


February 2010

	منظمة الأغذية والزراعة للأمم المتحدة	联合国 粮食及 农业组织	Food and Agriculture Organization of the United Nations	Organisation des Nations Unies pour l'alimentation et l'agriculture	Продовольственная и сельскохозяйственная организация Объединенных Наций	Organización de las Naciones Unidas para la Agricultura y la Alimentación
---	--	--------------------	--	--	---	--

## FAO Office of Evaluation

### Evaluation of FAO's role and work related to water

### Final Report

## **Acknowledgments**

The team of the Evaluation of FAO's role and work related to water long process is deeply grateful to the many individuals who made their time available for discussion and answering long questions.

In particular, the team benefited extensively from the generous information provided by staff in FAO headquarters, regional and sub-regional offices, the Governments of China, Egypt, Ghana, Malawi, Mali, Morocco, Saudi Arabia, Thailand, Turkey, development partners and people in the communities in these countries, as well as the organizations in FAO's Member Countries who answered the questionnaire survey.

Warm thanks go to Ms Daniela Del Giudice, who provided a precious help in the set-up, running and analysis of the questionnaire surveys.

Finally, the team extends its gratitude to Ms. Antonella Apuzzo di Portanova in the FAO Office of Evaluation, who supported the team with administrative assistance, patience and good humour.

## Table of Contents

<b>Composition of the Evaluation Team and Expert Panel</b>	<b>v</b>
<b>Acronyms</b>	<b>vi</b>
<b>Executive Summary</b>	<b>viii</b>
<b>1 Introduction</b>	<b>1</b>
1.1 <i>Background of the evaluation</i>	1
1.2 <i>Structure of the report</i>	2
<b>2 Objective and methodology of the evaluation</b>	<b>3</b>
2.1 <i>Objective and scope</i>	3
2.2 <i>Methodology</i>	4
<b>3 FAO's mandate and resources for work in water</b>	<b>6</b>
3.1 <i>Mandate of FAO units in water and their priorities</i>	6
3.2 <i>Overall resources</i>	10
3.3 <i>Conclusions</i>	12
<b>4 Overall assessment of FAO's role in water</b>	<b>13</b>
4.1 <i>Global and local challenges in water and agriculture 2000-2010</i>	13
4.2 <i>Contribution of FAO's work on water to its Global Goals and to the MDGs</i>	14
4.3 <i>FAO's clients and target groups in water</i>	16
4.4 <i>FAO's response to Member Countries' needs and demands</i>	18
4.5 <i>FAO's leadership, advocacy and guidance on water-related issues</i>	19
4.6 <i>FAO's mandate and role at the international level: effectiveness and comparative advantage</i>	22
4.7 <i>Conclusions</i>	23
<b>5 Policy and legal assistance</b>	<b>24</b>
5.1 <i>Water policies and strategies</i>	24
5.2 <i>Bringing potential physical and economic irrigable areas into production</i>	28
5.3 <i>Economic returns, water pricing and cost recovery</i>	29
5.4 <i>Water law and legislation and regulations</i>	29
5.5 <i>Local water management institutions</i>	30
5.6 <i>Conclusions</i>	31
<b>6 Technical assistance</b>	<b>32</b>
<b>A. Water in Production Systems</b>	<b>32</b>
6.1 <i>Land and water interactions</i>	32
6.2 <i>Rain Water Harvesting</i>	35
6.3 <i>On-farm water use, productivity and efficiency for agricultural production</i>	37
6.4 <i>Informal smallholder irrigation</i>	39
6.5 <i>Water and Food Security</i>	40
6.6 <i>Water and Livestock</i>	43
6.7 <i>Fresh water management for aquaculture</i>	45
6.8 <i>Conclusions</i>	46
<b>B. System feasibility, design and technology, management and operation</b>	<b>47</b>
6.9 <i>Rehabilitation and modernization of irrigation schemes</i>	47
6.10 <i>Groundwater irrigation</i>	50
6.11 <i>Drainage and soil salinity</i>	51
6.12 <i>International Programme for Technology and Research in Irrigation and Drainage</i>	52
6.13 <i>Non-conventional water use, including water quality, waste water re-use, desalinated water and urban/peri-urban water use</i>	53
6.14 <i>Conclusions</i>	54
<b>C. Water and environmental issues</b>	<b>55</b>
6.15 <i>Environmental services</i>	55
6.16 <i>Forests and Water and Watershed management</i>	55
6.17 <i>Agriculture and wetlands interactions</i>	60
6.18 <i>Pollution from agriculture, including pesticides, fertilizers and heavy metals on ecosystems</i>	61
6.19 <i>Water and food safety</i>	62

6.20	<i>Conclusions</i>	62
<b>7</b>	<b>Information, knowledge and capacity development</b>	<b>63</b>
7.1	<i>'Water at FAO' information and knowledge products</i>	63
7.2	<i>AQUASTAT</i>	65
7.3	<i>FAO as a global repository of knowledge: accessibility and diffusion, demand and use, by external and internal users</i>	66
7.4	<i>Capacity Development in the water sector</i>	68
7.5	<i>Synergy between normative and operational work</i>	71
7.6	<i>Conclusions</i>	72
<b>8</b>	<b>Gender mainstreaming and social inclusion</b>	<b>73</b>
8.1	<i>Information and analysis</i>	73
8.2	<i>Conclusions and recommendations</i>	76
<b>9</b>	<b>Partnerships and Alliances</b>	<b>78</b>
9.1	<i>Information and analysis</i>	78
9.2	<i>Conclusions and recommendations</i>	79
<b>10</b>	<b>Modalities of FAO's operational work in water</b>	<b>80</b>
10.1	<i>The Investment Centre and the Cooperative Programme</i>	80
10.1.1	<i>Information and analysis</i>	80
10.1.2	<i>Conclusions and recommendations</i>	82
10.2	<i>Emergency and rehabilitation</i>	84
10.3	<i>Other modalities for funding of water-related projects and programmes</i>	86
10.4	<i>South-South Cooperation</i>	87
10.5	<i>Management of water-related field projects and programme</i>	88
10.6	<i>FAO's rules and procedures applied to water-related field projects and programme</i>	90
10.7	<i>Conclusions</i>	92
<b>11</b>	<b>'Water at FAO': resources and organizational set-up</b>	<b>92</b>
11.1	<i>Resources</i>	92
11.2	<i>NRLW internal management</i>	95
11.3	<i>Collaboration within FAO on water issues</i>	96
11.4	<i>Conclusions</i>	98
<b>12</b>	<b>Overall conclusions and proposal for a FAO Water Platform</b>	<b>98</b>
12.1	<i>Overall conclusions</i>	98
12.2	<i>Proposal for an FAO Water Platform</i>	101

## Annexes

Annex 1	Terms of Reference of the Evaluation of FAO's role and work related to water
Annex 2	Profile of team members
Annex 3	Report of the Expert Panel of the Evaluation of FAO's role and work related to Water
Annex 4	Evaluation Methodology
Annex 5	List of institutions and stakeholders met during the evaluation process
Annex 6	Evaluation matrix
Annex 7	Evaluation of TCP projects
Annex 8	Evaluation of UTF projects in Saudi Arabia
Annex 9	Evaluation of IPTRID
Annex 10	Inventory of FAO projects related to water
Annex 11	Inventory of water-related normative outputs
Annex 12	Analysis of survey questionnaire to FAO's Member Countries
Annex 13	Analysis of survey questionnaire to National and International Institutions
Annex 14	FAO organigrams during the period under evaluation
Annex 15	Programme entities in FAO MTP and PWB 2004 - 2009
Annex 16	NRLW staff in the period 2004-2009
Annex 17	South-South Cooperation in the water sector
Annex 18	FAO Strategic Objectives and Organizational Results, 2010-2013

## **Composition of the Evaluation Team and Expert Panel**

### ***Evaluation team***

- Dr Andrew Bullock, water in development expert, Team Leader (United Kingdom)
- Dr Donald Baird, water quality and environment expert (United Kingdom)
- Mr Bart Dominicus, forest and watershed expert (The Netherlands)
- Ms Marna de Lange, irrigation engineer and capacity development expert (South Africa)
- Ms Vasudha Pangare, gender and social development expert (India)
- Dr Chris Perry, water economics expert (United Kingdom)
- Dr Aidan Senzanje, irrigation engineer and agronomist (Zimbabwe)
- Dr Saskia van Oosterhout, agriculture expert (South Africa)

### ***FAO Office of Evaluation***

- Ms Tullia Aiazzi, Evaluation Manager (Italy)
- Ms Carlotta de Vivanco, Evaluation research assistant (Germany)

### ***Expert Panel***

- Mr Amadou Allahoury Diallo, NEPAD\*
- Mr William Cosgrove, Independent consultant
- Dr Pay Drechsel, IWMI\*\*
- Dr Mats Eriksson, ICIMOD\*\*
- Ms Esther de Jong, Gender and Water Alliance
- Mr Henrik Larsen, UNEP/DHI group\*\*
- Prof Jan Lundqvist, SIWI
- Audrey Nepveu de Villemarceau, IFAD
- Dr Ti Le-Huu, UN-ESCAP\*

\* Attended first meeting of the Expert Panel

\*\* Contributed to the third meeting of the expert panel through written comments and a teleconference

## Acronyms

ADB	Asian Development Bank
AGL	FAO Land and Water Division until December 2006
AGAL	FAO Livestock Policy Unit
AGLW	FAO Water Development and Management unit until December 2006
AGNS	FAO Food Quality and Standards Service (previously ESNS)
AGPP	FAO Plant Protection Service
AIT	Asian Institute of Technology
APFAMGS	Andhra Pradesh Farmer Managed Groundwater System
CA	Conservation Agriculture
CAADP	Comprehensive Africa Agriculture Development Programme
CGIAR	Consultative Group on International Agricultural Research
COAG	Committee on Agriculture
CP	FAO-World Bank Cooperative Programme
EB/F	Extra-Budgetary Funds
ECOWAS	Economic Community of West African States
ESA	FAO Agricultural and Development Economics Division
ESW	FAO Gender, Equity and Rural Employment Unit
ET	Evapo-Transpiration
FAOR	FAO Representation
FFS	Farmer Field School
FIM	FAO Fisheries and Aquaculture Management Division
FNPP	FAO-Netherlands Partnership Programme
FOMC	FAO Forest Management Division, Forest Conservation Service
FPMIS	Field Programme Management Information System
FS	Food Security
GAWI	Guidelines on Agriculture, Wetlands and water resources Interaction
GCP	Government Cooperative Programme
GEF	Global Environment Facility
HIDA	Al-Hassa Irrigation and Drainage Authority
HQ	FAO Headquarters
ICARDA	International Center for Agricultural Research for the Dry Areas
ICIMOD	International Centre for Integrated Mountain Development
IDWG	Interdepartmental Working Group
I&D	Irrigation and Drainage Paper
IEE	Independent External Evaluation
IFA	Impact Focus Area
IFAD	International Fund for Agricultural Development
IFA-WALS	IFA on Water and Land Scarcity: reconciling competition in linked water and land systems
IFI/s	International Finance Institutions
ILRI	International Livestock Research Institute
IPM	Integrated Pest Management
IPTRID	International Programme for Technology and Research in Irrigation and Drainage
IUCN	International Union for Conservation of Nature
IWMI	International Water Management Institute
KSA	Kingdom of Saudi Arabia
LEGN	FAO Development Law Service
LTU	Lead Technical Unit
MASSCOTE	Mapping System and Services for Canal Operation Techniques
MC/s	Member Countries
MDG/s	Millennium Development Goals
MTP	Medium Term Plan

NEPAD	New Partnership for Africa's Development
NGO/s	Non-Governmental Organizations
NII	National and International Institutions
NPFS	National Programme for Food Security
NR	Natural Resources Management and Environment Department
NRC	FAO Environment, Climate Change and Bioenergy Division
NRL	FAO Land and Water Division in the Natural Resources Department, until 2007 called AGL
NRLA	Land Tenure and Management unit, until 2007 Land and Plant Nutrition Management Service
NRLW	FAO Water Development and Management unit, previously AGLW
NRLW/RAP-RAF	Water officers in the FAO Regional offices
NRR	FAO Research and Extension Division, Natural Resources Department
OECD/DAC	Organization for the Economic Cooperation and Development; Development Aid Committee
OED	FAO Office of Evaluation, until 2009 called PBEE
PC	Programme Committee
PE/s	Programme Entity/ies
PIRES	Programme Planning, Implementation Reporting & Evaluation Support System
PPRC	Project and Programme Review Committee
PWB	Programme of Work and Budget
RO/s	Regional Office
RP	FAO Regular Programme of work
RAF	FAO Regional Office for Africa
RAP	FAO Regional Office for Asia and the Pacific
RID	Thai Royal Irrigation Department
RLC	FAO Regional Office for Latin America and the Pacific
RNE	FAO Regional Office for the Near East and North Africa
RWH	Rain Water Harvesting
SADC	Southern Africa Development Community
SEC	FAO Sub-regional Office for Central Asia
SFW	FAO Sub-regional Office for Western Africa
SNEA	FAO Sub-regional Office for Northern Africa
SF	Strategic Framework
SIWI	Stockholm International Water Institute
SPFS	Special Programme for Food Security
SRO	Sub-regional Office
SSC	South-South Cooperation
TCE	FAO Emergency Operations and Rehabilitation Division
TCI	FAO Investment Centre, the Division hosting the FAO-World Bank Cooperative Programme
TCOS	FAO Management and Coordination Service of the SPFS
TCP	FAO Technical Cooperation Programme
TF	Task Force
ToR	Terms of Reference
UNEP	United Nations Environment Programme
UN-ESCAP	Economic and Social Commission for Asia and the Pacific
UNESCO	United Nations Educational, Scientific and Cultural Organization
USD	Dollar of the United States of America
UTF	Unilateral Trust Fund
WB	World Bank
WFP	World Food Programme
WSM	Watershed Management
WUAs	Water User Association

## Executive Summary

### *Information about the evaluation*

1. Over the last decade, FAO's Governing Bodies have frequently discussed issues related to water in agriculture, given its paramount importance. The Independent External Evaluation (IEE) of FAO concluded that FAO was in a weak position in the water sector. In light of this, the Programme Committee (PC) at its 100<sup>th</sup> Session in October 2008 endorsed among the topics proposed for initiation in 2009, the evaluation of '*FAO's work related to water, as this had been a significant discussion topic in the Committee of the Council for the IEE*'.

2. The Evaluation was conducted in the period March-December 2009. The exercise was managed by the FAO Office of Evaluation (OED) and the Evaluation team comprised experts in the different areas to be assessed. The Evaluation report and FAO's Management Response will be discussed by the Programme Committee at its 103<sup>rd</sup> Session in April 2010. All documents will be publicly available on OED website.

3. The Terms of Reference for the Evaluation defined its purpose as follows: "*The Evaluation will be forward-looking: its main purpose is to provide FAO's Member Countries and Secretariat with evidence- and lessons-based recommendations on the future role and scope of the Organization in its work related to water. The Evaluation will also provide accountability to FAO Member Countries and Secretariat about the Organization's performance and comparative advantage in this area of work.*"

4. FAO's role and work related to water was defined as "*all activities conducted by the Organization for the conservation, development and sustainable utilization of water resources for agriculture, including the responses to global environmental challenges affecting food and agriculture*". All relevant activities in the period 2004-2008/09 were evaluated.

5. The Evaluation methodology was based on the following elements:

- extensive consultation with FAO internal stakeholders throughout the process, including the Terms of Reference (ToR) and the final draft report, and with FAO clients, partners, donors and end-users of the Organization's services and products;
- assessment of evidence gathered against the OECD/DAC evaluation criteria, plus mainstreaming of gender and social inclusion and environmental sustainability;
- use of a range of quantitative and qualitative tools: interviews with FAO internal and external stakeholders and partners, at FAO offices and in Member Countries and international organizations; questionnaire surveys; analysis of project documents; review of auto evaluation and independent evaluation reports; direct assessment of normative outputs; and observation of field work;
- triangulation of gathered information and evidence; and
- compliance with UNEG Norms and Standards.

6. The countries visited balanced regional representation, cost effectiveness and resources available. Criteria for selection included: i) the total volume of water-related work by FAO; ii) diversity of work, priority being given to countries where different FAO units had been active; iii) countries where mandatory evaluations were required of on-going or completed projects, including the Technical Cooperation Programme; iv) countries hosting an FAO Regional or Subregional Office, to allow interaction with decentralized FAO staff; and v) security conditions.

7. Visited countries were: China, Egypt, Ghana, Malawi, Mali, Morocco, Saudi Arabia, Thailand and Turkey. Afghanistan had been selected initially but the level of insecurity preceding the elections led to the decision to cancel the mission. Interviews were also conducted with Land and Water officers in the Sub-regional Office for Southern Africa and in the Regional Office for Latin America and the Caribbean.

8. An external Panel of Experts, composed of representatives of international organizations and individual experts, supported the Evaluation process through three meetings to advise on the Terms of

Reference and on the advanced and final draft report. The Panel's final report is in Annex 3 of the current final Evaluation report, which integrates some of the Panel's suggestions.

8. Given the breadth of the work assessed and the length and complexity of the Evaluation report, this Executive Summary aims at informing the busy reader only about the key findings and conclusions for each area analysed, and at linking these to each of the 35 recommendations formulated. Despite good achievements and results, identified weaknesses in performance led the Evaluation team to urge in FAO a renewed commitment towards water in agriculture for the food security of the poor and a stronger cross-organizational coherence. Setting FAO's work on water on its appropriate course will require a boost to the depleted human resources, and new ways of working within the organization, as well as with member countries and partners.

9. Last, the ToR asked the Evaluation to set priorities for FAO's future work related to water. The team decided to clarify, based on its analysis of the evidence available and of current and future challenges, the areas of work where the Organization is effective and is producing outputs of high quality, and which require continuous or additional resources, and the areas where FAO does not currently have comparative advantage. Based on this report, FAO membership, including both recipient and donor countries, can discuss and agree with the Secretariat on their regional and sub-regional priorities in water and agriculture, as well as the resources made available to meet these needs.

### ***Overview of FAO's work in water: responsibilities, organization and budget***

10. FAO's work related to water is anchored in the Water Development and Management unit (NRLW) which is part of the Division of Land and Water (NRL) in the Natural Resources Department of the Organization. In addition, 'water' is an important aspect of the work of several other units in FAO, namely: Livestock Policy Unit (AGAL); Food Quality and Standards Service (AGNS); Plant Protection Service (AGPP); Gender, Equity and Rural Employment Unit (ESW); Fisheries and Aquaculture Management Division (FIM); Forest Management Division (FOM); Development Law Service (LEGN); Environment, Climate Change and Bioenergy Division (NRC); Emergency Operations and Rehabilitation Division (TCE); Investment Centre (TCI); Management and Coordination Service for the Special Programme for Food Security (TCOS). The report refers to 'Water at FAO' when discussing work, suggestions and recommendations relevant to more than one unit.

11. Regular Programme budget resources for NRLW ranged from USD 6.5 million in the 2004/05 biennium to USD 7.9 million in 2008/09, at nominal terms. These figures represented on average 0.84% of the Programme of Work and Budget Net Appropriation. The unit suffered cuts in line with the rest of the Organization.

12. Extra-budgetary (EB) resources allocated to water-related work were in the order of USD 460 million, representing 20% of the total EB funds received by FAO in the period under evaluation. Of these, 67% were for technical cooperation projects and 33% for emergency and rehabilitation initiatives. In total 238 initiatives were funded, 190 for technical cooperation and 48 under the emergency umbrella.

13. Data available does not allow an objective analysis of efficiency for work funded through the RP. Nevertheless, evidence collected showed that strategic decisions in NRLW to focus attention and resources on its global mandate and on normative outputs, coupled with cuts in budget resources and with about eleven major unplanned events, had serious consequences for the extent, quality and timeliness of the services delivered by the Organization to its Member Countries. A suggestion was formulated for more transparent allocation of tasks and resources.

### ***FAO's role in water***

14. FAO global goals include reducing hunger and food insecurity and sustainable use of natural resources, which correspond closely to two of the Millennium Development Goals, MDG1 and MDG 7 respectively. The Organization's commitment to gender equality makes of MDG 3 one of its important objectives. The Evaluation found that at global level, the Organization's work related to water since 2004 has been relevant to the Global Goals and MDGs, though limited in the case of MDG3. At country level the effectiveness of the contribution of the 'water' field programme to FAO Global Goal 1 and MDG 1 was limited by both resource constraints and the absence of a framework for intervention beyond

household food self-sufficiency objectives. Also, the effectiveness of the contribution at country level to MDG 3, gender equality, and MDG 7 has been mixed. Recommendation 1 aims at strengthening the contribution of FAO's unique combination of expertise in water and land resources for the improvement of food security for the poor and vulnerable.

15. FAO has a clearly defined role in water and agriculture and related issues of global relevance. The Organization is a major participant in international fora such as the World Water Forum and other international conferences, has for the last three years been chair of UN-Water, and maintains a variety of global databases, most notably AQUASTAT, which are recognized as primary sources of data for water-related analyses. FAO has contributed to raise the profile of agriculture in the international debate on water, as demonstrated by its visibility in international events and coordination bodies in recent years.

16. FAO continues to be a substantial advocate for food security and agricultural policies in general. Demand for FAO's services in the water sector is high, as the Organization is recognized as a reliable source of information, technical advice and support. The quality of advice and intervention is often good, but this is not uniformly the case and the development of a consistent 'FAO approach' to water issues appears necessary. In this context, water scarcity for food production has become the flagship driver of NRLW normative work and will become fully embedded in the Impact Focus Area on Water and Land Scarcity (IFA-WALS) from 2010 onward.

17. Much of FAO's work in the water sector is unique and recognised as such and the Organization's contribution to global knowledge and development is perceived as positive. Between 2004 and 2008/09, 'Water at FAO' produced more than 200 normative outputs. Most of them were assessed as satisfactory to good for technical quality, satisfactory for relevance to policy and to food security and they were well presented and written.

18. FAO's membership is diverse and complex in terms of needs and expectations. The water sector has proven particularly susceptible due to its complexity, as 'water' cuts across sectors and ministries, including agriculture, water resources, irrigation, energy, environment, forest and watershed management, health, municipalities. 'Water at FAO' contribution at country level, in itself less than fully coherent and coordinated, has not helped greater harmonization: Recommendation 2 calls for systematic engagement with all relevant ministries at country level.

19. In future, the Organization should give more space to water in its own global events, respond to signals from countries concerned about water scarcity, integrate water into responses to specific challenges such as climate change and the food price crisis and allocate its own resources in support of its strong advocacy messages on food insecurity.

20. The IEE in 2007 stated that FAO had 'no comparative advantage in water'. This Evaluation concluded that FAO is clearly the lead institution within the United Nations system on water in the context of food and agriculture. Other UN agencies and particularly the CGIAR institutions generally have complementary remits to that of FAO. Nevertheless, despite the good efforts of UN-Water, the generalized constraints on resources will continue increasing some degree of competition with other players.

### ***Assessment of FAO's work in water***

#### ***Policy and legal advice***

21. FAO's work in support of water policies and strategies is valuable. NRLW has emphasised production of normative products that demonstrate the central role of water in agriculture, and facilitate the negotiation of agriculture's access to water through valuation, production and productivity analysis, and basin resource planning. Gender and social inclusion perspectives are addressed in some work on policy but appropriate policy implementation tools remain to be identified.

22. In general, FAO's engagement in policy work at national level has been demand-driven and responsive to ongoing national policy reform. As might be expected, uptake and implementation by national governments has rarely been rapid or fully consistent with advice provided. Overall, however, the Evaluation noted an improvement in FAO's policy outputs over time and demand is high in most

regions of the world. Accordingly, more resources were recommended for this area of work (Recommendations 3 and 30); also, the absence of normative products on water and irrigation policy was noted (Recommendation 4) and a framework for policy analysis was suggested.

23. Policy recommendations related to expansion of irrigation were provided through irrigation investment briefs elaborated for the Sirte Conference in 2008. This area of work is supported more broadly by information coming from FAO AQUASTAT. FAO has also provided general policy advice on economic returns analysis, water pricing and cost recovery to the International Financial Institutions through TCI.

24. The area of water law and legislation included support to legislative reforms, capacity development, making organized information available to Member Countries, and technical advice to transboundary management of water resources. FAO's work has been of high quality, effective and highly appreciated by partners and participating countries. The Evaluation noted that this organizational capacity risks disappearing for lack of timely measures to maintain the institutional memory and experience and this was included in Recommendation 30.

25. Work during the period under evaluation on Water Users Associations was embedded in the field programme: its relevance and effectiveness ranged from excellent to average. The Evaluation suggested FAO should contribute to the global knowledge on this topic in partnership with others.

### Water in Production Systems

26. Technical assistance on Water in Production Systems covered a wide range of topics and subjects. In the area of Land and Water interactions, work assessed was considered relevant and effective. Collaboration among units in FAO suffered from the Organization's re-structuring and cuts in resources, in particular on soil fertility. Recommendation 5 addresses this, indicating a need for increased attention to environmental concerns. The new Land and Water Division, with no separation between units, should contribute to closer collaboration in this area of work. Recommendation 6 provides further guidance on Land and Water work.

27. FAO's innovative work in Rain Water Harvesting (RWH) pre-dates the evaluation period. NRLW considers that in the Asia and Pacific region there is no longer need for support in this area. In most recent years, work was mostly dependent on the personal commitment of some staff members in Africa: activities consisted of support to sub-regional networks and production of manuals and guidelines on the topic. RWH techniques have been diffused through field projects, but not on a systematic basis and usually excluding domestic uses. The Evaluation formulated recommendations for better mainstreaming of RWH practices in FAO's work, in collaboration with ICARDA, and finalisation of the normative manuals under preparation (Recommendations 7 and 8) as well as to increase resource allocation to this area (Recommendation 30).

28. The area of on-farm water use, productivity and efficiency for agricultural production has been a key activity for NRLW across the spectrum from rainfed to fully irrigated agriculture. The unit devoted efforts to replace the flagship tool CropWat, which was widely known and used, with a new product, AquaCrop, which has the capacity to estimate yield potential under any water supply conditions. This was prepared in collaboration and with contributions from a diverse set of institutions and individuals across the globe. AquaCrop is highly relevant and has a good potential for large uptake and impact. Along this line, the Evaluation formulated Recommendation 9 to strengthen a water saving and water productivity culture in FAO.

29. Work in informal smallholder irrigation has mainly been carried out through the field programme, including emergency interventions, and lacked a fully coherent and systematic approach. Examples in various countries showed that this sector requires substantial support from FAO, also at the strategic and policy level, in consideration of its relevance for food security. Recommendation 10 stresses the need to pay particular attention to the potential and requirements of smallholder irrigation when contributing to water policies and strategies.

30. In the area of Water and Food Security, normative work has been very limited and initiated only recently. FAO food information systems do not capture 'water' as resource, besides rainfall data. Nevertheless, some excellent publications have been produced on the topic.

31. The field programme included 76 'Water and Food Security' projects that represented 43% (approximately USD 200 million) of all water-related initiatives; 59 of these, funded through 80% of the resources, were conducted under the umbrella of the Special Programme for Food Security. Some of these projects showed positive results and impact, but only for restricted numbers of beneficiaries. Overall these projects failed in improving access to water resources for agriculture and food security for many among the rural poor, and did not adequately address sustainable land and water management. Any positive impact may thus be short-lived. Shortcomings have occurred particularly in Africa, and internal management issues and unrealistic time frames appeared to be among the main reasons for failures in implementation, although technical deficiencies also occurred. One Suggestion was formulated on participatory approaches in irrigation work.

32. Work in the area of Water and Livestock consisted of one regional project in Asia that looks at water pollution from livestock and agriculture, a relevant issue in the region. At the time of the Evaluation, the project looked likely to produce positive and sustainable results, as well as being replicable at wider scales. Suggestions were formulated on possible areas of further work in partnership with others.

33. Work on fresh water management for fisheries and aquaculture, under the leadership of FIM, consisted mainly of normative outputs. All have been assessed as highly relevant and of good technical quality. The Evaluation agrees with one of the IEE's recommendations concerning the urgent need for FAO to develop a coherent strategy for its work in aquaculture (and fisheries), and for better integration of aquaculture within other crop and livestock production systems. The contribution to food security of aquaculture and of aquatic products, in particular for women and the poorer sections of the population, should be recognized better in FAO. Recommendations 11 and 12 reinforce the need for an inclusive concept of water for food production and for FIMA to take leadership in promoting the integrated management of aquatic resources.

#### System feasibility, design and technology, management and operation

34. FAO's work in the area of rehabilitation and modernization of large scale schemes has been innovative, relevant and effective with the development of the Mapping System and Services for Canal Operation Techniques (MASSCOTE) tool. The substantial uptake by governments and International Financial Institutions in Asia is also promising for other regions of the world, where diffusion has started recently. Prospects for sustainability are linked to governments' interest and to the development of sub-regional capacity to provide services for the application of MASSCOTE. A Suggestion was formulated for the extension of MASSCOTE to West Africa.

35. Other field work in this area included rehabilitation of large irrigation schemes in Iraq and Afghanistan. Outputs and results were heavily affected by the prevailing insecurity in these countries.

36. FAO's publications on irrigation systems are all in great demand, but many of these are somewhat out of date. Recommendation 13 addresses the need for updating a number of products, norms and standards as well as developing others, aimed at improving FAO's work in modernisation and design of irrigation schemes.

37. Work in the area of groundwater has been limited due to resource constraints, but it appeared to be relevant and effective to a large extent, with excellent results in at least two cases. In some countries, FAO has been providing advice to governments, aiming at reducing unsustainable withdrawal from aquifers at high risk of depletion. Additional resources have been recommended for this area of work (Recommendation 30).

38. FAO's manuals on drainage and soil salinity are of global relevance and widely used. Overall, field work in this area was limited due to scarce resources, in particular in the Asia and Pacific region. Nevertheless, what has been accomplished is highly relevant and of good technical quality. The Evaluation considers this to be an area for continuous commitment by FAO.

39. The Evaluation assessed the relevance and performance of the International Programme for Technology and Research in Irrigation and Drainage (IPTRID). The original objective of the Programme is still highly relevant and valid, although financial instability and continual redefinition of IPTRID's strategy have disrupted its activities. Further, relations between NRLW and IPTRID have not always been easy. The Evaluation considers IPTRID's role to be valuable and in the absence of additional external

resources, recommends to FAO through Recommendation 14, to absorb some of IPTRID's capacity development function.

40. Work in the areas of non-conventional water uses included mostly normative products, although recently some field programme initiatives have been initiated. NRLW has developed strong partnerships in this area, at global and regional level, and outputs will likely have significant impact. Also, the work conducted has mainstreamed gender issues well and is highly relevant for the poor and marginal. The Evaluation considers this to be an area for continuous commitment by FAO and has recommended additional resources (Recommendation 30).

### Water and environmental issues

41. Within this broad theme, important work has been conducted on Forest and Water and Watershed Management (WSM), mainly at the normative level. A key activity was a review process, involving a large number of organizations around the world, through which previous experiences in WSM were analysed and discussed critically, Consensus was developed around a new paradigm underpinning watershed management at the global level and the process resulted in one flagship publication. The concept was further diffused through other publications. A key opportunity for application of the new vision will be a large GEF-funded initiative in West Africa, which also represents a unique occasion for bringing together all concerned FAO units, including the regional and sub-regional offices, around an integrated initiative. Recommendation 15 flags this aspect. Other extra-budgetary funds have recently been allocated for further application of the concept and other initiatives are in the pipeline.

42. Other policy work has been in support of global processes, with limited effectiveness and visibility. Also, technical assistance work at country level had mixed results, mostly due to limited human resources. The Evaluation considers there is opportunity for FOM to contribute to operational mechanisms of WSM service valuation. Recommendation 16 and a number of suggestions should guide FOM in revising its resource allocation in this area of work; and Recommendation 30 asks for additional resources.

43. FAO's contribution to the process for preparing the Guidelines on Agriculture and Wetlands Interactions, conducted in partnership with Ramsar and others, has been highly relevant and of high quality, though heavily constrained by lack of resources. This area of work is important for FAO and the Evaluation considers that the Organization should renew its commitment by leveraging or making resources available: wetlands are important for the poor and livelihoods, conservation and agriculture need to be brought together in the same framework. Recommendation 17 urges for the GAWI process to be sustained.

44. FAO has conducted limited work on Pollution from agriculture, besides the project on livestock pollution mentioned above. Some further work was conducted in Asia, as well as a recently started regional project in West Africa. However, pesticide contamination in irrigation channels recently emerged as a major obstacle to progress in the area of aquaculture-irrigation. A Suggestion has been formulated for this area, strengthened by integrating it in Recommendation 23 on Partnerships and Recommendation 30 on human resources.

45. FAO has an excellent reputation in the area of Water and Food Safety, a leading role and very good partnerships across the UN, in particular with WHO. Key normative outputs included significant studies on arsenic pollution in groundwater, and are to be highly commended in terms of their scientific value and relevance for sustainable agricultural development. Food safety is an issue of great economic importance, linked to both the health and livelihoods of people within their own countries, to the economic value of their export crops, and highly relevant to FAO's mandate. The Evaluation fully endorses continuous commitment by FAO to this area of work, with strengthened partnerships (Recommendation 23) and additional resources (Recommendation 30).

### ***Information, knowledge and capacity development***

46. FAO is recognised as a repository of knowledge in the water sector. Good numbers of its publications, in particular the older ones, are well known and used by governments, practitioners and academia. The Irrigation and Drainage Series, AQUASTAT and Waterlex are well known brand-names

associated with FAO. However, products by 'Water at FAO' appear to be 'far too many' and a number of documents lack originality and adequate focus on gender and social inclusion issues. At the same time, the Evaluation noted that in a number of publications, relevance for the field work is minimal, whereas 'grey documents' exist in staff's computers that would be very beneficial and relevant if published and disseminated. Recommendation 18 addresses the issue of prioritizing work on publications.

47. Undoubtedly there is a high generic demand for FAO's water products but staff in governments and other clients and users often complained that old and more recent products are available only on the web-site, whereas preference is still for hard copies. Recommendation 19, complemented by a suggestion, addresses the need for strategizing distribution and dissemination mechanisms.

48. AQUASTAT is fully recognized as FAO's flagship information system in water, and serves a vital role in making baseline information available globally. Its very nature demands continuous improvement, which happens on a permanent basis at the cost of over-stretched human resources. Promising partnerships are also forthcoming. The Evaluation fully endorses continuous commitment by FAO to AQUASTAT, with additional resources (Recommendation 30). A few suggestions were also formulated on technical aspects.

49. Capacity development has been a common element of many water-related initiatives. These ranged from training through IPTRID, to in-service capacity development through work on irrigation policy development and field projects, and included also specific initiatives for developing implementation capacity in the water sector. High demand for capacity development emerged in all regions through the questionnaire survey, in particular on technical issues. However, while there is much evidence of FAO's contributions to capacity development across its core functions, the Evaluation noted weak performance in dissemination, in institutionalising training and capacity building; and to some degree, in building implementation capacity.

50. The Evaluation fully endorses continuous commitment to this area of work, and formulated Recommendation 20 in which resources should be committed to the Africa region in collaboration with the Comprehensive Africa Agriculture Development Programme, along with a suggestion.

### ***Gender mainstreaming and social inclusion***

51. Responsibilities in FAO on gender mainstreaming and social inclusion are distributed to different actors through several mechanisms. Some good normative outputs like publications and training material were produced and the analysis of seven irrigation and agriculture policies to which 'Water at FAO' has contributed, shows that issues and concerns of smallholder farmers and socially disadvantaged groups were taken into account and addressed adequately. Also, some praiseworthy initiatives at field level have been implemented or are on-going.

52. However, 'Water at FAO' at large has failed to recognise social inclusion as a foundation of development and to adequately mainstream gender in its work, and outputs and results were short of requirements and expectations. There is no clarity as yet within FAO's work on water about two key concepts, namely, 'what is gender mainstreaming' and 'who should be responsible for gender mainstreaming'. Further, the Evaluation considered that the current institutional set-up for mainstreaming gender in the work of 'Water at FAO', and in NRLW's work in particular was not effective, mostly due to the lack of human resources at the appropriate level of seniority.

53. The Evaluation recommended that FAO should renew its commitment to gender and social inclusion in water through all its work, with Recommendations 21 and 22 and two suggestions. Recommendation 30 asks for additional resources also in this area.

### ***Partnerships and alliances***

54. Partnerships at global, regional and sub-regional level are a key feature of 'Water at FAO' and of NRLW. Collaboration within UN-Water, as chairperson and member, has been successful and particularly appreciated by partners. The Evaluation strongly supports continuous active engagement, promoting the importance of water to agriculture.

55. Constraints limiting FAO's capacity to partner more widely relate to corporate culture, unfriendly procedures, heavy bureaucracy and control, and lack of clear agreements with a number of

partners on issues of logos and acknowledgment of contributions. The Organization is developing a new strategy for partnerships that should help in tackling some of these issues.

56. Recommendation 23 calls and provides guidance for the identification and intensification of complementarities with UN- and other agencies. Two suggestions were formulated on internal FAO procedures.

### ***Modalities of FAO's operational work in water***

57. In the period 2004-2008 the water-related work of FAO Investment Centre with IFIs represented 17% of TCI's total work. Of this, 89% was for the World Bank and included mostly supervision of on-going operations and identification/preparation of investment projects. Internal Bank procedures have affected the form of collaboration and currently TCI's inputs are distributed along the whole project cycle. This makes an evidence-based assessment of its effectiveness virtually impossible. Nonetheless, TCI's contribution is highly appreciated by World Bank staff for several reasons, including high competence and independence of judgment of staff and consultants. Suggestions have been formulated to address issues of human resources within TCI and compatibility of information management systems between TCI and FAO.

58. Emergency work has been an important part of the water-related field projects during the period 2004-2008. TCE managed 48 projects with important water components, for a total of USD 150 million, which represented 14% of the total emergency funds and 33% of the total water-project funds. This was concentrated in few countries, with Iraq and Somalia being the largest interventions. Initiatives ranged from distribution of pumps to major rehabilitation of pumping stations to establishment of complex water and land information systems. Interventions had often development aims, despite the 'emergency' circumstances of implementation. Most were relevant, however the complexity of water-related work was not taken in due consideration and projects' effectiveness suffered to a large extent. Inconsistent involvement of NRLW in the role of backstopping unit also contributed to poor results in a number of cases. A suggestion was formulated on a specific joint NRLW-TCE product.

59. The Evaluation also analysed the Technical Cooperation Programme (TCP), which showed positive results as a modality of funding and implementation when used in the context of water policy and capacity development. Conversely, the TCP modality proved unsuitable for implementing field projects with water management components. Recommendation 24 urges FAO to use the TCP in the water sector mostly for policy and capacity development work.

60. The analysis of South-South Cooperation (SSC) in the water sector showed that this modality of collaboration suffered significantly from cultural and linguistic obstacles and was short of its potential effectiveness. A suggestion was formulated for an in-depth analysis of the whole SSC in FAO.

61. Further, the Evaluation assessed how procedures, rules and regulations for project implementation were properly followed in the water-related projects. Several weaknesses that had a negative impact on the effectiveness of the field programme were noted, in particular in relation to the respect of the LTU principle, functioning of Project Task-Forces, and provisions for technical backstopping and clearances. Recommendation 25 urges clarity, proper budgeting and adequate time-frames for water-related field projects. Recommendations 26, 27 and 28 are addressed at FAO for projects in general, and tackle the Project Task Force and the internal market mechanisms, as well as the development of procedures for National Execution of projects and programmes, respectively.

### ***'Water at FAO': resources and organizational set-up***

62. The Evaluation's assessment of current human resources in the water sector, against the actual and potential needs for assistance by FAO to its Member Countries, shows that the Organization is seriously under-staffed at both Headquarters and in the decentralized offices. Although some improvements in delivery could be obtained with improved internal management and capacity development of FAO staff, as formulated in Recommendations 31 and 32, FAO is below critical mass of staff for both the water-related normative and field programme. Recommendations 29 and 30 provide guidance on principles underpinning allocation of human resources and the specific areas of work that require strengthening.

63. Collaboration among units shows a very mixed picture, from excellent to non-existent. The Evaluation also identified gaps in the feedback and synergy loop between the normative and field programme, in particular between the work by NRLW and units in the Technical Cooperation Department. This, in a number of cases, represented a loss of opportunity and limited the effectiveness, impact and comparative advantage of the Organization in its water-related work at country level.

### ***Conclusions and recommendations***

64. The Evaluation was mandated to conduct a thorough assessment of FAO's work on water from 2004 to 2008/09. Throughout its analysis, the Evaluation referred to the goal and mandate of FAO '*towards food security for all*' as its overarching benchmark, and assessed how the work of the Organization related to water had contributed to it.

65. The analysis confirmed that FAO's mandate is as relevant as ever and that water is a significant aspect of many of FAO's activities, including: improving food security at household and global level; implications for forestry and fisheries; establishing international norms and standards for water safety; planning and designing for investments; and emergency operations which have restoration of water services as a priority. Even where there is no apparent direct connection with water, for example when improving the chain of activities from the farmer's field to marketed consumer products, there are significant implications for the productive benefit to society of water use in agriculture.

66. Globally, FAO has played a strong role in the debate on 'water scarcity' amid the topics of climate change and increasing global food needs. FAO has high visibility in international conferences, regional and national water-related forums and the Organization is well recognized and appreciated by peer international organizations. Collaboration on global flagship publications as well as for work at country level are appreciated and of good technical quality. The chairmanship of UN-Water has undoubtedly contributed to FAO's credibility and visibility among peer organizations.

67. FAO's contribution to assist planners and managers in many countries, and its support on legal aspects including on international transboundary issues, has been substantive and recognised and should continue. Equally, its normative and operational work on modernization and management of irrigation systems, water productivity, water resources management, ranging from groundwater to RWH and land and water management, was highly relevant and effective to a good extent.

68. Positive results, mainly at the normative level, were achieved in the areas of water quality, the interface between freshwater management and aquaculture, watershed management and there is potential, if resources will be made available and appropriate partnerships developed, in the work on agriculture and wetlands interaction and on water pollution from agriculture.

69. FAO has a name as an information and knowledge broker and its support for capacity development is highly demanded. The quality of many of its publications is good. AQUASTAT, the only existing database on water resources, is widely known and used. However, poor feedback from field experience into new products, lack of strategic planning for the production of NRLW normative outputs, and lack of attention to Member Countries' constraints in the access to FAO's products, all may contribute to undermine the important role the Organization can play with its products and knowledge.

70. This Evaluation found that FAO is the only institution with explicit mandate for global and country level work on the interface between food, agriculture and water, combined with the political mandate of the UN to address this on behalf of its Member Countries. FAO should exploit its corporate body of knowledge and field involvement to derive a set of messages and approaches that would constitute an 'FAO approach to water' to the pressing water-related issues within its mandate. Every activity should be an opportunity to bring FAO's skills to bear in a coherent manner. This would mean adopting a consistent approach to the identification of constraints and priorities in the water sector, exploiting FAO's contributions to the world water conferences, its analytical and information-based expertise in Rome, and its wide range of field operations.

71. With such a diversity of actors and activities within the Organization, the need for coordination is clear. Although this usually comes at a cost of time and resources, it bears potential for strong added value. The on-going FAO reform offers opportunities for improvement, but this may not be enough on its own. The Evaluation sees urgent need for a major shift of attention and focus as well as a

formal supporting mechanism – a FAO Water platform – that underpins the promotion of FAO's strategic vision for water and greater operational effectiveness.

72. Operationally, a coordinating mechanism would ensure enhanced feed-back between the normative and field programme as well as among units and organizational locations. This in turn will improve approaches and confirm relevance and applicability. Better balance between the resources needed for technical backstopping and the planned volume of field work should be achieved. As confidence and knowledge grow, quality will benefit and the 'FAO approach to water' will become clearer. Once that happens and is recognised, countries who seek FAO input will have a much clearer idea what they can expect to get and staff working for FAO, whether permanent or consultants, can be exposed to characteristically FAO ways of working.

73. There is no doubt that water will become increasingly important in future. A dominant theme of this evaluation has been that resources are insufficient to meet demand and the Evaluation has recommended a substantial increase in the human capital of the Organization. Partnerships can help, and should be pursued, but maximising complementarity among units and different organizational levels who work in the water sector will also be critical to improve FAO's impact at local, regional and global levels of food security.

74. Meeting these challenges and deriving the potential benefits outlined above will require decisions and guidance from the Assistant Director General's level, coordinated between Headquarters and the decentralized offices. The Evaluation formulated Recommendation 33 as the first step in this direction and proposed the creation of a FAO Water Platform. Recommendations 34 and 35 provide guidance on the set-up and functioning of the Water Platform, along with some suggestions. The adoption of a renewed mission statement as set-out in Recommendation 1 should be the building block for the Water Platform.

75. The recommendations formulated by the Evaluation can be implemented independently from each other. Nonetheless, the Evaluation considers that the recommendations are complementary and that all are required to improve FAO's performance in the water sector. Recommendations that call for renewed attention to FAO's core mandate and the set-up and functioning of the Water Platform will play a particular role in this endeavour, should be considered as 'first among equals' and have been grouped under the heading 'Foremost recommendations' here below. All other recommendations have been grouped by addressee: 'Water at FAO', considered the virtual pre-cursor of the Water Platform; NRL, the new Land and Water Division; and FAO as a whole. The numbering that appears in the main report has been maintained.

## Foremost recommendations

### *Recommendation 1 To 'Water at FAO'*

**FAO should define its mission statement for its work on water and land, centred on food security. This should be formulated to include the following concepts: "Food security is a prime objective in the work of FAO. To realize this objective, FAO should strengthen the efforts to ensure that the policies, management and use of water and land resources are coordinated to the extent necessary and feasible. The purpose must be to improve and stabilize the productivity in the use of these resources in a long term perspective, i.e. to meet an expected increase in demand for food and other goods and services from the agricultural sector. This can only be achieved by taking the different capabilities of women, men and youth into account. Special attention must be paid to the inclusion of poor and vulnerable groups. This approach should be the basis of the design of the technical, financial and institutional arrangements."**

### *Recommendation 21 To 'Water at FAO'*

**a) 'Water at FAO' should develop tools to support Member Countries in preparing agricultural water policies that are gender sensitive and socially inclusive;**

- b) 'Water at FAO' should recognise in all its work, normative and operational, that farming is a household enterprise, often passed down through generations and drawing on traditional knowledge, based on teamwork, where tasks are complementary and not competitive;
- c) 'Water at FAO' should update 'old' benchmark publications progressively, introducing new material, improving relevance to different farming households, and integrating gender concerns.

***Recommendation 30 To FAO***

**FAO should ensure full time capacity in the following areas and locations:**

- a) Irrigation engineering capacity at sub-regional levels in East, Southern and West Africa and in the Near East/North Africa;
- b) Strengthen water management capacity to support the Technical Cooperation Department in its work, with NRL staff based at the most appropriate location.
- c) Create a post for Social development and gender expert with specific experience in agricultural water and land management at middle/senior level (P4/P5) in NRL at Headquarters;
- d) Strengthen capacity at Headquarters in NRL on: groundwater management; water harvesting; water statistics and information systems;
- e) Strengthen capacity on waste-water management and related topics in Latin America, Asia and the Pacific and in the Near East;
- f) Strengthen capacity on water policies at the regional level, to match requests from Member Countries;
- g) Strengthen capacity on: water-related issues in AGNS and on agricultural pollution in AGPP;
- h) Establish capacity on Forest and Water and Watershed Management in Central Asia;
- i) Sustain the credibility and performance of LEGN by strengthening its human resources in the water sector.

***Recommendation 33 To FAO***

**FAO's Assistant Director General for Natural Resources, in collaboration with concerned Assistant Directors General in Headquarters and in the Regional Offices, should develop a strategy for water in FAO. This should define an official internal coordination mechanism, called FAO Water Platform, and reflect the importance of water in FAO's mandate as well as the objectives of the Organization in the water sector.**

***Recommendation 34 To FAO***

**The FAO Water Platform should become the organizational mechanism that connects work on water to the Strategic Objectives. Key elements of its structure and role are as follows:**

- a) The Chair should be the Assistant Director General for Natural Resources level and should report to the two Deputy Directors General of FAO on progress and constraints of the Platform mechanism;
- b) The Platform should develop a four-year program for the Impact Focus Area-Water and Land Scarcity and other Impact Focus Areas to which work on water is relevant; the programme should include priorities, responsibilities, areas for partnerships and required human resources for its implementation;
- c) The Platform should function through regular joint decision-making meetings among FAO unit managers and regional senior staff with strong responsibilities for water work, including NRL, ESW, FIMA, FOMC and the Technical Cooperation department and others, as appropriate.

***Recommendation 35 To FAO***

**The FAO Water Platform should ensure:**

- a) Clarity on the context and principles of collaboration between NRL, ESW, FIMA, FOMC and units in the Technical Cooperation Department, defining responsibilities and roles, resources,

allocation and sharing procedures and compliance with technical requirements of projects and initiatives;

b) Close coordination between all members of the Water Platform on all steps of project preparation, from discussions with donors to project approval and adequate planning for resources for backstopping and technical clearances.

c) Improved two-way linkages between technical staff and consultants working for all members of the Water Platform, as sources of information and means to disseminate and test ideas.

## Recommendations to 'Water at FAO'

### *Recommendation 2 To 'Water at FAO'*

'Water at FAO' should advocate for institutional arrangements in Member Countries that systematically engage all relevant ministries (agriculture, irrigation water resources, the environment, urban development, power, etc.) in issues related to water resources management for agriculture and food security.

### *Recommendation 3 To 'Water at FAO'*

'Water at FAO' should allocate resources for work on water and irrigation policies to meet rising demand from Member Countries, through the TCP or other funding modalities.

### *Recommendation 4 To 'Water at FAO'*

'Water at FAO' should develop a new normative product informed by experience and lessons learned illustrating steps and processes that can facilitate national policy development processes. This product should also set clear criteria and conditions under which FAO is in a position to provide meaningful policy assistance.

### *Recommendation 5 To 'Water at FAO'*

'Water at FAO' should, in formulating field interventions, pay increased attention to environmental concerns, including soil fertility, aquifer depletion and downstream impacts of increased local water consumption.

### *Recommendation 6 To 'Water at FAO'*

'Water at FAO' in its work on the development of land and water strategies, should always (a) consider the spectrum of land/water options from rainfed through to full irrigation; and (b) overtly address relevant gender and social inclusion dimensions.

### *Recommendation 7 To 'Water at FAO'*

In partnership with ICARDA and others 'Water at FAO' should evaluate the potential to incorporate Rain Water Harvesting practices into water resources development for rural livelihoods improvement.

### *Recommendation 8 To 'Water at FAO'*

The pending NRL publications on Rain Water Harvesting should be expanded to include a decision-support tool based on rainfall data to assess yield, assurance of supply and economics at the level of households and administrative units. They should be completed, published and disseminated as a matter of urgency.

***Recommendation 9 To 'Water at FAO'***

**'Water at FAO' should set out an institutional view on water accounting and establish a culture 'of water saving and water productivity' for dissemination in all its work.**

***Recommendation 10 To 'Water at FAO'***

**While contributing to Member Countries water policies and strategies, 'Water at FAO' should pay particular attention to the potential of smallholder irrigation and its requirements for specific technical, legal and extension support.**

***Recommendation 11 To 'Water at FAO'***

**'Water at FAO' should reinforce the integrated concept of water to sustain both aquatic and terrestrial crop-based food production, to ensure maximum benefit for the poor and disadvantaged.**

***Recommendation 12 To 'Water at FAO'***

**'Water at FAO', under FIMA's leadership, should promote integrated management of aquatic resources, aquaculture in irrigation systems and wetlands-agriculture interactions.**

***Recommendation 15 To 'Water at FAO'***

**'Water at FAO' should engage in the Fouta Djallon Project to make it an example of organizational achievement through intensive collaboration across departments, both at Headquarters and in decentralized units.**

***Recommendation 17 To 'Water at FAO'***

**'Water at FAO' is strongly urged to take immediate action to sustain the process for the Guidelines on Agriculture and Wetlands Integration, through the mechanism of the Ramsar Thematic Work Area, and to seek funding for this activity.**

***Recommendation 19 To 'Water at FAO'***

**'Water at FAO' should develop a distribution and communication strategy for its publications and normative products, to facilitate knowledge and access to these among governments, academia and other stakeholders beyond the posting on FAO's web-site.**

***Recommendation 23 To 'Water at FAO'***

**'Water at FAO' should identify and intensify specific complementarities with UN-agencies and other international organizations. Specific areas for partnership should be:**

- a) water in food safety and on wastewater with WHO;**
- b) livestock with ILRI;**
- c) agricultural pollution with UNEP;**
- d) agriculture and wetlands interactions with Ramsar and others;**
- e) research on water and food with the CGIAR system, in particular with IWMI.**

***Recommendation 24 To 'Water at FAO'***

**The use of the TCP modality in the water sector should be mostly in support of national processes of policy and strategy formulation and of capacity development.**

***Recommendation 25 To 'Water at FAO'***

**FAO project documents for interventions in the water sector should clearly indicate budget requirements for long- and short-term human resources, including for technical backstopping and clearances, as well as ensure reasonable time-frames.**

***Recommendation 29 To 'Water at FAO'***

**It is recommended that:**

- a) Experts with stronger specialization and competences in broad strategic issues should be based in FAO Headquarters; support from this to the other levels should be available upon call;**
- b) Experts with stronger engineering and field experience and with solid operational and problem-solving capacity should be based at regional and sub-regional level;**
- c) Competences should match regional/sub-regional needs, instead of the current standard set of competences across all sub-regions;**
- d) At least two water officers, one or more of each discipline, should be located in FAO decentralized offices where water and land issues are a priority, to properly deal with the management of water and land resources, jointly and separately, to ensure synergies and back-up mechanisms;**
- e) FAO Representations should recruit national technical specialists at country level, in particular in large countries like China and India and where competent expertise is available.**

**Recommendations to FAO units**

***Recommendation 13 To NRL***

**NRL should:**

- a) Update its normative products that are relevant to some of the modernisation efforts in various countries, especially pumped schemes in Africa.**
- b) Develop and assist in the introduction of the design-for-management concept to improve the manageability of irrigation schemes by user organisations.**
- c) Update norms and standards for equipment and design parameters suitable to agro-socio-ecological conditions as necessary; and**
- d) Develop guidelines for application by local agencies (public and/or private, as appropriate) to evaluate irrigation systems.**

***Recommendation 14 To NRL***

**If reliable and substantial multi-year external support is available, NRL should continue hosting IPTRID within a clearly defined framework of collaboration, with active future participation of the Programme in the proposed FAO Water Platform. Otherwise, NRL should absorb aspects of IPTRID's mandate and role on capacity development within its own Regular Programme of Work and Budget.**

***Recommendation 16 To FOMC***

**FOMC should contribute to 'Water at FAO' by:**

- a) reducing existing institutional commitments by matching resources to realistic time frames;**
- b) giving particular attention to 'scalability' of interventions when conceptualising and designing projects, including pilot initiatives;**
- c) invigorating advocacy and policy contributions through UN platforms;**
- d) seeking and developing active partnership opportunities, and**
- e) developing operationally-relevant WSM related normative products.**

***Recommendation 18 To NRL***

**NRL should prepare a 4-year publication strategy, aimed at scaling-back output to fewer publications and addressing priority gaps. New proposed publications should specify ex-ante the target audience and proposed plan of dissemination.**

***Recommendation 20 To NRL***

**NRL should commit resources in the Africa region, in collaboration with CAADP, to:**

- a) Introduce practical training courses based on the irrigation design manual into the curricula of regional training institutions, to improve capacity for the major irrigation development foreseen;
- b) Broaden the content of the irrigation design manual to include the norms and standards on irrigation design and irrigation equipment including Rain Water Harvesting approaches and techniques for informal/individual water control development options for smallholders;
- c) Develop and incorporate engineering aspects of informal smallholder irrigation into the curricula for irrigation engineers and related professions.

***Recommendation 31 To NRL***

**NRL should act urgently to:**

- a) develop a NRL common vision and strategy, by involving staff at all levels and locations;
- b) improve team work, collaboration, coordination and sharing within NRL across all levels and locations, including through annual meetings for all staff, regular and frequent virtual meetings, visits by senior managers to decentralized offices, etc.

***Recommendation 32 To NRL***

**NRL should give priority to conducting capacity development events for FAO water staff from all locations and all concerned units, in particular TCI, on all its new products, and 'Water at FAO' should accommodate these efforts making staff available for training. AquaCrop and MASSCOTE represent areas for urgent action.**

**Recommendations to FAO on procedures**

***Recommendation 22 To FAO***

**Any future FAO project and programme appraisal mechanism, that will take the role of the Project and Programme Review Committee, should ensure that project designs are strengthened towards mainstreaming gender and social inclusion and integrated approaches that consider the wider constraints of farming households as enterprises.**

***Recommendation 26 To FAO***

**The mechanism of the Project Task Force should be applied systematically and throughout the complete life of all projects, including emergency interventions, in particular when projects are multidisciplinary. Monitoring of project implementation should be part of the TF responsibilities.**

***Recommendation 27 To FAO***

**FAO should revise its internal market mechanisms and rates, to ensure they do not act as disincentive to collaboration between projects and operational units and technical departments, and prevent dissemination and testing of normative concepts.**

***Recommendation 28 To FAO***

**FAO should urgently develop procedures for National Execution of projects and efficient and effective tools for substantial project supervision and monitoring, beyond financial delivery.**

## 1 Introduction

### 1.1 Background of the evaluation

76. Water is a key resource for agriculture and food security and therefore for FAO. The third Global Goal of its Strategic Framework 2000-2015 is “The conservation, improvement and sustainable utilization of natural resources, including land, water, forest, fisheries and genetic resources for food and agriculture.” The Strategic Framework (SF) included water scarcity, pollution and salinisation and integrated natural resources management, within its Strategic Objective “D1-Integrated management of land, water, fisheries, forest and genetic resources”.

77. Over the last decade, FAO's Committees have repeatedly emphasised water use and management for sustainable agriculture, forest and food security efforts. The Committee on Forestry (COFO) in 2003 focused on the theme “forest and water”; the Committee on Agriculture (COAG) in 2007 discussed a paper on water scarcity by the FAO Land and Water Division and in 2009 requested FAO to set-up an early warning system on water scarcity; the Committee on World Food Security (CFS) also repeatedly stressed that FAO should pay particular attention to water scarcity and drought. FAO Regional Conferences have regularly listed work on water among their priorities.

78. The Independent External Evaluation of FAO (IEE) conducted between 2005 and 2007, commissioned a “Background working paper on Water Management and Irrigation”. The main conclusion on water and irrigation in the IEE's final report was: *‘FAO continues to have a lead role on water databases and is respected for its work on agricultural water management. If hunger, poverty and chronic malnutrition are to be overcome, especially in Africa, increased water control is a prerequisite for any green revolution and for continuing agricultural development in Asia and the Middle East. Many water networks exist but are often biased against agriculture. FAO is currently in a weak position. The competency mix and the wide dispersion of the few human resources remaining in the Organization would need to be addressed as an initial imperative for the Organization to exercise leadership in macro-policy issues at global and regional levels.’*

79. The IEE's core recommendation for water focused on the need for: i) a significant realignment of existing resources together with the securing of additional human and financial resources; and ii) a different strategic approach which would enable FAO to contribute to integrated policies and programmes which bring together engineering, tenure, economics, management and legislation. However, neither these recommendations nor those formulated in earlier auto-evaluation exercises by the Land and Water Division (NRL) had been implemented by the time the current Evaluation was completed.

80. As a follow-up to the IEE report and the related Management Response, the Organization launched a complex reform process. The 35<sup>th</sup> Special Session of the FAO Conference in November 2008 approved the Immediate Plan of Action (IPA), and the formulation of the new FAO Strategic Framework 2010-2019, as well as of the Medium Term Plan 2010-2013, for approval by the 36<sup>th</sup> Session of the FAO Conference in November 2009. Throughout 2008 and 2009, from the institutional point of view FAO has been in flux, progressing steadily in the formulation and approval of its new SF, its governance, internal structure and working mechanisms.

81. In this context, the Programme Committee (PC) at its 100<sup>th</sup> Session in October 2008 endorsed among the topics proposed for initiation in 2009, the evaluation of *‘FAO's work related to water, as this had been a significant discussion topic in the CoC-IEE’*<sup>1</sup>, to be presented to the PC at its session in Spring 2010.

82. The Evaluation of FAO's role and work related to water was conducted over the period April 2009-January 2010. The Terms of Reference (ToR)<sup>2</sup> for the Evaluation describe its objective, scope and methodology. FAO Office of Evaluation<sup>3</sup> (OED) managed the evaluation; the profiles of the Evaluation team members are in Annex 2.

---

<sup>1</sup> CoC-IEE: Committee of the Council on the Independent External Evaluation of FAO.

<sup>2</sup> See Annex 1, Terms of Reference of the Evaluation of FAO's role and work related to water.

<sup>3</sup> The denomination of the unit changed during 2009, from Evaluation Service to Office of Evaluation. The acronym also changed from PBEE to OED in January 2010.

83. The ToR brought the attention of the Evaluation team to the changing internal context, the role given to water in the new SF and planning documents, as well as the rapidly changing external factors affecting water. These current and future concerns informed the evaluation process insofar as possible: the Evaluation team conducted its analysis based on the evidence gathered about past performance. Its recommendations are thus based primarily on retrospective evidence. Recommendations are formulated taking into account the revised institutional framework to be implemented as of January 2010.

84. As per the Organization's evaluation policy, the FAO Natural Resources Department will prepare a Management Response to the final evaluation report, expressing its overall judgment of the evaluation process and report and indicating acceptance, partial acceptance or rejection of each recommendation. The final Evaluation report, the Expert Panel report<sup>4</sup> and the Management Response, to be discussed by the FAO Programme Committee at its 103<sup>rd</sup> Session in April 2010, will become public documents on the website of FAO Office of Evaluation.

## **1.2 Structure of the report**

85. Chapters 1 and 2 illustrate the background for the Evaluation, its purpose and a synthesis of the Evaluation methodology. Chapter 3, Overview of FAO's work in water, provides basic information on the units in FAO working in water and the resources made available through the Regular Programme (RP) and Extra-Budgetary (EB) resources to the water sector.

86. The Evaluation's assessment starts in Chapter 4, where the overall role of FAO in the water sector is analysed and discussed in terms of its mandate and the effects of its guidance and advocacy at international and national level. The chapter contains also some of the results of the surveys of Member Countries and National and International Institutions, in particular on knowledge of the FAO's work in water and their expectations.

87. Chapters 5 to 7 illustrate FAO's water-related work, grouped under the following activity areas:

- *Policy and legal advice*: providing assistance to member countries, as well as the development of specific policy information tools; it is funded through Regular Programme and Extra-Budgetary resources. (Chapter 5)
- *Technical support to countries and their constituents*: projects at the country or regional level including in emergency context, ranging from development of small-scale irrigation schemes to modernisation of large scale schemes, watershed management, wastewater treatment, etc. It is mostly funded through Extra-Budgetary resources for development, emergency and investment initiatives although staff members responsible for these activities are mostly funded through the RP budget. (Chapter 6). This chapter assesses: Water in Production Systems; Irrigation system feasibility, design and technology, management and operations and Water and the Environment.
- *Information and knowledge on water*: information databases on water (e.g. AQUASTAT and Waterlex), contribution to global studies and to international processes (e.g. UN-Water). In FAO's terminology, these are usually defined as 'normative products' and are funded through both Regular Programme and Extra-Budgetary resources. The Evaluation included work aimed at Capacity development under this heading (Chapter 7).

88. These chapters cover the normative and operational work of the Organization. The assessment of the synergies between normative and operational work is included in Section 7.5. All these Chapters have a section for Conclusions, which highlights the key messages. Section 4.5 contains a detailed assessment of all normative products by 'Water at FAO'.

89. Chapters 8 to 10 analyse FAO's work related to water from different perspectives: Gender and social inclusion; Partnerships and Alliances and analysis of work by the Investment Centre, the Emergency Division and South-South Cooperation. The quality of project management and the impact of

---

<sup>4</sup> See Annex 3, Report of the Expert Panel of the Evaluation of FAO's role and work related to water

FAO's rules and regulations on the performance of the work of the Organization in the water sector are also addressed.

90. Chapter 11 describes the human resources available for the water sector in FAO, issues related to their management, the organizational set-up and internal coordination and collaboration. Substantive proposals for the revision of FAO's water activities are included in this chapter.

91. Finally, in Chapter 12, the Evaluation draws its conclusions and formulates final recommendations. All recommendations are brought together in the Executive Summary of the report.

92. The Evaluation has formulated several recommendations for changes in FAO's work in the water sector. Some of these are addressed at specific units and/or divisions, whereas others are addressed to 'Water at FAO' when several units in FAO are concerned and the Evaluation wanted to stress the cross-cutting nature of the recommendation. In this respect, it should be noted that 'Water at FAO' should eventually become a formal entity called 'FAO Water Platform', if Recommendation 33 will be accepted and implemented.

93. No recommendations have been formulated to support on-going work which the Evaluation recognizes in the report as relevant and useful<sup>5</sup>. Recommendations are distributed throughout the report, as close as possible to the evidence and conclusion leading to their formulation. As stated above, recommendations are to be given full attention by FAO and will be object of the Management Response

94. The Evaluation has also formulated a number of 'suggestions': these include proposed details for the implementation of a recommendations and represent an additional contribution by the Evaluation that FAO may wish to take into consideration. Suggestions do not require to be taken into consideration in the Management Response to the Evaluation.

95. The annexes are part and parcel of the report and have been referenced throughout the text and footnotes, as appropriate. They include: the ToR of the Evaluation (Annex 1); the profile of team members (Annex 2); the report of the Expert Panel (Annex 3); detailed information on the evaluation methodology (Annexes 4, 5 and 6); the detailed evaluation of TCPs and of projects with a budget above USD 4 million (Annexes 7, 8 and 9); the inventory and details on the water-related projects during the period under evaluation (Annex 10); the inventory of FAO normative outputs in the water sector (Annex 11); the analysis of the responses to the questionnaire surveys; (Annexes 12 and 13); details of FAO organigrams, planning and staff resources in the water sector (Annexes 14, 15 and 16); details of South-South cooperation in the water sector (Annex 17); FAO new Strategic Objectives and Organizational results (Annex 18).

## **2 Objective and methodology of the evaluation**

### **2.1 Objective and scope**

96. The ToR for the Evaluation defined its purpose as follows: "*The Evaluation will be forward-looking: its main purpose is to provide FAO's Member Countries and Secretariat with evidence- and lessons-based recommendations on the future role and scope of the Organization in its work related to water. The Evaluation will also provide accountability to FAO Member Countries and Secretariat about the Organization's performance and comparative advantage in this area of work.*"

97. The Evaluation assessed work conducted from 2004 up to on-going and planned commitments as of December 2009. A longer term perspective was adopted if required to understand the context of an activity. Projects started between January and September 2009 were not assessed though they were taken into account as indicators of trends of the Organization's work.

98. The ToR detailed the areas and issues to be assessed. The Evaluation defined FAO's role and work related to water as "*...all activities conducted by the Organization for the conservation, development and sustainable utilization of water resources for agriculture, including the responses to global environmental challenges affecting food and agriculture*". This definition excludes work related to marine

---

<sup>5</sup> For example, see paragraph 333 on work in modernization of irrigation schemes.

waters and all kind of fisheries resources, as well as any work that does not relate to the management and development of water resources.

99. Within this definition, the Evaluation assessed all the work by the Water Development and Management unit (NRLW), the work by the Forest Conservation Service (FOMC) on Forest and Water and watershed management, and the work by other units in the Organization on water resources (see Box 1 below). It comprised all activities funded through RP budget and EB resources, including normative products, development and rehabilitation projects, support to investment in agriculture and contribution to international processes on water.

100. Further, it should be noted that:

- in accordance with the PC's request, work conducted by FAO Land unit was not assessed and the Evaluation provided only some information about key on-going work;
- FAO's focus is on agriculture, forestry and fisheries and its mandate is to ensure food security for all; the Declaration of the World Summit on Food Security in November 2009 included the following concept: *"Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. The four pillars of food security are availability, access, utilization and stability. The nutritional dimension is integral to the concept of food security"*.

101. Last, the ToR asked the Evaluation to set priorities for FAO's future work related to water. The team decided to clarify, based on its analysis of the evidence available and of current and future challenges, the areas of work where the Organization is effective and is producing outputs of high quality, and which require continuous or additional resources, and the areas where FAO does not currently have comparative advantage. Based on this report, FAO membership, including both recipient and donor countries, can discuss and agree with the Secretariat on their regional and sub-regional priorities in water and agriculture, as well as the resources made available to meet these needs.

## 2.2 Methodology

102. The Evaluation followed the methodological guidance provided in the ToR, which is described in detail in Annex 4. This section illustrates only the key elements and principles adopted throughout the process. These were:

- i. extensive consultation with FAO internal stakeholders throughout the process, including for comments on the ToR and the final draft report; and with FAO clients, partners, donors and end-users of the Organization's services and products; the list of stakeholders is in Annex 5;
- ii. assessment of evidence gathered against the OECD/DAC<sup>6</sup> evaluation criteria, plus mainstreaming of gender and social inclusion and environmental sustainability;
- iii. use of a range of quantitative and qualitative tools: interviews, survey, analysis of project documents, progress reports, auto evaluation and independent evaluation reports; direct assessment of normative outputs and observation of field work;
- iv. triangulation of gathered information and evidence: an evaluation matrix, to be found in Annex 6, illustrates the indicators, the sources of information and the method of data collection for all evaluation issues and questions; it guided the evaluation team in its analytical work; and
- v. compliance with UNEG<sup>7</sup> Norms and Standards.

103. With basis on the scope of the Evaluation as defined in the ToR, the team conducted its assessment of FAO outputs in the water sector during the period 2004-2008, as identified in the Inventory of FAO projects related to water (Annex 10) and in the Inventory of water-related normative outputs (Annex 11): the two inventories were prepared by OED and circulated to all concerned FAO units for revision and adjustments during the evaluability assessment.

<sup>6</sup> OECD/DAC: Organization for the Economic Cooperation and Development; Development Aid Committee

<sup>7</sup> UNEG: United Nations Development Group

104. The selection of countries visited balanced regional representation, cost effectiveness and resources available. Criteria were:

- a. the total volume of water-related work by FAO, funded through the Regular Programme budget (RP) or extra-budgetary (EB) resources;
- b. diversity of work, priority being given to countries where different FAO units had been active and where projects had to be evaluated according to FAO's evaluation policy, including Technical Cooperation Programme (TCP) projects; separate reports have been prepared for national TCPs and for projects with a budget above USD 4 million, to be found in Annexes 7, 8 and 9;
- c. countries hosting a FAO regional (RO) or sub-regional (SRO) office, to allow interaction with FAO staff in the decentralized offices; and
- d. security conditions.

105. Visited countries were: China, Egypt, Ghana, Malawi, Mali, Morocco, Saudi Arabia, Thailand and Turkey. Interviews were also conducted with the NRLW staff in the Sub-regional Office for Southern Africa (SFW) and in the Regional Office for Latin America and the Caribbean (RLC). Afghanistan had been selected initially but the level of insecurity preceding the elections led to the decision to cancel the mission. One team member visited the World Bank and other organizations in Washington, USA.

106. Two questionnaire surveys were conducted, one addressed to government stakeholders in all FAO Member Countries and the other addressed to National and International Institutions (NII) working in the water sector. Rates of response were 38% for the Member Countries and 34% for NII. Relevant information from the analysis of the responses has been included throughout the report; full reports are in Annexes 12 and 13 respectively.

107. An external Panel of Experts, composed of representatives of international organizations and of experts in their personal capacity, supported the Evaluation process. The Panel met three times, to comment on the ToR in late June 2009; to review the advanced draft report in December 2009; and to draw its final conclusions on the final evaluation report in February 2010. The report of the third meeting of the Panel is in Annex 3. This Final report of the Evaluation takes into account some of the Panel's final suggestions.

108. The Evaluation could not provide answers to some evaluation questions, among which those related to work efficiency due to the absence of appropriate recording systems in FAO. More detail is provided in Annex 4.

### 3 FAO's mandate and resources for work in water<sup>8</sup>

#### 3.1 Mandate of FAO units in water and their priorities<sup>9</sup>

109. FAO's work related to water is anchored in the Water Development and Management unit (NRLW) which is part of the Division of Land and Water (NRL) in the Natural Resources Department of the Organization. The Land and Water Division had been part of the Agriculture Department until it was integrated in the newly created Natural Resources Department in January 2007, as part of the Director General's reform. Further, as of January 2010, units have been abolished and the 'water unit' has become fully part of the Land and Water Division of the Natural Resources Department (NRL)<sup>10</sup>. Annex 14 includes the three organigrams (up to 2006; 2007-2009; from 2010 onward).

110. Besides NRLW, 'water' is an important component of the work of several other units in FAO and Box 1 below illustrates respective roles and responsibilities in FAO's Organigram for the period 2004-2009. Further, each unit contributed to the water related work through staff based at Headquarters (HQ) as well as in the Regional (RO) and Sub-regional offices (SRO), although the extent of decentralization of each unit varied.

#### Box 1. Roles and mandates on water within FAO

Unit	Overall mandate (synthesis)	Water-related mandate
<b>Livestock Policy Unit, AGAL</b>	Assisting Member countries to take full advantage of the contribution the rapidly growing and transforming livestock sector can make towards achievement of the Millennium Development Goals	Studies on livestock-environment-water issues through the Livestock-Environment and Development Programme.
<b>Food Quality and Standards Service, AGNS</b>	Protecting consumers and promoting the production and trade of safe, quality food. It works with Governments, national and international institutions, academia, the private sector and civil society to build effective partnerships and achieve long-term sustainable results in food safety and quality around the world.	Water-related issues, under the umbrella of the joint FAO/WHO Program for the Provision of Scientific Advice on Food Safety and related to the work of the Codex Alimentarius; capacity building on issues of water use and water quality in relation to food safety; normative work and contribution to international processes.
<b>Plant Protection Service, AGPP</b>	Promoting Sustainable Intensification of Crop Production, by the integration and harmonization of all appropriate crop production policies and practices aimed at increasing crop productivity in a sustainable manner.	Project aimed at reducing dependence on Persistent Organic Pollutants and other pesticides through the introduction of an innovative water quality monitoring device, capacity building for a network of national and regional laboratories.
<b>Gender, Equity and Rural Employment Unit, ESW</b>	Supporting FAO's efforts to promote the economic and social well-being of the rural poor. In addition to coordinating FAO's work on sustainable rural development and population issues, the Division assists FAO and its member governments in addressing gender, equity and rural employment issues.	Mainstreaming gender dimension and analysis into water resources development and management and projects;

<sup>8</sup> Information and evidence in this chapter come from: FAO's planning documents: the Strategic Framework 2000-2015, the Medium Term Plans and Plans of Work and Budget for the period 2004-2008; FPMIS and PIREs; interviews with FAO staff.

<sup>9</sup> Chapter 2 of the ToR, Annex 1 to this report describes more in detail the main areas of FAO's activity and how FAO works as an organization, and in particular in the water sector.

<sup>10</sup> In the report, the unit will always be referred to as NRLW for the period under evaluation (2004-2009); however, the report's recommendations and suggestions to be implemented as of 2010 were addressed to NRL.

<b><i>Fisheries and Aquaculture Management Division, FIM</i></b>	Facilitating and securing the long-term sustainable development and utilization of the world's fisheries and aquaculture.	Water management and use for aquaculture in freshwater systems including issues availability, competitive uses and quality; the impact of agriculture and livestock activities on inland and coastal fisheries; the biodiversity dimensions of freshwater ecosystems; normative and operational work.
<b><i>Forest Management Division, FOM</i></b>	Helping nations manage their forests in a sustainable way. Its approach balances social, economic and environmental objectives so that present generations can reap the benefits of the earth's forest resources while preserving them to meet the needs of future generations.	Water-related issues within forest hydrology, mountain ecosystems, watershed management and upstream/downstream linkages; normative and operational work and contribution to international processes.
<b><i>Development Law Service, LEGN</i></b>	Providing legal advisory services to governments on land, water, fisheries, plants, animals, food, forestry, wildlife and national parks and environment and biodiversity as well as general agricultural issues (institutions, trade, economic reform). It publishes legal studies and maintains legal databases such as FAOLEX, Waterlex and Water Treaties, of national legislation and international agreements concerning food and agriculture	Water-related issues in legislations, agreements, policies and strategy; water and land rights interface, access to land and water and transboundary issues; normative, and operational work and contribution to international processes; maintenance of databases: Waterlex, Water Treaties, Water Law and Standards
<b><i>Environment, Climate Change and Bioenergy Division, NRC</i></b>	Assisting member countries in responding to climate change, including the mitigation of climate change, as well as the development of adaptive capacities of agriculture, fisheries and forestry to the effects of climate change. It serves as the focal point for a multidisciplinary and global approach to bioenergy; and provides support and services in the use of spatial data, remote sensing and GIS techniques; and it acts as secretariat for the FAO Interdepartmental Working Groups on Climate Change and on Bioenergy.	Water is one of the natural resources that are analysed in the work of the division.
<b><i>Land and Water Division, AGL - NRL; Water Development and Management Unit, AGLW - NRLW</i></b>	Productive and sustainable use of land and water resources through their improved tenure, management, development and conservation, in order to increase food security, alleviate poverty and secure a healthy environment. By offering an integrated land and water management approach, NRL addresses long term sustainability of land and water quality and quantity, and the development of irrigation and rainfed agriculture.	NRLW is engaged in a programmatic approach to agricultural water management addressing water use efficiency and productivity, and best practices for water use and conservation, through the continuum from water sources to final uses, including capture, distribution, uses and impact of trades).
<b><i>Emergency Operations and Rehabilitation Division, TCE</i></b>	Helping countries prevent, mitigate, prepare for and respond to emergencies, focusing on: <ul style="list-style-type: none"> <li>•strengthening capacity for disaster preparedness;</li> <li>•forecasting and providing early warning of adverse conditions in the food and agricultural sectors;</li> <li>•assessing needs and devising programmes which help transition from relief to reconstruction and development;</li> <li>•improving analysis of underlying causes of a crisis;</li> <li>•strengthening local capacities to cope with risks through agricultural practices.</li> </ul>	Projects for small, medium and large-scale irrigation rehabilitation and development, watershed management, water harvesting, wastewater treatment and re-use, livestock water holes, soil desalinization, information and river management.

<b>Investment Centre, TCI</b>	Helping developing countries and countries in transition to formulate effective agricultural and rural development policies and strategies that promote investment	Formulation, supervision and evaluation of large investment irrigation and watershed management projects and of policies with the International Financial Institutions; it hosts the Cooperative Programme with the World Bank
<b>Management and Coordination Service for the Special Programme for Food Security, TCOS</b>	Improving food security within poor households through National Programmes for Food Security and Regional Programmes for Food Security.	Projects and national programmes for food security, that include irrigation and water management components

Source: FAO website, elaborated by the Evaluation team

111. In consideration of the diversified roles and responsibilities within FAO on water, whenever more than one unit was involved in the work illustrated in the report, the Evaluation has adopted the term 'Water at FAO'.

112. During the period under evaluation, the Regular Programme of FAO was budgeted through the Programme Entities (PEs) in Box 2 below. The evolution of PE and their objectives and outputs in the Medium Term Plans (MTP) and Programmes of Work and Budget (PWB) since 2004 is to be found in Annex 15.

**Box 2. Programmes and Programme Entities related to water since 2004**

Major Programme Chapter MTP 2004-09	Programme Entity	Unit
<b>PWB 2004-05</b>		
<b>2.1 Agricultural Production and Support Systems, 2.1.1. Natural Resources</b>	211A1 Agricultural Water Use Efficiency and Conservation	NRLW
	211A3 Integrated Land, Water and Plant Nutrition Policies, Planning & management	AGL
	211A5 Land and Water Quality Improvement	AGL
	211P7 Land and Water Information System	AGL
	211P8 Knowledge Management and Partnerships	AGL
<b>2.4.1. Forest resources</b>	241A7, Forests and Water	FORC
<b>2.5.6: Food Production in Support of Food Security in Low Income Food Deficit Countries</b>	256P2 and 256P3, SPFS Formulation and Implementation	TCOS
<b>3.3.3, Emergency Operations and Rehabilitation</b>	33300, Emergency Response Operations	TCE
<b>PWB 2006-07 and PWB 2008-09</b>		
<b>2K Sustainable Natural Resources Management</b>	2KA01 Agricultural Water Use Efficiency, Quality and Conservation	NRLW
	2KA06 Integrated Land, Water and Plant Nutrition Policies, Planning and management	NRL
	2KP02 Land and Water Knowledge management, Information systems, Databases and Statistics	NRL
	2KA07, Forests and water	FOMC
<b>4C: Food security, poverty reduction and other development cooperation programmes</b>	4CP01, Management and Coordination - SPFS/NPFS/RPFS/SSC/pro-poor small projects	TCOS
<b>4D, Emergency and post-crisis management</b>	4DS01, Implementation of emergency programme	TCE

Source: Programme Planning, Implementation Reporting & Evaluation Support System (PIRES), elaborated by Evaluation team

113. At the level of Major Programmes, in 2004/05 the PEs listed above were designed to contribute to agriculture, forest resources, food production in Low-Income Food Deficit Countries, emergency and rehabilitation. In 2006/07, some of these were aggregated under Natural Resources. The PEs were further articulated in Major and Biennial Outputs. Over time, the formulation of the Biennial Outputs has become more detailed, with the identification of specific products, for example CropWat version 8 and the translation in Spanish of the Irrigation and Drainage paper n. 60. However, even in the PWB 2008/09, the Evaluation could not identify a clear link between all the Biennial Outputs and actual outputs produced by NRLW, nor was detail provided between inputs in terms of resources and outputs.

114. While PE objectives remained fairly constant, some of the concerned units changed the focus and contents of their work over time: NRLW in HQ mainstreamed the water scarcity concept in its work and focused attention and resources on its global mandate and on normative outputs; FOMC revisited previous global experience on watershed management while maintaining a wide range of international and national commitments; TCOS has been moving towards upstream work on national programmes for food security; and TCE has been increasingly engaged in rehabilitation and transition-to-development initiatives in emergency context.

115. In NRLW, strategic decisions had significant implications for the work of the unit. The NRLW staff retreat in 2004 agreed, among others, that more visibility at international level was to be pursued. The FAO's Senior Management decision to accept the chairmanship of UN-Water in 2006, substantially strengthened the focus of NRLW's work at global level: wider goals were pursued and results were positive, also in terms of visibility. As a consequence, though, the Service Chief devoted a substantial amount of his time to UN-Water, together with some other NRLW staff<sup>11</sup>, in addition to fully dedicated UN-Water staff posted in NRLW.

116. At the same time, cuts in FAO staff resources in the biennium 2006/07<sup>12</sup>, had the effect of depriving NRLW of the irrigation engineer based in HQ, along with other two positions (see Section 11.1). The joint impact of staff time absorbed by UN-Water and the cuts in resources had consequences for the extent, quality and timeliness of the services delivered by the Organization to its Member Countries as illustrated later in the report<sup>13</sup>. This in spite of a strong commitment to impact at field level expressed under other corporate goals, and as agreed by the 2004 NRLW retreat.

117. Furthermore, unplanned major events frequently disrupted during the period 2004-2009, the Regular Programme plans of work. In this respect, it is important to note that the work-plans of FAO staff members have to be fully pre-allocated at the beginning of a biennium, and have been so in particular so due to the combination of declining human resources and unvaried requests from Member Countries (MCs).

118. The list below summarizes the unplanned events and internal FAO management decisions that affected the work program of NRLW during the period under evaluation:

- Second half of 2004: Auto-evaluation of PE 211P07, 211P08;
- December 2004: FAO involvement in the post-Tsunami emergency operations required 6-months diversion of human resources from NRLW;
- August 2005: FAO DG Reform was launched, with a full revision of the organization, affecting AGLW directly as it transferred to the newly created Natural Resources Department;
- 2005: Auto-evaluation of Auto Evaluation 211A1, 211A2, 211A3; which had implications on staff time to run the process;
- From June 2005 to December 2007, there was no Director NRL;
- 2007: the IEE report triggered consultation within the Organization about a wide ranging reform;

---

<sup>11</sup> Professional and secretarial staff paid fully through UN-Water funds was also posted in FAO to assist the Chair in his work.

<sup>12</sup> See Section 3.2 below

<sup>13</sup> See Chapter 10

- First half of 2008: organization of the High Level Conference on “World Food Security: The challenges of climate change and bioenergy” required staff time for the preparatory process and the Expert Consultation organized by NRLW on Climate Change and Water;
- April to December 2008: organization of the Sirte Conference on “Water for Agriculture and Energy in Africa”, including 4 sub-regional workshops, five Steering Committee meetings, preparation of 53 country investment briefs;
- 2009: implementation of the Immediate Plan of Action (IPA) and preparation of the new FAO Strategic Framework, Medium Term Plan, Programme of Work and Budget and the Impact Focus Area process;
- 2009: participation in the Evaluation of FAO's role and work related to Water;
- 2009: participation in the organization of the World Food Summit.

119. The report will discuss later whether the events above were an ‘effective’ use of resources or not. Here, the Evaluation observes that such significant unplanned activities inevitably resulted in reductions or delays in the programmed work. It appears that the field programme, the cross-unit support and the internal team management suffered most.

120. In the light of clear constraints on human resources within ‘Water at FAO’ and taking into consideration the strong likelihood, as illustrated above, of unplanned major requests for staff-time to occur, either due to external events such as natural or complex emergencies, or to internal organizational needs, the Evaluation formulated Suggestion 1 for FAO at large.

**Suggestion 1. To FAO**

*The allocation of resources, both financial and personnel, to tasks in the work-program should be clearly identified, defining the skills required for the task. As new priorities emerge, the resource needs should be reassessed and where activities are displaced this should be recorded as part of the process of introducing the new task.*

**3.2 Overall resources**

121. Funds from the Regular Programme budget available to NRLW including staff and non-staff resources at HQ and Regional and Sub-Regional offices during the period under evaluation are reported in Box 3 below. The estimated average of non staff-resources that NRLW used in HQ was 24% of total RP funds available for the period under evaluation. All figures are at nominal value, and they were not adjusted for inflation or exchange rates fluctuations<sup>14</sup>: the progressive decrease in real value of FAO Regular Programme Resources affected NRLW more or less in line with the rest of the Organization.

**Box 3. NRLW share of PWB net appropriation<sup>15</sup> in the period 2004-2009**

<b>Funds</b>	<b>2004-2005</b>	<b>2006-2007</b>	<b>2008-2009</b>
<i>NRLW RP Budget (USD, million)</i>	6.5	6.3	7.9
<i>PWB net appropriation (USD, million)</i>	749.1	765.7	924.8
<i>NRLW share of PWB net appropriation</i>	0.86 %	0.82%	0.85%

Source: PIRES

<sup>14</sup> Figures in Box 3 include salaries for HQ staff, which are paid in Euro. The rate of exchange was 1.25 USD/Euro in January 2004 and 1.46 USD/Euro in January 2008. The percentage of resources affected by unfavourable USD/Euro exchange rate varied between 65% and 58% of the PWB Net Appropriation over the three biennia.

<sup>15</sup> PWB net appropriation is the sum of the mandatory contributions to FAO by the Member Countries.

122. An example of available funds at regional level comes from FAO Regional Office for the Near East and North Africa (RNE): between 2004 and 2009, the non-staff resources were on average USD 20000 per year, ranging from USD 10750 to 34000, plus USD 40000/biennium for the management of the Agriculture, Land and Water Commission. In addition to these funds, the senior officer could use his "internal earnings"<sup>16</sup>, on average USD 24000/year, to conduct other activities such as studies and analysis through consultants' services.

123. Detailed information on staff resources in NRLW during the evaluation period is provided in Chapter 11. Non-staff resources from the Regular Programme budget are usually allocated in FAO as inputs for the production of normative outputs, i.e. publications, conferences, etc., sometimes in addition to Extra-budgetary resources. More than 200 normative outputs were produced in the period 2004-2008 by 'Water at FAO', including publications, manuals and guidelines, databases, papers and studies for conferences and publications by other organizations: their detailed assessment is to be found in Section 4.5 below, and the complete list in Annex 11, grouped by main category.

124. FAO operational work related to water was also analysed, including all initiatives operational between 1 January 2004 and 31 December 2008 that focused on water or had 'water-related' work as part of project objectives, results and/or outputs. Box 4 below synthesises the main information on budgets and number of projects by category<sup>17</sup>.

**Box 4. Budget and number of projects related to water in the period 2004-2008**

Type of projects	Total budget (USD)	Budget %	Number of projects	Number %
<i>All water related projects, 2004-2008</i>	460,671,591	100%	238	100%
<i>Technical Cooperation projects 2004-2008, water related</i>	310,577,717	67.4%	190	79.8%
<i>Emergency projects water related 2004-2008</i>	150,093,874	32.6%	48	20.2%
<i>All FAO projects 2004-2008</i>	2,343,905,009	100%		
<i>All 'technical cooperation' projects 2004-2008</i>	1,251,497,097	53%		
<i>All 'emergency' projects 2004-2008</i>	1,092,407,912	47%		

Source: Field Programme Management Information System (FPMIS), elaborated by Evaluation team

125. In total, 238 projects have been identified as relevant to the scope of the Evaluation, with a total budget above USD 460 million, some 20% of FAO's delivery through the Field Programme in the period 2004-2008, more precisely 25% of the technical cooperation funds and 14% of the emergency funds. According to FPMIS<sup>18</sup> data, 'technical cooperation' represented 67% of the total water-related project funds, whereas 'emergency' absorbed 33% of the funds. Forty-eight initiatives (20%) were 'emergency' and 190 'technical cooperation'. These percentages differ from the average FAO's overall delivery figures, wherein 'technical cooperation' projects were 53% and 'emergency' 47% of the total delivery in the period 2004-2008<sup>19</sup>. In terms of project size, 23% of all projects, 55 in number including

<sup>16</sup> These are "earnings" through the internal FAO market: technical backstopping services provided by FAO staff to FAO projects and programmes managed by other units.

<sup>17</sup> See Annex 10, FAO projects in the water sector in the period January 2004 - September 2009

<sup>18</sup> 'Technical cooperation' and 'emergency' projects are recorded separately.

<sup>19</sup> The total number of projects currently in operation by FAO is stated in the order of 1,500 excluding TeleFood projects. However the two figures cannot be fully compared as they refer to different time-frames.

both 'emergency' and 'technical cooperation', had a budget above USD 2 million, absorbing 78% of the total funds available. All 'emergency' projects were funded through EB resources, with the exception of two initiatives funded through the TCP, which together amounted to USD 500,000.

126. The source of funds for technical cooperation projects appears in Box 5 below. FAO's own Regular Programme resources fund the TCP initiatives; Extra-budgetary resources include donor funds, usually through the so-called Government Cooperative Programme (GCP) projects, and governments' own funds entrusted to FAO for implementing projects, the so-called Unilateral Trust funds (UTF). The great majority of projects were in support of the field programme, with 94% of the budget and 89% of the number of initiatives.

**Box 5. Budget and number of 'technical cooperation' projects related to water since 2004**

Type of projects	Total budget (USD)	Budget %	Number of projects	Number %
<i>All water related technical cooperation projects</i>	310,577,717	100%	190	100%
<i>TCP projects 2004-08, water related (non emergency)</i>	16,784,994	5.4%	67	35.3%
<i>EBF technical cooperation projects, water related, 2004-08</i>	293,792,293	94.6%	123	64.7%
<i>Support to global products projects, water related, 2004-08</i>	19,021,858	6.1%	21	11.1%
<i>Support to field programme, water related projects, 2004-08</i>	291,555,859	93.9%	169	88.9%

Source: FPMIS, elaborated by Evaluation team

127. The great majority of the projects were national in scope: only 19 projects were interregional or global, including one TCP, and 18 initiatives were regional, including 9 GCP, 7 TCPs and two emergency projects. Africa was the largest recipient of the technical cooperation projects funds, almost 52% of the total, followed by Asia and Pacific with 21% of the funds. The Near East and Northern Africa region was the largest recipient of emergency funds, with 49% of the total, due to interventions in Iraq, followed by Africa with 32%. Thus, over the period under evaluation, there was a clear focus on Africa, by both donors and FAO, the latter with 46% of all water-related TCP funds<sup>20</sup>.

128. In 2009, between January and September, 29 new water-related projects were initiated, for a total budget of USD 64 million.

### 3.3 Conclusions

129. FAO's work related to water is complex and diverse, involving a variety of units within FAO. Some 200 normative outputs were produced, a rather large number although the Evaluation had no benchmarks to make comparisons. The volume of projects handled is also substantial, about 20% of the FAO field programme for the period. Further, there is no doubt that the high number of unplanned tasks has added considerably to the workload of concerned units, in particular NRLW.

130. **The Evaluation cannot draw any objective conclusion based on hard-data about the efficiency of FAO in the delivery of these outputs.** This is due to: i) the absence of clear reporting and links between inputs and outputs; ii) the absence of time records for staff members and external consultants related to specific normative products; and iii) the absence of time records for staff members and external consultants for project formulation, management and backstopping. Starting in 2010, the new corporate Performance Management System (PEMS) should help in filling these gaps.

<sup>20</sup> See Annex 10, FAO projects in the water sector in the period January 2004 - September 2009

## **4 Overall assessment of FAO's role in water<sup>21</sup>**

### ***4.1 Global and local challenges in water and agriculture 2000-2010***

131. FAO's messages on the global challenge of agriculture and the implications for water have evolved in the last decade. In the First World Water Development Report (2003) the view was that global food security was assessed as good. Global food production was equal to consumption, though the distribution of consumption was unbalanced and inequitable. By 2050 the increased world population was expected to enjoy access to adequate food for all.

132. The sources of increased production through 2030 were expected to be: i) expansion of arable land, principally in Sub-Saharan Africa and Latin America; ii) increased cropping intensity, through multiple cropping and shorter fallow periods; and iii) expansion of the irrigated area by 20 percent, about 40 million hectares, principally by conversion of rain-fed areas to irrigation in Asia. Livestock and aquaculture were expected to grow in importance. Boosting production was seen as doubly beneficial: increasing food for the malnourished and raising income in rural areas. Liberalized trade offered another route to improve food access.

133. With the food security challenge viewed primarily as one of access, attention turned to scarcity and competition for water resources. The Dublin Statement and Principles<sup>22</sup> and the World Summit for Sustainable Development (WSSD, 2002) introduced concepts of water as an economic good, participation, and gender issues to the basic issue of water scarcity and environmental sustainability. Agriculture, through 'demand management' was expected to produce 'more crop per drop', releasing pressures of water scarcity elsewhere.

134. Towards the mid-point of the period set to meet the Millennium Development Goals, it was clear that progress in reducing poverty was off-track. In Asia, non-agricultural economic development had supported positive rural-to-urban migration and increases in income. Elsewhere, and particularly in Africa, most farmer households remained poor as the decade progressed, with rising pressure on increasingly degraded land, still highly vulnerable to variable seasonal patterns of rainfall and lean periods before harvest.

135. Rising global temperatures and more particularly the projected increases in the variability of rainfall compounded these problems. Estimates that the impacts of climate change could reduce food production in vulnerable areas by as much as 40% brought water in agriculture to the fore.

136. After more than a decade of disengagement, the International Financial Institutions, including the World Bank, the African Development Bank and Islamic Development Bank announced re-engagement with water in general and agricultural water management in particular. African Member Countries signed up to the Maputo Declaration to invest 10% of government expenditure on agriculture.

137. In 2007, the 'global food price crisis' emerged. Although grain prices have since fallen back, prices remain 50% higher than previously in Africa, and up by 25% in some other developing countries. The global spike in food prices unfolded in parallel with initiatives by several countries to buy large tracts of land, and by implication the associated water resources in a number of countries; again, particularly in Africa. While the long term implications of this are not clear, concerns over agricultural livelihoods and land tenure in some poor countries have increased.

138. The Global Economic Crisis raised international concern over the flow of finance to support development, and 2008-2009 witnessed the launch of a number of national economic stimulus packages and multilateral finance instruments.

139. Heads of the G8 convened in L'Aquila, Italy, in the summer of 2009, were concerned by trends in global food security, the impact of the global financial and economic crisis, and the 2008 spike in food prices on the countries least able to respond. A further 100 million people had been added to the total of the world's hungry, and the number of under-nourished had reached over one billion people for

---

<sup>21</sup> Information and evidence in this chapter come from: the overall analysis of FAO's work related to water; interviews with FAO staff, Government and other stakeholders in Member Countries; the Evaluation questionnaire survey to Member Countries and National and International Institutions.

<sup>22</sup> Dublin Statements and Principles, Global Water Partnership, 1992

the first time. Increased investment in agriculture was announced, including the 'right irrigation' that would see gains to poor farmers.

140. In mid-2009, preparations for the World Food Summit projected major deficits in global food availability. Agricultural investment in developing countries would have to increase more than fivefold to ensure that by 2050 the world has enough to eat. "*The challenge is not only to increase global future production but to increase it where it is mostly needed and by those who need it most,*" FAO Director-General Jacques Diouf said. "*There should be a special focus on smallholder farmers, women and rural households and their access to land, water and high quality seeds ... and other modern inputs*"

141. Achieving this, while coping with a rising population and planning for the expected impacts of climate change<sup>23</sup>, means that scarcity of water remains an important concern. Demand management approaches that focused heavily on water pricing and markets have little role in situations where water control is poor and water rights are undefined. Compared to the 1993 water policy of the World Bank, the most recent version<sup>24</sup> places very limited emphasis on economic instruments. Furthermore, advocates of farmer participation and irrigation management transfer are by now much more cautious about what has been achieved and the potential to build on successful past experiences.

142. These recent developments – from assured food security in 2003 through intense concerns about grain prices, biofuel development reducing the areas available for crops, evidence worldwide of unsustainable groundwater use, financial turmoil, and fears about the negative impact of climate change on yields, water availability, and water demand - point back to the fundamentals of FAO's mandate. For the foreseeable future, combining land and water as productively as possible to increase food security for all through the sustainable production of food would seem to be a central challenge.

143. FAO would be in a strong position to provide appropriate answers and solutions, thanks to access to local knowledge through its decentralized offices and its mandate to develop and disseminate normative analytical approaches. The Organization's actual capacity to do so is discussed throughout this report.

#### **4.2 Contribution of FAO's work on water to its Global Goals and to the MDGs<sup>25</sup>**

144. As mentioned above, water is specifically referenced in Global Goal 3 of FAO Strategic Framework 2000-2015: "*conservation, improvement and sustainable utilization of natural resources, including land, water, forest, fisheries and genetic resources for food and agriculture*". Further, water scarcity, pollution and salinisation and integrated natural resources management were embedded in the Strategic Objective D1: Integrated management of land, water, fisheries, forest and genetic resources.

145. The first Global Goal of the Organization corresponds to the Millennium Development Goal (MDG) 1, i.e. halving hunger and food insecurity by 2015; the second aimed at sustaining the contribution of agriculture to economic and social progress and well-being for all. The twelve Corporate Strategies were to contribute to all Organizational Goals, directly or indirectly.

146. Programme Entities (PE) were the basic unit of planning and funding for the Regular Programme, and for linking all EBF and TCP projects to the Organization's Strategic Framework. In the Medium Term Plan 2004-09, the water-related PEs listed in Box 2 contributed to at least five Strategic Objectives and through these, to the three Organizational Goals.

147. There is no doubt that **FAO work related to water was relevant to Global Goal 3 of the Organization, as well as to the other Global Goals**. However, it is difficult to trace the actual contribution of FAO's work at global level and of its normative products to its Goals, let alone its effectiveness or attribution, for any sector; and water is no exception. For example, there is evidence<sup>26</sup> that FAO's chairmanship of UN-Water was professionally conducted and may pave the way to a more rational use of the water resources in future. The Evaluation also believes that FAO's work in this role

---

<sup>23</sup> Economics of Adaptation to Climate Change, World Bank, 2009

<sup>24</sup> Water Resources Sector Strategy, World Bank 2004

<sup>25</sup> Millennium Development Goals

<sup>26</sup> Interviews with UN agencies; survey questionnaire to NII; External review of UN-Water, Final report, September 2009

contributed to raising agriculture in the global water agenda, however its actual impact on food security at global level cannot be quantified.

148. **At country level**, the link between FAO's water work to the Organization Strategic Goals and to MDG 1 is more direct and tangible, with clear examples of good results in improving the food security of participating households in Bangladesh, India, Malawi and Morocco among others. Also, the relative concentration of field projects in countries less endowed with water resources, for example in Sahelian West Africa, Northern Africa, the Middle East, Southern Africa region, China and India, contributed to **strong relevance** for almost all interventions.

149. However, the actual contribution to improved food security of the water components of the Special Programme for Food Security (SPFS), which was the major FAO field programme during the evaluation period, appears limited in terms of numbers of participants, technical quality and sustainability of the interventions, as illustrated later in the report. Further, the focus was mostly on household food self-sufficiency rather than on food security, with no attention given to nutritional issues or to the need for safe drinking water, in virtually any of FAO's projects related to water. The Evaluation came across only one project combining nutritional issues and agricultural development through improved water management control in Malawi. This was at the policy level and not yet at community and household level. Particularly in Africa, opportunities were not taken to link water-related interventions to sustainable livelihoods, environmental conservation, infrastructure and trade at the national level. Thus the **effectiveness of the 'water' field programme to FAO Global Goal 1, and MDG 1, was limited by both resource constraints and absence of a well articulated strategy of intervention beyond household food self-sufficiency objectives.**

150. The Evaluation found the **contribution to MDG 3 (gender equality) in terms of effectiveness to be mixed**: in policy work, gender concerns and issues related to different groups of farmers were often identified and described<sup>27</sup>; within the normative outputs, efforts at gender mainstreaming and social inclusion were relevant but short of FAO's expressed objectives, except in the normative work of ESW; within the field projects, relevance was mixed, both for gender and social inclusion.

151. **Contribution to MDG 7 (environmental sustainability) in terms of effectiveness was also mixed.** NRLW adopted water scarcity and its implications for food production as its flagship driver of normative activity. Coping with scarcity means increasing the production per unit of water consumed by crops, and minimizing unproductive losses to evaporation and sinks. In addition, from the basin perspective, it means accounting for the downstream impacts on other users and ecosystems of any intervention. Careful water accounting is critical and is a component of the proposed Impact Focus Area on Water and Land Scarcity (IFA-WALS)<sup>28</sup>. This topic was a central theme of an international expert consultation on Coping with Water Scarcity, held in FAO in December 2009, which is likely to influence how FAO presents these issues in future. Together with work on wetlands management, this focus was and is highly relevant to the Global Goals of the Organization and appropriate in an environmental perspective.

152. However, the Evaluation had no real sense of the existence in FAO of a corporate strategic vision of water resource management as a whole, of the continuum from rainfed agriculture through Rain Water Harvesting (RWH) to full irrigation and of the need for related sustainable agricultural practices. Systematic promotion of environmentally friendly practices such as Integrated Pest Management (IPM),

---

<sup>27</sup> The outcome of policy work is always a mix of what FAO recommends and what government wants: the true indication of FAO impact is therefore not easily identified.

<sup>28</sup> Impact Focus Areas should 'help mobilise voluntary contributions for priority groups of Organizational Results, providing a communication and advocacy tool and with an emphasis on capacity building and policy frameworks'. IFAs aim at effectively grouping Organizational Results, from one or more Strategic Objectives, that relate to the same theme or cross-cutting issue considered a priority for 'flagship' treatment and advocacy to mobilise extra-budgetary funding. The IFA concept is part and parcel of the new Strategic Framework of FAO. IFAs are set-up for four years. However, as at least five IFAs can be associated with the cross cutting role of water, including legal and policy standard setting, capacity building and smallholder farmer food production, it remains to be seen whether the IFAs will translate into reduced complexity, easy monitoring, timely strategic redirection, budget sourcing and allocation.

and conservation agriculture with emphasis on soil fertility maintenance and erosion control, all offer opportunities to contribute to MDG7. Some of the work within the themes Forest and Water and Watershed Management was relevant at the policy and strategic level, but lacked adequate resources for application at country level.

### **4.3 *FAO's clients and target groups in water***

153. FAO's primary clients are its Member Countries (MCs), who are also its 'share-holders' and through its governance system, influence the broad directions of the work of FAO. Member Countries each have one vote and express their requests as members of FAO Committees and Regional Conferences, as well as 'individuals'.

154. The Committee on Agriculture (COAG) is the main communication channel between FAO and the MCs on water issues. Through it, FAO's proposals to COAG's and MCs' requests are debated and agreed. The Evaluation notes that the implementation of decisions made by COAG or of proposals submitted to it has not been straightforward: NRLW's decision to focus on water scarcity and the suggestion to set-up an FAO Water Platform, were submitted to the COAG 2007 session with the paper "Agriculture and Water Scarcity: a Programmatic Approach to Water Use Efficiency and Agricultural Productivity". The Committee expressed its appreciation for the proposal but postponed any decision until after the IEE's report. More recently, COAG 2009 discussed another paper, "Agriculture and Environmental Challenges of the Twenty-first Century: A Strategic Approach for FAO", which included water scarcity among the environmental challenges for agriculture. COAG's core response was that FAO should strengthen its inter-disciplinary capacity and formulated a specific request through the Council to FAO for the set-up of an early warning system on water scarcity. This Evaluation was not informed of any action in follow-up to any of the above so far, though ongoing reforms and uncertainties have no doubt dominated the recent agenda.

155. FAO Regional Conferences express countries' agreement on regional priorities and confirm the priority of water issues. However, FAO membership is diverse, and calls for support at the country level often diverge from each other. This atomization of requests applies to much of FAO's work, but the water sector has proven particularly susceptible due to its complexity, as 'water' cuts across sectors and ministries, including agriculture, water resources, irrigation, energy, environment, forest and watershed management, health, municipalities, etc.

156. Consequently, FAO's institutional point of contact, the Ministry of Agriculture, is only one party to 'water for agriculture' issues, so that the needs and requests of the wider range of concerned institutions and agencies must be accommodated. To a certain degree, the coherence of the Organization's work in a given country on the agriculture-water interface depends on how the Member Country itself recognizes water's significance in relation to other agricultural needs and the need for an integrated management of the water resource. In this respect, FAO's experience across a large number of countries could be brought to bear at regional and country level in advising MCs on the institutional arrangements around water-irrigation-agriculture, so as to engage other ministries as appropriate.

157. Expectations in terms of assistance from FAO in the water sector are diverse. OECD countries' prime interest tends to be for statistics, collaboration and technical contributions on water related issues to thematic conferences and events. Other MCs, both low and middle income, also request support for technical assistance, capacity development, guidelines and advice in many areas of work. Member Countries also expect regular contact on water and FAO is expected to be 'ahead of the game'. The nature of the Organization is such that Member Countries have entitlements to services: although criteria exist for the allocation of TCP resources, virtually all support by FAO is 'free of charge' and this clearly encourages demand.

158. FAO's role as a technical agency appears to be well understood: MCs do not see FAO as a funding agency, and recognize and appreciate FAO's authority in agenda setting regarding food security, bringing different parties together, i.e. donors, government, technical experts, and supporting the process through technical expertise on irrigation.

159. However, the knowledge among Member Countries about FAO's work and products in the water sector is variable and is based on a general image of the Organization, with a number of exceptions

(see Section 7.1). FAO is associated with Food Security: this was overall the best known area of FAO's work in relation to water, among all respondents to the questionnaire surveys, both from Member Countries and from the National and International Institutions.

160. Indeed, the Evaluation questionnaire survey found a good knowledge of the Organization's work in the water sector only in the Near East region. In all other regions, negative/Do Not Know/Blank replies exceeded 50%. The areas for which FAO was best known were<sup>29</sup>

- "Water and Food Security" in Africa and Asia,
- "Rehabilitation and modernization of irrigation schemes" and "Policies and Strategies" in the Near East/North Africa;
- "Water and Food Safety" in Europe/Central Asia; and
- "On-farm water use, productivity and efficiency" in Latin America/Caribbean.

161. The least known areas were "Drainage and Desalinization" in Africa, "Agriculture and Wetlands Interactions" in Asia, "Fresh Water Management for Aquaculture" in the Near East/North Africa and in Latin America/Caribbean, "Economic returns, water pricing, cost recovery" in Europe/Central Asia.

162. Knowledge of FAO's products and services followed a similar pattern of limited knowledge, with "Publications" and "Website" being the best known products, with the only exception in Europe/Central Asia, where "Capacity development" ranked second among the "most useful products". "Advocacy" was the least known product in most regions; other low scores were for "Policy dialogue" in Africa, and "Development Projects" in Latin America/Caribbean.

163. The great majority of respondents considered that FAO should focus on "more areas of work" in comparison to what it is doing now, which basically meant maintaining focus on almost all sectors. The topics most frequently requested were "Water management linked to water availability and scarcity" and "Rehabilitation and modernization of irrigation schemes". "Watershed Management" and "Water Information Systems" were the next highest-rated.

164. An overwhelming majority of respondents wanted more support from FAO in the water sector in future, with the sole exception of the Asia/Pacific region, where only 48% of respondents asked for more support. Water management linked to water availability and scarcity was ranked first in Africa, Asia and the Near East/North Africa; Europe/Central Asia gave priority to "Water and Food Safety", and Latin America/Caribbean ranked highest "Sustainability of agricultural water use and competing uses". Preferred products and services were Publications in Africa; Capacity development in Asia/Pacific and Near East/North Africa; respondents had no clear preferences in Europe/Central Asia and in Latin America/Caribbean.

165. Assistance requests ranged from highly specialized experts to generalists in the water sector, of both national and regional/international origin, with a clear preference for recurrent visits over an extended period, possibly years. Capacity development was also highly requested in all regions (see Section 7.4).

166. At country level, the farming households are by definition the ultimate beneficiaries of FAO: however, they have not been heard frequently, if at all, by FAO in its water-related work and few of them were directly involved in the Organization's 'water' projects at community level. FAO's work at global and national policy level eventually will affect larger numbers of farmers. In this process, however, the Organization's role through normative and policy work is one of 'contribution' to results and impacts, as MCs inevitably are the final determinants of policy, actual results and impacts.

167. The nature of FAO's global mandate extends its range of actual and potential clients to other UN agencies, IFIs, the CGIAR<sup>30</sup>, regional and sub-regional bodies, academia, research institutions, bilateral cooperation agencies, Non Governmental organizations (NGOs) and civil society. The regional and sub-regional organizations play an increasing role on shared natural resources management, and water ranks high in their priorities. All these institutions look to FAO as a source of technical advice,

---

<sup>29</sup> See Annex 12, Analysis of the questionnaire survey to FAO's Member Countries

<sup>30</sup> IFIs: International Financial Institutions; CGIAR: Consultative Group on International Agricultural Research.

partnerships, technical stamp and endorsement of their work, as well as for publications and products at the cutting-edge of global knowledge, applicable at country level.

#### **4.4 FAO's response to Member Countries' needs and demands**

168. FAO's mandate requires it to respond to its Members' needs and demands, within its available resources. Needs and requests are diverse and extensive. This Evaluation appreciates the challenge of meeting unconstrained demands with limited resources, and this report illustrates a good number of positive cases.

169. The Evaluation has identified some good examples which should be used as models and reference. A very good case of a long-term, demand-led and effective response to country needs is FAO's partnership in the water sector in Morocco. Over the last decades, a large range of water-related topics have been tackled by FAO at the request of the Government, to develop a vision and a strategy for the long term management of water resources. In recent years, by means of conventions funded with national resources through UTF initiatives, FAO and the Government of Morocco have collaborated to develop the national policy, support to the water supply sector, improve the quality of project formulation and implementation and conduct studies and analysis through FAO recruited consultants. The results and impact of FAO's work at the national institutional level has been notable and praiseworthy and should be shared with other international agencies to ensure dissemination of what has been learned.

170. Another positive case was Mali, where FAO was assessed as having been highly responsive to national needs thanks to the ability of the FAO Representation to adjust support and mobilize resources to meet emerging requests by the Government. This included the prioritisation of water within food security for the major national programme to alleviate poverty, assessment of resource implications about the proposed Niger Inner Delta Project, assistance for the transboundary management of the Iullemeden aquifer, consolidation of a construction and management model for small-scale irrigation schemes, capacity development and technical assistance on small-scale irrigation. Also, the FAOR<sup>31</sup> chairs the Agriculture and Rural Economy Group in the Government-Partners Coordination mechanism and dialogue on food security issues, which depends fully on water availability in the Sahelian countries.

171. Elsewhere, often shortcomings in meeting requests at country level in the water sector were due to FAO's reduced resources in all regions. Some positive solutions were found: for example, NRLW/RAP<sup>32</sup> has been able to provide coherent and valuable support to institutional capacity development in some Middle Income Countries, aiming at strategic programme and regional policy support. In West Africa, NRLW/SFW is working closely with sub-regional organizations to reach out to a larger number of countries, and also partners with IWMI<sup>33</sup> in joint activities, exploiting proximity of location.

172. The problem of responding to demand is especially severe in offices serving countries such as India and China, both because the scale of these countries is so vast, each with a population greater than the entire population of Africa, and their agro-climatic range is so high. The Evaluation recognises the need to address the needs of Africa, but poverty remains endemic in India and China, and their water problems are severe. The allocation of resources must ensure critical mass, concomitant with the scope of the challenges faced, if FAO's input from the Regional Office for Asia and the Pacific (RAP), is to be meaningful.

173. The Evaluation also found out that Member Countries are at the same time not aware of much of FAO's work, while asking that "more be done". Assuming that existing products are generally useful, there is a clear need for their better dissemination. This problem emerged in virtually all countries and regions visited, from both within and outside the Organization. Worryingly, some MCs have expressed concern at a perceived erosion of FAO's overall response on water compared to the FAO of the 1970s, and of the Organisation's critical mass to respond to current global challenges. One observer described FAO as 'a big name with small actions'.

---

<sup>31</sup> FAOR: FAO Representation

<sup>32</sup> Water officers in FAO regional Office for Asia and the Pacific

<sup>33</sup> IWMI: International Water Management Institute

174. Expectations are indeed easily promoted: in October 2008 FAO's Director General, after visiting Malawi committed the Organization's support to the water sector and to grain storage. Different stakeholders, within and outside the government, expected FAO to have a role in the setting of standards, capacity development, and technical assistance in the irrigation sector and to follow-up the commitment with a planning mission. This had not occurred by the time of the Evaluation mission (September 2009), although a dialogue between Ministry of Water and Irrigation and FAO had now started.

175. Some observers find that FAO should better prioritise its support where it is most needed: although this opinion may partly be due to lack of full knowledge about the Organization's procedures and constraints, the Evaluation notes that while the Organization emphasised the need for efforts in Africa, the post of senior water resources officer has been vacant for almost 18 months at the time of writing this report, with serious implications for support to Member Countries and to the field programme. Equally, the allocation of resources on water to the Asian region has not been proportionate to the large number of poor and undernourished people. As noted, given that FAO support is free to most MCs, it is unsurprising that demand vastly exceeds supply. This, however, is different from leaving posts vacant and promising assistance that is not provided.

176. Nevertheless, lack of resources was not always the explanation for limited effectiveness. The current organizational set-up assigns responsibility for meeting MC's needs and requests to various units in HQ and staff located at different levels in the decentralized offices. Strong coordination would be required for this to happen, but good examples are not frequent: there is clear evidence from the country visits and the questionnaires that FAO is able to propose a constructive, comprehensive and coordinated action in the water sector in very few countries. Pre-conditions for this to happen seem to be the presence of water-competent staff in the country office<sup>34</sup>, as well as the interest and capacity to develop an integrated vision for the water sector and to call upon different services and responsible staff in FAO. Although national institutional set-ups, as discussed above in Section 4.3, do not facilitate an integrated response, evidence collected shows that in general, FAO's response was short of needs and expectations in proposing a better articulated and internally coordinated model for the development of the agricultural water sector at country level.

#### **4.5 FAO's leadership, advocacy and guidance on water-related issues**

177. The Director General of FAO has strongly promoted the case for investment in water control as a recurrent issue in his speeches, and has performed a significant leadership role on the international stage. Strong messages on water as a key element for food security have been associated with World Food Day and World Water Day and FAO has played an important leadership role with partners in the Comprehensive Framework for Action issued by the High-Level Task Force on the Global Food Security Crisis.

178. FAO continues to be a substantial advocate for the crucial role that food security plays in the life of the poor, for the linkage of food security to agricultural policies in general and to the uncertain availability, in many countries, of adequate water to ensure productive agriculture. FAO's technical contribution assists planners and managers in many countries, and its contribution to the legal aspects, including on international transboundary issues, has been substantive and recognised.

179. FAO also conducts its advocacy and guidance role through its normative products. As mentioned above, 'Water at FAO' was highly prolific in issuing normative products during the period 2004-2008. The Evaluation has assessed in depth more than 150 of these and scored them against the following evaluation criteria: relevance for policy, relevance for food security, technical quality, outcome (actual or potential), impact (actual or potential), mainstreaming of environmental sustainability, of gender issues and of social inclusion issues. Results are illustrated below in Box 6.

---

<sup>34</sup> Positive cases in this sense were Mali and Morocco, where both Assistant FAO Representatives, the incumbent and the former one respectively, had a solid technical knowledge of water issues.

**Box 6. Score of categories of normative outputs**

Type of outputs/criteria	Relevance for policy	Relevance for food security	Technical quality	Outcome (actual or potential)	Impact (actual or potential)	Environmental sustainability	Gender mainstreaming	Social inclusion
<i>Publications</i>	4.2	3.9	4.7	3.7	3.8	3.7	2.2	3.4
<i>Guidelines and manuals</i>	3.4	4.0	5.1	4.1	3.8	3.9	2.7	3.2
<i>Databases</i>	3.7	3.6	4.6	3.8	4.0	2.9	1.6	1.9
<i>Briefs and brochures</i>	4.3	3.9	4.3	3.6	3.6	2.7	2.8	2.9
<i>Conferences, Workshops, Meetings</i>	4.5	4.2	4.4	3.4	4.2	3.7	1.9	2.8
<i>Contribution global processes</i>	3.6	3.2	4.4	3.2	3.1	2.9	2.4	3.0
<i>IPTRID<sup>35</sup></i>	3.7	2.8	4.0	3.0	2.9	2.6	1.7	2.0

Source: Evaluation team

Scoring scale: 1= Very poor; 2= Poor; 3= Unsatisfactory; 4= Satisfactory; 5= Good; 6= Excellent

180. The highest score, half way between Satisfactory and Good, went to Technical quality of Guidelines and Manuals, followed by Policy relevance and Relevance for food security in Conferences and Meetings, along with Policy relevance and Technical quality of Briefs and Brochures. In all groups of products, technical quality was consistently assessed as 'more than satisfactory', followed by relevance for both policy and food security. Mainstreaming of gender issues systematically scored the lowest, either very poor or poor; Social inclusion was always slightly better than gender mainstreaming.

181. Contributions to major publications such as the Comprehensive Assessment of Water Management in Agriculture are influential among donors and widely quoted by them, at conferences, and in the literature. Still, there are limits to the frequency with which the message can productively be restated, for example in successive World Water Development Reports. Few if any interviewees in the World Bank could quote any key messages from the latter reports, though they were mentioned as useful works of reference.

182. Since 2000 most international forums have been dominated by drinking water, sanitation and environmental issues, despite the "higher priority to agricultural water given by partners outside the UN"<sup>36</sup>. FAO has worked to rectify this, as most recently seen at the 5<sup>th</sup> World Water Forum in Istanbul in 2009: events where FAO played a visible role were, among others: the Ministry of Agriculture of Japan Joint Conference on Agriculture; the session organized by FAO with IWMI and others on water in agriculture; a panel on Water-Food-Energy; and a side-event on Forest and Water.

183. Another positive spin-off of FAO's advocacy work has been the focus on agriculture, food and nutrition in poverty debates and in the CAADP<sup>37</sup> Pillar 3. Also, the presence of FAO in the Global Economic Forum Working Group on Water Security since 2007 and the presence of FAO in the Advisory Committee of the SIWI World Water Week<sup>38</sup> since 2009, are acknowledgments of FAO's international credibility and role, as well opportunities for global level advocacy and guidance on water and agriculture.

184. However, FAO itself has not been consistent in giving adequate space to water in its global events: a Water sub-group had been set-up in preparation of the "High Level Conference on World Food

<sup>35</sup> IPTRID: International Programme for Technology and Research in Irrigation and Drainage

<sup>36</sup> Source: Survey of the 3<sup>rd</sup> World Water Development Report

<sup>37</sup> CAADP: Comprehensive Africa Agriculture Development Programme

<sup>38</sup> SIWI: Stockholm International Water Institute

Security: The Challenges of Climate Change and Bio-Energy”, in 2008. No mention of water issues was included in the Conference declaration, even if it was part of the conclusion of two out of 4 working groups.

185. The African follow-up to the High level Conference, the Sirte Conference on Water and Energy in December 2008, was another occasion where FAO provided leadership and guidance and this was done on a very tight deadline. The preparation was a major, unplanned activity that required organizing and running sub-regional workshops and the elaboration of country investment briefs for each African country. Countries rallied behind it; further work was started in the second half of 2009 in three pilot countries, namely Egypt, Tanzania and Zambia.

186. Regarding other specific emerging challenges, such as the food price spike, 'land grab' and climate change, the Organization acknowledges the importance of visibility on these issues and conferences have been organized and run successfully. Follow-up, however, depends largely on response from MCs to translate deliberations and recommendations into action and FAO does not appear to have been good at keeping the momentum going at country level. In the case of the Sirte Conference, by the time of the Evaluation mission (September 2009), no follow-up advocacy or activity had taken place in any African country outside the pilot ones. Also, long term benefits of the country investment briefs remain to be demonstrated.

187. One area where FAO's response to emerging issues has been particularly disappointing is the emerging feminisation of agriculture due to the out-migration of adult men from the farming communities and of male youth moving out of agriculture into urban-based jobs. Although this phenomenon may take on different characteristics depending on the regions, it is a world-wide phenomenon that directly affects issues of access to and control of land and water resources, cropping decisions, appropriate technologies, access to services, etc. The Evaluation is doubtful, based on numerous examples from the field as well as interviews with staff, that at least in this case, the new Strategic Framework through its Strategic Objectives K on Gender will achieve any relevant result in the near future.

188. FAO's mandate confers upon it a duty to engage knowledge to influence policy: the capacity for this is based on its access to global scale data, the variety of in-house disciplines within water that are nested in the wider food and agriculture frameworks, good institutional memory, ability to mobilise international and regional expertise and awareness of the activities of other institutions. Advocacy activities were well appreciated in countries hosting FAO regional and sub-regional offices, whereas the response from the MC and the NII questionnaire surveys showed very little awareness elsewhere of FAO's advocacy role in relation to water.

189. Where advocacy has been highly valued, for example in Mali, Morocco and Thailand among the visited countries, the Organization is seen to have provided innovative vision and thinking 'as a partner' to MCs, while still being critical when needed. Interviews in countries visited confirmed that MCs feel that they can consult FAO in confidence on issues sensitive to governments and that the Organization will respond independently of donor interests.

190. At the same time, in some countries, interviews with national stakeholders revealed that advocacy appears to have declined and reached a hiatus with a number of governments, for example in China, Turkey and Malawi, due to low institutional presence and absence of a regular relationship. There is no doubt that the increasingly stretched human resources at all levels, including HQ, have reduced the capacity of 'Water at FAO' to develop and maintain relations with national interlocutors and to elaborate timely responses to upcoming issues.

191. The reduction of staff resources at all levels, including in HQ, may have affected the capacity of FAO to pick up signals and elaborate a timely response to specific challenges. At the same time, it is often hard to judge whether an apparent crisis will last long enough to merit extensive resource commitments: the FAO document on responses to the food prices spike appeared just as prices in some developed country markets had fallen below pre-spike levels.

#### **4.6 *FAO's mandate and role at the international level: effectiveness and comparative advantage***

192. In the context of increasing concern about the balance between supply and demand for fresh water, FAO's mandate and activities are, if anything, more relevant today than they were 10 years ago. Rain fed agriculture and irrigated agriculture are together by far the largest consumptive use of freshwater resources. With demand for food increasing, both with population and income-induced dietary changes and competition for water exacerbated by growing industrial and domestic demands, FAO has much to do. None of the other global institutions has FAO's explicit focus on food and agriculture at global, normative and operational level as a knowledge organization, combined with the political mandate to address this on behalf of the UN Member Countries.

193. Overall, the work of FAO and its contribution to global knowledge and development is positively viewed by other institutions. Some of FAO's work is unique and recognised as such. Also, the capacity of FAO to dialogue with governments at national and international level and its "honest broker" role and multi-disciplinarity were well recognized by most, including the CGIAR institutions.

194. FAO is clearly the lead institution within the United Nations system on technical issues involving water in the context of food and agriculture. FAO has also been successful in establishing a global position through its contribution to the major international conferences and through its role as chair of UN-Water for the past years. In this role, FAO's contribution has been positive and widely endorsed. This should benefit FAO in future due to enhanced credibility and in turn provide FAO with a sound basis for further contribution at national and international level to the pressing agenda of sustainable water use.

195. As scarcity and competition for water emerged, a number of organisations broadened their engagement. Establishment of the Global Environment Facility (GEF) initially created a lot of competition with UNDP/UNEP/WB<sup>39</sup> having first call, and gaining significant ground. Only recently FAO and other organizations have gained access to GEF funds. Competition remains in many areas.

196. Other UN agencies and particularly the CGIAR institutions generally have complementary remits to that of FAO, but mission creep certainly leads to some degree of overlap. The replies to the questionnaire from National and International Institutions showed that complementarity and overlapping with FAO was perceived by 41% and 15% respectively of UN agencies. Areas of work where overlapping was perceived as strongest were "Water management linked to water availability and scarcity" and "Water harvesting", whereas greatest complementarity emerged in relation to "Policies and strategies", and "Pollution from agriculture". Understandably, UN-agencies with mandates in agriculture and rural development perceived more overlapping, whereas other specialized agencies stressed complementarity.

197. Among external observers it is generally understood that FAO's concern is water for agricultural production and irrigation; the World Bank and UNDP lead on rehabilitation and water resources development; UN-ESCAP<sup>40</sup> on resources planning in Asia and GEF and UNEP in Africa. Among the CGIAR, IWMI is seen as being research-oriented, an excellent partner for this but relatively with low country presence. FAO's role would be to identify appropriate knowledge produced by IWMI and other research institutes, advocate and disseminate to Member Countries, also through direct piloting. However, donors have encouraged IWMI, rather than FAO, to take up a stronger role in the diffusion of technical knowledge at country level, through important funds provided to the Challenge Programme on Water and Food. FAO may wish to reflect on this, in particular as it relates to IPTRID.

198. FAO's comparative advantage in terms of mandate and function cannot imply, in the Evaluation's view, a 'business as usual' future. Resources remain constrained, and despite the good efforts of UN-Water, some degree of competition with other UN and CGIAR institutions will continue. This will require selectivity and focus, as well as facing and managing the stresses between what FAO would like to achieve and the resources available to it. The easy route is to advocate streamlining and efficiency while adding additional items to the wish-list of tasks that the Organization should address.

---

<sup>39</sup> UNDP: United Nations Development Programme; UNEP: United Nations Environment Programme;

<sup>40</sup> United Nations Economic and Social Commission for Asia and the Pacific; WB: World Bank

The hard route is deciding what must be cut and focusing resources to ensure that FAO's output is original, relevant, and of high quality.

199. Essentially this is a management function, but the complexities of FAO's governance, functional structure and its responsibilities to MCs do not facilitate simple management. Further, the visibility to donors of what FAO promises to do and the funding it receives does not encourage modesty in setting goals. Meanwhile, new 'priority' activities are commonplace: one NRLW staff member estimated that about half of the activities undertaken during the course of a planning period were in the original plan; the rest emerged later. Flexibility is a virtue to the extent that what is displaced is transparently judged to be of lower priority, but the lack of detail in the accounting for inputs and outputs precludes any assessment of this issue.

#### 4.7 Conclusions

200. The Evaluation considers that overall, the work conducted by 'Water at FAO' has been highly relevant to the Organization's Global Goals; however, its effectiveness has been mixed, ranging from good with positive results at global and country level, to poor, in particular in terms of improvement of food security at local level through water-related projects. Contribution to the MDGs has been mixed in the case of MDGs 3 and 7. Also, inconsistencies were noted between public statements and advocacy work and follow-up commitment with the Organization's own resources.

201. The Evaluation found that FAO's comparative advantage on 'water for agriculture' at global and normative level is high and well recognized by partners and share-holders, but that efforts will be required to improve and maintain this recognition over time. Equally, the Organization's wealth of knowledge and experience from countries across the globe and from the breadth of its technical mandate should be utilized more effectively in its water-related work.

202. 'Water at FAO' has been very active in normative activities, and technical quality was acceptable to good for many. Assessment against gender mainstreaming and social inclusion resulted in the poorest scoring across all groups of products.

203. The poor performance of the field programme in the water sector, and the very limited impact this had on the rural poor, undermined the Organization's credibility at country and global level. There is an urgent need for improvements in this area of work.

204. More evidence is presented and discussed later in the report on some of the issues raised in this chapter. The Evaluation considers that FAO has a strong comparative advantage in the area of water and land for food security but has missed the opportunity to contribute more effectively to improving the livelihoods of larger numbers of poor and vulnerable. Recommendation 1 below proposes a renewed commitment through this area of work to the core mandate of the Organization:

#### Recommendation 1) To FAO

**FAO should define its mission statement for its work on water and land, centred on food security. This should be formulated to include the following concepts: "Food security is a prime objective in the work of FAO. To realize this objective, FAO should strengthen the efforts to ensure that the policies, management and use of water and land resources are coordinated to the extent necessary and feasible. The purpose must be to improve and stabilize the productivity in the use of these resources in a long term perspective, i.e. to meet an expected increase in demand for food and other goods and services from the agricultural sector. This can only be achieved by taking the different capabilities of women, men and youth into account. Special attention must be paid to the inclusion of poor and vulnerable groups. This approach should be the basis of the design of the technical, financial and institutional arrangements."**

205. Poor or lack of coordination among FAO units responsible for delivering outputs at country level is often magnified by lack of coordination among national institutions responsible for water resources, agriculture and food security. The Evaluation considers that FAO should advocate and advise

at country level for better interaction and coordination across responsible institutions, and has formulated Recommendation 2 here below on this issue.

**Recommendation 2) To 'Water at FAO'**

**'Water at FAO' should advocate for institutional arrangements in Member Countries that systematically engage all relevant ministries (agriculture, irrigation water resources, the environment, urban development, power, etc.) in issues related to water resources management for agriculture and food security.**

## **5 Policy and legal assistance<sup>41</sup>**

### **5.1 Water policies and strategies**

206. The elaboration of policies and strategies is a complex endeavour: most countries include statements derived from international declarations about efficiency, food security, gender inclusiveness, reducing poverty, treating water as an economic good, etc., but avoid 'hard' choices about which objectives are of the highest priority and which are the basic rules for allocation of scarce water resources. This area is complicated and sensitive: it requires politicians to move beyond comfortable rhetoric and advisors, whether a civil servant, a FAO expert or some other external actor, capable of presenting difficult questions sensibly and thoroughly.

207. FAO is considered by countries a valuable source of advice and expertise in the preparation of water policies. Partly, FAO is valued because its staff can write such documents effectively and ensure that appropriate issues are referenced, but seeking FAO's assistance in these delicate areas also reflects real appreciation of the perspectives FAO can introduce. At the same time, for a minister of water resources it is surely an attractive option having an international team of experts who writes a policy document that 'ticks all the boxes' and adopt it with suitable caveats that it will take time, subject to financial and political constraints. The comment from Ghana that "*Donors require an irrigation policy before they invest*" illustrates this to a certain extent.

208. The traditional normative foundation for policy advice is viewed by NRLW as having become outdated and overly narrow, for example the "Water Sector Policy" and "Reforming water resources policy" checklists, prepared in the mid-1990s with support from the World Bank and UNDP. Thus, NRLW has been providing neutral policy advice, adopting a broad approach wherein agriculture is an economic engine and seeking to establish connections between food security and water security within the national circumstances. Also, the aim was at inclusiveness of beneficiaries, based on a good understanding of poverty structure and of social aspects and by close work with local Water Users institutions: NRLW has sought during the evaluation period to shift from a supply perspective in irrigation towards a demand-led approach, by preparing normative products that facilitate the negotiation of agriculture's access to water through valuation, production and basin planning. A good example of this approach is the paper "Demand for Irrigation products in Africa".

209. Work by 'Water at FAO' on water policies and strategies during the evaluation period consisted mainly of supporting Member Countries who had requested assistance in the preparation of their irrigation policies. NRLW assisted a number of countries in Africa and Asia<sup>42</sup>. FAO's engagement has thus been demand-driven and responsive to ongoing national policy reform and means that the

---

<sup>41</sup> Information and evidence in this chapter come from: interviews with FAO staff in HQ and in RO/SRO; interviews with Government and other stakeholders in Member Countries and with International Organizations and IFIs; analysis of project documents and project outputs; and the assessment of a large sample of FAO normative outputs.

<sup>42</sup> Namely Botswana, Ghana, Kenya, Malawi, Morocco, Mozambique, Swaziland, Nigeria, Tanzania and Zambia in Africa; and Cambodia, Indonesia, Malaysia and the State level in India, in Asia.

number of countries assisted depends to a large extent on factors outside FAO's influence. This is reasonable as countries must be willing to receive advice in these sensitive areas.

210. Policy work involved both agriculture and irrigation, at various scales. In some cases, policy work formed part of pre-financing arrangements, linked to IFIs' and donors' investments. FAO also contributed to multi-partner platforms, for example in Ghana, where a wide range of partners collaborated in the national process, including IWMI, donors and FAO. In Malta, FAO responded successfully to a specific request through water agencies to influence the Ministry's approach for groundwater law and regulation for the extraction from a depleting aquifer.

211. In Ghana again, support to the National Irrigation Policy included a shift towards a greater recognition of 'informal' irrigation by independent smallholder farmers, yet at the time of the Evaluation, it had failed to generate policy instruments for their support and these remained pending. In Mali, FAO contributed to the national consultation process on irrigated agriculture and agricultural development: national stakeholders considered it had been influential in focusing attention on small-scale irrigation schemes outside the large schemes of the Office du Niger. Further, FAO was successful in demonstrating the lack of available water to meet proposed plans for irrigation expansion in the Niger inner delta, a positive achievement. In Sub-Saharan Africa, national policies have to date been ratified by the Governments of Malawi and Zambia: in Zambia the reform was driven by strong political leadership at a sufficiently high level, the Minister of Agriculture. Support is also considered to have worked well through the Water Sector Support programme in Tanzania.

212. In Morocco, FAO has contributed to the conceptualization and formulation of the Water Saving Plan (Plan d'Economie de l'Eau en irrigation) and in Malawi, to the drafting of the Water Act<sup>43</sup> and before the evaluation period (2000) of the Irrigation Policy. The latest policy drafted in Mozambique was more strongly linked into global processes and contained an investment framework that strategically, focused mostly on facilitating donor response, but was no less strong on challenges faced by small farmer households.

213. In Asia, 'Water at FAO' is now emphasising returns to investments, through a combination of hardware and software, for example in India, China and Malaysia; it is also contributing to national policies and strategies in Thailand, Cambodia, Malaysia, and at the provincial level in China<sup>44</sup>. To improve the relevance of its water work to national development, RAP has also recently been working on indicators of Water Security, Water Insecurity and Rural Poverty. NRLW/RAP is pursuing a broad and long-term regional strategy founded on the building blocks of securing political buy-in, strengthening capacity by demonstrating best practices through sharing of experiences, improving investment flows and benchmarking performance. A Japanese-funded project initiated in 2009, titled "Study on Analysis of Sustainable Water Resources Use", will support work in this direction in the region, with focus on China, Malaysia, Thailand and Vietnam.

214. Further, RAP has collaborated extensively with ESCAP, in activating the water sector at political level through the Asia Pacific Water Forum and towards strategic planning processes, building on the pre-2004 Vision to Action process. Another key partner in the Asia Pacific Water Forum has been Asian Development Bank, for example on the First Asia Water Development Outlook (2007), to be updated by a 2010 revision.

215. Other **examples of relevant policy assistance** to a diverse set of country situations were:

- vi. RAP has supported multi-stakeholder River Basin Committees (RBCs) in Thailand as negotiating forums for allocations and trade-offs, regional lesson-learning in allocation, rather than accepting pre-defined allocation rules;
- vii. Support to the Kingdom of Saudi Arabia (KSA): irrigation is currently based on unsustainable groundwater use and FAO has generated data and information required to manage scarce water, including estimating crop water demands; proposing better cropping patterns; and improving irrigation technology;

---

<sup>43</sup> TCI has indeed worked recently with WB and TCP funds in Malawi to the drafting of the Agricultural Sector Wide-Approach (AgSWAP), however water was not part of the inputs by FAO.

<sup>44</sup> Shanxi Province

- viii. In six countries<sup>45</sup>, FAO is working collaboratively with other UN agencies (IFAD, UNDP, UNEP, UNIDO)<sup>46</sup> with Spanish funds to address policy, science, mitigation and adaptation issues arising from climate change, with particular focus on water resources. After initial problems of coordination among agencies and delays in technical clearance, progress is reportedly improving. This is an important model that should be followed carefully.

216. The Evaluation reviewed in detail seven of the irrigation and agriculture policies in Anglophone Sub-Saharan African countries listed above. Experience so far shows that the actual success of a policy development process depends largely on having a champion within the government who will take a serious interest in ensuring that the content is realistic, and then follow up by pursuing implementation. In spite of the demand-driven approach followed by FAO in its irrigation policy assistance, a 'champion' was not present in all countries.

217. Another lesson learned is the need for absolutely clarity in advance on the target of policy support. Zambia was the only good example of deliberate analysis of goals in relation to location, type and extent of irrigation development opportunities and target populations. The Evaluation notes that although policy formulation projects foresaw national Project Steering Committees to assist during project implementation, provisions were generally not been made for an inter-ministry coordinating committee to oversee and assist the implementation of the new irrigation policy.

218. The Evaluation also analysed policies from a gender and social inclusion perspective. Generally, **FAO's work in this area has been relevant** and almost all cases refer to the country's food security and poverty goals and issues and concerns of smallholder farmers and socially disadvantaged groups have been taken into account and addressed, although these products vary in content and approach. Particular attention has been paid to mainstreaming gender in Zambia, Malawi, and Swaziland. Policy statements with the clearest description of local farmer typologies and the challenges faced by them generally succeeded best in developing strategies responsive to circumstances in the country. However, these aspects have not been followed through systematically by FAO with adequate policy implementation tools. The Evaluation considers that further work is required to develop strategies addressing gender disparities in Mozambique, Kenya and Tanzania.

219. In the politically sensitive area of policies for transboundary water management, FAO through NRLW and LEGN has been engaged in a number of initiatives. These included: the Italian-funded support to the Nile Basin countries through development of and training on a Decision Support System; the upcoming "Regional Master Plan on Water Sharing for the Mesopotamian Basin"; and a GEF-funded project in the Okavango. Work on transboundary aquifers has been conducted in Africa and in Latin America, always in close collaboration with other UN agencies such as UNESCO<sup>47</sup>, UNEP and the GEF. Overall, a number of positive cases have been identified, although different partners expressed clearly diverging opinions on the comparative advantage of FAO in this area and the Organization's effectiveness as a policy advisor, both in quality and quantity, appeared mixed, with some evidence of uptake in what is in any case a slow process: many factors intervene at national level in relation to the approval and adoption of policies.

220. The Evaluation considers that FAO should engage in these processes, when its technical competence is the useful entry point to start developing dialogue and collaboration among stakeholders, and resources are made available to allow all interested riparian countries to participate. This work should always be conducted in close collaboration with other partners to ensure diverse contribution, higher visibility of the process and strengthen opportunity of continuity of funding and assistance.

221. Demand for policy support is apparent: for example, UN-ESCAP, a key partner for FAO in Asia on policy work, wishes to see specific actions to strengthen their capacity followed through at country level. This is not only a capacity to broker technical knowledge in policy settings, but a desire to

---

<sup>45</sup> Colombia, Egypt, Mauritania, Mozambique, Panama and Turkey. In total, 15 countries are implementing similar projects on climate change.

<sup>46</sup> IFAD: International Fund for Agricultural Development; UNIDO: United Nations Industrial Development Organization.

<sup>47</sup> UNESCO: United Nations Educational, Scientific and Cultural Organization

see FAO focus much more on political economy around water. Other Member Countries in the Asia and Pacific region also endorsed such work through the last Regional Conference. In Africa the demand for assistance with irrigation policy development remains high.

222. The Evaluation is aware that policy work at national level makes intensive demands on FAO, as these are processes of two years or more for which donor funds are not usually available. The FAO TCP has proved to be a suitable funding tool for the required national and international consultants, backstopping by NRLW staff and associated legal review. Recommendation 3 below tackles the issue of resources for this work.

**Recommendation 3) To 'Water at FAO'**

**'Water at FAO' should allocate resources for work on water and irrigation policies to meet rising demand from Member Countries, through the TCP or other funding modalities.**

223. FAO Agricultural Policy Support Service (TCAS) performs an important dissemination role through EASYPoL, an important mechanism for generic policy advice and capacity development on policy. However, the water content is seen by NRLW as being 'entry-level' and requiring an overhaul<sup>48</sup>, to bring into EASYPoL more relevant and useful knowledge available in 'Water at FAO'.

224. NRLW has considered, but not progressed to develop a policy 'product' useful for all countries. This is considered by the Evaluation a significant omission: a product that illustrates a sequence of policy steps and experiences from across the world appears to be widely needed. Recommendation 4 goes in this direction.

**Recommendation 4) To 'Water at FAO'**

**'Water at FAO' should develop a new normative product informed by experience and lessons learned illustrating steps and processes that can facilitate national policy development processes. This product should also set clear criteria and conditions under which FAO is in a position to provide meaningful policy assistance.**

225. Moreover, it is not clear that there is institutional consensus within FAO on the components of water policy: The Evaluation considers that identification of an 'FAO approach' to water policy is needed as a point of departure for all staff and consultants. This is not the same as a specification of what the preferred nature of the components should be - for example, WUAs versus tradable water rights or large surface systems versus groundwater - but rather what components policy analysis must address. EASYPol is a good start with much good material providing a basis for dialogue.

226. As a practical example of possible content, Suggestion 2 below illustrates the "Assessment, Bargaining, Codification, Delegation, Engineering" framework (ABCDE framework), which approaches policy analysis from the perspective of a sequence of dependent steps.

**Suggestion 2. ABCDE framework for policy analysis**

<i>Assessment</i>	<i>Is the quantity of water available for utilization (average, low flow, high flow, quality, location) well defined?</i>
<i>Bargaining</i>	<i>Has the political process of defining priorities for allocation among uses reached a conclusion – especially where there is evidence of current over-use?</i>
<i>Codification</i>	<i>Have the rules and laws that give effect to the outcome of the political process been written and implemented?</i>
<i>Delegation</i>	<i>Are the institutions responsible for undertaking the various roles implied by the rules, and required to provide the service implicit in the rules, in place?</i>
<i>Engineering</i>	<i>Is the infrastructure suitable to deliver the service implied by the previous steps in place?</i>

Source: Evaluation team

<sup>48</sup> NRLW provided contents on water for EasyPol, which were not used.

227. The strength of this approach is that it is non-prescriptive: it does not promote water pricing, or farmer management, or high-tech irrigation, or water user federations, or any other version of the ABCDE components. Rather, it points to the need that each be in place and be compatible with the other components, and by implication allows identification of where the process may currently be stuck.

228. There is no doubt that FAO involvement has lent weight to policy development, but the process is time-consuming and demands considerable expertise: policy is not a one-size-fits-all topic, and understanding the country's current situation, priorities and limitations is more important for successful policy development than promoting water pricing, participatory management, high-tech irrigation or other potentially relevant but often unsuitable approaches. The Evaluation considers that such processes should be based more thoroughly in assessment of the actual situation on the ground in the country, including: current agricultural water management trends; key lessons learnt/challenges in the past; implications of related policies, for example water resources policy; poverty alleviation strategies; and better assessment of the available resources and available capacity for implementation.

## **5.2 *Bringing potential physical and economic irrigable areas into production***

229. FAO's Director General has issued strong messages about 'irrigating Africa out of poverty', making significant comparisons between irrigated areas in Africa and Asia. NRLW's studies confirm that investment in water is crucial in Africa, while noting that the historic rates achieved in expanded water control and current absorptive capacity suggest that projected rates of development are optimistic.

230. FAO Land and Water Division, and NRLW in particular, invested significant resources into the preparation of the African investment portfolio for the Sirte Conference, encompassing smallholder irrigation, modernization of existing schemes, new large-scale irrigation. Developed as national portfolios, more work will be needed from FAO, donors, and the countries themselves, to progress towards real investment opportunities.

231. AQUASTAT datasets on water availability, water use, and land use classes are widely used as background information for international comparisons and global studies. While users and FAO staff agree that the data is imperfect, AQUASTAT datasets are the only ones available and thus of considerable international value. However, they do not provide information at the resolution required for specific decisions about irrigation development, which require local, detailed information. Further, estimates of irrigation potential as presented in AQUASTAT based on data provided by Member Countries tend to be statements of political intent rather than of physical feasibility. Thus many countries show plans for substantial increases in irrigated area while experiencing water shortage at current levels of development.

232. There have been significant inputs into formulation and design of irrigation systems through TCI activities in project preparation for IFIs. However, the fragmented use of TCI resources in project preparation for the World Bank in particular, typically a few person-weeks rather than a team contribution, makes it difficult to trace direct linkages between FAO activities and any level of physical areas of new or rehabilitated irrigation infrastructure to which FAO may have contributed.

233. Normative messages, for example about water accounting and the productivity of water, have not been translated into project design through investment preparation. In at least two cases, namely China and Morocco, major donor strategies appear not to be informed by FAO field activities. Discussion with NRLW staff indicates that while FAO input influences national strategy, governments adopt only those aspects that they decide are most appropriate. Thus, the Moroccan national plan to save water incorporates aspects to improve the productivity of water, which FAO strongly supports, as well as claims that aquifer overdraft will be ameliorated, which NRLW would dispute. Overall, FAO's involvement leads to improvement, and that, rather than perfection, is the appropriate test to apply.

### 5.3 *Economic returns, water pricing and cost recovery*

234. FAO has produced two reports in this area, namely "Charging for irrigation services - FAO Water Report 28"; and "The economic valuation of water resources in agriculture - FAO Water Report 27". Neither of these has proved to be notably influential, which parallels the impact of donors more generally on these politically sensitive areas. FAO 28 is substantially based on an earlier report by the UK Department for International Development (DfID), which was equally un-influential in terms of country or project policies, though as argued below, FAO 28 is consistent with current policy statements from major donors.

235. A more direct route for FAO influence has been through TCI, where the World Bank often depends on input from this division to compute project costs in the appropriate format (COSTAB) and calculate economic returns to irrigation investments. However, the link between project design and optimisation of economic returns is doubtful, given the much reduced emphasis in World Bank investment activities, where analysis is not usually appearing in the main report. This suggests that whatever work is done by FAO in this area was not a primary determinant of project design, selection or quality.

236. The issue of economic valuation and financial charging for water remains politically difficult as it has always been, though the discourse has changed significantly over recent years. The identification in the Dublin Principles of water as an economic good was widely interpreted by donors to mean pricing of water to manage demand with markets playing a key role in allocation. By now, a more practical reality has been recognised, namely that financial sustainability is critical, and cost recovery must contribute to this goal. The most recent World Bank water policy statement<sup>49</sup> is far more limited in its advocacy of pricing than the 1993 version. It is consistent with the position set out in FAO 28, namely that irrigation and drainage systems should be financially sustainable, while water allocations should be defined on the basis of national priorities among users, in the context of sustainable utilization.

### 5.4 *Water law and legislation and regulations*

237. FAO has provided through LEGN vital assistance to MCs in drafting legislation on renewable natural resources. FAO's engagement in this area is assessed as having been highly effective and widely recognized, and unique in the wider scenario of international organizations working in the water sector. LEGN activities range from organizing information in the FAOLEX and Waterlex websites to making direct contributions to defusing the potential for legal disputes over transboundary waters, for example in the case of the Iullemeden aquifer. Topics covered in relation to water ranged from legal aspects of food safety, to domestic law and regulations and their administration and to international law.

238. LEGN contributed to legislative reform or formulation processes at national and international level, either with NRLW or through TCI in co-financing arrangements with IFIs, for example with the World Bank in support to Malawi for the country's Water Act, IFAD, or with sister agencies, namely UNESCO, UNEP and the GEF. In Asia and Africa, LEGN has been working closely with regional and sub-regional organizations.

239. LEGN has also been active in training and capacity development, for example with the International Development Law Organisation and UNDP-CAPNET<sup>50</sup>. The setting of water law within LEGN has benefited from a peer environment of lawyers and from connections to a wide range of FAO technical departments.

240. The core engagement has been in review and drafting of domestic legislation, especially within policy reform. This included regulation of resource abstraction and allocation, pollution control, constitution of Water User Associations, trading of water rights and protection of vulnerable communities among others. In general, the Evaluation's assessment was that all these contributions have understated gender concerns.

---

<sup>49</sup> Water resources sector strategy, World Bank, Washington DC 2004

<sup>50</sup> CAPNET: Capacity Building for Integrated Water Resources Management

241. An auto-evaluation of LEGN recognized its significant research and publication outputs in the water arena. This included the Compendium of Groundwater Treaties and Agreements, Legislative Study No 86, Modern Water Rights, and training activities with the International Development Law Organisation. The Evaluation had feedback on the level of uptake and use of these documents through the questionnaire survey to Member Countries: most were not familiar with LEGN work, but a few respondents among NII expressed appreciation of FAO's work on transboundary issues. The likely explanation is that work by LEGN, by being rather specialized, is not widely known but is well appreciated by those who use it and are acquainted with it.

242. The Evaluation found evidence of strong contributions by LEGN in Thailand, where the unit supported the TCP on the Irrigation Sector Reform Programme; in Malawi, where it contributed substantially to the drafting of the Bill for the Water Act; and in Mali, the highly appreciated work on the Iullemeden aquifer that involved Nigeria and Niger. LEGN had also been able to ensure effectiveness and relevance in the legal dimensions of policy work and provision of specialist skills in drafting legal code, for example in Malta and Swaziland.

243. Further, close collaboration with WHO led to the development of: i) a text, which draws together water technical information and water legal information and ties the water resources outlook of FAO with the water safety outlook of WHO, and ii) a joint database with analysis and information on aspects of national water laws/regulations and standards.

244. In mid-2009, a new project was started in Central America, coordinated by a legal officer, and aims at the analysis and amelioration of the national legislation in four countries on water legislation. Also, the Evaluation was informed at its final stages of other on-going work within LEGN on water issues, which however could not be assessed.

245. Overall, LEGN's contribution to FAO's work in water was highly relevant, of high technical quality and well acknowledged and appreciated by partners and recipient organizations. At country level, work by LEGN and by 'Water at FAO' in the area of water law, legislation and regulations was also usually effective.

246. The information gathered by the Evaluation at country level showed that the recognition of FAO's expertise and contribution was frequently identified with the former chief of LEGN who has now retired, as the bulk of support in this area was conducted directly by him during the period under evaluation. In Malawi for example, the contribution had been perceived as being provided by the World Bank and not by FAO. The post has been abolished recently, diminishing LEGN's overall capacity as well as reducing specialist capacity of water despite efforts to fill the gap with junior consultants. If specialist LEGN human resources are insufficient, this will be detrimental to FAO's capacity to underpin existing commitments on water work with rigorous legal advice, and threaten longer-term engagement in policy reform that relies upon legal technical assistance, a key strand of FAO's work on water. Re-establishing LEGN's full specialist capacity on water issues, and the associated network of contacts and relations, appears to be the highest priority in this area of work. A specific recommendation on human resources in LEGN is contained in Recommendation 30 in Section 11.1, along with others on staffing.

## **5.5 Local water management institutions**

247. Farmer Organisations (FOs) are generally set up at regional or watersheds area, and have representation at various national government levels, while Farmer Groups (FGs) are formed at the local level and represent various interest or project groups. While the lead positions in Water User Associations (WUAs) and Farmer Organizations are generally held by men, especially in formal large irrigation schemes, FOs at the local level may be strongly represented by women or may cater specially for women's interests.

248. The complexities inherent in setting up and running WUAs are well described in the Participatory Rapid Diagnosis and Action Planning for Irrigated Agricultural Systems (PRDA), a manual produced within the IPTRID umbrella by FAO, the French Cooperation and IWMI. In general, in NRLW emphasis has been placed on WUAs. However, in a normative product drawing on the African experience, "Water and the Rural Poor: Interventions for improving livelihoods in Sub-Saharan Africa", the Unit adopted a livelihood perspective, and placed emphasis on the need to include poor households in

the decision-making processes and the importance of ensuring access to water rights for the poor users, rather than just setting up WUAs.

249. An analysis by NRLW/RAP in Asia reached the conclusion that the 'Water Users Association classic model' is not successful in the region, which was confirmed by others, including IWMI. The MASSCOTE<sup>51</sup> approach discussed later (see Section 6.8) should help in providing alternatives. Still, a good example of FGs in FAO's field programme was the Ground Water Managements Committees of the APFAMGS<sup>52</sup> project in India, which also encouraged women to become members and played an important role in ground water management. In China and Thailand, the development of WUAs had positive results and led to increased income, greater productivity and more equitable distribution of water to downstream farmers. However, in some cases, the Water Users Associations (WUAs) have failed to tackle difficult issues, such as cost-sharing and tail-enders, and consequently poor farmers have isolated themselves due to the perception that irrigation benefits the larger farmers.

250. Elsewhere, WUAs were set up in both large and small-scale irrigation schemes to collect funds for maintenance, but were sometimes top-down and mobilized by governments, although accepted and successful, as in Morocco and Turkey. In Mali, WUA members' farm production is divided into thirds, with one third being used to service the WUAs fees. Payment in kind is permitted, although this has been problematic in several cases in that too many participants pay in kind, too late, or the WUAs end up with large stocks that need to be stored and marketed to recover the payment.

251. Many of the projects evaluated mentioned FGs in the project document. In general, there was no disaggregated data available on the gender of members, although evaluation reports mentioned that women were participating in FGs set up by the SPFS in Bangladesh, Cambodia and Sri Lanka.

252. Water sector experts expressed the need for more systematic work on what are considered to be successful models for Local Water Institutions, in collaboration with international and national partners and institutions, drawing on the experience of the existing successful models around the world. The Evaluation considers that 'Water at FAO' should engage in this area of work and contribute with its global knowledge and capacity to reach out at different types of institutions, in partnership with other organizations, when consensus and supporting resources will emerge for it. Suggestion 3 below addresses this issue.

***Suggestion 3. To 'Water at FAO'***

*'Water at FAO' should partner with other organizations to contribute to a systematic assessment and lessons learning exercise about successful models of Local Water Institutions, including legal provisions and organisational arrangements.*

## **5.6 Conclusions**

253. The work by 'Water at FAO' under the heading of Policy and Legal Assistance is highly relevant and in demand. Results appeared mixed in the quality of products, although there was an improvement in policy work over time. The Evaluation also recognises that uptake at country level depends on factors often outside FAO's influence. Resources for policy work may become an issue in future and require careful planning and allocation.

254. In the area of water law and legislation FAO's work is of high quality and effectiveness and is at risk of losing critical mass, visibility, and institutional memory unless precise measures are taken to strengthen its current human resources in this area.

255. The Evaluation considers that 'Water at FAO' should maintain its engagement in the area of transboundary management of water resources and local water management institutions, always in collaboration with partners, when its technical expertise is relevant and useful.

<sup>51</sup> MASSCOTE: Mapping System and Services for Canal Operation Techniques

<sup>52</sup> APFAMGS: Andhra Pradesh Farmer Managed Groundwater System, GCP/IND/175/NET

256. Work conducted by 'Water at FAO' in the areas of economic returns and water pricing has been limited but relevant and consistent with the findings and recommendations of other development institutions. The Evaluation considers that FAO has no particular comparative advantage in these areas. AQUASTAT, on the other hand, is an area where FAO has unique capacity. With more adequate funding, AQUASTAT has the potential to provide important strategic information of international value. 'Water at FAO' also has a well recognized role in legal issues related to water which should be preserved and revitalized.

257. A recommendation on resources in the areas of policy and legal advice has been formulated in this chapter; a specific recommendation on human resources in LEGN and for policy work is contained in Recommendation 30 in Section 11.1, along with others on staffing.

## **6 Technical assistance<sup>53</sup>**

### **A. Water in Production Systems**

#### **6.1 Land and water interactions**

258. FAO played a pioneering role in the development of global thinking on interaction between land and water, which led to major FAO input into the 1992 Rio Summit. The Organization was subsequently designated as task manager for the land chapter (Chapter 10) of Agenda 21, a role including data collection and report preparation. At the World Summit on Sustainable Development (WSSD) in Johannesburg in 2002, FAO Land Unit contributed 75 examples of best land and water practices through the Land Degradation Assessment (LADA) programme. The Comprehensive Assessment of Water Management in Agriculture, written with inputs from FAO, states that *'the greatest potential increases in yields are in rainfed areas, where many of the world's poorest rural people live and where managing water is the key to such increases. Only if leaders decide to do so will better water and land management in these areas reduce poverty and increase productivity'*.

259. The close and complementary mandates of the two units within the Land and Water Division (see para 98 above) was manifest and innovative in work planning mechanisms, with shared Programme Entities and resources between the two Services. This structure and history provide FAO with a unique platform among international agencies to address the spectrum of technical concerns from pure land issues (e.g. soil fertility) through joint issues (e.g. salinisation) to pure water issues (e.g. irrigation technology).

260. The Land Service (NRLA) staff has been working on Conservation Agriculture (CA) and soil moisture management long before the current attention to blue and green water, by focussing mainly on minimum tillage, cover crops and biodiversity in soil and by putting more emphasis on land. It has conducted a large number of field projects in soil conservation. Examples include CA work funded by the World Bank in Brazil and by the Netherlands in Honduras after Hurricane Mitch. NRLA is a member of the FAO Working Group on CA, which organised the CA Congress in India in 2009.

261. The Evaluation notes that some criticism has been levelled at CA by academics and practitioners, for example on difficulties with narrow definition and certain 'cookbook recipe' approaches. There were also questions about the appropriateness of CA under all circumstances, pointing to possible similarities to past experiences with zero-tillage being highly effective in some agro-ecological conditions and inappropriate in others. In Africa there was also discussion of the need for more deliberate integration of CA with techniques to harvest surface runoff into the soil profile, and the integration of both CA and RWH with irrigated production. This set of concerns confirms the difficulty of

---

<sup>53</sup> Information and evidence in this chapter come from: interviews with FAO staff in HQ, RO/SRO and country offices; interviews with Governments and other stakeholders in Member Countries; interviews with IOs and IFIs; analysis of project documents and project outputs; direct observation in the field; assessment of a large sample of FAO normative outputs; and analysis of past evaluation reports.

precisely distinguishing the boundaries between rainfed and irrigated agriculture, and the need to apply both land and water expertise to raise agricultural productivity.

262. NRLA areas of work also included soil fertility, inherited from earlier work on fertilisers when land was merged with plant nutrition, reclamation of agricultural land work dealing with soil pollution, and the set-up of a network that dealt with problem soils all over the world (SPUSH network - Global Network on Salinisation Prevention and Productive Use of Salt-affected Habitats) as a forum to disseminate and exchange experiences on preventing salinisation and managing salt-affected habitats.

263. In relation to soil fertility, in most countries visited in Sub-Saharan Africa officers and farmers reported serious soil fertility declines. This was particularly apparent in Ghana, where one of the sites of the Special Programme for Food Security (SPFS; see Section 6.4) was situated behind the shoreline in sandy, nutrient depleted beach soil, with the crops showing clear signs of underdevelopment and resulting in low yields. Soil fertility problems were also evident in Morocco, on a non-SPFS project site. FAO was introducing pilot drip irrigation to replace the current flood irrigation on a large scale scheme. According to farmers, their sugar beet yields had halved over the past 14 years, despite double quantity application of inorganic fertilizers. In addition they complained about high levels of eelworm, which is a direct measure of poor soil fertility and which consequently had become the major limiting factor to increased productivity. If this problem will not be addressed, it is unlikely that irrigation on its own will lead to increased production.

264. The Evaluation notes that a number of excellent documents relating to soil fertility have been produced over the years by FAO, which should be available for consultation in the field. Additionally, the increased use of agrochemicals was posing an increasing risk to farmers and the environment. In this respect, it appears significant for the work of 'Water at FAO' in general, and related to food security issues in particular, that COAG 2009 unanimously shared the view that the "*agriculture and environmental imperatives must be simultaneously tackled*"<sup>54</sup>. Recommendation 5 below tackles this issue.

#### **Recommendation 5) To 'Water at FAO'**

**'Water at FAO' should, in formulating field interventions, pay increased attention to environmental concerns, including soil fertility, aquifer depletion and downstream impacts of increased local water consumption.**

265. In later years the focus in NRLA shifted to carbon work covering carbon sequestration, organic matter in soils, soil moisture management and interactions of these issues within dryland farming. This led to work on Sustainable Land Management encompassing climate change and climate change mitigation options. Other important areas and projects on which NRL worked were, among others:

- the multi-functionality of agriculture;
- watershed research work with several partners;
- Marmelade Watershed project in Haiti focusing on rural development;
- the Kagera project in the upper Nile countries of Uganda, Tanzania, Burundi and Rwanda, co-funded by GEF and the International Fertiliser Development Cooperation (IFDC);
- watershed management and environmental benefits including biodiversity, carbon sequestration and climate change issues; carbon in the soil (soil health, soil ecosystem), and carbon cycle in totality and benefits to the farmer.

266. Further, FAO is leading on the knowledge management side of TerrAfrica, an umbrella programme which includes among others the Kagera project and a 6-year gestation initiative for the production of a new tool for carbon monitoring. TerrAfrica was instrumental as well in bringing countries on board for the Fouta Djallon initiative (see Section 6.16 below) through Sustainable Land Management, leading to strategic investment frameworks.

<sup>54</sup> COAG 2009 Report to Council, para 25

267. NRLA has also produced many normative products linked to field projects, including about 15 publications on problem soils, e.g., Land and Water Bulletins #11 and #10. They also produced training modules for Farmer Field Schools (FFS) in Eastern and Southern Africa. Another specific normative output was the LEGN publication "Land and Water - the rights interface": the Evaluation assessed its technical quality as excellent.

268. During its country visits in Africa, the Evaluation found reasonable recognition of CA and of FAO's role in its origin and promotion. However, uptake in the field of both CA and other innovations remains inadequate (see also Section 6.4), partly because FFS are resource intensive and the results do not replicate automatically among farming households or from one settlement to the next, as for instance happened with the use of motorised pumps in Ghana.

269. **Overall, NRLA work can be considered as being relevant and effective.** Through work pioneered by FAO and followed up by others, a great deal more is understood about land and water interactions now than two decades ago, and there is also much better recognition of the role of water in the continuum from rainfed to 'full irrigation'. The challenge ahead is primarily to derive lessons of experience from field implementation and develop and refine 'best practices' on technical aspects and facilitation of uptake.

270. The Evaluation was told that prior to the separation of the Land and Water Division from the Agriculture Department, much closer interaction and collaboration existed among units involved in the different aspects of agricultural production. For example, the Evaluation came to the conclusion that the low integration of soil fertility with water-related work might be traced back, at least partly, to the transfer of the Land and Water Unit from the Agriculture Department, where links with the Crop Production unit (AGPP) were strong, to the Natural Resources Department. While NRLW realizes the inseparable nature of soil moisture and soil fertility, since 2006 there was no longer an institutional platform through which to continue collaboration with many of the Agriculture-Land and Water initiatives.

271. Moreover, due to successive cuts in human resources, FAO has lost much of its capacity to sustain many of the integrated land and water initiatives. In this respect and in the light of the strategic importance of a land and water approach to increased production, especially in rainfed areas, the evolution of the Land and Water Division with two separate 'services' into one single unit bodes well for closer integration on this topic and possibly, for a more rational use of available resources. Further, the 'Water platform' proposed by this report in Section 12.2 should provide the mechanism for achieving appropriate collaborative effort within the new FAO structure.

272. Last, there is no doubt in the Evaluation's view that since many of the world's poorest people live in rainfed areas, rainfed yield increases, through improved water and land interactions, hold the greatest potential to meet global food needs in the next half century. Thus, this topic is clearly key to FAO's mandate to work towards a world that is free from hunger and where natural resources are sustainably managed. In this respect, more field work may be required to develop gender-appropriate integrated land and water methodologies along the rainfed-irrigation spectrum. The Evaluation formulated Recommendation 6 on this, here below.

**Recommendation 6) To 'Water at FAO'**

**'Water at FAO' in its work on the development of land and water strategies, should always (a) consider the spectrum of land/water options from rainfed through to full irrigation; and (b) overtly address relevant gender and social inclusion dimensions.**

## 6.2 *Rain Water Harvesting*

273. Rain Water Harvesting (RWH)<sup>55</sup> holds potential for 'automatic uptake' because a farming household can implement many of its methods independently and profitably, unlike participation in an irrigation scheme which requires constant collaboration around a common water supply system. Interest in many countries is high, but implementation varies greatly: from massive uptake in China - where the negative downstream impacts are potentially significant - and in India - where negative downstream impacts are already evident in some areas - to small beginnings in countries like South Africa and Zimbabwe, and a whole variety of situations across developed and developing countries.

274. 'Water at FAO' has conducted significant innovative work in RWH, in particular in the Asia and Pacific Region, much of it prior to the period of the current evaluation. This included guidelines, training manuals in several languages, support for the establishment of the World Overview of Conservation Approaches and Technologies (WOCAT), and a database on related methodologies that is being updated and added to over time. As of now, RWH activities in RAP countries are widespread and there is no need for FAO to be directly and extensively involved in these. The focus in RAP countries should be on up-scaling to those places and countries where uptake is low and the potential for expansion without negative downstream impacts is clear. In Latin America, RWH work is under implementation in Guatemala, Nicaragua and Chile through the Food for the Cities program and was an important component of FAO's contribution to the Brazilian Zero-Hunger initiative in the arid North-east of the country. In these interventions, RWH serves multi-purpose uses.

275. During the period under evaluation, NRLW in HQ designated one staff member as focal point for RWH: activities focused on urban agriculture applications which included attention to solar disinfection and ceramic filters, with work conducted in Thailand and Latin America. When the staff member responsible for RWH moved to an African sub-regional office, the workload made it impossible to also do justice to normative work on RWH. This was severely exacerbated by the absence for at least 18 months of the regional post for Senior Water Officer in Africa. Nonetheless, three relevant and potentially useful normative products are virtually print-ready, and would need immediate support for finalisation and distribution. They are:

- a comprehensive FFS manual with specific module on RWH;
- an Excel-based routine to analyse the economic returns on several RWH methodologies; and
- a manual on economic analysis of RWH.

276. Another recent activity was the financial and organizational support by the Sub-regional Office in Harare to the Southern and Eastern Africa Rain Water Network (SearNet), for their 11<sup>th</sup> annual conference in 2007, held in Malawi. FAO's assistance provided was highly appreciated, though there was no specific follow-up. In Africa, a view shared by many people interviewed in the countries visited, by the Evaluation team and by NRLW officers, was that RWH holds significant potential to impact positively on food security in the region.

277. In the Flanders-funded FAO project in Malawi, the Evaluation saw substantive implementation of RWH for improved rainfed production, including pitting, tied ridges and ponds for aquaculture, but did not see RWH incorporated with irrigation of either field crops or fruit trees, nor was RWH used at homestead level for daily consumption as well as for fruit and vegetable production, to increase water infiltration in the soil profile, or to store surface run-off in tanks or ponds to bridge dry periods.

278. In Ghana, the sustainability and profitability of the rapid expansion of informal irrigation at one coastal SPFS site could have benefited greatly from RWH. Follow up would be required in the same

---

<sup>55</sup> The Evaluation assessed the work that FAO defines as RWH, along the following lines: 'Water harvesting in its broadest sense is the collection of runoff for its productive use', FAO, 1991. This has clearly expanded in recent years to include RWH for multi-purpose uses. The Evaluation did not assess work by FAO on Soil water management, defined as: 'Managing or controlling water that is 'on or in' the soil for use by crops, generally', as this was not included in its ToR.

country where farming households had reportedly abandoned specific RWH methods for banana production due to high-intensity labour requirements.

279. There is a great deal of work ongoing by various organisations on different aspects of RWH, but little coordination towards consolidating global wisdom. Potential partners include IFAD, ICARDA, ICRISAT<sup>56</sup>, Improved Management of Agricultural Water in Eastern and Southern Africa (IMAWESA), and IWMI; NGOs are also active, and a significant project funded by the Bill & Melinda Gates Foundation project on RWH was recently launched in Africa and Asia.

280. There is no doubt that RWH is an area that can contribute significantly to smallholder food production and food security in developing countries, and requests for support at country level are numerous, which can be taken as indicative of the current perceptions of its potential value. For example, officers and experts in African countries felt there would be room for more deliberate integration of a wider range of RWH concepts, especially for domestic use, including for household water and homestead fruit and vegetable production, as well as for improved rainfed production. Its potential integration with irrigated production methods to reduce overall irrigation (water, labour, energy) demand was also stressed.

281. In the absence of proper analysis, RWH tends to be either taken as a panacea for all water-constrained production problems, or ignored as insignificant, both positions being incorrect. A practical tool based on climate data, and linked to CropWat/AquaCrop (see Section 6.3 below) to calculate, by location, the water yield potential of RWH for household food production and water supply, would improve project planning and implementation by all players, and inform policy formulation, especially where potential overlaps with 'hunger/malnutrition hotspots'. This presents a specific opportunity for FAO to lead collaborative work similar to the process used to produce AquaCrop, resulting in an authoritative tool for assessment to underpin policy and implementation planning of RWH for household food security and domestic water.

282. Further, better understanding is needed of the movement of water through hill-slopes, not only groundwater recharge into aquifers, but the hydrological hill-slope processes (shallow and deep through-flow and natural pipe-flow) by which rain reaches rivers between days and weeks after a rain event. The objective would be to enable farmers to better exploit water in the vicinity of their own fields, reducing reliance on irrigation schemes whose command areas tend to be in the middle and lower reaches of rivers. There is also practical scope for enhancing infiltration and for the strategic placement of landscape management to reduce flood peaks and sustain river baseflows. As well as productivity gains, this would also contribute to watershed management and the control of invasive species to increase Mean Annual Runoff (MAR).

283. Within the debate on ET<sup>57</sup> management, there could be merit in assessing which fraction of harvested Rain water derives from avoided evaporation, by 'catching water where it falls' instead of its meandering to water bodies, compared to the fraction harvested at the expense of MAR. The purpose would be to understand the extent to which RWH offers opportunities to effectively increase the beneficially utilisable fraction of water in the hydrological cycle, or opportunities to 'enlarge the pie', without damaging the interests of downstream users as scale increases.

284. Of these three potential new topics, the first is viewed as having the most direct relevance for and potential impact on household food security, as the tool would enable both targeting, through assessment to underpin national policy and strategy, and engineering-based planning for implementation projects, for example correct sizing of water storage and cultivable areas according to water harvesting yield potential and economic analysis.

285. Shortage of resources currently hampers effective participation by FAO in RWH, both at HQ and in those decentralized offices where this work remains a priority, i.e. in Africa, Latin America and the Caribbean and the Near East and North Africa. Creating sufficient engineering capacity would help address this, especially if solutions targeting food insecurity are deliberately informed by the daily realities faced by farming households, with specific attention to women's daily routines, seasonal

---

<sup>56</sup> ICARDA: International Center for Agricultural Research for the Dry Areas; ICRISAT: International Crop Research Institute for the Semi-Arid Tropics.

<sup>57</sup> ET=Evapo Transpiration

availability of family labour and RWH methods with reduced maintenance/recurrent labour requirements. The Evaluation formulated Recommendations 7 and 8 below for FAO to pursue specific products; also, a specific recommendation on human resources for RWH is contained in Recommendation 30 in Section 11.1, along with others on staffing.

**Recommendation 7) To 'Water at FAO'**

**In partnership with ICARDA and others 'Water at FAO' should evaluate the potential to incorporate Rain Water Harvesting practices into water resources development for rural livelihoods improvement.**

**Recommendation 8) To NRL**

**The pending NRL publications on Rain Water Harvesting should be expanded to include a decision-support tool based on rainfall data to assess yield, assurance of supply and economics at the level of households and administrative units. They should be completed, published and disseminated as a matter of urgency.**

### **6.3 On-farm water use, productivity and efficiency for agricultural production**

286. FAO uses "efficiency" terms loosely in relation to water management. Biennial Programme Entities refer to "*efficient use and conservation*" (2004-05); "*water use efficiency and conservation*" (2006-07); and "*Water use efficiency and productivity*" (2008-09). Conventionally, irrigation efficiency is the dimensionless ratio ( $m^3/m^3$ ) of water available or utilized at one point to water delivered at some upstream point, for example, field irrigation efficiency is the ratio of water consumed by the plant to water delivered to the field. Water Use Efficiency by contrast is a productivity term ( $\$/m^3$  or  $kg/m^3$ ). The latter term is frequently misunderstood for, or indeed used in place of the former.

287. This is not a trivial semantic issue: increasing irrigation efficiency means avoiding non-productive losses of water (evaporation from wet soil, ET through weeds, infiltration to saline aquifers or outflows to the sea). Understanding irrigation efficiency involves identifying where "losses" actually go to, some are available for productive use later or elsewhere, which often leads to important insights when interventions at farm level are assessed from a basin perspective.

288. Increasing the productivity of water, i.e. Water Use Efficiency, is a separate issue and involves delivering water in ways that maximise the potential for the farmers and society to increase the quantity and value of production, avoiding stress at critical periods, ensuring that the service that the farmer is promised is the service that he or she receives. Reliable and timely irrigation encourages high input/high output farming strategies. Unreliable service leads to risk-averse, low input/low output farming strategies.

289. Given the centrality of these issues to FAO's mandate in water, i.e. utilizing scarce water productively, every effort must be made to avoid confusion of the components of this strategy through casual misuse of terminology. Other specialist agencies are moving away from "efficiency" terminology, rather using fractions (beneficial consumption, non-beneficial consumption, recoverable and non-recoverable fractions) instead of irrigation efficiency, and productivity instead of water use efficiency.

290. The existing model CropWat, the FAO standard reference on this topic published in 1979, is well known and widely used. The productivity concept is fairly new and FAO has now contributed an important new tool to analyse yield response to water, namely AquaCrop. The achievement for NRLW was to go beyond the former existing analysis of crop water requirements for top production under ideal circumstances: AquaCrop offers far more interesting potential in a context of water scarcity as it embodies more complex plant-water relationships based on interactions with CGIAR crop centres and other specialist groups. The next necessary step will be to test to what extent AquaCrop can produce 'realistic' rather than 'ideal' recommendations for design of irrigation, that take into account the unique and varied constraints to optimal production faced by smallholders in specific agro-climatic areas.

291. FAO is in a good position to champion AquaCrop as the leader in the area of water productivity theory and modelling: understandably, uptake by potential users such as IWMI and the World Bank had been limited by the time of the Evaluation. Although training on the model was on-going in late 2009, more efforts will have to be devoted to fully train FAO's own staff and its immediate partners in its use.

292. Priorities vary across countries, and even within countries, but maximising the productivity of water, and understanding how technology, water consumption and production interact is a critical issue wherever water is scarce. In its field operations, including within the work by the Technical Cooperation Department, 'Water at FAO' has yet to mainstream important insights in these critical areas from its normative work. Examples from the country visits illustrate the point:

- In Malawi, a river diversion scheme on a FAO project showed scope for significant improvement in the infield irrigation techniques to achieve improved water distribution and reduce overall irrigation time, saving labour, increasing productivity and possibly saving water;
- In Morocco the introduction of drip irrigation is expected to contribute to water saving, but the World Bank with support from TCI is following a different strategy with no apparent communication with NRLW<sup>58</sup>;
- In Ghana, where irrigation has been introduced through the SPFS, dissemination of known practices could help farmers save on labour and fuel, but there has been no follow-up since the initial FFS, which apparently was conducted only for IPM practices and not for water use.

293. Saving water, where possible, and increasing water productivity have been key focal areas for NRLW and should remain so. The Expert consultation conducted in December 2009 on this topic confirmed NRLW's awareness and commitment to the issue. FAO should continue to seek synergies with other partners and pool resources to continue working in this area and provide world class normative products for assessment purposes. FAO is potentially in a strong position to lead on proper water accounting to identify where water can be saved, as well as on productivity-oriented management to increase yields. This should contribute both to the 'A' and 'E' in the ABCDE framework (See Box 3 above).

294. The Evaluation considers that FAO's current focus on water saving and increasing productivity in agriculture is **highly relevant and has a good potential for high effectiveness and impact**; this work should be continued and enhanced as well as supported through FAO's advocacy work on the links between poverty, food insecurity, water requirements for food production and water resource limitations.

295. The Evaluation considers that with CropWat, and now AquaCrop, plus many relevant publications, and by ensuring that its own field activities are consistent with these approaches, FAO is potentially in a strong position to lead on this theme. Recommendation 9 below underlines the need for a more coherent and systematic approach throughout all FAO's work on this issue.

#### **Recommendation 9) To 'Water at FAO'**

**'Water at FAO' should set out an institutional view on water accounting and establish a culture 'of water saving and water productivity' for dissemination in all its work.**

<sup>58</sup> Correspondence between the relevant NRLW and World Bank staff has now been initiated.

#### **6.4 Informal smallholder irrigation**

296. FAO's work on informal smallholder irrigation has been conducted mainly through technical cooperation projects, under the umbrella of the Special Programme for Food Security or in projects managed by other FAO units including NRLW, and through emergency initiatives, which are assessed in detail in Sections 6.5 and 10.2 respectively. The Evaluation noted the absence of a fully coherent and systematic approach to the topic and this section explores the potential of this sector and its relevance to FAO's mandate.

297. During the period under evaluation there has been considerable growth in the recognition, and to some degree in the implementation of informal smallholder irrigation outside formal irrigation schemes. Informal smallholder irrigation includes the use of a diversity of water control options that enable individuals and/or small groups to reduce vulnerability to crop losses through better water control, including treadle pump irrigation, small motorised pumps, a range of RWH approaches, etc. The growth in low cost irrigation development approaches has resulted in more rapid expansion and, often, more sustainable irrigation than formal irrigation development approaches in Africa.

298. Where water supply can be secured directly to homesteads, through RWH tanks, river diversions to homesteads rather than 'schemes', or other water distribution systems for non-potable water in the context of 'homestead level multiple use systems', this opens enormous opportunities for homestead production, bringing food production within reach of vulnerable households. This appears particularly relevant for households that are landless, severely affected by HIV/AIDS, or with elderly adults with the care of young children/orphans. This type of irrigation has tended to be highly accessible and appropriate to women, and offers unique opportunity to address social exclusion.

299. Called 'informal irrigation' in Ghana, smallholder irrigation that sprung up in barely more than a decade without government assistance, for example 12000 ha around Kumasi alone according to IWMI, already exceeds the area under formal government irrigation schemes developed over more than half a century, which barely reaches 10000 ha, as well as the area of formal private irrigation, also reaching about 10000 ha. In the country there was strong expression of the need for better support for this sector, for instance, households buy pumps on the open market in the absence of technical advice on specifications, durability and matching of pumps to their circumstances, resulting in unnecessary high running costs, regular breakdowns and financial losses.

300. In Malawi there is active street trade in green maize grown with treadle pump irrigation, with immediate and direct impact on food security and income: two cobs of green maize sold in September 2009 earned enough to buy a kilogram of maize grain. In the same country, there was an expressed need for micro and small private enterprises to develop low-tech treadle pump parts and manage their maintenance, especially with demand growing rapidly due to development of the Green Belt. Many other similar examples proliferate across Africa and Asia.

301. There is a danger that these initiatives fall outside the net of 'investment frameworks' such as those of Mozambique and Malawi, as it is a challenge to develop policies and strategies that would strengthen and accelerate their spread, and be pro-active in preventing possible environmental impacts without stifling their dynamic self-replication and self-management.

302. Further, there seems to be a general absence of targeted extension service to informal irrigators. There remains a gap in ensuring smallholders' access to quality technology that is matched to the farming household's field conditions, and strengthening the technical advisory capacity of suppliers could be the most direct route to achieving this. This needs to be backed up by specification of generally accepted minimum requirements for equipment and technical advice to manufacturers to achieve the specifications.

303. The Evaluation views this area as important, with vast scope for direct and rapid impact on food security, because it provides a form of irrigation that could enable large numbers of rainfed farmers to secure their crops against failure. Evidence later in this report shows, however, that 'Water at FAO' has done insufficient technical and policy work in support of the rapidly growing informal smallholder irrigation sector, in particular in Sub-Saharan Africa but also elsewhere. In consideration of the importance of this sector for contributing to food security for all, the Evaluation formulated Recommendation 10 below.

### **Recommendation 10) To 'Water at FAO'**

**While contributing to Member Countries water policies and strategies, 'Water at FAO' should pay particular attention to the potential of smallholder irrigation and its requirements for specific technical, legal and extension support.**

304. One additional element that appears to have contributed to lower performance by 'Water at FAO' in the area of smallholder irrigation, was the lack of relevant technical expertise in FAO, in particular absence of irrigation engineers who could support field projects and develop appropriate normative products that meet the needs of government officers and field practitioners. The evidence for and the consequences of the dearth of engineering capacity are discussed elsewhere in this report, in particular Sections 10.5 and 10.6: all these element together point to the urgent re-establishment of an invigorated engineering capacity for smallholder irrigation and agricultural water management within 'Water at FAO'. A specific recommendation on human resources on irrigation engineering is contained in Recommendation 30 in Section 11.1, along with others on staffing.

### **6.5 Water and Food Security**

305. Water is a fundamental element of agriculture and of the natural resource base and access to water and its management are key contributing factors to food security. FAO's global mandate and objective of food security for all should be the overarching goal of all the work of the Organization.

306. A number of excellent publications have been published on the theme 'Water and Food Security', for example the "Water and the Rural Poor". The publications dealing with Farmer Field Schools, namely the "FFS Facilitators Manual" and the "Farmer Field Schools on land and water management in Africa" stand out in their category regarding lessons learned from field level experiences and feed back into a global product. On the other hand, the publication "World Agriculture towards 2015-2030, Summary report" contains an unfortunate reference in its foreword to the poor causing environmental destruction, although it presents excellent data and discussion of issues pertaining to Food Security.

307. However, one of FAO's core functions is the assessment and monitoring of trends in food security and the production of relevant long-term perspectives: the Evaluation found no evidence that 'water' was well captured in the food security information systems set-up by FAO, an exception being the regular inclusion of rainfall data in the early warning systems.

308. Further, in FAO's drive to deal with water scarcity, the Evaluation noted that less attention was given by 'Water at FAO' to the urgent need to focus on water for household food security, both in its contribution to the global debate and in its internal work. NRLW's brochures emphasise several achievements: '*During the second half of the 20th century, agriculture responded to a twofold increase in the world's population by more than doubling food production, and this in an environment of decreasing commodity prices. During the same period, the group of developing countries increased per capita food consumption by 30 percent and nutritional situations improved accordingly*'. These statements reflect the general prevailing optimistic vision, that until recently prevented a more proactive approach to identify ways of bringing water within the reach of people for whom this is pretty much a matter of survival. The food price crisis in 2008, the increase in inputs prices and the subsequent increase in the absolute number of food insecure people have brought attention back to these key issues.

309. Hopefully the on-going work by NRLW/RAP on water insecurity indices in Asia, in collaboration with UN-ESCAP, ADB<sup>59</sup> and IWMI, will raise awareness and inform policies as appropriate. Further, by taking advantage of its position, FAO should take the opportunity to bring attention to the fact that a limit will be reached sooner or later, beyond which no further water can be transferred out of agriculture if the planet is to continue feeding itself and that other water sectors also need to prioritise water saving behaviour.

---

<sup>59</sup> Asian Development Bank

310. In the mid 1990s, the Director General of FAO launched the Special Programme for Food Security (SPFS) in direct response to the concerns emanating from the 1996 World Food Summit, with Member Countries committing to halve the number of malnourished persons, mainly through increased crop production. Within the SPFS, availability and access to water resources were recognised as the major constraint to increased food production in all regions of the world, with many countries experiencing food insecurity as a result of limited water resources and others having reached the limits to water development for agricultural purposes.

311. The first phase of the SPFS, from 1995 to 2002, focused on improved access to water through irrigation techniques and/or construction of irrigation schemes; projects were implemented in high potential areas, which benefited better resourced farmers but did not improve food security for the great majority of the less well-endowed farmers. After the recommendations from the Independent Evaluation of the SPFS in 2002 were taken on board, the SPFS approach became more flexible. Project interventions were extended to non-irrigated and more marginal areas, the diversification objective was expanded to include horticultural and other non-cereal crops, as well small ponds for fish farming. Thus, not all the SPFS projects implemented during the evaluation period (2004-2008) included work on water resources and they have been included in the scope of this Evaluation depending on the importance of their water component.

312. At the same time, other field projects were formulated and implemented outside the framework of the SPFS, which included important water-related components aimed at improving the food security of participants, in an explicit or implicit manner. An example was the Andhra Pradesh Farmer Managed Groundwater System (APFAMGS) project in India that did not state food security (FS) as an objective in its Project Document, but had a strong focus on improving the livelihoods and FS of participants. These projects were implemented under the responsibility of different units in FAO, including NRLW as Lead Technical Unit (LTU). Often the core water activity was small-scale irrigation development, to improve food security through more regular access to irrigation, or improved management of available water resources. No emergency projects were included in this group.

313. Data about 'Water and Food Security' projects implemented between 2004 and 2008 are synthesised in Box 7 below. The SPFS initiatives with substantial water components received above USD 157 million, through 59 projects. This represented 80% of the budget of all "Water and Food Security" projects in FAO. The last row refers to Non-SPFS food security projects, as described in para 312 above.

**Box 7. Budget and number of 'Water and Food Security' projects in the period 2004-2008**

Type of projects	Total budget (USD)	Budget %	Number of projects	Number %s
<i>Total Food Security projects</i>	197,686,639	100%	76	100%
<i>SPFS projects run by TCOS</i>	124,132,514	63%	44	58%
<i>SPFS projects run by other units</i>	33,100,042	17%	15	20%
<i>Non SPFS Food Security projects</i>	40,454,083	20%	17	22%

Source: FPMIS, elaborated by Evaluation team

314. The Evaluation directly assessed the 'Water and Food Security' projects, most of them SPFS, in five countries and indirectly in other countries through past evaluations. The portfolio of both SPFS and non-SPFS projects included the whole range of FAO's modalities of implementation, most of them extra-budgetary funded initiatives, including some UTF. A few TCPs were also funded within this group.

315. Key themes that were introduced through these projects included improved access to water through the use of treadle pumps, water management, intensification through use of improved seed varieties, Conservation Agriculture (CA) practices, set up of farmer groups and in some cases gender awareness. Farmer Field Schools (FFS) were used for capacity development of farmers, covering IPM, basic business practices and marketing as well as the setting up of WUAs. Diversification integrated small livestock and multiple crops, including horticultural crops, into the farming system. In Mali, a course in motor-pump maintenance was part of the activities of an SPFS project.

316. Results of the SPFS in Africa were variable, ranging from acceptable in a few West African Sahelian countries, Sudan and Nigeria to poor in Egypt, Ghana, Mali and Mozambique. In some cases, while the food insecurity of the target group was clearly evident, there were unrealistic expectations of project results due to cultural factors. For example, in Ghana seasonal migrant fishers were expected to become irrigators, while in Sudan herders were expected to become irrigators. Clearly, context and needs of intended beneficiaries have to be carefully analysed and taken into account in project design and implementation in such situations. In Egypt, through a TCP project drip-irrigation was introduced as a pilot by the local agricultural research station on the fields of few better-off farmers in the New Valley<sup>60</sup>.

317. The Evaluation had no evidence that any of the SPFS projects followed any guideline to check the long-term sustainability of the water resource and the potential impact of increased local use on other users; it does not appear either that they followed the FAO technical guidelines for preparing a project for an IFI to finance. Although individual projects tended to be very small in scale, the SPFS aimed at developing models for up scaling to national level, therefore with a larger potential impact. This should indeed happen through the National Programmes for Food Security, although mechanisms for up-scaling were not clarified.

318. In some cases, relevant and effective mechanisms were established to link farmers to markets and banking systems, and farmers gained some competency in their market behaviour. There was some evidence of the use of CA such as zero tillage, composting and soil coverage in Malawi and limited mention of it in Ghana, Mali and Morocco. In consideration of the importance of CA for sustainable soil and water management, it is surprising that there was not more awareness and practice of it within the 'Water and Food Security' projects.

319. Institutional set-ups in the African projects were frequently flawed and ineffective. Collaboration with NGOs existed but was far from being systematic, although in Malawi, Ghana and Mali the NGOs are vital partners in spreading technologies and information, as is the private sector in manufacturing and maintenance of water related equipment. The participation of women tended to be informed by national policies and prevailing approaches for gender mainstreaming in field projects (see Chapter 8).

320. The Evaluation based its assessment of the SPFS in Asia through previous evaluations, in particular the Japanese funded projects in Bangladesh, Indonesia, Laos and Sri Lanka and an Italian funded SPFS in the Democratic Republic of Korea (DRK). It is worth noting that these projects had longer time-frames than SPFS projects in Africa, each between 4-5 years of duration: the evaluation reports illustrate clearly how this allowed for proper planning, organization and implementation of project activities.

321. In DRK, the irrigation and water control component focused on better delivery of water to the fields and rationalizing the irrigation systems, with some small rehabilitation of existing schemes. In Bangladesh and Sri Lanka, water-related works focused on the supply and installation of low-cost minor irrigation facilities, training of farmers about on-farm water management and formation of Water User Groups for operation and maintenance. In Indonesia, work focused on the introduction or re-activation of WUGs and subsequent improvement of the operation and management of the irrigation systems. Results tended to be positive in terms of accomplishment of activities, improvement of food security and poverty, although sustainability at the time of the evaluations appeared still somewhat uncertain.

322. One exception was the SPFS in Laos: major project investment in the range of USD 0.8 million went into the irrigation infrastructure component, but with poor results due to poor designs and cost-overruns.

---

<sup>60</sup> See Annex 7, Evaluation of TCPs

323. Overall, the **'Water and Food Security' projects had some positive results and impact on the food self-sufficiency for restricted numbers of project beneficiaries. However, the performance of the SPFS projects in Africa in particular was very short of expectations:** achievements of expected results, number of participants and sustainability of these projects were judged to be limited. In addition, the Evaluation noted in the visited countries and in all past project evaluations, the absence of any reference to how the SPFS project could have contributed to longer term economic growth, development and sustainable poverty reduction. The evolution of the SPFS into National Programmes for Food Security (NPFS), active in 55 countries with FAO as facilitator, should contribute to raising the attention to the national level and to the wider strategic vision. However, at the time of the Evaluation it was still not clear how NPFSs would tackle issues of large scale versus small-scale farmer-owned irrigation enterprises, and how to articulate these with the necessary attention and resources to rain-fed farming systems.

324. A number of reasons for this are discussed later (see Section 10.5 on project management). However, the evidence above shows that in most cases, 'Water and Food Security' projects did not take into account the fact that as soon as water availability ceases to be the primary constraint to increased crop production, other factors relating to natural resource management, such as soil fertility, pest and disease damage, as well as factors relating to labour availability, institutional set-up, storage and marketing issues become the limiting factors to increased food security. It is appropriate and praiseworthy that the new FAO Strategic Framework strongly develops the link between food security and the natural resource base: this dimension is urgently required in SPFS projects.

325. In the few cases where 'lessons learned' have been documented, analysed and published, these form invaluable reference and guiding material for 'Water and Food Security' projects. However, there is limited evidence that the recommendations by the Independent Evaluation of the SPFS in 2002, in relation to monitoring and local institutional set-up were properly mainstreamed, at least in Africa. The recent review of water technologies in the SPFS and NPFS by TCOS is a welcome move towards a learning approach.

326. In order to improve the impact of FAO's 'Water and Food Security' projects, Suggestion 4 below has been formulated on possible approaches to enhance reaching out to marginal households in urban and rural contexts, in spite of very limited access to resources.

***Suggestion 4. To 'Water at FAO'***

*FAO should build on participatory approaches for irrigation with households in rural and urban settings taking sustainable livelihoods as the key point of departure.*

## **6.6 Water and Livestock**

327. Within the CGIAR system, work related to livestock is the mandate of the International Livestock Research Institute (ILRI). FAO through its Animal Production and Health Division works in partnership with ILRI on aspects related to livestock and water.

328. The main activity in this area is conducted in RAP under the umbrella of the Livestock, Environment and Development programme (LEAD) and looks at, among other issues, water quality, climate change and biodiversity erosion. The focus is on water pollution from livestock and agricultural activities; a large project started in Thailand, China and Vietnam, preceded by TCP funding. The current initiative received USD 7 million through multi-donor funds. FAO plays a coordinating and backstopping role, as well as developing tools, working with several consultants. At the country level, the focus is on policy and technology development.

329. Project progress and results varied by country. One of the problems faced by the project was the resistance by the local population to the use of pig slurry (manure) in agriculture, so that demonstration experiments were needed to prove that it was actually beneficially. Results indicated a 44% yield increase from use of manure and a reduction in production costs due to the reduced use of

inorganic fertilisers. Project achievements included sensitisation of the issue in the region, training of various levels of stakeholders and implementation of the project.

330. Decision Support Systems products so far were: i) a preliminary version of the STRAW model (Support for Treatment And Recycling of Animal Waste), based on nutrient balance, dealing with the treatment of both solids and liquids and offering options for different processes and costs; ii) the COSIMO model (Cost Of Compliance Simulation Model). The project was also working on effluent discharge standards with COP (code of practice) under the relevant laws of the country.

331. **The LEAD project in Asia is likely to produce local benefits and it has good prospects for sustainability** based on a Memorandum of Understanding with a local bank and the government department to provide funding for farmer training. Farmers are realising benefits of using animal waste as a fertiliser and are receiving carbon credits for the environmentally sound management they are practicing.

332. It is expected that there will be a major out-scaling and up-scaling of the project results when the project terminates: farmers have acknowledged the benefits of using pig waste for manure, biogas, electricity, etc; there is enforcement of environmental pollution penalties by appropriate government departments; there is spatial planning in which farmers need to have a plan before they go into pig production; and there is a market mechanism to use waste. At the regional level, upscaling is expected to be in Laos, Cambodia, Indonesia, India, Pakistan and South Korea.

333. In Mali there is competition for water between livestock and crop production. Livestock is the mainstay of rural livelihoods in the dry North with sorghum and millet crops, whereas in the South, where water availability and crop yields, mainly rice, are higher, there is serious protein malnutrition due to the absence of livestock. What is required under these conditions is an integrated livestock-cropping system, and points to the need for adapted farming and water supply systems that would enable integration of crop and livestock production, also serving to enhance soil fertility.

334. In the KSA farmers are producing dairy milk for export based on pastures irrigated from scarce groundwater resources. This is definitely an unsustainable practice that needs to be stopped or managed carefully. Through the project "Improvement of Irrigation Water management in the Kingdom of Saudi Arabia", FAO is already playing a role in the livestock water dynamics through research work that is focusing on basic crop water requirements, precisely matching irrigation supplies to demand.

335. **Overall, FAO's work on water quality related to livestock can be considered as relevant.** However, much more deliberate analysis is needed of the relative roles of crops, livestock, water and energy interactions and their realistic contribution to the particular food security and nutrition problems in a given area. This should form part of FAO's policy assistance approach and could also benefit from the development of new tools for analysis. The Evaluation considers that FAO should only conduct work in this area by partnering with organizations such as ILRI that have a strong comparative advantage in the area of livestock production. Suggestion 5 has been formulated below on potential areas of collaboration.

**Suggestion 5. To 'Water at FAO'**

*'Water at FAO' should partner to conduct work on multipurpose water supply schemes and better integration of crops, livestock, water and energy in production systems, aiming at food security at household level.*

*One possible area of collaboration would be an analysis of how an increase in strategically placed watering points could improve utilisation and environmental sustainability of available grazing and how this could be expected to impact on seasonality and recurrence of food insecurity.*

## 6.7 *Fresh water management for aquaculture*

336. The Fisheries and Aquaculture Management Division (FIMA) staff have been highly active in the area of freshwater management for aquaculture, with the support of NRLW regional office staff. The key normative output in this area reviewed was the FIMA workshop report on aquaculture in agriculture irrigation systems. Further outputs in this area within FAO included:

- FIMA's work on rice-fish systems in the Mekong basin, namely in Laos, funded through the FAO-Netherlands Partnership Programme (FNPP) and involving members of the Interdepartmental Working Group (IDWG) Biodiversity including AGPP, FIIU, AGN<sup>61</sup> and several external partners including the World Wildlife Fund (WWF), the International Union for Conservation of Nature (IUCN) and the Mekong River Commission; it had a direct influence on the international wetlands management policy through Ramsar;
- NRLW input on Fresh Water Management for aquaculture in the World Water Development Report 3 in relation to the Tonle Sap system in Cambodia;
- NRLW and FIMA collaboration on the African Water Resources Database (AWRD);
- FIMA has been developing an integrated ecosystem approach to aquaculture, but this has yet to achieve substantial momentum, although the report from a FAO workshop held in Spain in 2007 outlines the path forward; FIMA and NRLW staff in FAO Regional Office for Africa (RAF) are providing technical inputs in Burkina Faso and Guinea;
- Some aquaculture projects initiated in Malawi in 2000, via a TCP in relation to the SPFS, are continuing, with funding from Canadian International Development Agency (CIDA).

337. Integrating aquaculture into the field agriculture system has several key benefits: an increase in production of a highly nutritious food source, thus impacting on poverty alleviation, food self-sufficiency and health; increased awareness of agriculture environmental impacts, for example with fish as 'early warning systems' and direct linkage of environmental awareness to livelihoods and food security; and maximize the benefits from scarce water and land resources. This approach has been championed by FIMA and promoted widely, particularly in West Africa where national government fisheries and agriculture departments were involved at an early stage. **FIMA's work has been highly relevant to FAO's mandate and of good technical quality.**

338. The IEE report re-emphasised a point made in many past evaluations: there is an urgent need for FAO to develop a coherent strategy for its work on fisheries and aquaculture. This message applies even more pertinently to aquaculture, which is becoming an increasingly important source of fish in food production, as marine and inland fisheries continue to be globally subject to unsustainable exploitation. Moreover, the need for better integration of aquaculture as an activity within other crop and livestock production systems has never been more pressing, and the potential for horizontal transfer of knowledge across the sector is obvious. This is as yet unrealized, due to the prevailing 'silos' mentality at FAO, and a corporate effort is required to modify the poor collaboration across departments and units.

339. Indeed, the Evaluation perceived an unfortunate prevailing school of thought within the Organization by which competing water uses are a source of conflict rather than an opportunity for collaboration, preventing the recognition and mainstreaming in the work of 'Water at FAO' of the more integrated view that water sustains both aquatic and terrestrial crop-based food production. Clearly, stronger collaboration on this theme is required between FIMA and other water scientists within 'Water at FAO', notably in NRLW, AGPP and AGNS. Currently, NRLW staff are fully engaged at regional level in Africa but much less so at HQ. AGPP has worked on this area in the past (see below), but neither it nor AGNS are working in this area at the present time, although AGNS work on the Codex Alimentarius has potential relevance, in terms of food safety issue.

340. The environmental benefits of improved water management in terms of water quality for aquaculture are self-evident. One added advantage of closer integration between agriculture and

---

<sup>61</sup> FIIU: FAO Fisheries Industries and Utilization Unit; AGN: FAO Nutrition and Consumers Protection Division

aquaculture is that the sustainability requirements of aquatic ecosystems in terms of water quantity and quality will be made explicit and percolate out to the wider agricultural sector.

341. Further, aquaculture food production offers more opportunities than fishing to larger numbers of women, and is of crucial importance given the nutritional value of the food produced and the food security aspects offered by, for example, fishponds. Both aspects have been at the forefront of both normative and field activities within FIMA-related FAO outputs.

342. Aquaculture is an area still struggling to achieve wider recognition in food production within FAO, which is surprising, given its prominence particularly in Asia, and importance in relation to food security and health issues. Integrating aquaculture within field agricultural production systems in irrigation-based crops, and through promotion of fishpond aquaculture in rain-fed systems offers strong synergies between agriculture and environment, which are often in conflict. Small-scale aquaculture puts people at the forefront, offers new working opportunities for women and improves diets of the poorest of the poor.

343. In the light of the above analysis, the Evaluation formulated Recommendations 11 and 12. Also, the proposal for a FAO Water Platform formulated in Section 12.2 of this report includes FIMA as one of the key contributing partners.

**Recommendation 11) To 'Water at FAO'**

**'Water at FAO' should reinforce the integrated concept of water to sustain both aquatic and terrestrial crop-based food production, to ensure maximum benefit for the poor and disadvantaged.**

**Recommendation 12) To 'Water at FAO'**

**'Water at FAO', under FIMA's leadership, should promote integrated management of aquatic resources, aquaculture in irrigation systems and wetlands-agriculture interactions.**

## **6.8 Conclusions**

344. Technical assistance on Water in Production Systems covered a wide range of topics and subjects. FAO-Water focus in recent years on water productivity with the new product AquaCrop, is highly relevant and has a good potential for large uptake and impact. Work conducted in the areas of Land and water interactions, water quality related to livestock pollution, fresh water management for fisheries and aquaculture was relevant and of good technical quality.

345. In the Water and Food Security area, some projects brought about positive results and impact for small number of participants. Overall, however, these initiatives largely failed in providing improved access to water resources for agriculture and food security at a large scale among the rural poor and in proposing an integrated approach to sustainable land and water management. Failures were in project conceptual designs and in implementation modalities, including short time-frames.

346. Better integration of FAO's work on water for different purposes, ranging from the 'Water and Food Security' projects to the use of aquatic food resources, is highly necessary and is embedded in the proposal for a FAO Water Platform (see Section 12.2).

## **B. System feasibility, design and technology, management and operation**

### **6.9 Rehabilitation and modernization of irrigation schemes**

347. In recent years, FAO's strategy emphasised modernization rather than rehabilitation, i.e. improving systems to meet new standards rather than restoring the original standards of service. In the Asia and Pacific region, FAO had a major role to play in the ongoing modernisation activities in irrigation and has been involved in the following:

- Assisting Member Countries in formulating irrigation policies and strategies;
- Streamlining the concept of modernisation for the region to enable generic conceptualisation and hence application;
- Formulation of irrigation investment policies in the region;
- Formulation of irrigation action plans for Member Countries;
- Role of stakeholders in WUA;
- Training in RAP as a critical tool in irrigation modernisation, e.g., in Malaysia;
- Working with provincial governments on modernisation, e.g., in China; and
- Wider dissemination modernisation approaches, and hence having a regional perspective to modernisation.

348. One of the main technical contributions by the Organization has been the MASSCOTE tool, which stands for Mapping System and Services for Canal Operation Techniques, to audit and plan the modernisation of canal irrigation schemes in Asia. MASSCOTE was developed from previous work for rehabilitation based on the Rapid Appraisal Procedure.

349. MASSCOTE is a 10-step procedure to audit and plan the modernisation of large canal schemes. It allows for the identification of key constraints to scheme performance and hence, the implementation of change that will make schemes have a better chance of improved performance. One of the critical elements in the procedure is the definition of the 'water service', in order to ensure service-oriented modernization of irrigation schemes. Despite its success, it is readily acknowledged that MASSCOTE is not an easy tool to apply and users need intensive training to master it: training workshops should last at least two weeks for the process to be meaningful.

350. MASSCOTE has been applied to 4 million hectares within a total of 200 million hectares of canal irrigation around the world. Strong evidence of its value is confirmed by uptake in many RAP countries:

- In China's Jiamakao Irrigation District (JID) through MASSCOTE there has been a change in management vision, mission statements, monitoring and evaluation, as well as the development of incentive programmes to reflect a shift to service orientation; MASSCOTE is now centrally used in China and a Chinese version will be out soon;
- In India, MASSCOTE was used in Karnataka and Uttar Pradesh and other states;
- In Thailand the Royal Irrigation Department (RID) requires that MASSCOTE be used in all their projects. Already over 300 RID staff have been trained in MASSCOTE through FAO. FAO has also been involved, under the TCP/3101/JPN on Irrigation Sector Reform, in the physical model that will be used to train RID staff on data acquisition as part of the irrigation transfer process and the application of MASSCOTE;
- Malaysia has also adopted MASSCOTE and full application will start in 2010;
- In Nepal, plans are to use MASSCOTE on all WB projects;
- In Vietnam, at least one ADB project used MASSCOTE and a workshop was held in June 2009;
- In the Philippines, MASSCOTE will now be used for project preparation.

351. MASSCOTE has been adopted by IFIs as well: the WB and ADB now insist that any project that they fund use MASSCOTE as a planning tool in countries such as Pakistan. As a tool, MASSCOTE

is being studied or evaluated by tertiary institutions such as the Asian Institute of Technology (AIT), where a student is undertaking an MSc in the applicability of MASSCOTE under certain conditions. Most recently, in October 2009 AIT offered, in conjunction with FAO, a short course on MASSCOTE for PhD students from AIT, Asian countries, Europe and Thailand, appropriately called "Advances in Agricultural Water Productivity Assessment and Improvement in Irrigation Systems". It followed a very practical approach and included a sensitisation on the Rapid Appraisal Procedure and then MASSCOTE. AIT appears to be aiming at institutionalising MASSCOTE training, which opens up the possibility for AIT to become a knowledge hub for MASSCOTE training in the region. Furthermore, this acts as part of the quality control of the MASSCOTE tool as any lesson learnt will be ploughed back into revised versions of MASSCOTE.

352. NRLW/RAP contributed to AIT's course with a resource person, with funds for 3 students and by supervising a PhD student: this means that the Organization is fully embedded in the activities of irrigation in the region, ranging from work at farmers' level up to academic work. Further support is foreseen in support of universities and learning institutions: besides AIT, a new Regional centre in Hanoi will also teach MASSCOTE.

353. FAO is actively setting up knowledge hubs in Asian countries: in China for large canal schemes, in Malaysia for rice irrigation, and in India for large scale irrigation, to ensure that users can access help whenever they require while applying MASSCOTE. NRLW/RAP aims at having several hubs that will first serve their own provinces and countries, and then can extend their services. The hubs will be developed in existing institutions that will be strengthened to include this activity within their mandate. FAO will support initial capacity building, but larger scale capacity building will be funded from local resources and programmes. This is the core concept of a regional TCP capacity development project in irrigation modernization: recipient countries are accepting this and they will finance all local costs of training and will set up national training programmes.

354. Eventually, the hubs should be able to provide capacity building/advisory services as a remunerated service to banks, agencies and projects, following the business model of the Asia Pacific Water Forum-IWMI-FAO Knowledge Hub on irrigation services reform. NRLW/RAP is also planning for a certification program, which may include individual experts and consulting firms: in these cases the requests for services can be directed to a list of certified individuals, firms or agencies.

355. NRLW/RAP will continue to sponsor and support MASSCOTE training when strategic opportunities will arise, for example for project preparation, to integrate relevant capacity development in the investment program: an example of this approach was the World Bank supported Vietnam Water Resources Assistance Programme, through which the Rapid Appraisal Procedure was applied to the modernisation of irrigation schemes.

356. MASSCOTE documentation is readily available and the model is computerised. In this respect, FAO should develop tools and training programmes that fit the requirements of the different countries in the region. Other MASSCOTE modules are under development, for rice and fish systems (MASSIF), for lift irrigation systems (MAALIS) and for multiple use systems (MASSMUS), but they were not finalized yet at the time of the Evaluation.

357. NRLW/RAP has provided support to other countries in the region in different but effective ways. For example, when the RID in Thailand sought to transform irrigation towards local management, FAO assistance aimed at strengthening its capacities on a number of aspects, including introduction to systems thinking and participatory irrigation management.

358. Elsewhere FAO is involved in irrigation scheme rehabilitation and modernisation, but not as much as in Asia with MASSCOTE. In Mali there is no evidence of use or knowledge, although a tool like MASSCOTE would be most appropriate if applied through the Office du Niger system as a whole and would be an opportunity for FAO in West Africa to lead the modernisation of irrigation schemes in the Niger basin.

359. In Morocco, MASSCOTE was introduced around 2008, and applied to the revision of the scheme of Doukalla, measuring 96000 ha. KSA is also updating its systems to centre pivot (Low Energy Precision Application/LEPA and Low Elevation Spray Application/LESA) and drip in an effort to save scarce water resources. FAO is already involved in this country in various aspects, such as irrigation scheduling training, salinity management, use of treated waste water and recycled drainage water through

various UTF projects (see Sections 6.11 and 6.13). In Egypt, modernisation efforts were not making use of MASSCOTE by mid-2009, as some members of the irrigation department had been trained in the new method only a few months earlier.

360. Work in Iraq and Afghanistan, technically supported by NRLW and AGST and managed by the FAO Emergency Division (TCE) was aimed at rehabilitation and modernization of large irrigation schemes. In the case of Iraq, where allocated funds reached a total of USD 68 million, request for assistance was to some extent outside FAO's mandate and required large mobilization of efforts within the Organization. **Results** assessed through a mid-term evaluation in 2009 were found overall to be **short of expectations**, due to the complexity of the works required linked to the local challenges posed by insecurity, in spite of some isolated positive outputs. Improvements are expected in the future. In Afghanistan, total funds allocated were in the order of USD 28 million<sup>62</sup>, mostly through the Emergency Irrigation Rehabilitation Project (EIRP), funded through a Unilateral Trust Fund with resources from the World Bank. Further, FAO has been involved in irrigation scheme rehabilitation through TCE's operations in Pakistan, Somalia and in the context of the post-Tsunami operations. Insofar as possible, the Evaluation relied on past-evaluation to assess this work, illustrated in Section 10.2.

361. The Evaluation noted that **a number of normative FAO publications on irrigation systems are in great demand at country level but require updating**, taking into account new developments in equipment available on the market and the ready availability of computer models. In particular, the following manuals should go through revision, updating and re-printing:

- the drip irrigation manuals;
- the Localised Irrigation manual, publication #36;
- the Trickle Irrigation manual, publication #14.

362. **The work by FAO is all relevant and timely** as water for irrigated agriculture is increasingly scarce.

363. In summary, FAO is very active in irrigation system modernisation and has made its mark in Asian countries. The irrigation systems modernisation processes based on MASSCOTE have found wide adoption and application in RAP countries and are now being made mandatory by governments and donors alike. This is solid evidence that **MASSCOTE is a relevant and effective tool**. The Evaluation considers that the reported success of MASSCOTE in RAP countries bode well for the application of the model elsewhere, including in West African countries. **The Evaluation endorses continuous commitment by FAO to this area of work** and formulated Recommendation 13 and Suggestion 6 below.

#### **Recommendation 13) To NRL**

**NRL should:**

- a) Update its normative products that are relevant to some of the modernisation efforts in various countries, especially pumped schemes in Africa.**
- b) Develop and assist in the introduction of the design-for-management concept to improve the manageability of irrigation schemes by user organisations.**
- c) Update norms and standards for equipment and design parameters suitable to agro-socio-ecological conditions as necessary; and**
- d) Develop guidelines for application by local agencies (public and/or private, as appropriate) to evaluate irrigation systems.**

<sup>62</sup> As mentioned in Section 2.2, the planned mission to Afghanistan could not take place. The Evaluation proposed to meet the Chief Technical Advisor in Bangkok, but this was not possible, and the Evaluation had no information available on which to base its own assessment.

**Suggestion 6. To NRL**

*In West Africa, NRL should advocate for the modernisation of irrigation systems in the Niger basin using the MASSCOTE approach.*

**6.10 Groundwater irrigation**

364. NRLW has competence in groundwater, although its work in this area has been suffering due to limited resources. The Unit has produced two normative products on this topic since 2002, namely "Rethinking the Approach to Groundwater and Food Security-FAO Water Report #24" and "Groundwater Management-FAO Water Report #25".

365. Overdraft of aquifers is a priority problem in many countries. Groundwater is a major, often over-exploited water resource within canal irrigation systems; without it, current cropping intensities would not be possible: it is therefore a priority issue for normative work. Currently, most activities are field based.

366. In Asia, shallow groundwater is taken into account in irrigation as well as during modernisation. FAO has developed a partnership on groundwater in the lower Mekong basin with IUCN, IWMI, ADB, the Mekong River Commission and Finland and there are plans for work in this area with UN-ESCAP.

367. The major groundwater project has been in the Andhra Pradesh State of India, which has become a success story. The APFAMGS project was implemented through a consortium of NGOs, based on the operational unit of 63 hydrological units. The project equipped women and men farmers with knowledge and skills that changed their behaviour regarding the use and management of groundwater resources. This was achieved through a series of concepts and approaches that included demand side groundwater management, farmer water schools founded on the same concept as farmer field schools, and participatory hydrological monitoring by committees and crop water budgeting. The results of the project were:

- better understanding of groundwater by farmers;
- self-regulatory process resulting in positive changes in the groundwater balance;
- adoption of water saving cropping practices and controlled groundwater pumping; and
- wealth creation for the farmers.

368. The APFAMGS project concept has since been adopted by others including the WB in their community tank project in Andhra Pradesh, the Australian Centre for International Agricultural Research for their projects in India and Australia, and the Australian Commonwealth Scientific and Industrial Research Organisation project on climate change adaptation.

369. NRLW noted that requests from Member Countries on ground water are usually submitted when a problem has already developed. Examples ranged from overdraft/mining the resource, as in Morocco where tapping the groundwater resource is becoming a problem, to water quality deterioration and intrusion of mobile pesticides and fertilisers in Senegal, on to arsenic in Nepal and Bangladesh, and fluoride in East Africa. Among positive responses by FAO, the work in Bangladesh on arsenic is highly reputed (see Section 6.19).

370. In Mali, FAO's projects make use of groundwater by providing wells for small-scale horticulture. Extraction tends to be limited by the low level of technology available. On the other hand, management of bas-fonds<sup>63</sup> which is widely supported by FAO SPFS contributes to increased infiltration and recharge of the water table.

371. In Morocco, through the Spanish funded project in Doukkala, a baseline survey of groundwater levels was done before implementation of the drip system, to monitor impacts on the water table through the combined effect of reduced flood irrigation and an expected increased in water use from wells through drip irrigation.

---

<sup>63</sup> Valley bottom wetlands

372. In KSA groundwater irrigation is widespread and it is estimated that large farms are using about 25 billion m<sup>3</sup> per year of groundwater. These pumped aquifers are only recharging at about 1 to 5% of the pumping rate, thus this is not a sustainable use. FAO was asked to help through undertaking both on-farm and off-farm research<sup>64</sup>. The on-farm research aims at improving irrigation techniques and reducing irrigation water consumption, crop selection, irrigation scheduling at field level, designing and operating irrigation systems, and awareness to farmers. These are fundamental approaches aimed at the farm level whose impacts should lead to a marginal reduction in irrigation water use and help the overall water picture in KSA. The approach taken, i.e. changing irrigation technology and evaluating potential ET, will do little if anything to address the problem. Admittedly, the necessary message that irrigated areas must reduce substantially if over-abstraction is to be controlled, is politically difficult to deliver.

373. In the context of grape farming in the Yundtagi region of Turkey where an FAO TCP is being implemented, there is concern about the use of groundwater for irrigation<sup>65</sup>. The provincial authorities believe there is sufficient groundwater for irrigation purposes but FAO questioned the wisdom of installing tube wells for irrigating the grape farms. This situation has not been resolved.

374. In Jiamakhou Irrigation District (China) government is using price differentials between the price of groundwater and surface water to encourage farmers to shift from using groundwater to surface water for irrigation. This is an effort to conserve groundwater for future generations as well as acting as a buffer for drought periods.

375. In summary, FAO is not substantially involved in groundwater work due to lack of human resources, in spite of the demand by Member Countries for groundwater knowledge and services. On-going collaboration and synergies should be further developed in this area, for example with the World Bank on its GW-MATE<sup>66</sup>. The success story in Andhra Pradesh, which is being replicated by others, as well as the work in Bangladesh on arsenic are a proof of **the capacity and potential of 'Water at FAO' to implement good quality work, which has significant impact**. However, groundwater over-use is a very important global water issue, in some places probably more important than global warming as a future threat to food security. FAO should urgently assign resources to this area of work: a specific recommendation on human resources for groundwater management is contained in Recommendation 30 in Section 11.1, along with others on staffing. Suggestion 7 below was also formulated, related to specific needs identified during the Evaluation's work.

**Suggestion 7. To NRL**

*NRL should review products such as the World Bank's GW-MATE and identify whether complementary or new and normative products are required, including i) Guidelines on groundwater recharging through agricultural practices, and ii) Protecting and anticipating groundwater quality and overdraft problems.*

## **6.11 Drainage and soil salinity**

376. FAO contends that data on drainage problems worldwide is of poor quality, as indicated by the disparity of values quoted by various authorities or sources, i.e. 20–30 million ha. Drainage is important as it is closely associated with irrigation production and hence food security. The question that emerges is, if irrigation is so important for food production and large amounts of land go out of commission because of drainage problems, then why not rehabilitate these lands? Historically, as areas with drainage problems have generally benefited from irrigation investments, it has been difficult to justify additional investment to rehabilitate them while other areas remained undeveloped.

377. In this context, FAO devoted some efforts in recent years to update data on sub-surface drainage and areas affected by salinisation. Further work by FAO has shown that the returns on investment in drainage are worthwhile. **Normative work such as the Irrigation and Drainage papers #60-62 and the associated computer models on CDs, are well regarded and used extensively** in the

<sup>64</sup> See Annex 8, Evaluation of UTF projects in KSA.

<sup>65</sup> See Annex 7, Evaluation of TCP projects

<sup>66</sup> GW-MATE: Groundwater Management Advisory Team

field programme in several countries, including Argentina, Cuba, Egypt, India, Iran, Pakistan, Mexico and Myanmar. Results from field work have also fed back into normative work, for example inputs from work in Egypt into Paper #61.

378. Drainage and reclamation do not appear to be adequately covered in the Asia and Pacific region, even during irrigation system rehabilitation and modernisation, although they are very important. NRLW/RAP has no competences in drainage and hoped that NRLW/HQ, where the expertise is based, would take it up. This was precluded due to the recurrent problem of over-stretched human resources. As the region becomes modernised, there is a need for drainage indicators but regrettably these are non-existent. Neither is drainage included in MASSCOTE due to the erroneous assumption that drainage would not be problematic in the modernisation of irrigation in semi-arid regions. Drainage assessments are being included in the recently developed Rapid Appraisal Procedures.

379. Salinity is a problem in irrigated agriculture in KSA because of the dominance of groundwater use and the high evaporation rates. FAO and Al Hassa Irrigation and Drainage Authority (HIDA) are involved in salinity related work<sup>67</sup>: in Al Hassa oasis it is estimated that 10-15% of the cultivated lands are affected by salinity problems because of i) use of groundwater with moderate to high Total Dissolved Solids (TDS) values, ii) accumulation of salts after irrigation because of high temperatures and hence high evaporation, iii) areas with poor drainage and high water tables, hence the use of recycled agricultural drainage water. Through UTF funds, HIDA and FAO organised a short training course in November 2008 on "Sustainable Salinity Management on irrigated date palm orchards" for HIDA staff, King Faisal University staff and officers from the Palm & Date Research Centre, engaging the services of a world renowned international expert in soil and salinity.

380. Constraints in human resources to work on all issues call for FAO to prioritise and follow through on these prioritisations, and also ensure continuity. NRLW commitments to replace the recently retired drainage specialist soon are appropriate, given the importance of the subject and the need to ensure continuity in this area of work.

381. **FAO work in drainage is crucial and so far seems to have been done efficiently through partnerships in various countries.** The tools produced are relevant and are finding application in drainage in many countries. **The Evaluation endorses continuous commitment by FAO to this area of work, given its importance for the success of any irrigation development.**

## **6.12 International Programme for Technology and Research in Irrigation and Drainage**

382. Originally an initiative of the Congress of the International Commission for Irrigation and Drainage (ICID) in the late 1980s, the International Programme for Technology and Research in Irrigation and Drainage (IPTRID) started in 1990 to promote application of research results and new research in developing countries on technology for Irrigation and Drainage<sup>68</sup>. In mid-1998, the IPTRID Secretariat moved from the World Bank to FAO, with continuing core financial support from the World Bank. IPTRID remained closely connected with ICID, holding concurrent annual meetings.

383. Association between FAO and IPTRID has continued until 2009, through a series of Memorandums of Understanding (MoU). However, the period since 2004 was dominated by variable levels of funding, threats of closure, reviews, repeated attempts at "renewal", difficult relationships with FAO and successively revised strategic frameworks.

384. IPTRID's purpose set for the period 2006-2008 was to "*enhance uptake of research, exchange of technology and management innovations in irrigation and drainage in targeted (developing) countries in Africa and Asia*". Many outputs have been produced, of acceptable quality individually. However, they lack critical mass or direction, and do not reach farmer households.

385. The Evaluation's assessment is that NRLW has been both the host and a financier of IPTRID, but has not always sustained an easy relationship with it, unsurprising during times of declining resources. Continual redefinition of IPTRID's strategy has further disrupted the Programme's activities.

<sup>67</sup> See Annex 8, Evaluation of UTF projects in KSA

<sup>68</sup> A more in-depth analysis of IPTRID is in Annex 9

386. The Evaluation observes that despite some renewed donor interest, the current trajectory will result in IPTRID's quiet disappearance when the terms of the last two staff expire in late 2009. However, the Evaluation has found that **the original objective for IPTRID, namely the dissemination of and support for technology-related research is still relevant** and that no alternative provider has stepped in as IPTRID's activities in this area have declined. Thus, if IPTRID will disappear, the need for its services will remain unmet.

387. IPTRID institutional set-up means that FAO can only decide about its own role in relation to IPTRID, whereas any wider decision will have to be taken by the IPTRID governance structure. The availability of reliable and substantial multi-year funding for the Programme will be a major factor influencing FAO's capacity to run IPTRID. However, the Evaluation considers that the capacity development aspects of IPTRID's mandate should be maintained in FAO, even in the absence of Extra-budgetary resources allocated to the Programme, as formulated in Recommendation 14 below.

**Recommendation 14) To NRL**

**If reliable and substantial multi-year external support is available, NRL should continue hosting IPTRID within a clearly defined framework of collaboration, with active future participation of the Programme in the proposed FAO Water Platform. Otherwise, NRL should absorb aspects of IPTRID's mandate and role on capacity development within its own Regular Programme of Work and Budget.**

**6.13 Non-conventional water use, including water quality, waste water re-use, desalinated water and urban/peri-urban water use**

388. Currently, this area is supported by FAO staff at HQ and in the regions, from NRLW and other units. The key normative output in the review period was the WHO/UNEP/FAO Wastewater use guideline documents, which are **likely to have significant impact**, as they constitute globally relevant, internationally-endorsed standards. Indeed, this type of normative output is exactly in line with what is expected within the new IFA framework.

389. A number of country and regional activities have been initiated recently: Spanish government projects on hydroponics in Honduras with UNDP; re-use of drainage water in the Nile delta with the Egyptian National Water Resources Institute; and other activities in Angola, Rwanda and Senegal capital cities.

390. Notably, through RP funds, a project involving collaboration with WHO, IWMI, IDRC and two universities in Ghana applied the Wastewater Guidelines to develop a module on risk management with regional application in West Africa following the Farmer Field School approach. In Morocco, work was carried out in collaboration with the national institution for potable water (Office National de l'Eau Potable, ONEP) with technical inputs on waste water re-use and desalination. Several activities were also underway in Saudi Arabia, including methods for use of wastewater for crop irrigation, which included technical inputs from FAO and other regional partners and most importantly, capacity building to sustain activities after FAO projects are completed.

391. Thus, this is an area where FAO has a strong role: NRLW staff have been **highly effective in networking with partners** to build capacity both in Latin America and Africa. Linkages with other initiatives in peri-urban agriculture through EB initiatives and reportedly Telefood, have yielded strong synergies between for example, the hydroponics and wastewater/water quality sectors. In the pipeline there are EB funded initiatives in Congo and the Guatemala City Project on urban discharges. The ideal partners for such work are municipalities through multi-sector platforms; FAO's prime partnership with Ministries of Agriculture has presented a barrier so far.

392. The environmental and human health spin-offs from this area are clearly positive, and directly beneficial to the poorest of the poor. At the same time, issues of food safety arising from these new practices need to be carefully managed to avoid public health concerns, and this requires even closer collaboration across UN-Water.

393. Gender is well mainstreamed in this activity area, with excellent, balanced coverage in the Wastewater Guidelines reports. Similarly, the **relevance of this area to the poor and marginalized is self-evident**, and again this is reflected in both normative outputs and in the projects evaluated, particularly in the context of food security.

394. In an increasingly urbanized developing world, urban and peri-urban food production will require major rethinking of traditional agricultural practices to achieve the food requirements of a growing population. FAO has a clear role to play in this 'urban green revolution', and NRLW staff is at the forefront of this challenge. However, staff working in this area is also overloaded with work: the Evaluation considers that this is an area wherein FAO needs to show commitment by hiring new staff to meet the expanding needs of this program, which has important implications for sanitation, health and food security. Key skills should not be lost through staff attrition.

395. **The Evaluation fully endorses continuous commitment to this area of work**; a specific recommendation on human resources for waste water and related topics is contained in Recommendation 30 in Section 11.1, along with others on staffing.

## **6.14 Conclusions**

396. Work by NRLW on irrigation systems has been innovative, relevant and effective, in particular through the development of MASSCOTE in the area of rehabilitation and modernization of large scale schemes. The wide level of uptake in Asia by governments and IFIs is promising also for other regions of the world, where diffusion has started recently. Besides suggesting MASSCOTE's introduction in West Africa, the Evaluation also recommended updating FAO's normative products for modernisation and introduction of the design-for-management concept.

397. The traditional work in drainage has continued to be effective and highly relevant. Equally, work in the area of waste-water use and water quality, assessed to be relevant and of good quality, has expanded to give a leading role to the Organization. All these sectors should be maintained as key areas of work within 'Water at FAO'.

398. Outputs and results in the areas of groundwater and water harvesting have not met the demand in terms of quantity, but they have been relevant and effective. The successful model of the APFAMGS project in Andhra Pradesh, India, is being replicated in the same country and possibly elsewhere. Request for FAO's inputs on water harvesting is high and FAO should make it a priority where appropriate.

399. IPTRID has reached a point of silent disappearance, although its objective and mandate is still highly relevant.

400. All these areas should be maintained as core mandate of Water at FAO and should be strengthened with additional human resources. Recommendations have been formulated accordingly.

## C. Water and environmental issues

### 6.15 *Environmental services*

401. Work on Environmental Services was driven by the State of Food and Agriculture (SOFA) 2007, which focused on Payment for Environmental Services (PES) led by ESA<sup>69</sup> through Discussion Paper No. 3. This work was preceded by an online Land and Water dialogue, engaging among others ICIMOD<sup>70</sup> and OECD. The approach is not limited to water and includes, among other environmental services, carbon sequestration, tourism, biodiversity and watershed. 'Payment' is interpreted widely to embrace incentives as well as financial remuneration. Two other principal products have been the FAO-Netherlands Conference on Water<sup>71</sup>, from which PES emerged as a potential economic driver, raising awareness of governments of available instruments together with support for the Guidelines for Wetlands Agriculture Interactions (GAWI, see Section 6.17), and the Millennium Ecosystem Assessment supported by an external consultant.

402. Environmental economists have seen a lot of potential in linking watershed management to downstream benefits. While not closing the door to dialogue, NRLW has different views, which lie in difficulties around evidence of impact. NRLW adopted a cautious approach to work on watershed improvements that promises 'clean water, no floods', particularly in light of the evidence that some of the generalised water services advocated as the basis for payment are not performed in reality, by forests or by wetlands. Furthermore, any benefits of services performed locally, in situations where these may exist, would prove too difficult to quantify at the basin scales at which payments might be sourced. While there have been major differences in views between the Forestry Department and NRLW, they maintain constant and strong interactions.

403. FAO's capacity to assess production based on agro-ecological zones has been eroded over time, undermining the opportunity to provide a vital integrating tool for climate change analysis and for rigorous contributions to IPCC<sup>72</sup> deliberations. As a consequence, most countries are now struggling to project local agricultural impacts by interpreting low resolution regional climate predictions. There is little evidence that field interventions by 'Water at FAO' are strategically targeted at Climate Change (CC) or are proving to be a useful vehicle for incorporating NRLW approaches to sustainability and CC.

404. NRLW has engaged more generally in Natural Resources issues. Valuation methods for environmental services and water resources have been prepared; legal contributions to issues related to productive use of water and health were successful. NRLW and Fisheries officers in RAP are developing a common methodology (MASSIF) to integrate sectoral issues. The Unit has tended to focus resource assessments on river flow, rather than on water availability or hydrological processes 'between rain and rivers', where the majority of the world's farmers live.

405. NRLW receives many queries from MCs on reducing sediment loads into dams. As with local environmental management in general, FAO's position, based on existing analysis is that how farmers use land has little if any demonstrable accumulated impact downstream in large river basin.

### 6.16 *Forests and Water and Watershed management*

406. As mentioned briefly above, FAO's work on water-related issues within forest hydrology, mountain ecosystems, Water and Forest and Watershed Management (WSM) and related upstream/downstream linkages, is within the direct responsibility of the Forest Conservation Service (FOMC) within the Forest Management Division (FOM). The Programme Entity on Forest and Water (241A7 in 2004/05 and 2KA07 from 2006 onward) was the prime Regular Programme funding source. This was complemented by a small number of TCPs and limited EB funding before 2009.

---

<sup>69</sup> ESA: FAO Agricultural and Development Economics Division

<sup>70</sup> ICIMOD: International Centre for Integrated Mountain Development

<sup>71</sup> The FAO/Netherlands International Conference on Water for Food and Ecosystems, 2005

<sup>72</sup> Intergovernmental Panel on Climate Change

407. The area was seen as a high priority by FAO Committee on Forestry (COFO) since 2003, and was underpinned by Strategic Objective D2, Environments at the greatest risk, in the Strategic Framework 2000-2015. It is interesting to note that D2 was maintained by FAO management in spite of a recommendation by the Evaluation of this Strategic Objective in 2006 to eliminate it. However, it is no longer a specific area in the new Strategic Framework 2010-2019.

408. Growing global attention on Climate Change and water scarcity issues also implies an increasing spot light on WSM. This provides both an opportunity and an increased competition for FAO. Over the past decade, FOMC has considerably readjusted its perceptions and approaches regarding forest and water relationships within the larger framework of WSM and sustainable mountain development. The main output has been FAO's comprehensive global review of WSM financed by The Netherlands and linked to both the 2002 International Year of Mountains and the 2003 International Year of Freshwater. This was also part of the Organization's extended role as task manager for Chapter 13 of Agenda 21.

409. The review process involved 80 institutions and 300 individual experts and culminated in FAO Forestry Paper 150 "The new generation of watershed, management programmes and projects" in 2006. The exercise was carried out in collaboration with several international and regional institutions (EOMF, ICIMOD, REDLAC, ICRAF)<sup>73</sup> and **Paper 150 proved to be a 'best seller'** by FAO standards with more than 3000 copies distributed and a second print in 2009. Five additional normative products<sup>74</sup> also contributed to informing a global audience, with exhaustive coverage on the state-of-the-art knowledge related to forest hydrology and watershed management. Their **technical quality was assessed as satisfactory to good**, although the Evaluation saw excessive overlap and absence of clear targeting.

410. Paper 150 embodies FAO's current institutional standards and views regarding the state of the art in Watershed Management. Additional topics are economic incentive systems, carbon sequestration potential and broader environmental concerns that make investment in watershed management services more viable. WSM implementation in the 1990s had veered strongly towards emphasizing participatory approaches and broad-based rural development thinking. This happened at the cost of extending and emphasizing core technical messages contained under WSM as a discipline, to the extent that WSM was at risk of becoming a 'dead' discipline. Current views on WSM do address the consequences of this past biased thinking and advocate an institutionally collaborative approach.

411. The principal technical WSM message stemming from the wider body of normative products reviewed is that as basin size increases, the correlation between percentage of forest cover, water discharge and siltation rates weakens and eventually disappears. Despite this, the common wisdom about the forest "sponge function" as a universally positive regulator of catchment stream flow has been relegated to the category of myth, but remains deeply embedded in policies and legislations of many countries, with considerable influence on investment choices in such catchments. In terms of impact from land use conversion, consumptive use of forest plantations needs to be carefully considered. While current thinking advocates a more nuanced look at the role of forest cover within WSM, there is a continuing recognition of the many important forest contributions, including biodiversity conservation, a regulatory force in micro-climate conditions, fertility source for mountain agricultural systems and source of multiple economic incomes.

412. Outstanding questions of the new approach are the relative lack of practical guidance on policy and institutional processes. Realistic opportunities and remaining shortcomings for practical valuation of WSM services also deserve more critical scrutiny. Global products have been weak in reflecting key qualifications of country level relevance: this makes the translation of Forest and Water messages to specific local conditions relatively difficult.

413. Better use of staff and consultant time could have been achieved and a more articulated follow-up scenario pursued. As it is, FOMC is overburdened by follow up on a wide range of

---

<sup>73</sup> EOMF: European Observatory of Mountain Forest; REDLAC: Latin American Technical Cooperation Network on Watershed Management (Red Latinoamericana de Cooperación Técnica en Manejo de Cuencas Hidrográficas; ICRAF: World Agroforestry Centre.

<sup>74</sup> Namely Forest and Floods, Drowning in fiction or thriving on facts; Livestock Environment and Development in Watersheds: Policy Note; Floods in Bangladesh; Forest and Water, 229<sup>th</sup> issue of *Unasylva* Vol 58, 2007/4; Watershed Management , Why Invest. See Annex 11, Water Normative Outputs, for further reference.

international processes, project backstopping tasks, all by a single staff member for global subject interaction. Under current staff resources and management conditions, improvement in the HQ situation is not likely. However closer cooperation with FAO embedded Mountain Partnership and Mountain Forum functions, as suggested by FAO staff, could lead to better synergies among human resources. Active advertising for young professionals within the JPO<sup>75</sup> scheme to support FOMC work and priority filling of regional Forestry positions will further help to address human resources constraints.

414. The main policy engagement of the Forest and Water stream of work has been through support to global processes: the nature of interactions in these processes tends **to limit the effectiveness of policy work and its visibility**. Admittedly, contributions to Regional Forest Commissions are an historical creation by FAO and FOMC's involvement with the Working Party on Mountain Watersheds of the European Forestry Commission continues to date. However, the Evaluation calls into question the continuing added value of such bi-annual exchanges given the many communication and exchange opportunities, especially those within the European Union. Furthermore, FAO's participation in broader UN initiatives with a wider audience, including its contribution to relevant platforms such as the UN Forum on Forests (UNFF), the Collaborative Partnership on Forest (CPF) and the United Nations Framework Convention on Climate Change (UNFCCC) do provide ample opportunity to extend messages of the same nature to the same partners. The Evaluation sees an urgent need for FOMC to become selective and optimally effective in the choice of its communication channels, at HQ and regional level.

415. Climate change related issues are among the important drivers for continuing convergence of forest and water management disciplines: therefore, strong FAO engagement with REDD<sup>76</sup> offers a pathway for plausible increase of forestry prominence in the climate change mitigation agenda. This will include a potential growth market for financing of watershed services. In valuing such services it is important to shift away from classical upstream-downstream relationships and increasingly emphasize payments schemes for in-situ services of forests and alternative land use. Reward for services could be linked to sound landscape management for multiple economic benefits, providing premium services for responsible local water management.

416. **Technical Assistance to Member Countries has had mixed results, both in terms of quantity and quality**. Knowledge transfer has been impeded by limited interaction and trust-building opportunities, and is negatively impacted by unfilled staff positions. A typical example was the absence of a Forestry Officer and Policy Officer in SRO for Central Asia. In-country FAO relations suffer frequently from a lack of sufficiently diversified institutional contacts also for the Forest sector, for example in Turkey. FAO Representations can seldom avail of technically qualified national programme staff and in-country subject specialists who can act in an authoritative manner on behalf of FAO are also in short supply.

417. Programmes and projects funded through EB resources have been in steady decline in this area and few strong partnership opportunities have emerged. Thus the pre-dominant thrust of field programme initiatives in forest and water have relied on TCPs. Although the Evaluation acknowledges that only one Regular Programme officer was coordinating and running the programme during the period under evaluation, the Forest and Water project portfolio has not been large in absolute terms: when including mountain development projects, for which water was not a central objective, the total number of projects in the period under evaluation is 12 initiatives including 6 TCPs, 2 emergency EB funded initiatives and a recently started GEF/UNEP/FAO project. The few successes can largely be attributed to judicious selection of consultants, with strong individual impact, rather than well tailored programme and project design.

418. It is important to note as well that the field programme is an important demonstration and pilot opportunity for FAO for modern insights regarding WSM. The Evaluation, however, concludes that only a weak synergy existed in recent years between the developed normative products and their application in the field programme. Moreover, the review of previous programme and project evaluations,

---

<sup>75</sup> JPO: Junior Professional Officer

<sup>76</sup> REDD: Reducing Emissions from Deforestation and (Forest) Degradation

and the auto evaluation of the Programme entity AE2KA07 Forest and Water, provided sufficient insight on common field programme issues under this entity.

419. A frequently recurring issue is the **limited relevance, effectiveness and impact from TCP projects** in this area of work, and the TCP in Turkey<sup>77</sup> is one such example. In this project, there was a fundamental disconnect between the scale of policy ambitions and the allotted financial, human and time resources to reach intended objectives. By their nature, forest and water interactions, watershed management and any associated impact on policy involve long term processes. However, TCPs do not have the resources and time implementation scale to support such processes. For example, design shortcomings, which are not infrequent, cannot be overcome during project life. Further, pure grant based input supply, in circumstances where this is neither required nor desirable undercuts replication potential and economic sustainability. Even in the case of the successful TCP piloting participatory watershed management in upland areas in Tajikistan<sup>78</sup>, in spite of good results and impact at the local level, there was no up-scaling of the model, nor influence on policy or other donors' similar initiatives by the time of the FAO country evaluation in 2009, almost four years after project completion.

420. The single most important field programme initiative is the recently started Fouta Djallon Highlands Integrated Natural Resources Management Project, funded by the Global Environmental Facility (GEF) through UNEP, with FAO as executing agency in cooperation with several other UN and CGIAR organizations. The Gambia, Niger and Senegal rivers all originate from this plateau: this large scale 10-year regional project involves the eight countries with territory on the Highlands or depending on rivers rising there. The programme is a follow-up to an African Union programme and has the objective of conserving bio-diversity and maintaining the very important function of these highlands as a major source of regional water supply. The project offers a considerable opportunity to bring into practice FAO's views on basin and forestry-water based natural resource conservation management. Cross-departmental and external partnering opportunities and effective placement of FAO's standard normative products are other real opportunities.

421. Another potential opportunity will be the Spanish funded initiative in 2009 that aims at applying the concepts embedded in the FAO Forestry Paper 150 in three countries, namely Ecuador, Mauritania and Morocco. A first phase exclusively for project formulation and design was coming to a close at the time of writing this report and should be followed by a multi-year implementation phase. The new phase, "Combating land degradation and desertification and supporting sustainable development in selected watersheds", should be implemented over 2 years, at a total project cost of USD 3 million. A subsequent expansion phase of USD 6 million may follow. The outline of the project reads as fairly classical, participatory, erosion control, social forestry type pilot project. The most concrete targets for the initial phase are an integrated treated project area of at least 200 hectares; the initial project outline does not devote substantial attention on issues of policy and institutional integration or collaborative management mechanisms. To gain optimal benefit from the combined forecasted project investments it will be important to look closely at the national integration aspects: means should be explored to tie in project initiatives with national programme efforts, to concentrate project inputs on providing added value to larger scale operations. The use of FAO add-on expertise and international networks would be more beneficial to national policy and strategy, than a 200 ha pilot or a slightly up-scaled version thereof. The project should draw on national or regional expertise and aim as well to draw lessons for general diffusion through one or more normative products.

422. Last, a five-year regional initiative for Asia and the Pacific is under joint preparation by FAO Forestry in HQ and RAP and NRLW/RAP. The title will be "Support to the implementation of the new generation of watershed management programmes and projects", and ICIMOD was asked through a letter of Agreement, to organize a regional workshop in early 2010 to discuss and validate the trust fund project proposal. Tentative budget is in the order of USD 13 million, but donors had not yet been identified by the end of 2009.

---

<sup>77</sup> TCP/TUR/3102, Development of public participation and improvement of socio-economic prosperity in mountain communities; see Annex 7

<sup>78</sup> TCP/TAJ/2903: Participatory Integrated Watershed Management in Upland Areas

423. FOMC has plans for further structured follow-up in collaboration with past contributing institutions and partners involved in the WSM review process. This would be most effective if pursued with the goal to explore concrete options for action, aiming to link policy assistance to influencing of large scale investments oriented to country-specific situations. Skilful partnership-based operations are required to make optimal use of FAO's limited, but technically competent capacity in the field and to maintain and enhance FAO's strategic credibility. It requires a more effective promotion of FAO's messages, by linking WSM and the vision for sustainable mountain development to practical applications for river basin management.

424. The Fouta Djallon project is a key opportunity to advance this working approach. Human resources capacity is however teetering on the edge and plan implementation had yet to come to fruition by the time of this Evaluation. In practical terms adequate pre-positioning of technical and administrative backstopping will be crucial to satisfactory project performance, and may have to be partly financed out of project management fees. A concrete large scale initiative such as the Fouta Djallon offers the opportunity to maximize internal cooperation between FOMC and NRLW. Partnership building and practical re-orientation of FAO-supported policy platforms will be one key to the success of a re-directed implementation approach.

425. The Evaluation considers that the example of the Fouta Djallon project could be a good case for testing and strengthening in-house collaboration and coordination, and Recommendation 15 should be a further push in this direction.

**Recommendation 15) To 'Water at FAO'**

**'Water at FAO' should engage in the Fouta Djallon Project to make it an example of organizational achievement through intensive collaboration across departments, both at Headquarters and in decentralized units.**

426. The two 4-year IFAs, namely "Strengthening the base for sustainable forest management" (IFA-SFM) and "Coping with scarcity of water and land resources" (IFA-WALS), are of most immediate relevance to the forest and water relationship. From an organizational perspective, WSM should preferably become more closely associated with FAO's overall work on land and water, so as to allow more effective use of its normative outputs by MCs and practical application by end users. All means for policy assistance and transfer of normative products can be exploited, but a viable field programme component is crucial to this effort. Especially work on products for WSM valuation and economic and financial transaction mechanisms are important if the Organization's wider experience has to become increasingly relevant to Member Countries and international institutions.

427. In conclusion, despite limited progress to date there appears to be considerable opportunity for FAO to contribute to operational mechanisms of WSM service valuation. Classical up-stream down-stream concepts will give way to more in situ-landscape based services. REDD is of importance in this context. Also, normative products which are meaningful as standards for monitoring WSM services and specifically water resource availability and early warning systems at localized levels will be increasingly in demand and provide an additional niche for FAO contributions.

428. Based on the analysis of the gaps and strengths in FOMC on Forest and Water and WSM issues, the Evaluation has formulated Recommendation 16 below, to guide FOMC and 'Water at FAO' in better use of available resources. A specific recommendation on human resources on WSM is contained in Recommendation 30 in Section 11.1, along with others on staffing. In addition, the proposal on FAO Water Platform formulated in Section 12.2 of this report includes FOMC as one of the key contributing partners.

**Recommendation 16) To FOMC**

**FOMC should contribute to 'Water at FAO' by:**  
**a) reducing existing institutional commitments by matching resources to realistic time frames;**  
**b) giving particular attention to 'scalability' of interventions when conceptualising and designing projects, including pilot initiatives;**

**c) invigorating advocacy and policy contributions through UN platforms;  
d) seeking and developing active partnership opportunities, and  
e) developing operationally-relevant WSM related normative products.**

### **6.17**     *Agriculture and wetlands interactions*

429. Many wetlands are marginal habitats which are vulnerable to degradation when agriculture is practiced nearby. Also, food production in wetlands is undervalued and often ignored in economic cost-benefit analyses of irrigation schemes. The interface between agriculture and wetlands is indeed a hotly contested topic: agriculture consumes water and emits pollutants which can impact or even permanently eliminate wetland habitats. Water allocated to agriculture, which is a consumptive user of water, is often not returned to the ecosystem, and when and if it is returned, often comes in a highly degraded state with added pesticides, fertilizers, salinity and sediments. As many wetlands are protected through the Ramsar Convention, due to their role in sustaining biodiversity, much concern has been voiced that increased use of water for agricultural irrigation is achieved through degradation of undervalued ecosystem goods and services which sustain food items of high nutritional value. Fisheries, small-scale aquaculture and food harvesting in wetlands are always key elements of food security for the poorest of the poor, and for many others in times of crises, for example during droughts.

430. **'Water at FAO' has shown leadership in this area** within the UN by partnering with Wageningen University and Ramsar, and in collaboration with IWMI and wetlands NGOs such as Wetland Action and Wetlands International. Support to this work was also provided through the FNPP, as a follow-up to the FAO-Netherlands Water Conference. The aim was to produce guidelines for agricultural water use and emissions control and general land-use planning in relation to wetlands, and the major product so far is a scoping document for the GAWI.

431. NRLW and FIMA staff have also been engaged with the Ramsar Scientific and Technical Review Panel on a number of agriculture-wetlands cross-cutting issues, including water quality and biofuel, through a Ramsar Thematic Work Area. An upcoming initiative is a GEF full/medium sized proposal for Securing Biodiversity Conservation and Sustainable Use of Lake Dongting in China, a Ramsar Site. The proposal has already been endorsed by the Government of China.

432. While NRLW HQ staff have provided key support to this activity, staff shortages, including the departure of the key GAWI project contact within FAO at an early stage, and a funding hiatus have limited the finalization of this process into a single scoping report. The Evaluation considers there is a strong likelihood that funds may never appear if FAO does not urgently re-establish commitment to this area. Other partner organisations, Ramsar in particular, continue to promote the GAWI initiative as a win-win for agriculture and conservation, with important spin-offs in relation to rural livelihoods, gender and social inclusion issues with potential global application.

433. Gender issues are well covered in the GAWI scoping document. Moreover, the poor and disadvantaged are often driven to live in marginal habitats such as wetlands, and to eke out a fragile existence often in conflict with other wetlands stakeholders, notably conservation groups and agricultural water managers.

434. As the Food and Agriculture Organization of the United Nations, FAO needs to be constantly mindful of the role of water resources in sustaining other forms of aquatic food resource. Replacing traditional forms of food security with high production agriculture comes with significant, unquantified risks of reducing access to food of the poorest of the poor. The GAWI process is the first step to make the consequences of impact by agriculture on wetlands explicit, and to link livelihoods, conservation and agriculture together within the same framework; it encourages conservation bodies to return indigenous people to their rightful place within traditionally-managed ecosystems by valuing their ability to sustain ecosystem character and increase local buy-in for future conservation activities. Its importance is therefore very high and the Evaluation has formulated Recommendation 17 below.

**Recommendation 17) To 'Water at FAO'**

**'Water at FAO' is strongly urged to take immediate action to sustain the process for the Guidelines on Agriculture and Wetlands Integration, through the mechanism of the Ramsar Thematic Work Area, and to seek funding for this activity.**

**6.18 Pollution from agriculture, including pesticides, fertilizers and heavy metals on ecosystems**

435. **FAO has limited activity in this area** through NRLW, and to a lesser extent through AGPP, with linkages to other UN-Water partners such as UNEP and WHO, and donor agencies, namely DfID. One activity of significance is the GEF-funded project on the development of decision-support tools and non-point pollution livestock waste management focused on East Asia (China, Thailand, Vietnam) through RAP, discussed in Section 6.6 above. A workshop was also planned in 2008/09 by NRLW in China, on water quality management.

436. Another initiative began in 2009 in West Africa, through a GEF-funded AGPP project on pesticide mitigation.

437. In recent consultations on a FIMA-NRLW aquaculture-irrigation project, pesticide contamination in irrigation channels emerged as a major obstacle to progress in this new area of technical development. Pesticide emissions and water contamination from agrochemicals were also often identified in country visits as an area where FAO should be focusing more attention by providing technical input and guidelines. Clearly, as a promoter of agriculture, FAO has an important supporting role to play in helping to mitigate impacts of agriculture on the wider environment. However, this is an issue which is more appropriately and credibly led by other partners in UN-Water, for example UNEP.

438. Given limited resources within NRLW, this area should be developed in close collaboration with AGPP on pesticide inputs and mitigation measures, with FIMA on aquatic exposure and affected resource base, and with AGNS through its program for the provision of scientific advice on food safety to Codex and Member Countries. The new GEF-funded project on pesticide mitigation in West Africa should be linked to ongoing activities within the same countries on aquaculture irrigation by NRLW and FIMA, coordinated through the regional office which should be involved to some extent in its implementation. Concerns voiced in Malawi regarding water degradation in irrigation channels could also be linked to this work.

439. The Evaluation formulated Recommendation 23 on partnerships, also including this area of work, in Section 9. A specific recommendation on human resources on agricultural pollution in AGPP is contained in Recommendation 30 in Section 11.1, along with others on staffing.

440. In consideration of the shortage of human resources in 'Water at FAO', the Evaluation was wary of adding extra tasks to already full work plans. Water pollution from agriculture is however an area of relevance to FAO's mandate and where MCs have expectations and clear needs. Therefore, only Suggestion 8 has been formulated below, should the opportunity arise within UN-Water for any type of work in this area.

**Suggestion 8. To 'Water at FAO'**

*Pollution from agriculture is an area of work that would benefit from coordinated efforts by several units in FAO, including AGNS, AGPP, FIMA and NRLW, in support of activities within UN-Water, led for example by UNEP.*

## 6.19 *Water and food safety*

441. This is an area where **FAO has an excellent reputation and a leading role:** collaboration is successful within the Organization between NRLW and AGNS, as well as across UN-Water with WHO, under the umbrella of the joint FAO/WHO Program for the Provision of Scientific Advice on Food Safety to Codex and Member Countries.

442. Key normative outputs included significant studies on arsenic pollution in groundwater as discussed earlier, notably in Bangladesh, which were clearly aimed at overcoming an obstacle to agricultural development through irrigation. Studies focused on the impacts of growing rice using contaminated water, and tested possible solutions, with the potential for scaling up towards field production. There were a number of other activities led by NRLW, including mining contamination issues in Mongolia and Macedonia and lake water quality issues in China, which made significant contributions to this area.

443. All FAO normative outputs on arsenic contamination, all of which were cited in a recent authoritative review on the subject and praised, and pathogen issues in food are to be **highly commended in terms of their scientific value and relevance for sustainable agricultural development.** Future areas being developed include issues of nano-materials in food, and exposure to contaminants via peri-urban agriculture<sup>79</sup>. While arsenic is clearly an issue with direct relevance for poor farmers growing paddy in marginal areas in Bangladesh, this is less apparent for work on pathogen levels in export crops or nano-materials: in these cases, funding by donors often involves an element of self-interest, with limited evidence that knowledge gained will be targeting food security/food poverty issues facing the poorer sectors of society.

444. Admittedly, food safety is an issue of great economic importance, as it is linked both to the health and livelihoods of people within their own countries, and also to the economic value of their export crops. FAO has responsibility in both areas, and must therefore balance the self-interest of donor countries seeking to protect their own consumers, which may of course yield economic benefits to the recipient countries, but will necessarily divert funds focused on maintaining healthy and secure diets for the poor, which is a core component of its mandate. The current personnel shortages in this area within AGNS and NRLW are jeopardizing FAO's ability to deliver on this key area of responsibility. If further staff losses were to take place, this situation will be exacerbated.

445. Food safety is currently jeopardized by agricultural pollution, which may indeed be self-pollution in many cases, where the perpetrators of a problem themselves may also benefit from its solution. Environmental sustainability of agricultural production has food safety at its core and FAO must continue to set the agenda in this key area of water management, in close collaboration with other partners in UN-Water, notably WHO.

446. **The Evaluation fully endorses continuous commitment to this area of work.** It also formulated a recommendation on partnership in this area, along with others, later in the report. A specific recommendation on human resources on water within food safety is contained in Recommendation 30 in Section 11.1, along with others on staffing; also, the proposal on FAO Water Platform formulated in Section 12.2 of this report includes AGNS as one of the key contributing partners.

## 6.20 *Conclusions*

447. Under the area of water and environmental issues, important work was conducted on Forest and Water and Watershed Management, revising previous experiences and developing consensus around a new paradigm underpinning watershed management at the global level. Dispersion over too many fronts and weaknesses in the field programme appear as the main issues to be tackled in future.

448. All other areas under this heading are also important: work conducted ranges from excellent to good, with lack of resources being the major obstacle to wider effectiveness. The Organization should ensure that adequate priority is given to water in the food safety context and to agriculture and wetlands

---

<sup>79</sup> On this, see also Section 6.13 above on non-conventional water use

interactions. If possible, also work on pollution from agriculture should be pursued. Recommendations have been formulated accordingly.

## 7 Information, knowledge and capacity development<sup>80</sup>

### 7.1 'Water at FAO' information and knowledge products

449. FAO is globally associated with publications and information in the agricultural sector, including fisheries and forestry, in particular on statistics and technical documents: FAO's normative products, including reports, manuals and models, are acknowledged worldwide. This was the benchmark for the Evaluation in its assessment of the work by 'Water at FAO' on information and knowledge products.

450. The Evaluation found **good evidence that also in the water sector, FAO is recognised as repository of knowledge**. Products such as AQUASTAT, FAOLEX and a number of FAO Irrigation and Drainage Papers (I&D) are widely known and used, as highlighted by the feedback through the Evaluation questionnaire survey to National and International Institutions and Member Countries. FAO has very good technical publications and deserves full credit and acclaim on this. A number of these are used at Universities for MSc classes and PhD courses in irrigation engineering and the distribution of some of the material in the form of CDs, easy to convert to own use, is also highly valuable.

451. The best known publications tend to be the same across countries, with some adjustments given to regional and national contexts. In the area of "On-farm water use, productivity and efficiency for agricultural production", internationally known products include FAO Irrigation and Drainage Paper 24 and the publication "Handbook on pressurized irrigation techniques" by Phocaides with subsequent updates. Products such as CropWat, FAO I&D Papers 56 and 33 are currently accepted as industry standards. They have developed over time and users are familiar with them, as they are relatively easy to use and compatible with climate data assembled by FAO. In general, field staff can reasonably be expected to apply the models.

452. Other good examples were the "State of Land and Water", the publication on the e-conference about "Water scarcity and Biotechnologies"; "Access to water, pastoral resource management and pastoralists' livelihoods: Lessons learned from water development in selected areas of Eastern Africa" with information on Kenya, Ethiopia and Somalia, as well as "Land and water rights in the Sahel: Tenure challenges of improving access to water for agriculture", both published by the DFID-funded Livelihood Support Programme.

453. The Evaluation notes that the most used written products are older publications, issued well before the period under assessment. A recent key output has been the AquaCrop model which is currently being rolled out; training on AquaCrop through regional workshops for researchers, academics and development staff was on-going in all sub-regions at the time of writing this report and the response has been overwhelming. The model achieved 1600 downloads in the first 6 months of being released. Challenges faced included not being able to respond to queries fast enough because of time and manpower constraints. In the development of AquaCrop many other contributors, including CGIAR centres, provided their time and professional input without charge, indicating their trust that NRLW would produce an output of universal value. The Evaluation considers this to be a good indicator of FAO as a recognized global player, which can take the lead and derive synergy from high quality scientific input from across the globe.

454. In general, FAO's normative material is extremely well presented and well written, but it is also often repetitive, with repeated, generalised reference to scarcity, competition, sustainability, poverty, gender dimensions and so on. A number of documents, while ultimately addressing different themes and

---

<sup>80</sup> Information and evidence in this chapter come from: interviews with FAO staff in HQ, RO/SRO and country offices; with Government and other stakeholders in Member Countries; assessment by the Evaluation team of 150 FAO normative outputs; the questionnaire survey to Member Countries and National and International Institutions; analysis of past evaluation reports.

topics, have much material in common. The Evaluation considers that when the background is well stated elsewhere, the main content should be original and focussed. Critical issues around the political economy of water have lost out to technical issues; admittedly, the latter are dealt with thoroughly.

455. An opinion expressed by FAO staff working in the field was that some outputs coming from HQ lacked relevance to the day-to-day problems they have to face, including answering demands from their national audience. The Evaluation, through its own assessment of the outputs, tends to agree with these statements. While normative outputs by definition do not address specific situations, the lack of feedback from local field experience into related normative products is a matter of concern.

456. Many publications lack close relevance to the Organizational goals and Strategic objectives, beyond introductory generalization. Issues such as gender, social factors and infrastructural components are usually mentioned, although the Evaluation considers that publications would be more relevant and useful if better focused in these areas. Publications such as "Water at a Glance", "Water at FAO", "Water and Food Security Fact Sheet", which are intended for the large public, fulfil their purpose of awareness-raising but it is impossible to assess their actual use and effectiveness.

457. The Evaluation concludes that 'Water at FAO' has far too many products in the form of books and other publications lacking clarity on target audience and relevance to differentiated types of users. Most of these were issued by NRLW. A conclusion by one of the AGL's auto-evaluation in 2006 was that "*publications are the most satisfying service of the division, although there is room for improvement*"<sup>81</sup>: the 'satisfaction' aspect seems to largely have informed NRLW's work during the evaluation period, but the 'room for improvement' was not followed up. For example, there is no single repository in NRL for their publications and re-prints. A strategy underpinning or informing management decisions on what to produce in terms of normative outputs appears highly desirable and necessary.

458. In the absence of time-keeping records, the Evaluation's hypothesis is that with limited human resources available on water, publication effort may have been at the expense of support to FAO's field operations and load-sharing with decentralised officers. At the same time, it appears that 'grey literature' that would fill important gaps of knowledge for experts and practitioners exist in staff's computers in draft format, or in the form of one single printed copy. It is likely that lack of resources to complete a product is the main reason behind this state of affairs, resulting in a total waste of resources. Long lead times in progressing to publication are evident, for example FFS modules in West Africa and other work on RWH have faced long delays.

459. With so many publications, FAO faces major challenges in the quality assurance of its products. Generally, quality of these normative products should be assured through internal checks by specialists and the feedback received from users of a software or publication. However, NRLW does not seek collegiate feedback on its own products within HQ, nor with decentralized officers and final products are not reviewed or screened by the Unit, for example for consistency of messages, triangulation across issues or common positions.

460. Evidence supporting the need for staff with different technical knowledge to work together comes from the Evaluation's review of 46 normative products from the social inclusion and gender perspective. This has shown that generally social issues fare better than gender issues in NRLW publications, briefs and brochures; however, products among these which were developed by NRLW along with other departments in FAO, e.g. the Economic and Social and the Agriculture departments, or with partners such as IWMI and IFAD addressed gender concerns substantively.

461. The most effective quality assurance has been achieved where specialists have engaged with the products, and the feedback received from users has influenced product development, as in the case of AquaCrop software. In such cases, workshops in the regions and sub-regions are part of diffusion, scaling up and developing capacity for local NGOs, managers, government ministries, and university staff.

462. The Evaluation has formulated Recommendation 18 below on the publication strategy.

---

<sup>81</sup> Auto-evaluation report of PE 211A1, A2 and A3, January 2006.

**Recommendation 18) To NRL**

**NRL should prepare a 4-year publication strategy, aimed at scaling-back output to fewer publications and addressing priority gaps. New proposed publications should specify ex-ante the target audience and proposed plan of dissemination.**

## 7.2 AQUASTAT

463. AQUASTAT is FAO's flagship information system in water, by being the overarching Global Information System on Water and Agriculture. In 2008, the Evaluation of FAO's role and capacity in Statistics assessed AQUASTAT as highly relevant and effective among other statistics information systems in FAO.

464. AQUASTAT is constructed around a country-level database of global maps of irrigation, Climate Information Tool, Water Resources Information System, Geographic Information System, Country profiles and Institutions database, to name some of its features. With its interlinked models and datasets, AQUASTAT provides Water at FAO, and NRLW in particular, with a unique capacity to analyse information and to deliver products at the interface of agriculture and water. Work is also on-going on gender-disaggregated indicators and data, discussed in Chapter 8 below.

465. AQUASTAT has enabled the generation of innovative information in support of flagship publications by FAO and other international partners including, among others, the Global Perspective Studies, both 2015-2030 and 2030-2050, the annual FAO-OECD medium-term projections, the Sirte portfolio of investment opportunities and the series of World Water Development Reports. The importance of FAO's capability to aggregate such information is increasingly attracting interest from partners, such as UN-ESCAP who is working with AQUASTAT and improving data collection.

466. This capability has also enabled NRLW to support high-level messages issued by FAO through the Director-General, briefings to FAO representatives and IFIs, and has provided the information base for collaboration with other units within 'Water at FAO', including ESA and FAOSTAT. The AQUASTAT database manager is well-regarded for her constant and timely interactions with users, with an email access system that enables rapid response to queries from users. A regular User Survey provides important feedback as well.

467. AQUASTAT serves a vital role in making available baseline information to Member Countries, partners and other water information-using communities, including academics and professionals, through the FAO website. The Evaluation questionnaire revealed AQUASTAT to be the best or second best known product of FAO among Member Countries and National and International Institutions, and this was confirmed in particular through interviews with organizations working at the supra-national level. Data about access to the AQUASTAT homepage shows a steady increase between 2007 and 2008; the peak level in October 2008 at almost 6,000 hits was reached again in March 2009, but was followed by a decline to 2007 levels. Access to the AQUASTAT query page followed the same trend as the home-page in terms of increase, without showing however any decrease: possibly, 'experienced clients' started skipping the homepage to go directly to the query page. Similar increases are visible for all other pages of the FAO-Water website, including CropWat, publications, promotional/educational material, with a certain periodicity as it is for most websites. AquaCrop showed an increase matched by a decline in CropWat hits. Thus, the trend is very positive and if not on the increase, stabilized at what appears a fairly good level.

468. Complementing the HQ capacity in AQUASTAT, the Evaluation has also encountered some successful issue-specific Decision Support Tools at regional level in fisheries and in livestock, e.g. ALCOM and STRAW<sup>82</sup>, and positive experiences in support to countries' efforts to strengthen their own information systems, for example in Benin, Ethiopia, and Somalia.

---

<sup>82</sup> ALCOM: Aquatic Resource Management for Local Community Development; STRAW: Support for Treatment and Recycling of Animal Waste

469. Maintaining AQUASTAT and improving its functionality is core business of NRLW, and requires sufficient human and financial resources to sustain this highly-reputed system. So far, resources for staff have been leveraged through FAO's Regular Programme budget: the Evaluation sees a need for strengthening these in the light of the importance of AQUASTAT for the water community at large. Unlike FAOSTAT, to which Member Countries formally submit information, AQUASTAT has to recruit national consultants to renew data contributions, as these are not mandatory. Likewise FAOSTAT, however, sometimes this requires some political negotiation over the content of country profiles.

470. In the Asia and Pacific Region, AQUASTAT is taken as a reliable source of data. In Africa, there is a strong request for data in products such as AQUASTAT to be presented according to regional economic and development clusters, e.g. SADC and ECOWAS<sup>83</sup>.

471. There is no doubt that AQUASTAT is one of the flagship products of 'Water at FAO', **highly relevant and widely used. The Evaluation fully endorses continuous commitment to this area of work.** As acknowledged, there is room for improvement and the Evaluation collected various suggestions about strengthening and improving the system. These are reported below in Suggestion 9 for AQUASTAT. A specific recommendation on human resources on water statistics and information systems is contained in Recommendation 30 in Section 11.1, along with others on staffing.

#### ***Suggestion 9. To AQUASTAT***

- Support capacity in Member Countries to improve the flow of data and information, or partnership arrangements, for example with the Water Research Institute in Ghana;
- Formalisation of a regular 5-year update of the full world-level data set;
- Strengthening linkages between the water information in AQUASTAT and production information in other FAO database repositories e.g. FAOSTAT;
- In partnership with UN-Water, standardise/integrate access to additional datasets (e.g. farm information, gender issues, water control systems);
- Pursue improvement of gender disaggregated data.

### ***7.3 FAO as a global repository of knowledge: accessibility and diffusion, demand and use, by external and internal users***

472. If FAO wants to be a Knowledge Organization, besides producing high quality documents and publications, it is also expected to make these easily accessible to its intended users. Therefore, the Evaluation made an attempt at assessing how effective 'Water at FAO' has been at making its products known and available to its clients.

473. One of the benchmarks for assessing the value of FAO's products was the level of demand for these and the Evaluation found that requests are very frequent. For example, the Regional Office for the Near East reportedly receives about 50 requests/year for documents on water resources, mainly on water re-use, drought mitigation, CropWat and FAO Irrigation and Drainage Papers 33 and 56. Although no hard data is available from other NRLW staff, in all countries visited there was **a unanimous request for FAO's documents and publications** in the water sector, from Government, academia and NGOs alike.

474. The Evaluation also heard consistently and repeatedly that access to FAO's products is considered difficult in general, that some useful publications are out of print, that many are not available in French or Arabic, making them inaccessible to large numbers of countries and organizations. Some interesting examples of local translations of NRLW documents exist, for example in Chinese and Turkish, but they tend not to be available through the FAO website. Opportunities exist to make documents available in other FAO languages (e.g. Arabic, Chinese) to increase readership and uptake, with funds from national governments.

---

<sup>83</sup> SADC: Southern Africa Development Community; ECOWAS: Economic Community of West African States

475. A particular important point made at country level was that availability of publications on the Organization's website is not particularly helpful. In spite of good level of access to Internet in a number of countries, this is still not good everywhere. Poor Internet access goes hand in hand with a lack of habit for web-based search, in particular among more senior officers. This is more pronounced in some parts of the world, but the questionnaire survey indicated poor direct knowledge for most web-based products by 'Water at FAO' across all regions<sup>84</sup>. This in spite of the category 'publications' being the best or second-best known products by 'Water at FAO' among other products and services.

476. This is not a criticism of the FAO-Water website, which on the contrary is a lively and growing tool. It came on line in April 2007 and by the end of the year, it had reached 20,000 external hits per month: since then, the number of hits never went below this threshold. Access in 2008 was quite constant, with peaks at or above 30,000 hits in May and October. In 2009, the average number of hits is around 30,000; the peak was reached in March, at the time of the 5th World Water Forum, with 40,000 hits.

477. However, large numbers of potential users still do not consider a website a practical source of documents: the equation 'available on the web-site equals available to intended users' does not hold true, at least not yet in 2009. Although dissemination of documentation on CDs has been a welcomed development, enhancing uptake and adoption, hard copies and detailed information on what exists and is produced are still very frequently requested. There is no doubt that many associated workshops at the regional and sub regional offices are part of diffusion, scaling up and capacity building for local NGOs, managers, government, ministries, and university staff, but they do not reach the critical mass of users in national institutions that would help in supporting wider uptake.

478. There seem to be two other main issues within 'Water at FAO' related to the distribution of documents and publication. First, as mentioned above, effective dissemination is complicated by the sheer number of products and the absence in NRLW of a catalogue of titles, or number and availability of reprints. FOMC appeared better organized in this respect, so it is likely that for other 'Water at FAO' units contributing to different extent in the production of the 200 outputs, records will be mixed. Using the existing in-house systems, it took the Evaluation more than two full weeks to compile a list of normative outputs related to water, apparently the first time such an exercise had been conducted<sup>85</sup>. The Evaluation noted little sense in NRLW about what their role should be beyond the production of a specific product.

479. The second point, linked to the above, is the absence of a distribution and communication strategy in 'Water at FAO'. It appears that piles of documents lie idle in offices, while experts contributing to publications do not receive even one copy of the final product. In these cases, the disproportion between cost and benefit is huge. If documents are not distributed effectively, opportunities for uptake of presumed valuable knowledge are lost, even within FAO itself. Dissemination at the country level is the responsibility of the FAO Representation, but not only they have no resources, they often are not even aware of what 'Water at FAO' has produced. Further, the FAO mailing lists tend to include only ministries of agriculture, thus ignoring all the other national institutions dealing with the water sector.

480. Thus, the Evaluation sees clear shortcomings in the strategic thinking behind the production of normative products, in their distribution and in the planning of the substantial resources that were devoted to this. While positive outreach has undoubtedly been achieved for individual products, the overall picture is much less positive and there are important gaps in making the right information available to the right users in the appropriate format.

481. The Evaluation has formulated Recommendation 19 below and Suggestion 10 for its implementation.

---

<sup>84</sup> See Annexes 12 and 13.

<sup>85</sup> See Annex 11. The inventory should be updated on a regular basis.

**Recommendation 19) To 'Water at FAO'**

**'Water at FAO' should develop a distribution and communication strategy for its publications and normative products, to facilitate knowledge and access to these among governments, academia and other stakeholders beyond the posting on FAO's web-site.**

**Suggestion 10. To Water at FAO**

*The Evaluation suggests the following products as part of the distribution and communication strategy recommended to 'Water at FAO':*

- a) develop means to identify key documents in the website, e.g. a list of all documents with links upfront;*
- b) produce a bulletin for FAO Representatives every six/twelve months listing new publications and means of access, to be forward to all relevant national institutions;*
- c) identify, re-print and distribute through FAO Representations the key technical publications;*
- d) distribute some copies of final documents and publications to all contributing experts/co-authors;*
- e) translate/leverage funds for translation of key publications into other FAO languages;*
- f) upload translated documents in non-FAO languages for better diffusion and availability;*
- g) identify major national and international agricultural water initiatives in MCs and proactively disseminate FAO products and knowledge.*

#### **7.4 Capacity Development in the water sector**

482. The analysis of FAO's capacity development efforts in relation to water, gave cognisance to the broadening in thinking from earlier 'capacity building' concepts to 'capacity development', which is defined as *"the process whereby individuals, groups, private and public sector organizations all enhance their systems, resources and knowledge as reflected in their improved abilities to perform functions and solve problems, in order to better address hunger, poverty reduction and sustainable natural resource management objectives."*<sup>86</sup>

483. One major vehicle for capacity development in the water sector during the Evaluation period has been IPTRID, although this was not the Programme's original mandate. IPTRID organized three well-structured consecutive international workshops as side events to the annual ICID Congresses of 2003 in Montpellier, 2005 in Beijing and 2006 in Kuala Lumpur. These events addressed methodological issues on needs assessment, design and implementation and on Monitoring and Evaluation of capacity development programmes. These efforts yielded a synthesis report, case studies and an interactive database of available irrigation training. However, capacity building "on the ground", rather than in international workshops and conferences, has been dominated by non-IPTRID activities (see below).

484. The efforts of 'Water at FAO' in irrigation policy development have built capacity through the processes themselves of policy development, as well as through the improvement in knowledge and mutual understanding of local people and institutions engaged in the policy formulation process. The best cases were already discussed in Section 5.1.

485. In relation to outreach and partnering capacity, there are examples of good capacity building of government staff through field projects. Examples include: the Norwegian funded project in Malawi; countless conferences and workshops that have created opportunities for interaction between a range of stakeholders and partners; the very recent workshop in Ouagadougou on experiences with smallholder irrigation and processes like the Sirte conference.

486. Specific initiatives aimed at the development of implementation capacity in the water sector in Africa and Asia included the following:

- FAO's irrigation design manual developed by staff in FAO-SAFR, which contains in-service training modules for qualified irrigation engineers, bridging between academic learning and field application and includes hands-on experience in design, construction and all-important

<sup>86</sup> Extracted from Evaluation of FAO's Activities on Capacity Development in Africa, Inception Report, October 2009

tendering and procurement procedures. The manual has now been translated into French and will soon be available on CD-ROM.

- The in-service training courses conducted by FAO based on the irrigation design manual in 2004, 2005 and 2006 respectively, were highly appreciated and effective in producing irrigation engineers who were equal to the challenges of implementation, but these were one-off events and most of those trained have already moved on. Attempts at the time to institutionalise this training in the sub-region were commendable but suffered from political instability in Zimbabwe where the training used to be based.
- In Mali, within the World Bank funded programme for the development of rural infrastructures, FAO developed a training package for the mechanical maintenance of motor pumps. This stands out as highly relevant, with a great need for publication, dissemination and up scaling due to its significance in capacity building at the local level. Opportunities for 'genderizing' it could be explored.
- In Africa and in Asia, across various field projects, farmer groups received training through FFS activities on irrigated crops, water management and Operation and Maintenance of schemes. Results appeared to be very mixed, depending to a large extent on the skills of trainers, on the availability and follow through of extension staff, often not solid enough, and on the duration of the training.
- A manual jointly developed by FAO and WHO is used on some FAO projects for training on family nutrition: this material could usefully be updated with recent experience and promoted more broadly as a sound foundation for households participating in food security projects.
- Land and Water Management Training Modules for Farmer Field Schools in East and Southern Africa.
- MASSCOTE and PRDA are valuable tools for capacity development, while training also receives attention through AQUASTAT and AquaCrop.
- A notable success story was the APFAMGS project in India, wherein through a strong focus and investment in capacity development and the process of demystification of science, members of small farming households developed understanding of the seasonal occurrence and distribution of groundwater in their villages and hydrological basins as well as capacity to estimate seasonal recharge, draft and balance of the ground water resources.
- In India again, in the context of the Andhra Pradesh Water Management project, capacity building activities and training events were organized throughout the whole project period, for project staff, line department staff and farmers. Further, specific training was given to farmers on water management, farming practices, water saving technologies and FFS.
- In the Asia and Pacific region, FAO and partners undertook commendable training and capacity building initiatives especially under the auspices of MASSCOTE. These have been wide ranging, including participants from line ministries, e.g. extension services, through to academia, universities, and from technical to policy issues. Furthermore, NRLW/RAP has been involved in training and capacity development on formulation of irrigation policies and strategies, irrigation investment policies and irrigation action plans. NRLW/RAP officials also participate in tertiary-level training of irrigation staff in Asian countries, by offering supervisory support for MSc and PhD (at AIT) students in irrigation water management.
- NRLW/HQ has also been conducting training on drainage in many countries in the world, e.g. Mexico, Argentina, Cuba and Egypt. In many of these cases, this resulted in using the training material to feed into the development and application of relevant FAO manuals and guidelines. A case in point is the drainage manual Irrigation and Drainage Paper No. 61 that made use of field work and training undertaken in Egypt by the drainage expert posted in HQ.

487. The questionnaire survey indicated that capacity development was highly requested in all regions. Among different possible forms, "training courses on technical issues" were the preferred option,

followed at a distance by training courses and on-the job training on policy development, as well as meetings<sup>87</sup>.

488. The Evaluation noted that earlier in the evaluation period, irrigation design training in southern Africa has had short-lived results because institutionalisation failed. Over time there have been improvements in the organization of training events. Among others, recent arrangements have been made to hold training events on AquaCrop in close collaboration with sub-regional organizations that could become the institutional home for the model. Equally, NRLW/RAP efforts to identify 'hubs' for MASSCOTE in Asia are praiseworthy and in West-Africa, collaboration has been developed with universities like the 2IE in Burkina Faso. This is considered to be the right path, which should be fully pursued in future.

489. Therefore, while there is much evidence of FAO's contributions to capacity development across its core functions – policy and technical assistance, repository of knowledge, neutral forum and advocacy - the Evaluation noted weak performance in dissemination, in institutionalising training and capacity building; and to some degree, in building implementation capacity.

490. Comments were received from FAO staff that they would prefer to be trained on FAO products before or at the least at the same time as the public. The Evaluation views this as a fair request, and believes that this would improve the use by staff and general dissemination of these products. A recommendation has been formulated on this in the section on improved internal management.

491. FAO's experience in training and in producing excellent didactic material makes it well placed to lead a process to institutionalise targeted capacity development programmes. **The Evaluation fully endorses continuous commitment to this area of work.**

492. In Africa in particular, the recent request to FAO by CAADP to play a greater role in the region on a number of themes, opens up the possibility to cover the full suite of functional capacities in support of the water sector. Recommendation 20 on the need for more efforts into training in Africa is formulated here below, together with Suggestion 11.

**Recommendation 20) To NRL**

**NRL should commit resources in the Africa region, in collaboration with CAADP, to:**  
**a) Introduce practical training courses based on the irrigation design manual into the curricula of regional training institutions, to improve capacity for the major irrigation development foreseen;**  
**b) Broaden the content of the irrigation design manual to include the norms and standards on irrigation design and irrigation equipment including Rain Water Harvesting approaches and techniques for informal/individual water control development options for smallholders;**  
**c) Develop and incorporate engineering aspects of informal smallholder irrigation into the curricula for irrigation engineers and related professions.**

***Suggestion 11. To Water at FAO***

*It is suggested that FAO updates the material for family nutrition training with recent experience and promote it more broadly as a sound foundation for households participating in food security interventions.*

<sup>87</sup> See Annex 12, Analysis of survey questionnaires to Member Countries

## 7.5 *Synergy between normative and operational work*

493. FAO has stressed in its statements the 'continuum' that should exist between normative and field programme, and that collaboration between HQ and RO/SRO is vital to FAO because of the benefits to Member Countries when normative and field operations are mutually supportive. Such integration is also what distinguishes FAO's capacity from a number of other organisations who engage in one or the other type of work, but not both.

494. Ensuring synergy between HQ and decentralized officers is not easy, given the wide network of decentralized officers for water and the breadth of their individual responsibilities. Particularly in view of the further decentralization efforts to be implemented by FAO from January 2010, the Evaluation considers that effective feedback is essential for 'Water at FAO' to ensure the comparative advantage of its work. Normative products should be better informed by field experience and field implementation should draw more strongly on existing normative products, where they exist and can be made relevant. The IEE also stressed the key role of the link between normative and field programme and the ensuing institutional reform emphasises this concept.

495. The reality on the ground for the water sector is quite complex. On the one hand, 'normative' messages on water productivity/efficiency are not reaching the field, and work at country level is not always best informed by the global normative outputs produced by NRL. Examples range from India to North Africa: the Evaluation had evidence that 'Water at FAO' normative products are not fully used and exploited in FAO's field projects and IFIs' interventions, or delivered to the country offices or by HQ units with extensive field linkages (TCI, TCOS, TCE). Thus, FAO Representations' staff are not aware of what the most recent publications in the water sector are. The adoption of MASSCOTE in India by the World Bank was not the result of promotion by TCI, despite its important involvement in India with the WB and AquaCrop is not promoted by TCI or units designing and implementing water-related projects.

496. On the other hand, there is also evidence that many general 'water normative products' are less relevant to the field programme of the Organization and to the countries, as stated by interlocutors at country level. Normative products over the past 4-5 years do not clearly show a response to issues arising from the country level and from field operations, which can be interpreted either as a failure of NRLW to identify priorities or a failure of field staff to report experiences.

497. This situation reflects on poor collaboration between NRLW and units in the TC Department: cases in point were identified in work conducted under the umbrella of the SPFS, and in emergency interventions in the Southern Africa region. At the same time, dissemination of normative concepts and feedback on their relevance depends also on an active relationship between HQ and Field/Regional offices. The frequently reported view from field/regional offices was that integration of NRLW activities between HQ and the field should be much stronger. The Evaluation considers that where the responsibility lies is less of a problem than the fact that this happens, since it is likely that there are many contributing factors.

498. The Evaluation identified through its country visits, a huge need for outputs of regional relevance, either through adaptation of global products to the regional context or "regional products" on specific issues. It was stated that it takes three to four years of work to produce one normative product starting from work at field level, and that the level of inputs required makes it difficult for decentralized officers to develop them on their own, when working in isolation from colleagues in the same area. The positive on-going example of sub-regional guidelines for waste water treatment in West Africa was possible through the window of opportunity of partnership with IWMI: these possibilities have to be explored, of course, but FAO should not rely only on them to fulfil its mandate for products suitable for the regional and sub-regional level.

499. The evidence gathered and illustrated so far also shows that the focus of NRLW-HQ has been heavily skewed in favour of the global and normative mandate of the Organization, with the tendency to neglect partly the work at country level and the important role that staff in RO/SRO are called to play. Although it is easy to understand why this would happen in a situation of over-stretched resources and huge demands on the time of senior management from the global tasks, including networking for fund raising, the trend is worrying and requires re-balance.

500. The new Strategic Framework creates the need for NRLW, as for others of course, to forge stronger connections across the Organization, both horizontally, across departments, and vertically, between HQ and decentralized offices. As FAO is still expected to deliver high-quality products at all levels, but resources will never be enough to ensure full coverage everywhere, closer and more effective interaction between all staff, wherever they are located, will be required to build on respective strengths.

501. The FAO Water Platform proposed in Section 12.2 of this report should help in tackling some if not most of these issues. In this respect, closer attention should also be given to brief adequately consultants who get recruited to work on 'Water at FAO' initiatives and who cannot possibly know in detail all that the Organization has produced in each area. Suggestion 12 below highlights this point.

***Suggestion 12. To 'Water at FAO'***

*Develop an information and training module on 'Water at FAO' products, to be used as mandatory technical reference for new staff and consultants recruited to contribute to any FAO initiative related to water, independently by allocation of LTU and Budget Holder responsibility, including TCI.*

## **7.6 Conclusions**

502. The Evaluation found solid evidence about the relevance, quality and usefulness of the publications and normative products issued by 'Water at FAO' during the period under evaluation and earlier. Many specific products are highly appreciated and used in all regions and by stakeholders in governments, academia, international organizations and others.

503. A number of weaknesses exist in making these products available to potential users; also, too many appear to have been produced, without clear targets of users and innovative messages to transmit.

504. AQUASTAT is **the global information system on water resources** and it should be supported to further improve its quality, relevance and usefulness.

505. Capacity development at large is a feature of FAO's work in general; 'Water at FAO' has been active in this respect, and more can be done to reach out to more users. Neglected areas such as engineering capacity development for small-scale irrigation should be urgently tackled.

506. The Evaluation identified gaps in the feedback and synergy loop between normative and field programme, and between the work by technical departments and TC units within 'Water at FAO'. This limits the effectiveness and comparative advantage of the Organization in its water-related work. The proposal on FAO Water Platform directly addresses these issues.

## 8 Gender mainstreaming and social inclusion<sup>88</sup>

### 8.1 Information and analysis

507. Since 2001, the FAO Gender and Development Plan of Action (GAD-PoA) has been the tool through which FAO corporate commitments and priorities, as reflected in the Strategic Framework 2000-2015, were realigned to mainstream gender equity. The GAD-PoA 2008/13, which as a result of the recommendation of the IEE has been integrated into the new SF of the Organization with a Gender Strategic Objective, stated “*Gender equality gains are essential to fulfil FAO’s mandate of raising levels of nutrition and standards of living and improve agricultural productivity and livelihoods of rural populations*”. It also stated, in relation to Land and Water issues that “*Water-management initiatives must consider men and women’s specific water needs, the different ways they manage water for agriculture and their different rights to access to both land and water*”.

508. The FAO Gender, Equity and Rural Employment Unit (ESW) is the technical unit mandated to support FAO’s and MC’s efforts in promoting the economic and social well-being of the rural poor and in addressing gender, equity and rural employment issues.

509. ESW efforts at mainstreaming gender in FAO have been mainly through: i) training; ii) the Gender Plan of Action (GPA); iii) the Gender Focal Point (GFP) system; and iv) the Project and Programme Review Committee (PPRC). At the same time, given the cross-cutting nature of gender and social inclusion, all other units have a responsibility to give attention to these issues in their work, including NRLW.

510. Within this context, the Evaluation assessed the extent to which FAO had ‘mainstreamed gender and social inclusion’ in the work on water produced by all concerned units. This inevitably also implied assessing the institutional mechanisms set-up by the Organization to pursue its goals.

511. On water, ESW has conducted the following activities:

- implementation of the project “Gender analysis in farmers’ water management project”<sup>89</sup> funded by Italy; ESW and NRLW provided inputs into the SPFS: this has contributed to improve gender mainstreaming in these projects;
- membership of the UN Task Force on Gender and Water;
- contribution to the IFAD/FAO/World Bank “Gender in Agriculture Sourcebook”, which has references to women and water in agriculture;
- management of the Spanish-funded project “Capacity development on the integration of gender analysis in water and land tenure management” in lusophone countries, through the integration of a gender approach in legislation, policies and programmes on land and water administration and management<sup>90</sup>; NRLW is participating actively in the project as well;
- collaboration with the EC-funded project “GEWAMED: Mainstreaming gender dimension into water resources development and management in the Mediterranean Region” by conducting several training sessions for nationals of Mediterranean basin countries based on the FAO SEAGA<sup>91</sup> Programme.

---

<sup>88</sup> Information and evidence in this chapter come from interviews with FAO staff in HQ and RO/SRO offices, direct observation of projects during country visits, interviews with Government and other stakeholders in Member Countries, detailed assessment of a sample of FAO normative products related to water; past project evaluations.

<sup>89</sup> GCP/INT/872/ITA, which was conducted building on the experience of the “Empowerment of Women in Irrigation and Water Resources Management for Improved Household Food Security, Nutrition and Health” project (WIN) implemented in Cambodia, Nepal and Tanzania and completed in 2002, thus outside the scope of this Evaluation.

<sup>90</sup> GCP/INT/052/SPA

<sup>91</sup> SEAGA: Socio-Economic and Gender Analysis,

512. In general, ESW has demonstrated capability to prepare strong products on gender and water and **its normative products on this subject are excellent in terms of technical quality and treatment of gender**. ESW has done some very good work in terms of capacity development in gender sensitization, both within and outside FAO and has produced an excellent publication, "Gender: The missing component of the response to climate change".

513. NRLW also continues to devote efforts to gender issues in water through AQUASTAT, in particular:

- in 2006, the organization of and participation in an expert meeting on "The role of women in water resources management", for countries in the Near East and Northern Africa region, in collaboration with the respective regional and sub-regional offices; and
- implementation of a project, in collaboration with SNEA and through a Letter of Agreement with CAWTAR<sup>92</sup>, on "AQUASTAT and gender sensitive indicators" in northern African countries, namely Algeria, Morocco and Tunisia.

514. Further, like all other divisions in FAO, NRLW has appointed a Gender Focal Point (GFP). In this respect, the Evaluation notes that the GFP concept is good and works when i) the GFP has technical expertise in gender mainstreaming and social inclusion and time is allocated in his/her plan of work to provide assistance to colleagues to mainstream gender issues in their work; ii) when staff are receptive to receiving inputs from the GFP; and iii) when the GFP is a senior officer who can dialogue authoritatively with peers and supervise more junior colleagues. It is important to note that the GFP mechanism was officially adopted in FAO in mid-2008, but that time has not been allocated to this task in GFP's work-plans yet. The upcoming Gender Audit of FAO will look in detail at the GFP mechanism, at its performance and needs for improvements.

515. In the case of NRLW, the effectiveness of the GFP, who is not a senior officer, does not go beyond "a conduit for information" to be passed between ESW and NRLW. The GFP has mainstreamed gender in her own work on urban agriculture and in the normative products she had worked on, but she was able to influence the work of others in NRLW only and when other officers in the unit sought her inputs. This did not happen on a regular basis or for all relevant products and projects. Furthermore, she was engaged on a large number of topics and her time appeared over-stretched already. Equally, ESW did not have spare resources to assist either NRLW or other units in FAO to mainstream gender issues in their daily work. Thus, at the time of the evaluation, the **effectiveness of the NRLW GFP had been limited by the absence of appropriate circumstances, including seniority of the Unit's GFP, time and stronger commitment in the Unit towards gender mainstreaming**.

516. NRLW staff were trained on gender mainstreaming, however one or two sessions may, in the Evaluation's view, at best open peoples' minds to the topic. Staff with a different academic and professional background cannot be expected to learn how to "mainstream gender" in their work<sup>93</sup> only through a few sensitization and training sessions.

517. Normative products developed by NRLW with other departments such as ES and AG<sup>94</sup>, the Livelihood Support Programme or partners such as IWMI and IFAD have addressed gender concerns substantively. However, the impact of engaging in these collaborations, or of having a good working relationship with ESW, has influenced NRLW's bigger picture only partly: the review of 46 normative products has shown that social issues fare better than gender issues in NRLW publications, briefs and brochures.

518. An example of the low awareness in NRLW about gender issues at the level of strategy development was the proposal submitted to COAG in 2007, "Agriculture and Water Scarcity: a Programmatic Approach to Water Use Efficiency and Agricultural Productivity". The paper proposed a comprehensive framework for dealing with water scarcity and expressed a need for a "*more explicit water programme to leverage water expertise across the Organization with specific contributions from units*

---

<sup>92</sup> CAWTAR: Center for Arab Women Training and Research

<sup>93</sup> One staff member asked, "We don't expect you to become engineers, why do you expect us to become social scientists? We don't know how to mainstream gender".

<sup>94</sup> ES: FAO Economic and Social Department; AG: FAO Agriculture Department.

*dealing with fisheries, forestry, agriculture, environment and economics*”, to achieve a much more coherent framework to inform national policies and prepare national investment programmes for responsible agricultural water development. While developing this framework and identifying capacities within FAO to address each element of this framework, there was no recognition that the programmatic approach needed capacity in gender mainstreaming and that the multi-disciplinary team should include someone with technical expertise in social and gender issues. The Social and Economic Department was included but only the ‘Economic’ side of it was recognized.

519. NRLW was not the only unit prone to these oversights. The ES Department within which ESW is housed, does not recognize gender mainstreaming and social development as a technical area of expertise. An example was the ‘World Agriculture: towards 2015/2030’: issued by ESAC, it states that *“the development of local food production in the low-income countries with high dependence on agriculture for employment and income is the one factor that dominates all others in determining progress or failure in improving their food security”*, but does not acknowledge women’s role in agriculture. There is also no further discussion of agriculture as a source of livelihood.

520. The Evaluation considers that any reasonable connections between water and reducing hunger and malnutrition, and the economic and social well-being of all, should recognise at the outset that poor and hungry people are the target, and that there are many different types of farming households. Admittedly, the analysis of seven irrigation and agriculture policies to which ‘Water at FAO’ has contributed, shows that issues and concerns of smallholder farmers and socially disadvantaged groups were taken into account and addressed adequately. By looking at them through the gender lens, the picture was quite positive: four countries had mainstreamed gender in their policies, while three countries recognised the problem of gender disparity but had not developed adequate strategies to deal with it.

521. These minor successes however appear to be more the exception than the rule, as the Evaluation detected minimal evidence of such prominent orientation having entered into FAO’s work, or role, in water at a larger scale. NRLW briefs make good use of photos of women. But this is mere lip-service when the text has not internalized women as irrigators and food producers, conveyed any meaningful messages on access to resources by women, or mainstreamed gender and its contribution within multi-disciplinary approaches.

522. The FAO programme and project appraisal process (PPRC) was established to ensure that projects due for approval meet certain criteria and are viable. ESW developed a guide for reviewing Project Documents for gender concerns, to ensure that gender and social aspects would be built into project design. It is a good guide but cannot ensure an objective, substantive review if the reviewer does not have technical expertise in gender mainstreaming. An example of how the PPRC may not be able to guide the project design adequately is the TCP in Turkey assessed directly by the Evaluation, where the assumptions made in the PPRC for addressing gender concerns were not corroborated in the field. In fact, in this case FAO lost the opportunity of demonstrating the importance of strengthening the role of women in the changing agricultural scenario, the “feminisation of agriculture”.

523. The Evaluation noted that women’s participation in FAO water-related projects depended mostly on the traditionally recognized role of women in smallholder agriculture and on national policies and practices for women’s participation and mainstreaming gender concerns in agricultural development. Water-related projects fared better in terms of gender mainstreaming where national policies were gender sensitive, for example in Malawi. In the Asian SPFS projects, women’s participation was either a specific concern as in Bangladesh or Sri Lanka, or both women and men participated in project activities. A notable exception was the APFAMGS project in India which mainstreamed gender concerns in the project design and followed it up in implementation, meeting both practical and strategic needs of women. The project however did not do as well in terms of social inclusion. However, overall there were no specific efforts by ‘Water at FAO’ to mainstream gender issues into many projects.

524. In the field projects assessed directly by the Evaluation, it was not clear how the beneficiaries were targeted and why the particular project sites were identified. Identification of projects sites and sometimes even selection of beneficiaries is influenced by the priorities set by the countries where these projects are located, and who the partners are in these projects. ESW suggested that capacity building of partners would help in identifying appropriate project interventions. Of course, this means more training, more staff time and more resources.

525. In some of the emergency work, for example in Sri Lanka on the occasion of the post-Tsunami rehabilitation and in Pakistan in the post-earthquake rehabilitation work, there were consistent attempts at community involvement across ethnic group boundaries.

526. The Evaluation would also like to stress that quantitative indicators such as percentage or number of women beneficiaries, or percentage or number of women participants do not by themselves mean that women have benefited from project interventions. Supporting quantitative and qualitative indicators would need to be used in order to assess the benefits derived from the projects such as increased income, improved nutrition and decrease in work burden. Besides, unless the indicator is turned around to count the percentage of men or number of men participants in the project, true gender mainstreaming will not take place.

527. The Evaluation considers that there can be no progress on gender mainstreaming in FAO's work in water until the Organization recognizes and internalizes the fact, proven without doubt and accepted across the UN, that there is no agriculture without women, that women are food producers, often more than men, that efficiency in food production increases when women along with men have access to inputs, credit and knowledge. The core issue is not just saying 'men and women farmers', but rather acknowledging and believing that women along with men are going to feed the world. This even more so now, with the feminization of agriculture. Gender mainstreaming means dropping the 'husband speaks for the whole family' approach in favour of understanding that 'husband and wife may speak differently'.

528. Further, the changing face of rural society with the increasing out migration of young men means that women and the elderly are being left behind to tend the farms. In other words, on-going changes in rural society are placing food production in the hands of the women, who do not have the necessary access to resources, credit and inputs to maintain and/or increase productivity. Also, where agriculture is still the main source of livelihood, and water defines many agricultural livelihoods, it is unlikely that farming households will move out of agriculture altogether.

529. FAO's action should ultimately be the acceptance of four principles: accepting women as food producers; accepting that women's participation in water and agriculture is about giving them access to resources, credit, inputs and knowledge; accepting that gender mainstreaming and social inclusion is an area of expertise and technical knowledge; and that multi-disciplinarity in FAO's work on water includes technical expertise in gender mainstreaming and social inclusion.

530. Looking forward, there are several issues to be considered. The new Strategic Framework includes Strategic Objective K, aimed at gender mainstreaming in FAO's and Member Countries' work in agriculture. Thus, there is acknowledgement that smallholder irrigation needs to be strengthened and that it is important to look at agriculture as a source of livelihood for men and women. Whether the allocation of resources will follow will be another matter. In the decentralized structure, the regional offices will have full powers to use the budgets the way they want. For example, FAO/RAP does not seem inclined to recruit a gender expert at the regional level. Although the Evaluation did not explore this in detail that was outside its mandate<sup>95</sup>, the trend is worrying as there are clear risks of an easy fall back into the 'invisibility of women and gender issues' by abolishing such posts.

## 8.2 *Conclusions and recommendations*

531. FAO responsibilities on gender and water are dispersed across many actors. Some normative products were relevant and of excellent technical quality and some project initiatives were relevant and effective. However, as a whole, **'Water at FAO' did not comply with its 'genderized' mandate.** There was no evidence of specific attention to women-friendly technologies related to water use and irrigation introduced by any of the Water and Food Security projects. The mainstreaming of gender issues in NRLW's work has been short of requirements and work loads and staff profiles in the unit at the time of the Evaluation were such to prevent proper attention to be given in future to gender and social inclusion issues.

---

<sup>95</sup> The Office of Evaluation will raise this concern with the team responsible for the upcoming Gender Audit of FAO.

532. The assessment of gender mainstreaming and social inclusion in FAO's role and work in water shows that **there is no clarity as yet within FAO's work on water about two key concepts, namely, 'what is gender mainstreaming' and 'who should be responsible for gender mainstreaming'**. 'Gender' is still used synonymously with 'women' and 'gender mainstreaming' with 'women's participation'. The IEE had stated that *"much of FAO's work seems to be "gender-blind" even in prominent flagship publications, or portray women in a passive role as victims or beneficiaries, rather than as crucial economic actors in the areas of FAO's mandate."* The same applies to work by 'Water at FAO' to a large extent.

533. In light of the above, FAO should renew its commitment to gender and social inclusion in water through their key messages, through their normative work and field projects. Recommendations 21 and 22 and Suggestions 13 and 14 have been formulated below. A specific recommendation on human resources for gender and social inclusion is contained in Recommendation 30 in Section 11.1, along with others on staffing. Also, the proposal on FAO Water Platform formulated in Section 12.2 of this report includes ESW as one of the key contributing partners.

**Recommendation 21) To 'Water at FAO'**

- a) 'Water at FAO' should develop tools to support Member Countries in preparing agricultural water policies that are gender sensitive and socially inclusive;
- b) 'Water at FAO' should recognise in all its work, normative and operational, that farming is a household enterprise, often passed down through generations and drawing on traditional knowledge, based on teamwork, where tasks are complementary and not competitive;
- c) 'Water at FAO' should update 'old' benchmark publications progressively, introducing new material, improving relevance to different farming households, and integrating gender concerns.

**Recommendation 22) To FAO**

**Any future FAO project and programme appraisal mechanism, that will take the role of the Project and Programme Review Committee, should ensure that project designs are strengthened towards mainstreaming gender and social inclusion and integrated approaches that consider the wider constraints of farming households as enterprises.**

**Suggestion 13. To 'Water at FAO'**

*'Water at FAO' should incorporate analytical tools such as Livelihoods Assessment in order to understand and assess what policy and strategic interventions and institutional arrangements will be required to strengthen smallholder irrigation and agriculture as a livelihood for improving food security and poverty alleviation. Seeking innovation among the weak should also be part of these tools.*

**Suggestion 14. To FAO**

*FAO should re-establish and strengthen capacity in all Regional Offices on social development and gender*

## 9 Partnerships and Alliances<sup>96</sup>

### 9.1 *Information and analysis*

534. The Evaluation conducted its assessment of the performance of 'Water at FAO' in developing partnerships and alliances, by focusing on partnerships that aimed at strategic outcomes at national, regional or international level. In the absence of 'objective' benchmarks, the opinion of FAO's stakeholders and partners was sought on the usefulness and effectiveness of these collaborations, and on FAO's weaknesses and strengths in them. The Evaluation also assessed the technical quality of the outputs produced through them and their overall relevance.

535. At the international level, FAO's main partnership activity has been its role as chairman of UN-Water for three years (2007-2009). This has been judged **successful by all external commentators and it has enhanced FAO's credibility**, which hopefully will make it possible in future for FAO to stake out its own territory after a period when, as chair, a degree of neutrality was required.

536. From the UN Water's perspective, whether these efforts will turn out to be sustainable will depend on the next chair of the network and the willingness of UN agencies to accept specified roles in the UN water framework. Certainly, a review of the Back to Office Reports from early meetings during FAO's tenure reveals considerable lack of clarity and confusion about objectives and means of coordination. This, no doubt, was time consuming and 'inefficient', but perhaps a lot less inefficient than the likely alternative continuous competition for a place at every 'water table' for each UN agency.

537. Overall, this was a task that had to be done if the UN system is to achieve coherence, effectiveness, and efficiency in its water related activities. Further, once FAO had been offered, it would not have been sensible in visibility terms, to refuse the engagement. At present, a review of the websites of many UN organisations leaves the impression that they have substantial expertise and ongoing programs in a range of water related activities. The overhead implied by these programs is substantial, and the objective of creating a 'single portal' to UN expertise and activities in the water-related sectors can only increase efficiency at a time when donor funds are likely to be in short supply.

538. Whether this task was efficiently executed is really impossible to judge. The number of meetings, coordinating committees, conferences and so on that had relevance to the UN water agenda was no doubt exhaustive and exhausting. It is unlikely under the circumstances that the chairman opted for extra travel and involvement when less would have sufficed and consultative processes in the UN tend to be laborious and time-consuming.

539. At the country level, there is very little awareness of UN-Water and no concept of how or whether the existence of UN-Water will improve impact on the ground. Again, the problem of translating or integrating 'global' themes and messages into practical advice at the field level is worrying.

540. In summary, translating the UN-Water objective of a single point of access to coordinated fields of speciality requires a lot more work, including endorsement within the UN system for a rational allocation of responsibilities. As a proven agent in UN-Water, FAO should clearly stake out its central role on water/food issues. Potential future issues could include:

- the state of groundwater worldwide, linked also to climate change, for the future imbalances between supply and demand for water in many areas;
- regional implications for crops and food of climate change; and
- determinants of water productivity in agriculture

541. Besides chairing UN-Water, FAO has developed partnerships with a wide de range of UN- and non-UN organizations. Most of these have been mentioned throughout the report and any listing here would be partial and incomplete. It is important to mention however the partnership with IWMI in Asia

---

<sup>96</sup> Information and evidence in this chapter come from: interviews with FAO staff in HQ and RO/SRO, with Government and other stakeholders in Member Countries and with staff from IFIs and International Organizations; the questionnaire survey to National and International Institutions.

and in Africa, with the World Bank<sup>97</sup> and the Asian Development Bank, with universities and training centres, on projects and for the production of normative outputs, including a wide range of joint publications. Only a few examples are mentioned below.

542. An example of how successful collaboration can be between UN agencies with different but related mandates is the work of FAO, UNEP and WHO on wastewater use guidelines mentioned above, an output of global relevance and comprising internationally endorsed standards. Further, this constructive and effective collaboration was continued through the Sub-regional office in West Africa with IWMI and national universities in Ghana, to produce regionally appropriate guidelines.

543. Another substantial collaborative effort was the Comprehensive Assessment of Water Management in Agriculture, a high profile publication that attracted significant international attention, and certainly benefited substantially from technical advice provided by FAO on the critical issue of water productivity.

544. Collaboration by 'Water at FAO' to publications is wide-reaching and at different levels; for example, NRLW staff in RAP provided significant contributions to regional flagship products. The Evaluation identified 26 different products 'issued' by other organizations, to which 'Water at FAO' contributed during the period under evaluation<sup>98</sup>.

545. Collaboration with IFAD has also taken place, on 'water and poverty'. IFAD is a key partner for FAO, by having complementary mandates and by having an interest in respective inputs and outputs. The agricultural and poverty focus of IFAD matches FAO's mandate closely and there is active exchange of ideas and experiences beyond the basic project level. As evident in the World Bank's relationship with TCI, FAO's input is valued and essential to project formulation, and likewise the World Bank, IFAD experiences variability in the quality of input from FAO, and notes the lack of integration of FAO's technical units in responding to water issues.

## 9.2 Conclusions and recommendations

546. 'Water at FAO' and NRLW in particular have developed several partnerships at global, regional and sub-regional level. Collaboration within UN-Water has been particularly appreciated by partners and joint work with other UN and non-UN agencies has been often successful and with positive results.

547. Issues that tend to limit FAO's capacity to partner more widely relate to a slowly changing corporate culture of autonomy, unfriendly procedures for establishing agreements, heavy bureaucracy and control on any type of partnership, and lack of clear agreements with a number of partners on issues of logos and acknowledgment of contributions. The Organization is developing a new strategy for partnerships that should help in tackling some of these issues.

548. The Evaluation strongly supports that **NRL should continue to be actively involved in UN-Water**, promoting the importance of water to agriculture, food and farming families. It also formulated Recommendation 23 on the partnerships that are considered necessary for 'Water at FAO' to be fully engaged as well as Suggestions 15 and 16 about procedural issues linked to partnerships management.

### **Recommendation 23) To 'Water at FAO'**

**'Water at FAO' should identify and intensify specific complementarities with UN-agencies and other international organizations. Specific areas for partnership should be:**

- a) water in food safety and on wastewater with WHO;**
- b) livestock with ILRI;**
- c) agricultural pollution with UNEP;**
- d) agriculture and wetlands interactions with Ramsar and others;**
- e) research on water and food with the CGIAR system, in particular with IWMI.**

<sup>97</sup> FAO's partnership with the World Bank through the Cooperative Programme is described in Section 10.1. This section refers to other types of collaboration.

<sup>98</sup> See Annex 11, Inventory of normative outputs

**Suggestion 15. To FAO**

*In the work on revision and improvement of Letters of Agreement, the perspective of CGIAR and similar partners should be included, if not already taken into account.*

**Suggestion 16. To FAO**

*When contributing to any 'joint' publication, FAO's contribution should be identified as clearly as possible, also through its logo.*

## **10 Modalities of FAO's operational work in water<sup>99</sup>**

### **10.1 The Investment Centre and the Cooperative Programme**

#### **10.1.1 Information and analysis**

549. TCI participates in the identification, preparation, appraisal, supervision and post-evaluation of projects funded by IFIs. The World Bank is the client for the vast majority of TCI's work through a partnership that was formally established as the "Co-operative Program" (CP) between the Bank and FAO in the 1960s. The original program was designed to respond to a number of issues – all of which remain broadly relevant today:

- First, for countries who did not have the domestic capacity to prepare investment projects for financing by the World Bank the Program provided expert, cost-effective support to augment local capacity;
- Second, because FAO is a UN organisation, 'owned by' the Member Countries, such advice was seen as more likely to be sensitive to the views of the country concerned;
- Third, because FAO has representation in many countries, TCI contributions would reflect important considerations of the country expressed through the local representative, so that input from the Co-operative Program was somewhat independent of the World Bank.
- Fourth, being part of the "greater FAO" implied that TCI staff would bring with them perspectives drawn from the normative program that would enhance the quality of advice, drawing on experiences from across the world.

550. In the period 2004-2008, TCI water investment work in Member Countries included 57 water related projects; 37 were for the World Bank, 3 for AfDB, 4 for IFAD and GEF and the remainder for the Opec Fund, the Arab Bank for Economic Development in Africa, the Inter American and Islamic Development Banks and bilateral cooperation with the Italian Development Cooperation, excluding those specifically developed for FAO (TCP and other projects). TCI calculated that its work contributed to an overall investment portfolio of approximately USD 5 billion in the water sector.

551. In the period 2004-2008, TCI carried out a total of 3408 missions worldwide with 584 classified as water-related<sup>100</sup>; thus the water sector missions comprised 17% (compared with 20% in the period 2000-2003) of TCI's work during this period. TCI had 89% (86% for the period 1999-2003) of its

<sup>99</sup> The main source of information for the evaluation was direct interviews with about ten World Bank staff members, identified by TCI as being particularly familiar with TCI's work, plus an additional number separately identified by the Evaluation Team (or suggested by the first group), plus a number of individual contacts (IFAD, ADB). There were no obvious variations in opinions among the organizations contacted. In addition, during country visits, information about TCI activities was sought. The Evaluation also took note of the IEE's review of TCI and related material.

<sup>100</sup> In this period TCI also carried out 93 NEPAD-CAADP missions, which, although in the MIS, cannot be differentiated on the basis of water or other agricultural activities and thus not included in the analysis.

water sector missions<sup>101</sup> financed in partnership with the World Bank Group: a total of 518 missions out of 584 missions that comprised 2675 staff weeks, with 1090 by TCI staff and 1533 (57%) with consultants.

552. Worldwide, the 584 missions completed between 2004-2008 have comprised:

- supervision of ongoing operations (43% or 252 missions),
- identification/preparation of investment projects (35% or 196 missions);
- appraisal (8% or 47 missions);
- sector work (6% or 36 missions); and
- evaluation/completion reports (5%).

553. These figures indicate the dominance of the World Bank in TCI's operations, typically accounting for some 90% of the staff time, lending operations, volume of lending, etc.

554. Two sources of funds dominate TCI's budget: an annual subvention of about USD 10 million from the World Bank, and similar support from within FAO. By utilising the CP, MCs get access to international expertise at much lower costs than using conventional international consultants. This is politically more acceptable to Member Countries of both FAO and World Bank, who found it hard to justify spending large amounts of money for expertise which in some measure at least is locally available.

555. The financing arrangements for the Co-operative Program are important in interpreting the demand for TCI services from World Bank staff. As noted above, World Bank funds TCI through an annual block subvention which is not directly linked to the budget for a specific task or operation. Thus from the perspective of the task manager in the World Bank, TCI staff supplements the resources available for operational activities at no cost.

556. Historically, TCI staff produced complete identification and pre-appraisal reports that closely followed the World Bank format for the final appraisal report document. These reports assembled a great deal of background information and analysis, allowing the World Bank appraisal process to concentrate on key issues that were often identified by TCI as needing to be resolved with the implementing agencies or the government concerned.

557. Many TCI staff worked for years in particular regions and thus had extensive background knowledge of institutional strengths and weaknesses, as well as technical issues such as irrigation management, crops, marketing facilities, etc. They were thus expert intermediaries between the country and the Bank.

558. In recent years the role of the Program has changed. In particular, the extent to which projects are fully identified, formulated and made ready for appraisal by the TCI staff has reduced substantially. Most commonly now, TCI provides staff who are part of the project formulation, preparation, or appraisal process, rather than providing the team who undertakes the entire job. In addition TCI staff have become increasingly involved in project supervision and the preparation of completion reports. Again, in these roles, the contribution of TCI staff is mostly as part of a team rather than forming the full team.

559. These changes have been accompanied by significant changes in the human resources made available by TCI to the CP. In the 1990s, the majority of TCI staff were full-time, regular employees of FAO, whereas now almost 60% of the human resources made available by TCI are consultants who work independently, or long-term consultants to TCI on 11-month renewable contracts. In interviews, concerns were voiced frequently that current FAO recruitment rules have affected negatively the professional competence of TCI staff.

560. Furthermore, it was generally agreed that the technical capacity of TCI has deteriorated sharply in recent years as experienced staff retired. In the mid-90s, there were 10 irrigation engineers, whereas now there are substantially fewer working full-time as irrigation engineers. Another emerging problem is the lack of TCI staff with knowledge of new approaches to water resources management, such as public-private partnerships.

---

<sup>101</sup> Analysis carried out for projects/missions with water related titles in the TCI MIS.

561. Operationally most of the changes described above are as much the result of changes in the World Bank as changes in TCI. Bank staff consistently report that inputs from all sources for the various elements of the project cycle (identification, preparation, appraisal, supervision, and completion) are severely stressed. This has been accompanied by a broadening of the spectrum of issues addressed by projects: environmental issues, sustainability, participation, gender, private sector participation, climate change and variability are now addressed in project analysis. The relevance of these issues is clear, but the implication is that a vastly wider set of skills is needed to meet today's standards than was required in the past.

562. The net result of these changes has been a substantial increase in resources required properly to address the full range of issues, while resources available for this within the World Bank, following a reduction of 25% in the 1990s have recently at best remained constant, if not declined further.

563. While one of the expected benefits of basing the Cooperative Program in FAO was the link to FAO's broader "normative" perspectives, the minimal involvement of NRLW staff in TCI work is striking. In irrigation and drainage activities of TCI in recent years, the proportion of input from NRLW has averaged only 2% of total human resources. This is mainly due to the inability of NRLW to assign staff for the length of time required, often in the range of 3 to 6 weeks. Although cases of collaboration exist, for example with the NRLW officer in Cairo and in Bangkok (see Section 11.3), the current charging rates for internal secondment to TCI are not interesting from NRLW's point of view (see Section 10.6).

564. The Evaluation also looked for evidence of use by TCI of FAO water products. Positive cases identified were the diffusion of drip irrigation in Senegal through a WB-funded and CP-formulated project with inputs for NRLW/RAF, and informal interactions between TCI consultants in West Africa who regularly maintain contacts with NRLW. However, the uptake of MASSCOTE and APFAMGS model by the WB in India occurred through direct contacts between the WB, FAO-India and NRLW, rather than through TCI. Thus, there have been lost opportunities for all concerned. If NRLW is making useful recommendations, TCI is a vehicle to get this information to the field, and if NRLW's recommendations can be improved, this will become clearer more quickly from field experience.

565. The procedure within the WB for allocating resources has exacerbated the fragmentation of TCI inputs. Generally, staff weeks available from the CP are divided among regions, countries, and sectors so that the task manager may be assigned just a few weeks of TCI staff time, which are completely inadequate to mount a full-scale product identification, preparation or appraisal mission.

566. Due to this fragmentation, the potential to use TCI as the major contractor for any part of the project cycle was very limited. Further, the demand for support to lending operations has been highly variable in the financial years 2000-2005, irrigation lending operations supported by TCI (in USD million) totalled successively 0, 0, 39, 0, and 264: not an easy demand pattern to plan for.

567. TCI continues to provide full staffing for donors such as OPEC, who have no technical capacity, which has generally been successful. However, the only recent case where the World Bank had staffed a preparation operation entirely with TCI resources was not a success, possibly due to loss of critical mass in TCI.

568. In response to the question of whether it would be simpler to incorporate TCI staff into the Bank's technical department, Bank respondents said that they did not trust World Bank management to keep such technical resources intact. Another respondent pointed out that one of the critical benefits of TCI staff was continuity in their region of work, and this might disappear under WB's rotation policy.

569. A further suggested advantage of the Cooperative Program, compared to a conventional consulting company, is that TCI staff could say "no" to poorly conceived project ideas, whereas a consulting company might still be supportive so as to ensure future employment. However, this advantage is substantially limited by the combination of the extensive use of consultants in the CP, plus the fragmented nature of total FAO inputs into Bank's operations.

### *10.1.2 Conclusions and recommendations*

570. From the point of view of **effectiveness of TCI work in water**, the Evaluation during its country visits in Africa could assess the **high level of appreciation for TCI contribution** to national

water-related projects in Mali and Morocco, where work by TCI – which in Morocco included NRLW's inputs - was quite visible with the national technical departments and the World Bank itself. In Egypt, as well, there appeared to be a renewal of interest in this type of support.

571. Overall, **the World Bank staff value input from TCI**. It is an important extra resource that generally adds both quantity and quality to World Bank operations and often adds experience. For the most part, however, task managers rely on specific TCI staff whose knowledge and experience is valued, and with whom they have established a substantial professional relationship. A number of younger Bank staff readily admitted that they relied very heavily on experienced current or retired TCI staff operating in their regions to ensure that government contacts were appropriate, and that local sensitivities and issues were addressed. There is no doubt in some of these cases that the quality of Bank work depends upon TCI input.

572. This positive relationship is, however, no longer based on the original premise of the CP as a source of top quality international technical expertise performing major tasks with predominantly in-house resources and drawing on FAO's general body of expertise and knowledge. In the new perspective, TCI is a contributor to all aspects of the project cycle and cannot be identified any longer as responsible for a specific step of the project cycle. The preoccupation of WB task managers with assembling and managing the inputs into the project cycle has maintained the demand for TCI input as a convenient, generally reliable and financially very competitive source of expertise.

573. There are two threats to this arrangement. First, it appears likely that the World Bank and other IFIs will conclude that recent instability in food prices and the implications of climate change, require a renewed concentration of skills in water resources development. TCI's capacity to respond with its own resources - which currently account for about 40% of its work load - will be limited and even this capacity is manifestly declining as experienced staff retires. The quality of new staff is considered by WB staff to be constrained by FAO's recruitment rules. Suggestion 17 below has been formulated on this issue.

574. Secondly, beyond the specific work related to water, the 'subsidy' implicit in the internal FAO support to TCI (originally targeted at project preparation, which is the responsibility of the host country) is now primarily a subsidy to the World Bank because most TCI staff time is used for Bank project cycle activities, not for project preparation. It will be a decision of FAO membership to assess whether this is an appropriate use of 3% of FAO's budget.

575. A minor issue at first sight but still rather important in an evaluation and accountability perspectives, is the partial or complete lack of information in FPMIS about the work by TCI through the Cooperative Programme with the World Bank and other IFIs. Although information on TCI's missions to some countries was available in the early years of FPMIS, this was discontinued at a certain point. This issue was particularly important in this evaluation, as the evaluability assessment could not identify the substantial work by TCI in this area through its usual analytical tools. TCI itself had to devote time and efforts to make the relevant information available to the Evaluation. Clearly, the 'invisibility' of TCI work in FAO's corporate information systems goes beyond this evaluation and might become an important issue of accountability vis-à-vis FAO and its membership. Suggestion 18 is formulated below on this, although TCI informed the Evaluation mission in late November that work to resume better visibility for TCI's work in FAO's system had just started.

576. Finally, the Evaluation compared its analysis largely based on different sources, with other recent reviews of TCI, including the IEE's: all seem to converge on some key points on which FAO/TCI has to act, in order to flourish and meet the obvious and imminent challenges in the water sector. The proposal on FAO Water Platform formulated in Section 12.2 of this report includes TCI as one of the key contributing partners.

**Suggestion 17. To TCI**

*TCI should ensure that its 'water' staff embodies a balanced mix in the key sectors of specialization, recruited on the basis of proven and promising excellence, so as to ensure that high quality services are provided to the IFIs while building internal capacities.*

**Suggestion 18. To FPMIS unit and TCI**

*TCI and the FPMIS team should collaborate on making TCI own reporting system visible and accessible to all FPMIS users: either a new link is established between TCI and FPMIS, or TCI resumes providing accurate and complete information on its work to FPMIS.*

## **10.2 Emergency and rehabilitation**

577. Requests and calls upon FAO to work in emergency and rehabilitation have increased substantially in the last decade, unfortunately due to the steady growth of natural and man-made disasters. Water in these circumstances is always an immediate priority, in terms of access to potable water, sanitation issues and water-borne diseases. However, FAO usually has no role in these actions, not even in the safety and quality of potable water as the Organization's work has been so far very much upstream in the area of Water and Sanitation, focusing on the scientific, technology and normative aspects of water quality for human and agriculture use.

578. In fact, FAO water-related work in emergency situations has been mostly in the 'window' of rehabilitation and transition to development, although some immediate relief operations were conducted through distribution of seeds and tools, which included pump distributions. The total volume of water-related work operated by the FAO Emergency Division (TCE) as Budget Holder is quite significant: in the period under evaluation, TCE managed 48 projects for a total of USD 150 million, which represented 14% of the total emergency funds and 33% of the total water-project funds. Countries of major concentration were Iraq and Somalia, followed by West Bank and Gaza and Haiti. Budget-wise, Iraq ranked first by large with USD 70 million, followed by Somalia with USD 20 million and West Bank and Gaza with USD 5 million<sup>102</sup>. Overall, less water-related work in emergency situations was funded in the context of natural disasters.

579. Three main situations of emergency work with major water components have been identified: i) supply and distribution of pumps in 'immediate relief' operations; ii) rehabilitation and development work in complex emergency situations or failed states and iii) rehabilitation and development work in more stable national contexts.

580. In the context of i) above, both treadle and non-treadle pumps have been distributed, within time-frames that do not allow any rehabilitation work. Funds and initiatives were few and mainly included in the Horn of Africa, the Post-Tsunami and in the Southern Africa emergency operations. These initiatives **reached limited numbers of beneficiaries** and although there may be an immediate effect, by definition **sustainability tended to be low**, due to lack of a system for spare parts, impossibility to organize users' groups effectively, etc.

581. FAO's water-related work in complex emergency situations or failed states was conducted in Afghanistan, Iraq<sup>103</sup>, Somalia, West Bank and Gaza. Watershed management projects were implemented in Pakistan. In these countries donors were the driving force for funding large projects. In Somalia, work funded mainly by the European Commission was well within NRLW mandate and ranged from complex information systems to the rehabilitation and construction of irrigation schemes. **Relevance of many interventions was good** as well as design, however the **problems of implementation increased costs and affected effectiveness, efficiency and sustainability** to a large extent. For example, in the case of two very similar ARDOPIS projects<sup>104</sup>, both implemented by NGOs, one showed positive results during a mid-term evaluation, but not the other due to security issues, lack of participation and problems with design. Information products that were assessed as good or very good are being used by donors and international organizations working in Somalia, but there are no perspectives of sustainability in the medium term at best. On the other hand, **post-rehabilitation basin management approaches in Afghanistan**, introduced through longer term German trust fund projects, **have been commended for the quality** of their national level information management and longer term policy contributions.

<sup>102</sup> See Annex 10, FAO water-related projects

<sup>103</sup> Please refer to Section 6.8 above on Iraq and Afghanistan.

<sup>104</sup> ARDOPIS: Agricultural rehabilitation and diversification of high potential irrigation schemes

582. **Rehabilitation of watersheds can be effective**, provided that projects work at adequate scale and avoid design over-complexity. In Pakistan, certain projects have indeed lost sight of the short term rehabilitation priorities and entered slow and pilot size implementation mode.

583. The last mode of intervention was the case of the southern Africa region operations, where the emergency was not linked to conflicts and rehabilitation and development work was conducted in functioning national contexts. This included the rehabilitation or construction of small-scale irrigation schemes and of water harvesting structures as well as training courses for irrigation specialists and farmers. The evaluation of that operation<sup>105</sup> identified **serious weaknesses in project documents as compared with actual needs of people and in the design of technical proposals**, which were short of accepted standards. Implementation was also delayed and overall, results were mixed.

584. An important point is that TCE has limited competencies in water issues and relies on NRLW staff or on consultants for most if not all technical aspects of its projects. When NRLW or staff from other units such as AGST were actually involved in project design and implementation, as was the case for Iraq and Somalia, the quality of project documents was good. In the complex emergency context, the quality of implementation is often well outside FAO's control. On the contrary, when NRLW was appointed LTU, but was not directly involved in the technical clearance and backstopping of the interventions<sup>106</sup>, quality of project designs and implementation was rather poor until NRLW eventually provided backstopping to address some of the technical problems.

585. There is no doubt that emergency and rehabilitation in FAO has become a major area of work. However, most of the time water work in emergency is about rehabilitation of old irrigation schemes or even construction of new ones, or watershed management: these interventions present complex technical and institutional challenges, among many others, that cannot be forgone in an emergency context and engineering competence in this area is an absolute must for this type of work. Regrettably, both NRLW and TCE show an acute lack of human resources. In the past within the context of the Iraq Oil For Food programme, TCE funded one full-time irrigation engineer post. Since then, no substantial resources have been made available by TCE to NRLW to cope with the numerous requests for technical clearances.

586. NRLW staff in HQ and in Regional and Sub-regional offices have been involved in backstopping emergency projects, but requests clearly outdo the already over-stretched human resources and delays and default are often the norm. Some temporary solutions have been found by 're-deploying' an irrigation engineer consultant recruited for the Somalia programme to the West Bank, but these do not seem to be sustainable solutions. Similar issues of missing technical competences also applied to projects aimed at watershed rehabilitation. Moreover, problems with staff recruitment for emergency projects have at times also plagued operations at times.

587. Another necessary element in water construction work is time, for surveys, design and implementation: in the emergency mode all get compressed and the risks of failure grow rapidly. At the same time, the need for 'emergency mode' work in the water sector appears somewhat over-stated. Undoubtedly, there is need for water-related work also in failed countries where modalities of intervention are different and more challenging; still, using as example an intervention aimed at capacity development of irrigation staff in a failed-state country, this is not an emergency project, rather a development project implemented in difficult conditions and as such, it requires proper design and technical backstopping. Admittedly, emergency work can be an entry point for development work in water, but only if it is good quality work, otherwise the contrary effect will be achieved.

588. The very recent and still non-finalized review commissioned by TCE on its water-related projects, likewise the one carried out by TCOS, contributes a detailed proposal to TCE and FAO for a better informed approach to the identification, formulation and implementation of water-related emergency projects. This Evaluation praises TCE for having undertaken this initiative: it formulated a number of recommendations well focused and specific, which have the potential to greatly enhance the

---

<sup>105</sup> Mid-term review of project "Strengthening Livelihoods through Food and Nutrition Security in Vulnerable SADC Countries" (OSRO/RAF/511/SAF).

<sup>106</sup> Information provided by NRLW indicates that about one third of the 'water' emergency projects were run without direct support from NRLW.

quality of FAO's water interventions in emergency context. TCE will have to decide which ones to implement, possibly in consultation with NRLW for the technical implications of a number of them

589. There appears to be a strong need for better definition within FAO of what 'water-work' in emergencies should be. The key actors who are TCE and NRLW have to agree on the principles underpinning their collaboration, respective roles and responsibilities and what can be reasonably expected to be feasible, where and how, and required resources. The IFA-WALS and the new Strategic Framework may offer a good opportunity for: i) legitimacy to the need for high technical contents in water work in emergencies; and ii) recognition of emergency work as a potential entry point in a country. The proposal on FAO Water Platform formulated in Section 12.2 of this report includes TCE as one of the key contributing partners. Suggestion 19 is also formulated below on the possible preparation of a specific product.

***Suggestion 19. To NRLW and TCE***

*NRLW should develop, or adapt if any similar document already exists for the community of humanitarian agencies, a guideline/manual for impact and needs assessment under emergency/rehabilitation conditions for water management.*

**10.3 Other modalities for funding of water-related projects and programmes**

590. Besides the work described above through the Investment Centre and the Emergency Division, FAO has implemented during the period under evaluation a large number of projects and initiatives through its 'technical cooperation' channel. This includes initiatives funded through the Regular Programme Budget with the Technical Cooperation Projects (TCPs) and initiatives funded through extra-budgetary (EB) resources. These include both Unilateral Trust Funds (UTF), when a country is at the same time the donor and recipient of the project, and Government Cooperative Programme projects (GCP) funded by donors in the context of their Official Development Assistance (ODA).

591. The TCP is FAO's tool to meet requests by Member Countries, usually small and requiring a rapid response, for which donors would not be ready to provide funds. In a number of cases, FAO has also been a pro-active proponent with TCP funds in the water sector in the first phase of the SPFS, before the period under evaluation. Between January 2004 and December 2008, 67 TCPs in the water sector, also including watershed management initiatives, have been under implementation, for a total budget of USD 17 million. Six of these were regional and one an inter-regional TCP. Geographical distribution was very wide, reaching 52 countries; only Mali benefited of three TCPs in the water sector. Out of the sixty national TCPs, less than half (26) were aimed at policy formulation, identification of investment projects, training and capacity development. In Africa, most if not all policy formulation work was conducted with TCP funds: the project designs were flexible enough to allow enough technical inputs from FAO at the right moment following the progress of the national policy formulation process.

592. All other TCPs were for field level work, often in support of the SPFS but not only. As discussed later for non-TCP projects, this raises concerns about the cost-effectiveness of the use of short-lived projects in water -related interventions that require longer time-frames than the two years that are usually available for TCPs. In a number of cases, TCPs were not effective as their design did not take into account realities on the ground and wider strategic issues. The example of the TCP in Turkey reveals a substantial lack of critical review by the PPRC endorsing the project. The Evaluation formulated Recommendation 24 below on the use of TCPs as a delivery tool in the water sector.

**Recommendation 24) To 'Water at FAO'**

**The use of the TCP modality in the water sector should be mostly in support of national processes of policy and strategy formulation and of capacity development.**

593. Most of the water-related projects during the period under evaluation were funded through EB resources provided by donors. The most frequent field initiatives were in the areas of food security and water, including in the context of urban and peri-urban (U/PU) agriculture. More recently, water related issues in the context of climate change have become significant. Donors also provided limited support<sup>107</sup> to NRLW at global and normative level, in particular in support of IPTRID and UN-Water.

594. An interesting case, partly mentioned above, is the relationship between FAO and Morocco in the water sector, which began in the 1980s. Along this path, the full range of possible FAO funding mechanisms has been used. In the past, TCPs and GCPs were predominant but since the early years of this decade, the UTF mechanism has been widely used to improve the quality of project formulation, development of ToR, recruitment and management of consultants in a wide range of topics, studies and analyses. The excellent collaboration among all concerned has so far ensured a high level of strategic and technical inputs from FAO. The question is whether the example could be replicated elsewhere. With adequate human resources, countries at a similar stage of development could benefit from similar support by FAO.

595. Last, the contractual agreement between FAO and the World Food Programme (WFP) in Mali opens up a new opportunity for FAO's interventions at country level. In this specific case, the FAO Representation with the technical support of RAF and SFW conducted an evaluation of a WFP project, funded by Japan and implemented through the NGO Mali-Nord. Despite a number of short-comings, mainly due to limited resources available, time constraints and the difficulty to recruit a gender-balanced team, the final report was of good quality and raised a number of key issues that had to be urgently addressed. Officially the donor did not appreciate the criticism, but reportedly, a number of the recommendations were implemented. In this case, the important question is the extent to which FAO should be involved in this type of service. The Evaluation considers that due attention and thought should be given to this modality of work, beyond the water sector. This would allow FAO to continue providing competent and highly skilled technical inputs to a country, without being directly involved in project implementation but still maintain a close relationship with the field, in order to draw lessons for its normative role. Such services should be conducted in so far as possible in close collaboration with national technical departments, so as to build their own capacities in this area as well and ensure easier mainstreaming of lessons learned and implementation of recommendations. Before embarking on this modality at large scale, FAO should develop clear guidelines, ToR and quality assurance tools for conducting technical monitoring and evaluation. Suggestion 20 below addresses these issues.

***Suggestion 20. To FAO***

*FAO should explore the appropriateness and the necessary administrative tools to act as a service provider in the technical monitoring and evaluation of projects and initiatives funded and implemented by other organizations.*

#### **10.4 South-South Cooperation**

596. The South-South Cooperation (SSC) scheme contributed to provide experts (graduate) and technicians (diploma holders) from developing countries to other developing countries in the areas of Water control, Crop production, Fisheries, Livestock and Other/diversification. It also included interpreters.

597. The total number of SSC experts and technicians who were operational between 2004 and June 2009 in all areas and countries involved was 942. This includes experts and technicians who completed or started their assignment during this period, independently of their length of service.

598. In total, water control experts were 216, including 27 experts and 189 technicians. Countries of origin and destination were quite diverse: the complete list is to be found in Annex 17. The total

---

<sup>107</sup> EB resources in support of global initiatives represented 6% of the EB funds for technical cooperation projects, excluding emergency, see Box 5 above.

amount of resources provided through the SSC in the water sector were 43 years of expert-time and 305 years of technician-time, from 11 countries of origin to 38 countries of destination.

599. In Nigeria, some successes were achieved with varied water supply constructions, and in Mali the Vietnamese experts and technicians were said to have contributed numerous farming related skills.

600. In all countries, the concept of SSC was highly appreciate, however the actual implementation and effectiveness were less positive. Communication often tended to be quite problematic, both in term of language and culture. Although experts and technicians are selected through an accurate CV analysis, fluency in English or French is usually limited, not to mention the local languages when working at community level. Also, the cultural differences were always wide and not easily overcome: this was mentioned also in the countries sending SSC experts to South-Saharan Africa, for example in Morocco. It was also stated that the honorarium under SSC for experts and technicians is not attractive.

601. Moreover, in a number of cases the technical knowledge of experts and technicians was not appropriate for the local conditions of their assignment, including issues such as hybrid varieties, and equipment, which go beyond the water sector. SSC is an important mechanism and should be continued, but improvements to its implementation appear urgently necessary. Suggestion 21 below addresses this issue.

***Suggestion 21. To FAO***

*FAO should analyse candidly and in-depth its experience so far in South-South Cooperation across all the sub-sectors and countries, its strength and weaknesses, and draw lessons and fine-tune modalities for future implementation.*

**10.5 Management of water-related field projects and programme**

602. The complexity of water-related work, in particular the engineering contents required for the rehabilitation, modernization and construction of irrigation schemes, pose a heavy toll on the management of projects and programmes in this area. As mentioned above in the case of emergency initiatives, technical engineering skills and time for surveys, designs, construction and use of the infrastructure are necessary inputs and steps for any irrigation schemes beyond the area that can be irrigated with a treadle pump.

603. These are well known facts among the water community. Admittedly, FAO membership system and current financial situation limits strongly, at least formally, the possibility of not responding to Member Countries' requests through the TCP modality in general, or not following up on donors' interest to work through FAO. The Organization has to respond and service these requests "even if they are clutching at straws." Also, some donors have constraining budgetary systems that do not allow longer projects. However, technical officers have a large scope for modifying project proposals and the Organization should have the clout for better negotiated agreements. The question remains whether this potential has been used to its full extent.

604. The Evaluation found evidence that when FAO designed and/or implemented projects which made time for appropriate design and construction and provided good quality backstopping and technical expertise, some good results were achieved. Among others, examples were: in India with the APFAMGS project, implemented over four years with regular backstopping from HQ and a national competent coordinator in the area of groundwater management; in Saudi Arabia, where the Chief Technical Advisors are international experts and have access to RNE for backstopping and advice if required and/or planned for; and in Malawi, where the Norway-funded project was planned and funded for a five-year period, with adequate provisions for a competent national project director, a well qualified international expert and appropriate backstopping from the NRLW officer based in the Sub-regional Office for Southern Africa. Shortcomings in design were always there, but also there was enough time ahead for addressing the problems once proper technical competences and skills were available.

605. Delays in implementation and heavy procedures were mentioned by virtually all during the country visits. It was stated that these cause very high costs for the countries themselves in time and resources and seriously undermine FAO's credibility. Delays are usually due to (i) slow procurement and flow of funds; (ii) long delays in technical clearance; and (iii) slow or non-compliance on reporting tasks. Further, the low competence of some of the consultants across a number of projects and partnerships was mentioned. Also, delays may not be specific to water-related interventions, but may have a greater impact on water-related interventions as technical weaknesses in this area have longer term consequences for participating populations.

606. Evidence of poor design and management was particularly acute for projects with important water-related components in Africa, within the umbrella of the Special Programme for Food Security (SPFS). In this region, virtually all projects suffered from gross under-estimation of costs of irrigation works and of time requirements for irrigation works. Moreover, during implementation there have been systematic delays, of 1 year or more, in the approval of the Terms of Reference or the final studies for the irrigation schemes, sometimes with very negative consequences for farmers. An example from the period prior to the evaluation was the first SPFS funded by the Netherlands in Mali: delays in works led to negative impact on the food security of participants for one cropping season. In spite of an evaluation having pointed this problem out at the time, there is not much evidence that FAO has learnt from that sad lesson. In particular, in the same country four other SPFS projects have suffered from similar delays and from gross under-estimation of irrigation work costs in the Project Documents.

607. The Evaluation's assessment is that the African SPFS projects with major water components, have failed to a large extent, with responsibilities shared by many units and levels:

- a) projects were designed and approved with unrealistic time-frames; the Evaluation suggests that FAO should be more successful in its negotiations with donors about the need of longer implementation periods for achieving effectiveness;
- b) project budgets were underestimated in several cases, also in non-SPFS projects, e.g. the Norway-funded project in Malawi;
- c) no adequate provisions existed for backstopping resources, disregarding the need for specialized competences to provide technical clearance for the different steps in the construction process;
- d) institutional set-up at country and regional level contributed to poor implementation: in the West-Africa Spanish funded projects, staff profiles and selection did not take into account the technical complexities of the projects, the need for good knowledge of irrigation technical aspects and of FAO procedures and the need for a managerially efficient location of the regional coordination;
- e) the gap in NRLW human resources in the Africa Regional Office from mid-2008 onward, due to predictable retirement, and in the West Africa Sub-Regional Office in late 2008-early 2009, totally unpredictable and unfortunate, with no provisions for adequate substitution in spite of efforts from the Central African Sub-Regional Office, led to very long delay in the technical clearance process for five or six projects in West-Africa;
- f) there is no certainty that the next steps will be smooth and that projects will achieve the expected results in due time, given the complexities still ahead linked to clearance, procurement and construction.

608. Also, the added value to the Organization in terms of testing innovative approaches and feed back in the normative work from these initiatives appeared to be rather limited, as the technical unit tended to be called in mostly when problems were rampant and it was too late to re-structure interventions to make them more efficient and effective.

609. In this respect, a major problem in the management of projects with important water components has been the low compliance across TC units with the rules for the set-up and management of project Task Forces. In relation to Emergency projects, about a third of the projects with TCE as Budget Holder or Lead Technical Unit had received no inputs from NRLW staff at all. As far as TCOS is concerned, the acknowledgement of NRLW as a key player in the formulation and implementation of water-related projects has been limited: the five Spain-funded projects in West Africa discussed above are

the most visible example, but this weakness emerged in most TCOS-managed projects. The Evaluation identified at least three main 'institutional causes' for this to have happened: shortage of human resources in NRLW; the 'emergency' mode of action of TCE, which does not appear to be justified in most cases given the nature of the interventions; and the underestimation of the need for technical inputs by TCOS.

610. Further, although the Evaluation may agree in principle that multi-disciplinary projects that should bring about changes in food security may not be better designed or implemented by a 'sectoral' technical unit as LTU, it also considers that the full involvement of all concerned units through the Task Force mechanism and throughout the complete life of a project is an absolute necessary to ensure that FAO's technical knowledge reaches the field and that experience from the field feeds back into FAO's knowledge. Resources also have to be made available to ensure that this happens.

611. Considerations above relate only to the construction or rehabilitation aspects of irrigation schemes. The Evaluation observed the shortcomings of the PPRC mechanism to ensure that adequate attention be given to gender and social inclusion issues in water-related projects earlier in the report (see Chapter 8). The same observation applies to the low attention given in the Organization's system for project appraisal to all other aspects linked whenever a technology like irrigation is introduced. This raises important needs of assistance for the capacity development of users for the management of the scheme, the new cropping methods and practices, for developing links with the market, transformation of products, nutritional issues, etc. There was no evidence that any of the concerned projects had taken these needs duly into account. This meant that even if the planned schemes had been built in due time, no provisions were there to assist users in the sustainable use of the schemes.

612. The Evaluation is aware that often donors are not ready to allow longer project durations, which would be necessary in any case to ensure sustainability of interventions as recommended by most evaluations in FAO. However, unless the project duration is solved and unless FAO takes a strong action to improve its project design and implementation, it should refrain completely from implementing projects requiring complex technical works in the water sector, as they result almost systematically in loss of credibility for the Organization.

613. The Evaluation has formulated Recommendations 25 and 26 here below on these issues.

**Recommendation 25) To 'Water at FAO'**

**FAO project documents for interventions in the water sector should clearly indicate budget requirements for long- and short-term human resources, including for technical backstopping and clearances, as well as ensure reasonable time-frames.**

**Recommendation 26) To FAO**

**The mechanism of the Project Task Force should be applied systematically and throughout the complete life of all projects, including emergency interventions, in particular when projects are multidisciplinary. Monitoring of project implementation should be part of the TF responsibilities.**

**10.6 FAO's rules and procedures applied to water-related field projects and programme**

614. The Evaluation does not challenge the rationale behind the existence of procedures for technical clearance of ToR for studies and designs and technical reports in general, in a specialized organization that has the function of global repository of technical and knowledge standards. However, the evidence from Africa and indirectly from other countries shows that FAO has been unable to ensure a timely response to the requests created by its own procedures in projects with large components on irrigation. Ensuing delays are unacceptable in the implementation of any project. Since the option of delegating the technical approval to third parties does not appear feasible, much better planning and more human resources within FAO would be absolutely necessary to comply with the work load created by its procedures. The alternative is to restrict field activities to the level that can currently be accommodated.

615. This also applies to the administrative process for recruitment and payment of consultants: delays in clearance of ToR and reports for and by consultants affect project implementation and

resolution of contracts, with a negative impact on the image of FAO. In this area, FAO's fees for consultants in the water sector, national and international, are considered low, with consequences on the recruitment process of project and back-stopping experts. This was particularly mentioned in Asia but it applies to other regions as well.

616. The Evaluation came across a major issue in Mali, which is likely to become important in other countries as well. This concerns the role that FAO retains as executing agency with technical and financial responsibility in implementation, while Governments are engaging, fully or partly, in the national execution approach and direct budget support by donors. As FAO lacks tools and procedures for National Execution (NEX), it ends up paying a price of image and substance in the hybrid situation whereby a Government has a relative lee-way in appointment of national staff for the management of FAO projects, while the Organization still retains the full responsibility for the actual management and implementation.

617. The absence of a mechanism and procedures for National Execution applies to all projects, but it seems to become more visible in the case of field projects with complex water and irrigation components, as works tend to suffer heavy delays due to the need for highly competent and specialized technical staff for proper project management. Interestingly the evaluation of the Libyan funded SPFS in early 2009 had mentioned the issue, but there was no follow up on it within FAO. In Mali, the Government suggested that FAO should have a role in formulation and monitoring and evaluation, where its technical competences and skills could be most useful, but not in the actual execution and implementation of the initiative. Clearly, issues about responsibility and image should be very well defined, as well as auditing procedures.

618. Another area where FAO's procedures had a negative impact on the respective project's implementation and relevance was the impossibility for the FAO Representation to accept funds locally by development partners. In Mali again, cases in point were a request by WFP for support in monitoring and evaluation of a small-scale irrigation project (USD 10000) and the set-up of a Unilateral Trust Fund with the World Bank/National Programme for Rural Infrastructure for the preparation of a training programme (USD 500000). In 2008 the authorization was granted and the WFP initiative was conducted under this umbrella, but the delay in approval affected the timeliness of the inputs by FAO.

619. The mechanism for setting the biennial 'earning targets' for technical officers in the decentralized offices and the merging of funds 'earned' by technical staff into a common regional pot, that appears to act more as a disincentive than an encouragement to more work and collaboration in the field programme, was raised as an issue in the context of this Evaluation. The welcome increased push towards decentralized decision making at regional level of funds embedded in the new RBM system of the Organization will have to pay adequate attention to these possible negative effects of the reform process.

620. NRLW did not come across similar problems at HQ level, as targets are decided at the unit level and earnings get re-invested in the Unit's work. However, from a more theoretical stand-point and not related to findings within the context of this Evaluation, the fact that these funds, most of which are earned through an EB source get transferred to the RP environment is not conducive to the most rational use of available resources.

621. Another issue of larger significance for the Organization that emerged clearly during this Evaluation, is the differential in secondment rates in the internal market when TCI 'buys' the time of staff in FAO's technical units. Since the secondment rates of FAO staff to TCI were cut by half, the remuneration to NRLW for supplying staff time is less than the actual cost of staff. In a situation of over-stretched human resources, this was a strong disincentive to collaboration between the two units on IFI-funded water-related project work.

622. Last, the Evaluation was clearly told by CGIAR institutions that are collaborating with FAO at length in water-related projects, how difficult it is for them to enter a partnership with FAO through Letters of Agreement, as this tool does not allow a peer to peer relationship. Issues of intellectual property and recognition of mutual contributions have also emerged several times.

623. The Evaluation formulated Recommendations 27 and 28 below to contribute to future better performance by FAO at large, in full respect of its rules and procedures.

**Recommendation 27) Recommendation 27 To FAO**

**FAO should revise its internal market mechanisms and rates, to ensure they do not act as disincentive to collaboration between projects and operational units and technical departments, and prevent dissemination and testing of normative concepts.**

**Recommendation 28) To FAO**

**FAO should urgently develop procedures for National Execution of projects and efficient and effective tools for substantial project supervision and monitoring, beyond financial delivery.**

## **10.7 Conclusions**

624. Water is an important component of a substantial part of FAO's operations and is conducted through all the modalities of delivery at field level, including support to large-scale investment, emergency work and food-security interventions. The relevance of the field programme as a whole has been good to high, but its performance quite mixed.

625. More specifically: the current mode of TCI work with the IFIs appears efficient and of good quality though very fragmented due to the type of requests, in particular from the WB; the TCP modality has proved to be effective in policy and capacity development work; the potentially positive effectiveness of the SSC has been jeopardized by linguistic and cultural obstacles; and work in emergency was below average in terms of effectiveness.

626. FAO's procedures and rules for project management, including the Task Force mechanism, have not been respected fully in all water-related projects, in particular by TCE and TCOS. Lack of specialized human resources has been a major weakness, with the end result that several projects, in particular in Africa, have performed very poorly. As of now, the Organization does not have any comparative advantage for the implementation of complex field projects with important water components.

627. The Evaluation formulated recommendations to FAO and to 'Water at FAO' to tackle the numerous issues identified.

## **11 'Water at FAO': resources and organizational set-up<sup>108</sup>**

### **11.1 Resources**

628. The NRLW professional mailing list in 2009 fluctuated between 25 and 30 names, including RP staff, project staff and consultants, the latter both short and long term. NRLW RP staff in total are 17, 8 of whom located in HQ and 9 at decentralized level, whereas consultants and project staff seem to be mostly concentrated in FAO HQ. The distribution of RP staff across FAO different locations was, at the time of writing the present report, as follows:

- eight including the Service Chief in HQ;
- one officer in RNE, plus one JPO (non RP staff);
- two officers in RAP;
- one officer in each of the other Regional and sub-regional offices, namely in RLC, SEC, SLC, SFC, SFS, SFW with the exception of SLM, SNE and SFE where there is none<sup>109</sup>.

<sup>108</sup> Information and evidence in this chapter come from: interviews with FAO staff in HQ, RO and SRO; review of data in PIREs; analysis of auto-evaluation reports.

<sup>109</sup> SEC: FAO Sub-regional Office for Central Asia; SFC: FAO Sub-regional Office for Central Africa; SFE: FAO Sub-regional Office for Eastern Africa; SFS: FAO Sub-regional Office for Southern Africa; SFW: FAO Sub-regional Office for Western Africa; SLC: FAO Sub-regional Office for the Caribbean; SLM: FAO Sub-regional Office for Central America; SNEA: FAO Sub-regional Office for Northern Africa

629. All NRL decentralized officers are accredited as 'Land and Water' expert, although FAO information system indicates this applies only for the officers in the RLC and SEC.

630. NRLW has, through budget cuts, lost three professional staff positions from the PWB 2004/05 to the PWB 2008/09. Major reshuffling, particularly in the PWB 2006/07, led to a final net loss in the 2008/09 PWB of two professionals at P5 and one at P3 level and to a different mix of staff profiles. In 2006/07, NRLW lost the P4 irrigation engineer posted in HQ and was left with only one senior irrigation engineer, in RNE. The senior water officer post in RAF has been vacant for almost two years at the time of finalizing this report. In HQ, one P3 post was also vacant and one P3 additional post on Water management was foreseen by the new SF. Staff resources in NRLW during the period under evaluation, and the shifts across biennia, are detailed in Annex 16. The skill-mix includes experts in water policy, water management, irrigated agriculture, water quality and safety, information systems and communication.

631. The Evaluation notes that four out of the 17 staff in NRLW at the time of the evaluation were women and included senior staff and staff in the decentralized offices. The ratio is within the average range of FAO's technical units. Women are also among project staff and long-term consultants, usually more junior, but this is an issue that FAO as a whole struggles with. Thus, the attention to gender balance in the recruitment of new staff is noted and encouraged.

632. Additional to NRLW, there is a spread of water knowledge across FAO. These officers are commonly water specialists within their wider thematic area and are located in the following units:

- Investment Centre, TCI, 7 officers;
- Forests and Water, FOMC, one officer;
- Agro-meteorology, NRC, 2 officers;
- Water legislation, LEGN 3 officers in HQ<sup>110</sup>, 1 project Legal officer in the field;
- Gender, ESWD, one officer;
- Pesticide residues/plant protection, AGPP, one officer;
- Freshwater and Aquaculture, FIM, several officers;

633. At project level, there are currently at least 10 Chief Technical Advisors with competences in the water sector: six in Asia, three in Saudi Arabia and one in Somalia. Their number and location is linked to the implementation of larger field projects funded through EB resources. They can represent a valuable technical resource at country level for the FAO Representations.

634. In the absence of quantitative targets and results it is difficult to say what would be the necessary staffing in a unit like NRLW and in 'Water at FAO' in general. Nevertheless, there is no doubt in the Evaluation's view that staff in NRLW at all levels and in FAO in general in the water sector, is below the quantitative threshold for efficient and effective response to the requests by the Member Countries and for being pro-active on the diversity of themes on which it is called, by mandate and role, to act.

635. Major gaps in the numbers of human resources have been identified in FAO's capacity in water in HQ and at the decentralised level. In terms of staff numbers, water expertise in virtually all regions is below critical mass, for both normative and field work. There is a strong need for strengthening support capacity from the sub-regional/regional level in terms of strategic and technical thinking and competences in all regions, aimed at Governments directly or at partners or projects. Also, it is of vital importance to take into account the synergy that develops when two or more technical officers are posted in the same location: the net results is much more than having the same two people located at a distance. This was very clear in the case of the location in Accra of both RAF and SFW water offices and comments about isolation in other regional and sub-regional offices tend to confirm this fact.

636. Stronger presence appears necessary also at country level. Often governments expect rapid response to their queries, including at very short notice if not in on-the-spot situations, and it is not

---

<sup>110</sup> By the time of finalizing this report, one staff member had left the Organization and two junior consultants were working on water-related issues.

possible for FAO Representatives or their Assistants to provide informed replies on water-related technical and policy issues, unless they happen to be competent in the subject.

637. The Evaluation is aware that the definition of the right mix of professional skills at the different levels of decentralization is a complex exercise, which should be matched with the needs and requirements expressed and recognized for each region. Undoubtedly, the dearth of engineering staff to backstop field operations and to generate the innovations needed to deal with water scarcity and food security, but in a way that enables vulnerable households to intensify their production, appears as the first priority to tackle, especially in the decentralized offices.

638. The Evaluation defined some principles to underpin the allocation of human resources within 'Water at FAO', to ensure balance and effectively complement responsibilities between HQ and decentralized offices, including at country level, and across areas of specialization. These are illustrated in Recommendation 29 below.

**Recommendation 29) To 'Water at FAO'**

**It is recommended that:**

- a) Experts with stronger specialization and competences in broad strategic issues should be based in FAO Headquarters; support from this to the other levels should be available upon call;**
- b) Experts with stronger engineering and field experience and with solid operational and problem-solving capacity should be based at regional and sub-regional level;**
- c) Competences should match regional/sub-regional needs, instead of the current standard set of competences across all sub-regions;**
- d) At least two water officers, one or more of each discipline, should be located in FAO decentralized offices where water and land issues are a priority, to properly deal with the management of water and land resources, jointly and separately, to ensure synergies and back-up mechanisms;**
- e) FAO Representations should recruit national technical specialists at country level, in particular in large countries like China and India and where competent expertise is available.**

639. The Evaluation, based on evidence provided throughout the report, has also identified priority technical and geographical areas where there is a higher need for additional human resources. Means to achieve improved staff allocations are: rearrangement of current staff, filling of vacant posts, Extra-budgetary resources made available by the TC Department as sharing costs for project management and/or directly by donors. It will be the task of 'Water at FAO' to refine this analysis by matching needs with resources, with its insider's knowledge that no evaluation can ever achieve.

640. The Evaluation is aware that implementing Recommendation 30 below will require a substantial investment in terms of resources. Evidence supporting this need has been illustrated throughout the whole report in detail. However, the Evaluation considers that there is no alternative to a significant increase in resources, if FAO and its Member Countries want to make the work of the Organization in the water sector relevant and effective and through it, have a real impact on the food security of its intended beneficiaries, the rural poor across the world.

**Recommendation 30) To 'Water at FAO'**

**FAO should ensure full time capacity in the following areas and locations:**

- a) Irrigation engineering capacity at sub-regional levels in East, Southern and West Africa and in the Near East/North Africa;**
- b) Strengthen water management capacity to support the Technical Cooperation Department in its work, with NRL staff based at the most appropriate location.**
- c) Create a post for Social development and gender expert with specific experience in agricultural water and land management at middle/senior level (P4/P5) in NRL at Headquarters;**
- d) Strengthen capacity at Headquarters in NRL on: groundwater management; water harvesting; water statistics and information systems;**

- e) Strengthen capacity on waste-water management and related topics in Latin America, Asia and the Pacific and in the Near East;**
- f) Strengthen capacity on water policies at the regional level, to match requests from Member Countries;**
- g) Strengthen capacity on: water-related issues in AGNS and on agricultural pollution in AGPP;**
- h) Establish capacity on Forest and Water and Watershed Management in Central Asia;**
- i) Sustain the credibility and performance of LEGN by strengthening its human resources in the water sector.**

## **11.2 NRLW internal management**

641. Relations within NRLW appear good overall and the Evaluation perceived it as an open, collaborative unit where staff exchange and collaborate. There are interesting examples of effective collaboration also among some NRLW officers located in different regions, for example the joint work between HQ and RNE in Morocco, and the work on MASSCOTE between HQ and RAP.

642. However, the inter-regional collaboration cases appear to be more exceptions than the rule. Staff in decentralized offices often expressed frustration at the absence of mechanisms for exchange and collaboration with colleagues in HQ and with the senior management, and all agree about the need for much stronger integration and interaction; overall perception by decentralized staff was that minimal efforts were made at building a "NRLW team" that would bring together all levels, HQ and decentralized offices, or at developing a shared vision and strategy to which all would contribute from respective geographical locations. A recent case reinforced these feelings: in 2009, on the occasion of the preparation of the new Organizational Results, FAO departments and divisions in HQ brought together all their staff for consultation and common strategizing. The Natural Resources Department (NR) failed to do so, apparently due to lack of financial resources and heavy workload of staff: this appears as a missed opportunity, which could have produced much more benefits than its actual monetary cost. The efforts by NRLW in HQ to improve communication and 'team spirit' with decentralized staff were not enough to fill the gap and lack of resources prevented further planned initiatives<sup>111</sup>.

643. Oversights in sharing information occurred in both directions, and included HQ by-passing RO/SRO water officers with projects and initiatives in countries and in respective regions, the exclusion of decentralised officers from mailing lists of regional projects in their region or within their range of interest, as well as decentralized officers not keeping senior managers in HQ fully informed about their involvement in activities of HQ interest and domain. In themselves, these are not major problems, but indicate the need for improved attention and communication. The absence of specific training for FAO decentralised staff on new FAO water products (e.g. AquaCrop) is discussed later in Section 11.3.

644. In the understanding of the Evaluation, possible reasons for these shortcomings included: for approximately half the period, the Director post was vacant; and the decision, that the Evaluation supports as stated in Chapter 9, to allow the appointed chief of NRLW to serve as Chair of UN-Water reduced the time available for management of the unit and strengthened the perception from the field that HQ's priority was linkages outside rather than within FAO.

645. Most of these issues had been discussed and identified as weaknesses already in 2004, on the occasion of an AGL retreat, and in 2006, through the auto-evaluation exercise conducted by AGL. The Evaluation found no real evidence of progress on a number of them, and considers that efficiency and effectiveness of NRLW's work has suffered also due to the lack of attention by the Unit's and Division's managers to these aspects. The key recommendations formulated in 2006 are listed below<sup>112</sup>:

- Revise the vision of the Land and Water Development Division;
- Redefine the role of programme entity managers to allow for an effective management;

<sup>111</sup> In January 2010, NRL organized a retreat with all staff., that resulted in a high quality detailed Plan of work for 2010/11

<sup>112</sup> Auto-evaluation report of PE 211A1, A2 and A3, AGL Summary cleared, 2006.

- Formulate a more strategic approach to objectives and direct work efforts on few priority areas;
- Promote more integrated team work and a stronger relationship between headquarters and sub-regional and regional officers;
- Strengthen leadership and integration of programme entities;
- Establish more proactive approaches to cooperate with NGOs and civil society;
- Evaluate the use of training and capacity building products in the field;
- Increase participation by AGL staff at international conferences, with the aim to enhance visibility and raise credibility of the Division's work;
- Strengthen efforts to improve visibility and a mechanism for planning, monitoring and publishing documents.

646. A number of the recommendations above are still relevant today and better management of NRL will be essential to meet the strategic role that this unit should play in FAO water operations. Recommendation 31 below addresses these issues.

**Recommendation 31) To NRL**

**NRL should act urgently to:**

- a) develop a NRL common vision and strategy, by involving staff at all levels and locations;**
- b) improve team work, collaboration, coordination and sharing within NRL across all levels and locations, including through annual meetings for all staff, regular and frequent virtual meetings, visits by senior managers to decentralized offices, etc.**

### ***11.3 Collaboration within FAO on water issues***

647. Overall, relations between NRLW and other units of FAO are of a mixed nature. They appear good and constructive with a number of technical units, namely with AGNS, NRR<sup>113</sup>, LEGN and NRLA. In these cases, roles are clear-cut and technical responsibilities well divided. Models differ: collaboration with AGNS on water quality for food safety and with LEGN on the interface between water management and legal aspects are long-term relationships that have peaks of joint activity around specific products or projects; sporadic joint initiatives, as was the case with NRR for an e-conference on biotechnologies, whereby collaboration was very intensive for a limited period of time; long joint history and shared fate with NRL, implying a much closer relation and the merging under the new structure.

648. Work with FIMA has been positive on some occasions, for example for the Water Resources database, but short of potential and rich in missed opportunities.

649. The separation of the FAO Water Unit from the Agriculture Department in 2007 led to agricultural water to become 'isolated' and to have only nebulous contacts with the Agriculture department, as assessed internally to the Organization. Further, under the water scarcity flagship, production and agronomy have lost out to tackling water use issues and opportunities have not been taken to seize upon FAO's strongest asset in water, i.e. its linkages to agriculture and food. Also, FAO had little advocacy foundation for the social and economic benefits of agricultural water use through production.

650. NRLW has traditionally been linked to NRLA and collaboration has been close and permanent. Collaboration between NRC and NRL is considered excellent only by some, whereas others consider that gaps exist.

651. NRLW contributed to work by other units: with AGNS on water safety in the context of food safety issues and soil contamination; with NRR for an e-conference on the role of bio-technologies in water scarcity (commented as very positive and high level contribution); with Fisheries collaboration was very positive in some cases, e.g. the Water resources Database, though less successful in others; in general, collaboration with TCE and TCOS has been difficult and short of required levels of interaction, whereas with TCI, it appeared mainly frustrated by lack of time among NRLW staff.

<sup>113</sup> NRR: FAO Research and Extension Unit, Natural Resources Department

652. A number of cross-departmental working mechanisms, including Priority Areas for Interdisciplinary Actions (PAIAs), IDWGs and Multidisciplinary Areas have facilitated and seen positive collaboration between NRLW and other technical units in the Organization. Those with greater involvement by NRLW seem to have been the Multidisciplinary Areas on Food for the Cities, Sustainable Management of Mountains, Global Perspective Studies and Spatial Information Management and Decision Support Tools.

653. Interactions between NRLW and TCI have been poor on a project-by-project basis and for mutual feedback on new products and lessons learned have been poor, though positive through internal activities within Headquarters. Entry points have been the joint work for IFAD on "Water and Rural Poverty", "Investment in Africa" with IWMI, Comprehensive Assessment, macro-level capital requirements (ESAG) costs of capital investment in agriculture (Anti-Hunger), unit costs and credit mechanisms. More recently, the work for the background preparation for the Sirte Conference was also an opportunity for extensive interaction, over a nine month period, through an IDWG chaired at Deputy Director General level and supported by recruitment of one national consultant per country, cross-checking with FAO representations and regional workshops.

654. In most decentralized offices, both regional and sub-regional, NRLW staff collaborates with Fisheries, Forestry, Policy and Climate Change staff and others through the Multidisciplinary team. In SFW/RAF, a good mechanism exists by which meetings are organized at the sub-regional level between FAOR, SFW staff and other sub-regional bodies' representatives: this helps multi-disciplinarity and offers opportunities for internal training, joint planning and information sharing and meeting with key partners. For example, at the time of the Evaluation SFW was planning to invite representatives from ECOWAS and the Mano River initiative to discuss about relevant water issues.

655. In general, NRLW has been willing to go the extra-mile to collaborate on normative products with other units in FAO, although less so for field projects; admittedly, the timing of involvement in field work is less compatible with work-loads. There is also an issue of staff profiles, more skewed in favour of normative work, as well as of the priorities set by the unit. The analysis above has shown the gaps and weaknesses and the serious disconnection between NRLW and emergency and SPFS initiatives. Also, NRLW workload has been fully pre-allocated, as it should be in any efficient organization with secured resources to be used to fulfil its mandate. This leaves little, if any, space for the high number of unexpected demands, which come often at short-notice. The issue could be partly solved with better planning by TC units on the basis of on-going and pipeline initiatives; it appears less manageable regarding un-planned events decided by FAO Senior Management.

656. An area of internal collaboration on which NRLW appears to have invested not enough attention and efforts has been the diffusion of its new products within FAO, for example with TCI and among its own staff in the regional and sub-regional offices, as mentioned above. This gap would be easy to fill with little investment for targeted training events of FAO staff in the different units and locations. The Evaluation considers that this would provide strong returns in terms of immediate highly qualified feedback and diffusion. Recommendation 32 below tackles this aspect.

**Recommendation 32) To NRL**

**NRL should give priority to conducting capacity development events for FAO water staff from all locations and all concerned units, in particular TCI, on all its new products, and 'Water at FAO' should accommodate these efforts making staff available for training. AquaCrop and MASSCOTE represent areas for urgent action.**

657. As is often the case, good professional relations depend on personal commitment and willingness to overcome obstacles. However, in a complex organization like FAO there is a need for formal mechanisms that facilitate, if not ensure, that such vital collaborations are institutionalized and do not remain in the realm of the personal initiative. So far, FAO staff working on water issues rarely comes together, though they may do so at occasional international events or meetings with donors.

658. There are signals that NRLW staff desires to be deployed to better effect in field operations though this role may not be clearly contained in the job descriptions of HQ NRLW staff. NRLW appears open to a modality of planning and commitment to the field operations on joint programmes and with engagement in the full project cycle, rather than meeting occasional ad hoc, and often unrealistic, requests for piecemeal support.

659. The term "FAO-Water" was first used in the proposal aimed at setting up a FAO Water Platform, presented to COAG in 2007. Since, due to the absence of a mandate to progress on this initiative, the term has been used for communication purposes only. The Evaluation finds the concept appropriate and necessary. The FAO Water Platform proposed in this report encourages FAO to transform it into reality.

660. The Evaluation considers that the path ahead for connecting water to the three organizational goals demands more resources, a much stronger and deliberate interaction between a 'critical mass' of a diverse range of water specialists located at the various decentralized levels in the Organization with other technical disciplines and with operations, as well as innovation in management.

## **11.4 Conclusions**

661. Human resources for water in FAO have been short of needs and were assessed as being 'below critical mass'. This applies to virtually all units involved in work on water in the Organization and has affected the capacity of the Organization to meet its commitments in an efficient and effective manner.

662. Attention will be required urgently to improve the internal management of NRLW and to make the best use of the available human resources.

663. The Evaluation found that coordination and collaboration between all units in TC Department and NRLW require strong improvement in both directions: TC units should exploit normative products of NRLW and NRLW must take the opportunity to learn from field experience to strengthen the basis for normative recommendations. The opportunity to apply normative outputs in the Organization's field programme and close the feedback loop should be reinforced. Recent initiatives by some units in the TC department towards internal review of their achievements in the water sector, as well as the new constructive attitude to collaborate with funds to NRLW are important and praiseworthy steps towards better integration and coherence in FAO's work.

664. The Evaluation formulated recommendations to FAO and to 'Water at FAO' to tackle the numerous issues identified.

## **12 Overall conclusions and proposal for a FAO Water Platform**

### **12.1 Overall conclusions**

665. The Evaluation was mandated to conduct a thorough assessment of FAO's work on water from 2004 to 2008/9, as a follow up to the IEE and to the relevant discussion among Member Countries in the context of the preparation of the Organization's Immediate Plan of Action. Throughout its analysis, the Evaluation has referred as its overarching benchmark to the goal and mandate of FAO, and assessed how the work of the Organization related to water had contributed to it. This is reported in Box 8 below.

#### **Box 8. Mission statement by FAO**

<p><b>FAO's mission statement places a duty on the Organisation to work towards food security for all, improve agricultural productivity, better the lives of rural populations and contribute to the growth of the world economy</b></p>
---

666. The Evaluation found that in the water sector, FAO's mandate is as relevant as ever, and that demand for its services is at least as high, if not higher, than before. The Organization is perceived as a substantial advocate for the linkage between food security and water; its work in the water sector is respected, although it is not well known among its Member Countries.

667. FAO's 'share-holders' and primary clients are its Member Countries and their rural poor. At country level, FAO is recognized as a reliable source of information and technical advice and support. However, the capacity and quality of FAO's delivery has not matched the rising and diverse demand and expectations of its Member Countries and shortcomings were noted both in its technical assistance and field project work as well as in the effectiveness of its response to the water-related aspects of climate change and the food price crisis.

668. The Evaluation noted inconsistency between what has been FAO's strong advocacy message on water priorities in Africa and the level of resources made available in that region for ensuring high quality delivery of both normative and field programme. Equally, resources on water leveraged or allocated to the Asian region are not proportionate to the large numbers of poor and undernourished people there.

669. Globally, FAO has played a strong role in the debate on 'water scarcity' amid the topics of climate change and increasing global food needs. FAO has high visibility in international conferences, regional and national water-related forums and the Organization is well recognized and appreciated by peer international organizations. Collaboration on global flagship publications as well as for work at country level are appreciated and of good technical quality. The chairmanship of UN-Water has undoubtedly contributed to FAO's credibility and visibility among peer organizations, although it is not clear yet whether 'water in agriculture' will also benefit of enhanced visibility through FAO's role in UN-Water. Also, competition exists and FAO should not expect a 'business as usual' future.

670. FAO's contribution to assist planners and managers in many countries, and its contribution to the legal aspects including on international transboundary issues, has been substantive and recognised and should continue. Equally, its normative and operational work on modernization and management of irrigation systems, water productivity, water resources management, ranging from groundwater to RWH and land and water management, was highly relevant and effective to a good extent.

671. However, to make an example, the contribution of Water at FAO to on-farm water use has to go beyond AquaCrop to have more direct impact on the absolute number of people hungry and vulnerable to hunger, which has increased by more than 100 million in the last three years alone. FAO's work should actively pursue and promote accelerated access to water for production by the poor, in ways that enhance, not threaten, environmental sustainability. This is a daunting but unavoidable challenge.

672. Positive results, mainly at the normative level, were achieved in the areas of water quality, the interface between freshwater management and aquaculture, watershed management and there is potential, if resources will be made available and appropriate partnerships developed, in the work on agriculture and wetlands interaction and on water pollution from agriculture.

673. FAO has a name as an information and knowledge broker and its support for capacity development on all its areas of work is highly demanded. The quality of many of its publications is good. AQUASTAT, the only existing database on water resources, is a widely known and used information system. However, poor feedback from field experience into new products, lack of strategic planning for the production of NRLW normative outputs, and lack of attention to Member Countries' constraints in the access to FAO's products, all may contribute to undermine the important role the Organization can play in this area.

674. Water is a theme of work for many units in FAO and has been a strong component in FAO's support to its membership through investment projects, emergency and food security interventions. Divergent views and working modalities, together with overstretched human resources, disincentives in the form of rules and regulations and a certain turf-defence spread in the Organization, have led to missed opportunities in the uptake of normative messages and feedback from the field in relation to TCI, as well as to poor results in terms of technical contents of emergency and food security projects. The Evaluation considers that unless issues of human resources, project time frames and management and procedures are solved, FAO should refrain from implementing projects requiring complex technical works in the water sector, as they almost systematically result in loss of credibility for the Organization.

675. Although FAO's role and contribution are well recognised at the regional, sub-regional and country levels, effectiveness has been less than expected and required. The priority given by NRLW to the normative and global level has negatively affected its response to needs expressed by the countries. Interventions have often been isolated, fragmented and lacking coherence and critical mass. With some exceptions, FAO's work on water has failed to recognise social inclusion as a foundation of development and to adequately mainstream gender in its technical work.

676. In 2007, the Independent External Evaluation of FAO stated that FAO had '*no comparative advantage in water*' and concluded that '*FAO continues to have a lead role on water databases and is respected for its work on agricultural water management. If hunger, poverty and chronic malnutrition are to be overcome, especially in Africa, increased water control is a prerequisite for any green revolution and for continuing agricultural development in Asia and the Middle East. Many water networks exist but are often biased against agriculture. FAO is currently in a weak position. The competency mix and the wide dispersion of the few human resources remaining in the Organization would need to be addressed as an initial imperative for the Organization to exercise leadership in macro-policy issues at global and regional levels.*'

677. This Evaluation found that FAO is the only institution with explicit mandate for global and country level work on the interface between food, agriculture and water, combined with the political mandate of the UN to address this on behalf of its Member Countries. However, it agrees with the IEE that FAO cannot exercise its mandate fully unless two key principles are accepted and put into practice by FAO and its membership alike:

- innovation to address water scarcity in agriculture for the food security and economic benefit of all is necessary; achieving this objective requires meaningful interaction between a 'critical mass' of a diverse range of water specialists; and
- successful integration of water aspects across FAO requires much stronger and deliberate interaction with other disciplines, including gender and social development experts, and operations.

678. In the absence of repositories for requests from Member Countries and of time-keeping systems that allow an objective analysis of gaps between supply and demand, and of related efficiency, the Evaluation can only judge the amount of work implemented in subjective terms. There is no doubt that work-plans have been often disrupted by unplanned requests, either external or internal. It is expected that the new Results Based Management and Performance Management Systems (PEMS) operational as of January 2010 will help in addressing these issues.

679. At the same time, 'Water at FAO' is seriously understaffed, at HQ and decentralized level: there is no critical mass of experts overall and in specific locations to effectively handle requests and needs of Member Countries, let alone be pro-active on the wide range of themes where it could provide an added value. Moreover, the existing human resources within NRLW, in particular at the decentralized level, are not part of a 'water-team' that shares vision and strategy and whose members contribute to commonly agreed goals. Opportunities for more efficient and effective work have thus been lost.

680. Also, as stated by the IEE, the Evaluation considers that as of now, 'Water at FAO' is at a distinct disadvantage in its attempts to generate meaningful solutions for the world's hungry. Global successes are only meaningful if they effect change on the ground, and this has been FAO's Achilles heel. Previous evaluations as well as this one have found that only little of the excellent normative work and successful global networking and advocacy translates into food security gains on the ground. A major shift of attention and focus will be necessary, to make FAO Water work relevant and effective for the rural poor.

681. 'Water at FAO' needs to find innovative ways to put and keep upfront in its own and others' thinking on land and water productivity, the immediate urgency of people living with hunger. The new structure for FAO provides a useful foundation, as much as the focus on results and impact rather than outputs, but it will be the 'ways of working together' that will determine its success in practice.

## 12.2 *Proposal for an FAO Water Platform*

682. This Evaluation has confirmed the extent to which water is a significant aspect of many of FAO's activities. Water is one of the basic resources that FAO's work revolves around: improving food security from household to national levels often involves better use of water; water-related projects are a major component of the work of the investment centre; emergency operations frequently have restoration of water services as a priority. In conditions of scarcity and competition, activities in sectors such as forestry have implications for downstream water availability.

683. These themes are evident both in the work of staff based in HQ and in the decentralized offices. Various other activities - including data collection about land and water resources, contributions at project and conceptual level to legal aspects of water, preparation of policy papers for countries, and background papers for regional and global conferences – should all contribute to and benefit from FAO's many activities in water. Even where there is no apparent direct connection with water, for example when improving the chain of activities from the farmer's field to marketed consumer products, there are significant implications for the productive benefit to society of water use in agriculture.

684. With such a diversity of actors and activities, the need for coordination is clear, although this usually comes at a cost of time and resources. It is therefore appropriate before recommending any new mechanism to explain what the added value is expected to be. The Evaluation sees two distinct potentialities: enhancing operational effectiveness and promoting FAO's strategic vision.

685. Operationally, not only the capacity of NRLW to provide technical backstopping and clearance was limited, but other division and units did not consider it when designing and implementing projects with water-related components, in particular emergency and SPFS initiatives. This resulted in delayed implementation, or worse, implementation to inappropriate technical standards. A coordinating mechanism would ensure that the balance between the resources needed for technical backstopping and the planned volume of field work is appropriate.

686. At the same time, the appropriate location of capacity for technical backstopping and clearance should be considered: the required engineering capacity should be located as close as possible to the place where this will be used, i.e. the regional and sub-regional offices from where assistance is provided to FAO Member Countries for project implementation. This additional expertise needs to be linked functionally to the division or unit in HQ that can best support it and NRLW appears to be the logical unit<sup>114</sup> in the view of the Evaluation. However as of now, NRLW expertise in HQ tends to be highly specialised on the range of topics relevant for the global and inter-regional mandate of the unit, rather than in those aspects of support to field projects that predominantly require application of appropriate engineering standards. Thus, the Organization will have to decide whether NRLW should be strengthened also on this aspect or another division should take on this role.

687. Additional improvements in the use of scarce FAO resources could also be expected from a coordinating mechanism with an overview of ongoing and planned activities. Cross-fertilization between country-level activities and project preparation work of TCI, TCE and TCOS, in both directions, could be enhanced, lessons can be shared among countries and skills in one unit might more readily be shared, rather than duplicated in another.

688. However, the major benefit from an effective co-ordinating mechanism should be the promotion of FAO's strategic vision for water. Based on the evidence above, the Evaluation is of the opinion that the outputs of NRLW and of 'Water at FAO' more generally, have content that is relevant to all of FAO's operations. Yet it is a matter of concern that there is no evident demand from the more operationally oriented units for these and that the dissemination of these ideas through non-NRLW FAO field activities is limited at best.

689. In sum, FAO does not exploit its corporate body of knowledge and field involvement to derive a set of messages and approaches that would constitute an 'FAO approach to water' to the pressing

---

<sup>114</sup> The Evaluation notes that as of 2010, the relation between all technical units in FAO will go through substantial revision in 2010, when the main reporting lines of regional and sub-regional staff will be the Regional Representative. At the time of writing this report, no final decision in this respect had been made and no comment is possible.

water-related issues within its mandate. This would not mean applying uniform solutions to the widely varying problems of Africa, the Middle East, Asia, and so on. Rather it means adopting a coherent approach to the identification of constraints and priorities in the water sector, exploiting FAO's contributions to the world water conferences, its analytical and information-based expertise in Rome, and its wide range of field operations.

690. An 'FAO approach to water' will not emerge immediately, but it will never emerge if operations continue as near-independent fiefdoms. Every activity is an opportunity to bring FAO's skills to bear in a coherent manner. Interventions that disseminate materials from HQ should also allow for feedback from the other operating units and the field to improve approaches and to confirm relevance and applicability. As confidence and knowledge grow, quality will benefit at both ends and the 'FAO approach to water' will become clearer. Once that happens and is recognised, countries who seek FAO input will have a much clearer idea what they can expect to get and staff working for FAO, whether permanent or consultants, can be exposed to characteristically FAO ways of working.

691. The ongoing reorganization of FAO provides an opportunity for establishing and shaping the Water Platform. Water is identified as an Impact Focus Area, with an appropriately broad range of interests. The new structure of NRL that will bring Land closer to Water, the IFA-WALS and all other IFAs relevant to water, and the greater attention to RBM, should all set the stage for progress towards the Water Platform proposed below. The fact that 'water' is the object of Organization Result F.2<sup>115</sup> and mentioned or implied in nine out of fifty-three Organizational results, namely A1, B1, B3, C5, D4, E6, F2, F5 and F6 besides having also an impact on objectives H, I, K and L<sup>116</sup>, should facilitate the acknowledgement within the Organization of the strong and urgent need for better coordination and collaboration around it. The mission statement proposed earlier in this report for 'Water at FAO' (see Recommendation 1) meets fully the thrust of the proposed Water Platform.

692. A dominant theme of this evaluation has been that resources are insufficient to meet demand. Water will become increasingly important and FAO's budget is unlikely to expand dramatically in the foreseeable future. Partnerships can help, and should be pursued, but maximising complementarity among units and different organizational levels who work in the water sector will be critical to improve FAO's impact at local, regional and global levels of food security.

693. Operationalising the Platform will require concentrated leadership in the initial phases, and the question of where this should come from was considered by the Evaluation. The initial 'supply' of materials that should provide the intellectual basis for the Platform is NRLW, suggesting that Natural Resources should take the lead. On the other hand, the current failure to link supply and demand suggests that the Technical Cooperation Department, which represents the demand side, should guide the process to ensure that normative work meets their needs. On balance, the first option is judged most likely to be successful: NRLW is also the primary link to institutions outside FAO, within the UN, donors, CGIAR, etc., and promotion of the corporate water agenda to this group will be an important element of the Water Platform's role.

694. Whatever the final structure of the Water Platform will be, including the possible rotation in its chair, meeting these challenges effectively and deriving the potential benefits outlined above will require immediate decision and guidance from the Assistant Director General's level, coordinated between HQ and the Regional offices. The Evaluation formulated Recommendation 33 as the first step in this direction.

---

<sup>115</sup> Organizational Result F2, "Countries address water scarcity in agriculture and strengthen their capacities to improve water productivity of agricultural systems at national and river-basin levels including transboundary water systems", The Director General's Medium Term Plan 2010-13 and Programme of Work and Budget 2010-11.

<sup>116</sup> Annex 18 contains the list of the new FAO Strategic Objectives and Organizational Results.

**Recommendation 33) To FAO**

**FAO's Assistant Director General for Natural Resources, in collaboration with concerned Assistant Directors General in Headquarters and in the Regional Offices, should develop a strategy for water in FAO. This should define an official internal coordination mechanism, called FAO Water Platform, and reflect the importance of water in FAO's mandate as well as the objectives of the Organization in the water sector.**

695. In the recommended strategy, the Assistant Director General should include suggestions on the operations of the Water Platform, should address some of the difficulties mentioned above and formalise operation and resource utilization procedures across the concerned units and organizational levels and locations. Topics discussed and decisions made could be the subject of a report to all staff in FAO whose work relates to water, and invite comments and feedback from all. This process, as well as creating better informed staff may also defuse some of the obvious tensions that were reported to exist between units and different organizational levels within FAO. Evidence that management is actively involved in better allocation of resources and in addressing issues and problems can only help this process.

696. An additional topic that the Water Platform mechanism should address is preparation for anticipated changes to the priorities of FAO's work in water. These may be new opportunities – for example the scope for using satellite data to better understand water processes – or new threats, such as the expected impacts of climate change. The current two-year program – in a four year context – is already quite a dynamic framework for operations, but the Water Platform should provide a forum to prepare for changes and maximise the input that the professional staff contribute to the more politicised debates of COAG and other fora within FAO.

697. The Evaluation identified four Guiding Principles that should underpin the work of the FAO Water Platform: these are illustrated below, in Suggestion 22.

***Suggestion 22. Guiding principles for the work by FAO Water Platform***

<b><i>Coordination &amp; collaboration mechanism</i></b>	In the water sector FAO requires improving coordination and collaboration across all concerned units and organizational levels to ensure delivery of high quality results and enhance its impact.
<b><i>Prioritization</i></b>	FAO Water is asked to do a lot but it cannot do it all. It needs (i) to know 'what to do' and especially 'what NOT to do', and (ii) within the constraint of hardly being able to say 'no', to know 'how much' to do on what.
<b><i>Human resources</i></b>	Issues of human resources relate to the dearth of engineering capacity, the lack of gender and social development competences, the general lack of critical mass of staff at all locations and the isolation of staff in the decentralized offices.
<b><i>Management</i></b>	This is the glue that can make FAO's new structure work, through joint decision making and close follow-up of implementation

698. In order to improve coordination and collaboration, facilitate synergies between HQ and decentralized offices and between technical and operational departments and units, and based on evidence reported throughout the report, the Evaluation formulated additional Recommendations 34 and 35.

**Recommendation 34) To FAO**

**The FAO Water Platform should become the organizational mechanism that connects work on water to the Strategic Objectives. Key elements of its structure and role are as follows:**

- a) The Chair should be the Assistant Director General for Natural Resources level and should report to the two Deputy Directors General of FAO on progress and constraints of the Platform mechanism;**
- b) The Platform should develop a four-year program for the Impact Focus Area-Water and Land Scarcity and other Impact Focus Areas to which work on water is relevant; the programme should include priorities, responsibilities, areas for partnerships and required human resources for its implementation;**
- c) The Platform should function through regular joint decision-making meetings among FAO unit managers and regional senior staff with strong responsibilities for water work, including NRL, ESW, FIMA, FOMC and the Technical Cooperation department and others, as appropriate.**

**Recommendation 35) To FAO**

**The FAO Water Platform should ensure:**

- a) Clarity on the context and principles of collaboration between NRL, ESW, FIMA, FOMC and units in the Technical Cooperation Department, defining responsibilities and roles, resources, allocation and sharing procedures and compliance with technical requirements of projects and initiatives;**
- b) Close coordination between all members of the Water Platform on all steps of project preparation, from discussions with donors to project approval and adequate planning for resources for backstopping and technical clearances.**
- c) Improved two-way linkages between technical staff and consultants working for all members of the Water Platform, as sources of information and means to disseminate and test ideas.**

699. In order to improve ownership by Member Countries and accountability on the Organization's work, based on the evidence in Sections 4.3 and 4.4, the Evaluation formulated Suggestion 23 for 'Water at FAO' to develop closer relations with FAO Member Countries, including potentially leveraging more resources for its work, through CoAG or other mechanisms to be identified:

***Suggestion 23. To 'Water at FAO'***

- Discuss the four-year Plan of Work of the IFA WALs/Water Platform with Member Countries and other donors to leverage their concerted efforts to support its implementation.*
- Improve accountability to Member Countries through regular reporting on progress on water through CoAG, in line with the new Strategic Framework and Results Based Management system.*

700. In order to facilitate the implementation of the recommendations above, 'Water at FAO' will need to adopt different ways of management across concerned units and across all levels and locations of the Organization. The Evaluation has formulated Suggestions 24 and 25 for the path ahead.

***Suggestion 24. To 'Water at FAO'***

- Two key characteristics are required to make the joint decision making meetings a meaningful exercise:*
- each responsible manager can be absent only if s/he sends a proxy with delegated authority to take decisions on behalf of the unit; and*
- each meeting is to be followed as soon as possible, preferably the same day, with a joint 'reporting-up' session with the higher level decision-makers.*

**Suggestion 25. To 'Water at FAO'**

*'Water at FAO' should adopt different and innovative management styles, in particular:*

- a) Implement 'management-by-walking-around' or similar active management approach suitable to decentralized specialist technical services.*
- b) Institute regular 'water team' support, report-back, re-planning and team-building processes and events.*
- c) Set up and agree on fallback arrangements in the event of illness or departure of every key staff member, and effect replacement of retiring staff in time to allow smooth transition.*
- d) Develop tools that could help guide both corporate and personal day-to-day decision-making, especially work prioritisation.*

**Evaluation of FAO's role and work related to water**

**Final report**

**Annex 1**

**Terms of Reference for the evaluation**

Rome, June 2009

## Table of contents

<b>Acronyms</b>	<b>3</b>
<b>1 Background for the evaluation</b>	<b>4</b>
<b>2 Water in FAO</b>	<b>5</b>
2.1 How FAO works	5
2.2 FAO's work in water	6
2.2.1 FAO Water Development and Management Unit	6
2.2.2 Food Quality and Standards Service	8
2.2.3 Fisheries and Aquaculture Management Division	8
2.2.4 Forest Management Division	9
2.2.5 Development Law Service	9
2.2.6 Emergency Operations and Rehabilitation Division	9
2.2.7 FAO Investment Centre	10
2.2.8 Management and Coordination Service for the Special Programme for Food Security	10
2.2.9 Others	10
2.3 Water in the FAO Programme of Work and Budget and Medium Term Plan	11
2.4 Projects on water or with water-related components	11
2.5 Issues that emerged during the Evaluability Assessment	12
<b>3 Purpose of the Evaluation</b>	<b>14</b>
<b>4 Scope of the Evaluation</b>	<b>14</b>
<b>5 Evaluation criteria, areas for assessment and issues</b>	<b>14</b>
<b>6 Evaluation approach and methodology</b>	<b>18</b>
6.1 Roles and responsibilities	18
6.2 Methodology	18
6.3 The Evaluation Report	20
<b>7 Organization of the Evaluation</b>	<b>20</b>
7.1 Operational aspects	20
7.2 Composition and profile of the evaluation team	21
7.3 Composition of the Expert Panel	22
7.4 Evaluation time schedule	22

## Annexes

Annex 1: Inventory of projects with water-related components

Annex 2: Inventory of water-related normative outputs

Annex 3: Programme entities related to water in FAO MTP and PWB since 2004

Annex 4: Evaluation Matrix

### Acronyms

BH	Budget Holder
CFS	Committee on World Food Security
CGIAR	Consultative Group on International Agricultural Research
COAG	Committee on Agriculture
COFO	Committee on Forestry
EB	Extra-Budgetary
FAOR	FAO Representation
FPMIS	Field Programme Management Information System
GCP	Government Cooperative Programme
GEF	Global Environment Facility
HQ	FAO Headquarters
ICIMOD	International Centre for Integrated Mountain Development
IDWG	Interdepartmental Working Group
IEE	Independent External Evaluation
IFAD	International Fund for Agricultural Development
IFIs	International Finance Institutions
IUCN	World Conservation Union
IWMI	International Water Management Institute
IWRM	Integrated Water Resources Management
GWA	Gender and Water Alliance
LoA	Letter of Agreement
LTU	Leading Technical Unit
MASSCOTE	Mapping System and Services for Canal Operation Techniques
MDG	Millennium Development Goals
MTP	Medium Term Plan
NGO	Non-Governmental Organization
NMTPF	National Medium Term Priority Framework
NRCB	FAO Climate Change and Bioenergy Unit
NRLW	FAO Water Development and Management Unit
NRL	Land and Water Division
NR	Natural Resources Management and Environment Department
PBEE	FAO Evaluation Service
PBEP	FAO Planning and Budget Service
PC	Programme Committee
PWB	Programme of Work and Budget
RP	FAO Regular Programme of work
RAP	FAO Regional Office for Asia and the Pacific
SC	Steering Committee
SIWI	Stockholm International Water Institute
SPFS	Special Programme for Food Security
TCAP	FAO Field Programme Development Service
TCI	FAO Investment Centre
TCOS	FAO Management and Coordination Service of the SPFS
TCP	FAO Technical Cooperation Programme project
TCPF	FAO TCP Facility
TF	Trust Fund
ToR	Terms of Reference
UNEP	United Nations Environment Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UTF	Unilateral Trust Fund
WB	World Bank
WTO	World Trade Organization

## 1 Background for the evaluation

1. Water is a key area for FAO. The third Global Goal of the FAO Strategic Framework 2000-2015 is “The conservation, improvement and sustainable utilization of natural resources, including land, water, forest, fisheries and genetic resources for food and agriculture.” The Strategic Framework includes water scarcity, pollution and salinization and integrated natural resources management, within Strategic Objective D1: Integrated management of land, water, fisheries, forest and genetic resources.

2. Throughout this decade, FAO's Committees have repeatedly emphasised water use and management for sustainable agriculture, forest and food security efforts. In particular, the Committee on Agriculture (COAG) in 2007 discussed a proposal by FAO/NRL<sup>1</sup> on Agriculture and Water Scarcity and “welcomed the proposal for multidisciplinary integrated framework to address water scarcity”; the Committee on Forestry (COFO) in 2003 focused on the theme ‘forest and water’ and has stressed its importance since; the Committee on World Food Security (CFS) also repeatedly stressed that FAO should pay particular attention to water scarcity and drought.

3. The Independent External Evaluation of FAO (IEE) conducted between 2005 and 2007, commissioned a ‘Background working paper on Water Management and Irrigation’. The main conclusion on water and irrigation in the final report was: “FAO continues to have a lead role on water databases and is respected for its work on agricultural water management. If hunger, poverty and chronic malnutrition are to be overcome, especially in Africa, increased water control is a prerequisite for any green revolution and for continuing agricultural development in Asia and the Middle East. Many water networks exist but are often biased against agriculture. FAO is currently in a weak position. The competency mix and the wide dispersion of the few human resources remaining in the Organization would need to be addressed as an initial imperative for the Organization to exercise leadership in macro-policy issues at global and regional levels.”

4. The IEE core recommendation for water focused on the need for: i) a significant realignment of existing resources together with the securing of new ones, both human and financial; and ii) a different strategic approach which would enable FAO to contribute to integrated policies and programmes which bring together engineering, tenure, economics, management and legislation.

5. The IEE report and the respective Management Response by the Organization triggered in FAO a complex reform process that is still on-going. The first step was the preparation of the Immediate Plan of Action (IPA) for the follow-up to the IEE, which was discussed and approved by the 35<sup>th</sup> Special Session of the FAO Conference in November 2008: it defined FAO's Vision and Global Goals and 11 Strategic Objectives. Water appears again in the third Global Goal and in one of the Strategic Objectives, along with land and genetic resources.

6. The reform process includes the preparation of the new Strategic Framework of the Organization: in this document, the sustainable management of natural resources, including water, is at the forefront of progress toward food security and in addressing conflicts by “recognizing the cross-sectoral character of integrated natural resources management at the local scale, and linking local management to the complexity and variety of instruments that address different aspects of the environment at the global scale”<sup>2</sup>. A very recent and important development in this context is the formulation of one out of seven, Impact Focus Areas<sup>3</sup> on water scarcity, namely “Coping with scarcity of water s and land resources” (IFA-WALS). This should help ‘mobilise resources, progressively enable pooled and less rigidly tied funding, primarily address issues of priority.’ The thrust of the IFA is on the need to ‘increase land and water productivity in a sustainable manner while negotiating water allocations with other users as a matter of priority’.

7. In this context of sustained dialogue between the Member Countries and the Senior Management of FAO, the Programme Committee (PC) at its 100<sup>th</sup> Session in October 2008 endorsed, among the topics proposed for initiation in 2009, the evaluation of “FAO's work related to water, as this had been a significant

---

<sup>1</sup> NRL: Land and Water Division

<sup>2</sup> Draft Strategy Note Environment, Climate Change and Natural Resources Management, CoC-IEE, 8 May 2008

<sup>3</sup> Impact Focus Areas aim at effectively grouping Organizational Results, from one or more Strategic Objectives, that relate to the same theme or cross-cutting issue considered a priority for ‘flagship’ treatment and advocacy to mobilise extra-budgetary funding. The IFA concept is part and parcel of the new Strategic Framework of FAO, but themes for focus can change over time.

discussion topic in the CoC-IEE<sup>4</sup>.” The evaluation report is expected to be presented to the PC in its Spring 2010 session.

## 2 Water in FAO

8. This chapter illustrates the main areas and type of work related to water within FAO. This information was gathered and elaborated through the Evaluability Assessment conducted by the FAO Evaluation Service; all concerned units had the opportunity to comment and verify factual details.

### 2.1 How FAO works

9. FAO main areas of activity are identified in: i) Putting information within reach; ii) Sharing policy expertise; iii) Providing a meeting place for nations; and iv) Bringing knowledge to the field.

10. The Organization's work, likewise in other International Organizations (IOs), is also usually categorized as 'normative' or 'operational'<sup>5</sup>. The first meets the 'global normative role' of the UN and of FAO, and includes work of international interest and use, e.g. technical papers, global debate and conventions. It is funded mostly by the Regular Programme (core) budget (RP) of the Organization, although increasingly Extra-Budgetary (EB) resources are allocated to it. The RP is structured in Programme Entities (PE).

11. The operational work, alternatively called Field Programme, includes all initiatives, projects and programmes that “respond to the needs of the Member Countries<sup>6</sup>”. These projects and programmes are funded to the largest extent<sup>7</sup> through Extra-Budgetary resources, although the Regular Budget finances the Technical Cooperation programme. Projects and programmes can be global, inter-regional, regional and national and can be under the responsibility of Budget Holders (BH) and Lead Technical Units (LTU) located throughout the decentralized structure of the Organization: FAO Headquarters (HQ), regional, sub-regional or national FAO Representations (respectively RO, SRO, FAOR).

12. The Organization's repository and sources of information about operational and normative products and initiatives are separate and provide very different types of information. The corporate Field Programme Management Information System (FPMIS) contains detailed and comprehensive information on the Field Programme and a great deal of information is available on budgets, inputs, timelines, activities and outputs, etc. (Annex 1).

13. This is not the case for the normative work (Annex 2), which is funded through the Regular Budget of the Organization. The low level of detail in outputs and outcome indicators and targets for the Programme Entities (PE) as illustrated in the Programme of Work and Budget (PWB) and in the corporate Programme Implementation Report until now, entails that no information is easily retrievable on the inputs and process leading to the production of the normative outputs of the Organization, nor on results intended as use or adoption of these products by clients. Further, there is no single repository or record of the 'normative' products of FAO, which tend to be dispersed across the very complex corporate website. This should be kept in mind when analysing all work by FAO, and the water-related activities are no exception.

---

<sup>4</sup> Committee of the Council-Independent External Evaluation

<sup>5</sup> The difference is considered to be artificial by many, including the Member Countries, and more recent trends are for a focus on the continuum and synergies between different types of activities. Still, this dichotomy permeates the language and culture of the Organization.

<sup>6</sup> From the website of the Technical Cooperation Department

<sup>7</sup> Currently, EB resources represent 90% of the Field Programme according to FPMIS.

## 2.2 *FAO's work in water*

14. The 'FAO's Programme in Water' is anchored in the Division of Land and Water of the Natural Resources Department of the Organization. It closely reflects the main areas of FAO's activity mentioned above and is articulated as follows<sup>8</sup>:

- A) Information and knowledge on water: this includes multi-scale information base on water at different levels, contribution to global studies and to international processes (e.g. UN-Water); it is usually defined as 'normative work' and it is funded through both Regular Programme<sup>9</sup> (RP) and Extra-Budgetary (EB) resources;
- B) Policy advice: this area involves providing assistance to member countries on water management within agricultural policies, as well as the development of specific policy information tools; it is funded through both RP and EB resources;
- C) Technical support to countries and their constituents: this area consists mainly of projects at the country or regional level including in emergency context, ranging from development of small scale irrigation schemes to modernisation of large scale schemes, watershed management, wastewater treatment, etc. It is mostly funded through EB resources for development, emergency and investment initiatives although staff members responsible for these activities are mostly funded through the RP budget.

15. FAO also had and has a number of mechanisms for cross- and multi-disciplinary work, called Priority Areas for Interdisciplinary Action (PAIA), or Inter-Departmental Working Group (IDWG). Water was and is a cross-cutting topic in a number of these and the units concerned with water contribute to them as required. Main ones appear to be:

- the current Multidisciplinary Area Food for the Cities, which worked on issues of wastewater and water quality and at urban/rural competition for water use and at urban/peri-urban agriculture and water use;
- the IDWG on Biosecurity, again concerned with water quality issues;
- Multidisciplinary activity on Sustainable Management of Mountains;
- Multidisciplinary activity on Global Perspective Studies;
- Multidisciplinary activity on Spatial Information Management and Decision Support Tools (ex PAIA SPATTLE);
- IDWG for Climate Change.

16. Within these broad lines, water is a substantial theme of work for a number of departments and units in FAO: a short summary is provided below of the areas of activity on water of all concerned units during the period under evaluation.

### 2.2.1 *FAO Water Development and Management Unit*

17. The 'traditional' focal point for water in FAO is the Water Development and Management Unit (NRLW), part of the Land and Water Division (NRL): the Division was within the Agriculture Department, until it was integrated in the newly created Natural Resources Department in January 2007, as part of the FAO Director General's reform<sup>10</sup>. The Unit, as most other FAO technical units, has staff located in HQ and in the regional and sub-regional offices.

18. NRLW leads and conducts virtually all FAO's normative work related to water and acts as Lead Technical Unit (LTU) for many projects related to water management and development. NRLW also supports projects with water-related component run by other units, as a member of their task forces, though not all (see Chapter 2.5).

---

<sup>8</sup> Water at FAO, Information Note, FAO, 2009.

<sup>9</sup> The budget of the Regular Programme of the Organization also funds the Technical Cooperation Programme (TCP).

<sup>10</sup> The reform process of FAO started by the Director General in 2005 was mainstreamed in the reform process following the Independent External Evaluation.

19. All the work of NRLW is on the different aspects and perspectives of water management and development in relation to agriculture; its main areas of focus and modality of action are described here.

- AQUASTAT is FAO's global information system on water and agriculture: it collects, analyses and disseminates secondary data and information by country and by region. The information system consists of databases, maps, tables, and country and regional profiles. AQUASTAT is a member of the Inter-Agency Working Group on Statistics. The Evaluation of FAO's role and work in Statistics in 2008 conducted an in-depth assessment of this work.
- Irrigation systems: development of new maintenance and modernization systems and approaches (MASSCOTE), update of old and preparation of new technical publications and training material, capacity building, technical assistance to field projects and contribution to formulation of investment projects; work in Asia (India and China), expansion to Central Asia and Near East regions; modules of MASSCOTE for fish and rice.
- Drainage systems: development of new systems and approaches for drainage and salinity control, technical publications (4 since 2000) and technical assistance to field projects; collaboration with ICID and ALTERRA-ILLRI.
- Water policy: advocacy work at international level; assistance to countries through field projects; work on water and poverty with IFAD.
- International waters and transboundary river management: collaborative management projects, e.g. the Italian-funded Nile Basin project, the GEF-funded Okavango basin project and the up-coming Master Plan of the Mesopotamian Basin; the focal points for the GEF International Waters Focal Area are in NRLW and FIMA.
- Water quality: this includes development of systems and approaches, technical publications and technical assistance to field projects on various sub-themes, including water re-use, waste water, arsenic contamination, reclamation of polluted areas, non conventional water resources, issues of salinity in the post-tsunami recovery.
- Water scarcity and environmental aspects linked to water: advocacy work, technical publications, technical assistance to field projects and development of systems and approaches on various sub-themes, including improvement of water use efficiency; payment for environmental services on water and watersheds; contribution to Virtual Water/Water Footprint network.
- Economics of water resources management: technical publications.
- Crops and water: contribution to development of water-efficient cropping systems, e.g. System of Rice Intensification; studies (paddy irrigation in monsoon areas); technical assistance to field projects; models and decision support tools (DST) for crops and water, e.g. AQUACROP; collaboration with CGIAR organizations, e.g. ICRISAT, ICARDA, CIMMYT<sup>11</sup>, etc.
- Wetlands: collaboration with Ramsar Convention, UNEP and IUCN on the sustainable agricultural development in wetlands; technical publications.
- Water resource assessment: production of spatial information, models and databases on water resources for projects and global and regional resource assessments.
- Contribution to international processes on water: chairing of UN-Water in the period 2007-2009; hosting of UN-Water task force; organization of the Netherlands Conference on Water in 2006 and of the Sirte Water and Energy Conference 2008; collaboration with IWMI; participation in international fora, e.g. the World Water Forums, the World Water Week, with presentations, stands, etc.
- Contribution to international publications on water, e.g. Water for Food, Water for Life, published by IWMI in 2007.
- Contribution to FAO's flagship publications and perspective studies, e.g. World Agriculture: towards 2030/2050; water resource assessments, State of Land and Water 2010, etc.
- Information and communication: set-up, maintenance and update of the FAO Water web-site, including statistics on use; set-up of website for Tsunami on Water; information products on water;

---

<sup>11</sup> ICRISAT: International Crop Research Institute for the Semi-Arid Tropics; ICARDA: International Center for Agricultural Research in the Dry Areas; CIMMYT: International Maize and Wheat Improvement Centre.

assistance to and capacity building in projects on information systems; World Water Day; maintenance of mailing lists on water; collaboration with IFAD in general for publications.

- Advocacy work and resource mobilization on water, agriculture and food security.

20. A few normative products have been produced or are work in progress in collaboration between NRLW with other units in the NR department, e.g. NRL, NRR.

### 2.2.2 *Food Quality and Standards Service*

21. The Food Quality and Standards Service (AGNS) is mostly involved at the normative level with water-related issues. Products are guidelines for water safety under the umbrella of the Codex Alimentarius and the Microbiological Risk Assessment Series. In addition, capacity building on issues of water use and water quality is conducted in partnership with the World Health Organization (WHO) and the World Organization for Animal Health (OIE).

22. The network of partners is rather wide and includes WHO, IWMI, IDRC, universities, CGIAR, IRRI, RUAFA (Resource Centre on Urban Agriculture and Food Security), WFP, UNICEF, IUCN, Ramsar Convention, etc.

23. In the Tsunami case, there was collaboration with UNICEF on ground-water quality. Mention was made of the need for better collaboration among UN agencies on water at the interface of human, animal and agricultural consumption, including water sanitation and re-use of waste-water.

### 2.2.3 *Fisheries and Aquaculture Management Division*

24. FAO's work on aquaculture in freshwater systems is within the boundaries of the Evaluation Assessment, being a direct form of water management and use in the same sense as crops and livestock with all related issues of availability, competitive uses and quality. Equally, the impact of agriculture and livestock activities on inland and coastal fisheries appears relevant to the scope of the Evaluation. Furthermore, the Fisheries and Aquaculture Department have solid experience in the biodiversity dimensions of freshwater ecosystems. FAO's work on marine waters and all work on fisheries resources are excluded.

25. The mission of the Fisheries and Aquaculture Department of FAO is to facilitate and secure the long-term sustainable development and utilization of the world's fisheries and aquaculture. The visibility of this area of work is very limited across the Organization; further, the human resources in the area of inland fisheries have been cut heavily over the last decade, although efforts are currently being made to rebuild some of this lost capacity.

26. Before the period under evaluation, FAO had an IDWG for the follow-up to Chapter 18 Freshwater of Agenda 21 after the Rio Conference in 1992. However, as early as 1999, the topic did not feature any more in the documents by the Organization on the relevant follow-up.

27. During the period under evaluation there has been some collaboration between staff in both the Fisheries and Aquaculture Management Division and the Fisheries and Aquaculture Economics and Policy Division with NRLW on a number of products including the World Water Development Reports, the African Water Resource Database, expert workshops etc. Recently, NRLW and FI have decided to collaborate more closely on the Guidelines on Agriculture-Wetlands Interaction initiative. Most of this collaboration, met with high appreciation in NRLW, has been limited by the limited human resources available and the fact that this has not been a priority under the Programme of Work and Budget (PWB) of the Fisheries & Aquaculture Department. The main drive for it to happen has been the personal initiative and commitment of staff in FI.

28. At the same time, there have also been FI initiatives, with limited input from other FAO water units, covering thematic reviews and expert meetings on dams and fisheries in collaboration with the World Commission on Dams; fisheries in irrigation systems in arid zone of Asia, in collaboration with the Interstate Coordination Water Commission (ICWC) of Central Asia; and hydropower, flood control and water abstraction – implications for fish and fisheries in Europe.

29. With freshwater fisheries production and biodiversity under increasing pressure from land-based activities and considering additional pressures imposed by climate change, there seems to be clear

opportunity and need for more intensive and formal interaction between FI and NRLW on clearly defined programmes and outputs.

#### 2.2.4 *Forest Management Division*

30. The Forest Management Division's Forests and Water Programme covers a broad range of water-related issues within forest hydrology, mountain ecosystems, watershed management and upstream/downstream linkages.

31. Normative products emerging from this division include a stocktaking exercise of international watershed management activities, conferences and workshops on forest and water issues as well as a number of publications, such as UNASYLVA and FAO Forestry Papers.

32. There are a number of field projects mainly covering watershed management activities, concentrated in Eastern Europe and Central Asia. A large GEF funded project is starting at the time of writing these ToR, on the Fouta Djallon massif in West Africa.

33. The Forest and Water Programme has been engaged in many partnerships (ICIMOD, the European Forestry Commission, Mountain Partnership, Mekong River Commission, etc.) and has been an active participant at a number of conferences (5<sup>th</sup> World Water Forum, Barcelona Conference, European Forest Week etc.) highlighting issues of forests and water.

34. One of the issues raised by FOM was the limited human resources available for this area of work at the moment. There is lack of human resources in the decentralized offices as well.

#### 2.2.5 *Development Law Service*

35. The Development Law Service (LEGN) is involved at normative, field programme and international level in water-related issues. At normative level, guidelines, training manuals, policy notes and legislative studies have been produced on water legislation, water rights, water user organizations, sustainability, conservation and protection of the water resource base and transboundary aquifers. At field programme level, LEGN covers legal components within projects covering policy and strategy (both in irrigation and water resource management), the water and land rights interface, access to land and water and transboundary issues.

36. In terms of international processes LEGN has contributed to UN Water, the 3<sup>rd</sup> WWDR, cooperation with UNESCO, training and capacity building related to water rights and law, as well as drafting articles on the Law of Transboundary Aquifers. Initially a cooperation with the WHO on water legislation and water standards, WATERLEX was expanded and is now a database containing legislative and regulatory frameworks for water and their analysis.

37. LEGN underlined its close collaboration with various units within FAO, including NRLW and TCI, and with international organizations on water-related topics. The senior officer in LEGN who managed all water related work has recently retired: institutional memory of the past work exists and the Unit stated that tasks have been redistributed.

#### 2.2.6 *Emergency Operations and Rehabilitation Division*

38. During the period under evaluation, TCE has managed 42 projects including a water component, with a total budget of USD 124 million. The types and sizes of interventions vary according to region and specific country contexts with Iraq, Somalia, Pakistan, West Africa and the West Bank and Gaza being the main beneficiaries.

39. The emergency and rehabilitation interventions are wide ranging, including small, medium as well as large-scale irrigation rehabilitation, irrigation development, watershed management, water harvesting, wastewater treatment and re-use, livestock water holes, soil desalinization, information projects and river management.

40. Some of the work by TCE in Iraq on water pumping stations appeared to be beyond the traditional mandate of FAO: the Unit responsible was however able, in collaboration with AGS (Rural Infrastructure

and Agro-Industries Division) to select and contract a suitable service provider. Through this work, norms for similar assignments have been prepared.

41. A large number of emergency projects with water components, namely in Iraq, Tsunami-affected areas, Pakistan, Somalia and the Horn of Africa, have been evaluated recently either as individual projects or within the framework of large emergency programme evaluations.

#### 2.2.7 *FAO Investment Centre*

42. FAO Investment Centre (TCI) collaborates with multilateral institutions such as the World Bank, regional development banks and international funds by assisting developing countries to identify and formulate effective and sustainable agricultural policies, programmes and projects. The Unit hosts and is largely funded through the FAO-World Bank Cooperative Programme; in addition, it uses also funds from FAO's Regular Budget, for example through TCPs. In this framework, TCI contributes to formulate and implement projects mobilizing very large financial resources.

43. An initial rapid assessment of TCI's work on irrigation and drainage investments indicates that in the period under evaluation, TCI contributed to 42 projects with a total budget of USD 4 billion, by engaging approximately 15% of its total staff time. This estimate does not include work on watershed management and water and environmental issues: the total support to the IFIs on this theme and to the World Bank in particular, appears to be very substantial and the Evaluation should explore it more in depth.

44. TCI staff stated that there is a regular and frequent use of some of NRLW products, such as Crop-WAT.

#### 2.2.8 *Management and Coordination Service for the Special Programme for Food Security*

45. TCOS is responsible for the management of the SPFS, that includes more than 100 field projects and/or national programmes for food security in Africa, Asia and Latin America. Water management is one of the four core components of the SPFS and small-scale irrigation featured in the planning of virtually all projects funded in the first round of the SPFS in the late 1990s. Over time, the SPFS has become more tailored to local needs and circumstances and has often evolved in national programmes of food security, wherein the policy and institutional component has become more important.

46. The Evaluability Assessment has identified 37 SPFS projects with a significant water-related component. They are mostly concentrated in West Africa, with some initiatives in Haiti and in Asia. In particular, Spain has been funding initiatives in a number of West African countries with a strong attention to water management aspects within the umbrella "Programme Eau pour l'Afrique".

#### 2.2.9 *Others*

47. The Evaluability Assessment shows that some work has been conducted on gender and social equity in water related contexts, in particular on gender disaggregated statistical data in Africa (e.g. AQUASTAT).

48. The Livestock Policy Unit (AGAL) conducted a number of studies on livestock-environment issues through their Livestock-Environment and Development Programme, wherein contamination of water was a key issue. The most relevant recent product of this Unit on water-livestock issues is the publication "Livestock's long shadow". Work is ongoing in Asia on livestock waste management and pollution (GEF Project) and there is collaboration with RAP officers. AGA contributed to the Netherlands Conference on Water.

49. In the Agriculture Department, it appears that the most relevant water-related initiative is a newly started large programme in West Africa in collaboration with the Oregon State University and funds from the GEF, implemented in close collaboration with a regional project funded by the Netherlands on IPM and Farmer Field Schools. The new project aims at reducing dependence on Persistent Organic Pollutants (POPs) and other pesticides through the introduction of an innovative water quality monitoring device, capacity building for a network of national and regional laboratories, etc. The project started in March 2009 and has a

long time horizon. Collaboration with NRLW exists at the informal level. No other initiatives were identified during the Evaluability Assessment.

50. Particular mention is made of the Science Council Secretariat of the CGIAR, hosted by FAO that is also one of the CGIAR donors. The Secretariat has conducted assessments and work on water issues, including the review of IWMI and the External Review of the Water and Food Challenge Program, both in 2007. The extent and form of potential collaboration between FAO and CGIAR's Secretariat on water issues may be of interest for the Evaluation.

### **2.3 Water in the FAO Programme of Work and Budget and Medium Term Plan**

51. During the period under evaluation, the Regular Programme of FAO was articulated and budgeted through "Programme Entities" (PE). A detailed table of the main PEs throughout the string of Medium Term Plans and Programmes of Work and Budget is to be found in Annex 3. For ease of reference, the main PEs are indicated in Box 1 below.

#### **Box 1. Programmes and Programme Entities related to water since 2004**

<b>Major Programme/Programme/Chapter MTP 2004-09</b>	<b>Programme Entity</b>
<b>PWB 2004-05</b>	
<b>2.1 Agricultural Production and Support Systems, 2.1.1. Natural Resources</b>	211A1 Agricultural Water Use Efficiency and Conservation
	211A3 Integrated Land, Water and Plant Nutrition Policies, Planning & management
	211A5 Land and Water Quality Improvement
	211P7 Land and Water Information System
	211P8 Knowledge Management and Partnerships
<b>2.4.1. Forest resources</b>	241A7, Forests and Water
<b>2.5.6: Food Production in Support of Food Security in LIFDCs</b>	256P2 and 256P3, SPFS Formulation and Implementation
<b>3.3.3, Emergency Operations and Rehabilitation</b>	33300, Emergency Response Operations
<b>PWB 2006-07 and PWB 2008-09</b>	
<b>2K Sustainable Natural Resources Management</b>	2KA01 Agricultural Water Use Efficiency, Quality and Conservation
	2KA06 Integrated Land, Water and Plant Nutrition Policies, Planning and management
	2KP02 Land and Water Knowledge management, Information systems, Databases and Statistics
	2KA07, Forests and water
<b>4C: Food security, poverty reduction and other development cooperation programmes</b>	4CP01, Management and Coordination - SPFS/NPFS/RPFS/SSC/pro-poor small projects
<b>4D, Emergency and post-crisis management</b>	4DS01, Implementation of emergency programme

Source: NRLW, FOM and PBEE

### **2.4 Projects on water or with water-related components**

52. The Evaluability Assessment based the selection of 'operational' activities on two criteria: i) the implementation period: projects had to be operational between 1 January 2004 and 31 December 2008; ii) 'water-related' work was part of project's objectives, results and/or outputs. An additional twelve projects started after 1 January 2009 have been included under a separate heading. Annex 1 provides the complete list.

53. In total, 226 projects<sup>12</sup> have been identified as relevant to the Evaluation thrust, 44 of these classified as Emergency as mentioned above. Their total budget amounts to USD 436 million: this represents 19% of FAO's delivery through the Field Programme in the period 2004-2008. The budget of Technical Cooperation initiatives represents a larger proportion within the water-related projects than within FAO's overall delivery figures, 70% against 53%. Conversely, emergency initiatives within the water-related projects are less than within FAO in general (29% against 47%).

54. The great majority of the projects were national in scope: only 16 were interregional projects, 9 regional and 4 global; also among TCP, 7 were regional and 1 interregional and only one emergency project had a regional scope.

55. The budget of the 226 projects was accrued to as follows: 29% of the funds were used for emergency projects, TCP projects represented 4% and EBF Technical Cooperation initiatives represented 67%. In terms of number of projects, 20% of the projects were in emergency, 28% within the TCP and 52% funded from EB resources.

56. Within the Technical Cooperation projects, TCP were 5% of the budget and 36% of the number of projects, whereas projects funded through EB resources represented 95% of the budget and 64% in number of projects. Projects in support of the normative work of the Organization in water represented 8% of the Technical Cooperation budget, against 92% going in support of the field programme. In terms of numbers, 14% of projects were normative and 86% field programme.

57. Within the total number of water related projects (226), 52 projects have budgets above USD 2 million<sup>13</sup>, for a total amount of USD 338 million (77% of the budget); 19 were emergency and 33 non-emergency projects. Emergency projects with budgets above USD 2 million were proportionately more in number than Technical Cooperation projects with similar budget (43% and 18% respectively). The average budget was slightly larger in the case of Technical Cooperation projects, USD 6.7 million against USD 6.0 million in the case of emergency interventions. Out of the 52 projects for which an evaluation is mandatory as an independent exercise or as part of a larger evaluation, according to FAO's Evaluation policy, 29 have been evaluated in the past.

58. Major donors were the United Nations Development Group Office (UDG) in the case of emergency, FAO for TCPs by definition<sup>14</sup>, and Italy as EB resource provider for Technical Cooperation. The UK Department for International Development (DfID) is an important donor to UN-Water, although this does not appear in FAO's information systems.

59. It appears that NRLW or FOM have been involved in the formulation and/or backstopping of most water-related projects. However, procedures and practice in the Organization for the set-up and functioning of Project Task Forces (PTF), resulted in approximately 50 initiatives with substantial water-related components, implemented without any consultation or involvement of NRLW. These were mostly emergency and Special Programme for Food Security interventions.

60. Last, as in other thematic and programme evaluations, the recurrent corporate problem in linking projects to the 'appropriate' Programme Entity in the PWB is at the basis of a possible oversight of relevant projects. The Evaluability Assessment checked the first list of projects with relevant units, however the possibility of a few gaps can never be excluded completely. This also entails that a number of projects linked to the 'water PE' had to be excluded as they did not include 'water activities' in their thrust. This list is also available in Annex 1.

## **2.5 Issues that emerged during the Evaluability Assessment**

61. The issues described below have emerged during the first phase of the Evaluation, through meetings with FAO stakeholders, research work in FAO's information systems, website and databases and a rapid analysis of official documents and previous evaluation reports. They have been captured in the list of areas to be assessed by the Evaluation, presented in Chapter 5 of the ToR.

---

<sup>12</sup> The total number of projects currently in operation by FAO is stated in the order of 1,500 excluding TeleFood projects. However the two figures cannot be fully compared as they refer to different time-frames.

<sup>13</sup> This is the budget threshold above which a project is subject to mandatory independent evaluation according to FAO policy, see Methodology.

<sup>14</sup> The TCP programme is funded exclusively through the FAO's Regular Budget.

62. Following the analysis of the IEE summarized above, it appears that the Evaluation should aim at a clear definition of the role of FAO on water, food and agriculture, by assessing the niche and the comparative advantage of FAO in the current global water institutional architecture.

63. To a certain extent, some lack of clarity and shared agreement about what FAO should do on water seems to exist also within the Organization itself, in relation to what should be its priorities and modalities of work, including the balance in NRLW between normative and operational focus. The Evaluation should contribute to define better the thrust, the resources and the institutional mechanisms required for FAO to meet its corporate mandate and the needs of its membership, while building on its current and future comparative advantage.

64. Overall resources in FAO have been on a diminishing trend for many years now and this has affected the staff and non staff resources from both the RP and EB sources: work on water has been affected as well. Both FOM and NRLW mentioned the impossibility of meeting all requests with the currently over-stretched human resources. This was confirmed by TCE and TCI, who consider that the well appreciated technical assistance by NRLW to their work in emergency and investment is very much affected by the limited human resources of NRLW at all levels. In the case of TCE, demand has been mostly for an irrigation engineer: the post in NR has been vacant for a few years, and the recruitment process was on-going at the time of writing this document. TCE compensated the lack of expertise in FAO by re-assigning a field expert in one country to provide assistance to a project in another country. The example was also mentioned of the collaboration in the past between TCE and NRLW through the Oil For Food Programme in Iraq, whereby the programme contributed to the costs of an irrigation engineer in NRLW. Equally, obstacles to full collaboration between NRLW and TCOS seem to exist also due to NRLW over-stretched human resources.

65. These issues will require more in-depth analysis by the Evaluation, based on evidence made available about requests and work-loads. One of the tasks of the Evaluation would be also to assess whether the 'water' area of work has suffered from budget cuts similar or different to the average for the Organization as a whole, as well as the evolution of EB resources for this area.

66. There is some evidence that NRLW has achieved a functional link between the normative and operational streams of work for the work under its full responsibility. The Evaluation should include this into its assessment, along with the analysis of the existence of a feedback loop between the existing corporate knowledge on water-related matter and the work and experience of field projects and programmes. This may or may not be related to the absence of formal and substantive involvement of NRLW in a number of FAO field projects with water-related components which are managed by divisions in the TC Department.

67. There seems to be a demand for assistance which is not currently met. The main reason mentioned by those requesting support is the lack of human resources on the supply side. On the other side, it appears that the modality of the requests are incompatible with the management of a unit with a fixed number of staff, all with full work plans, in terms of lack of planning, urgency, scope and duration, etc. Contributing factors could be the corporate procedures or their interpretation for the set-up and running of Project Task Forces and attribution of LTU responsibility. The Evaluation should explore these aspects at length, in particular how they affect the quality of the field programme, if at all, and the efficient and effective use of resources available.

68. More at the normative level, collaboration between NRLW and some other units in the Organization appears positive overall, e.g. with AGNS and LEGN, although it appears there would be room for closer cooperation and synergy development with Fisheries, Agriculture and Climate Change. Collaboration between FOM and NRLW appears to be frequent and constructive at the level of international events, with presentations and side-events; it is more limited at the level of project backstopping, given the specificities of the "forest and water" theme.

69. The absence of a coordinated approach and institutional mechanism in FAO to deal with water, along the lines proposed to COAG in 2007, was mentioned as an obstacle. Also, there seems to be good room for improving collaboration with the Agriculture Department and with the Gender Unit in FAO, in particular taking into account the IFA's attention to scarcity and access issues. The Evaluation should analyse these weaknesses and gaps, along with the on-going organizational reform and the new PWB structure, and contribute to identify potential steps for improvement, including institutional mechanisms if necessary.

70. Technical areas that were mentioned as possibly requiring more attention were: transboundary water issues; the interface between freshwater management and fisheries resources; water-related adaptations to climate changes; water contamination, including from agriculture and livestock. Above all, the paramount challenges are water scarcity, access to it and its efficient use.

### **3 Purpose of the Evaluation**

71. The Evaluation will be forward-looking: its main purpose is to provide FAO's Member Countries and Secretariat with evidence- and lessons- based recommendations on the future role and scope of the Organization in its work related to water.

72. The Evaluation will also provide accountability to FAO Member Countries and Secretariat about the Organization's performance and comparative advantage in this area of work.

### **4 Scope of the Evaluation**

73. The Evaluation defines 'FAO's role and work related to water' as all activities conducted by the Organization for the conservation, development and sustainable utilization of water resources for agricultural development, including the responses to global environmental challenges affecting food and agriculture. This definition excludes all work related to marine waters and all kind of fisheries resources, as well as any work that **does not relate** to the management and development of the water resource.

74. Within this definition, the Evaluation will assess all the work by AG/NR-LW, the work by FOM on Forest and Water and watershed management, and the work by other units in the Organization on water resources, outlined in Chapter 2 above. It will comprise all activities funded through Regular Budget and EB resources, including normative products, development and rehabilitation projects, support to investment in agriculture and contribution to international processes on water. The detailed areas and issues that will be assessed through the Evaluation are specified later in the ToR.

75. The period of analysis will be from 2004 up to on-going and planned commitments. A longer term perspective will be adopted, whenever relevant for understanding the context of the activity and trends for the future. This will be the case for example when analysing the contribution to long-term international processes and partnerships on water, as well as for projects that started before 2004 and were completed during this period, or that started only recently and open up new paths of action.

76. The Evaluation will formulate its recommendations taking into full account the changing national and international demands in relation to water, food and agriculture, including the global drivers and crisis on energy and finance. Further, due attention will be given to the on-going reform process in FAO and to the role and resources assigned to the water sector in the Organization in the strategic and planning documents under preparation.

### **5 Evaluation criteria, areas for assessment and issues**

77. The Evaluation will utilize for its assessment the standard OECD/DAC and UNEG criteria for evaluation as well as a few additional ones, listed below, applied as appropriate:

- relevance;
- efficiency,
- effectiveness;
- impact;
- technical quality;
- institutional and environmental sustainability; and
- contribution to gender equality and social inclusion.

78. For ease of analysis, the technical areas briefly described in Chapter 4 by unit, are listed within clusters here below.

<b>I</b>	<b>Policy, Legal and Economic</b>
<b>A</b>	Water policies and Strategies
<b>B</b>	Bringing potential (physical and economic) irrigable areas into production
<b>C</b>	Water law, legislation and regulations
<b>D</b>	Local water management institutions
<b>E</b>	Water management linked to water availability and scarcity, including agricultural withdrawals within river basin management (including associated (multi-purpose) storage and conveyance infrastructure)
<b>F</b>	Economic returns, water pricing, and cost recovery
<b>II</b>	<b>Water in Production Systems</b>
<b>A</b>	Land and water interactions (including reclamation of contaminated land)
<b>B</b>	On-farm water use, productivity and efficiency for agricultural production
<b>C</b>	Water and Food Security
<b>D</b>	Water and livestock
<b>E</b>	Fresh water management for aquaculture
<b>III</b>	<b>System Feasibility, Design and Technology</b>
<b>A</b>	Irrigation potential and new irrigation schemes
<b>B</b>	Rehabilitation and modernization of irrigation schemes
<b>C</b>	Groundwater irrigation
<b>D</b>	Water harvesting
<b>E</b>	Drainage and (de-)salinization
<b>F</b>	Non-conventional water use, notably water quality, waste water re-use, desalinated water and urban/peri-urban water use
<b>IV</b>	<b>Environmental</b>
<b>A</b>	Water and Forest and watershed management
<b>B</b>	Environmental services
<b>C</b>	Agriculture and wetlands interactions
<b>D</b>	Sustainability of agricultural water use in the context of competing water uses and climate change
<b>E</b>	Pollution from agriculture, including from pesticides, fertilizers and heavy metals, on ecosystems
<b>F</b>	Water and food safety
<b>V</b>	<b>Information Systems</b>
<b>A</b>	Water Information Systems, models and decision-support tools, including AQUASTAT and AQUACROP

79. The key aspects and issues to be assessed through the evaluation criteria and in relation to the technical areas are listed below.

**A. FAO's role in water**

- a. FAO's mandate and visibility in meeting global, regional and national needs with respect to water, food and agriculture, among the relevant international organizations (IOs);
- b. FAO's role and comparative advantage, actual and potential, as a knowledge organization and as a provider of policy and technical assistance in relation to water, food and agriculture, at the global, regional and national level;
- c. FAO's advocacy, guidance and leadership role at global, regional and national levels on water, food and agriculture;
- d. FAO's clients and target groups in water, at global, regional and national level, including their awareness and expectations about the Organization.

**B. FAO's work in water**

**B.1. Overall**

- e. Contribution of FAO's work on water to the Organization's Global Goals in the Strategic Framework 2000-2015, including in terms of scale and geographic balance;
- f. Contribution of FAO's work on water to the Millennium Development Goals number 1, 3 and 7;
- g. The strategic and technical priorities of FAO on water in the period under evaluation as expressed in the strategic and planning documents of the Organization, and the process and mechanisms for their identification;
- h. Flexibility, adaptation and responsiveness of FAO to a changing context of social and economic and social issues around water (notably growth, employment, trade, securities, conflict avoidance and environment) and to emerging international crises;
- i. FAO's response to Member Countries' needs and requests on water issues: process, modality and contents;
- j. Monitoring and reporting by FAO to its membership on water related issues;
- k. Synergy, balance and feedback loops between normative and field programmes in FAO's work on water.

**B.2. Information and knowledge**

- l. Accessibility of FAO as global repository of knowledge on water, food and agriculture;
- m. Global and specific technical, information and resource assessment products;
- n. Quality control and assurance of products;
- o. Demand for FAO's water related products
- p. Diffusion mechanisms of FAO's water related products;
- q. Knowledge and use of FAO products on water by external clients at global, regional and national level;
- r. Knowledge and use of FAO products on water by FAO users for support to the field programme and to investment initiatives;
- s. Source, extent and quality of contributions on water, food and agriculture to FAO and other organizations' flagship publications.

**B.3. Policy and technical assistance**

- t. Policy and technical assistance to regional, international and transboundary processes on water, food and agriculture;
- u. Policy and technical assistance at the national level on water, food and agriculture, through the Technical Cooperation and Emergency field programme, as well as through investment projects;
- v. Development of regional and national capacities on policy and technical aspects related to water, food and agriculture.

**C. Partnerships and alliances**

- w. Partnerships with international, regional and national organisations on water-related themes, including assessment of the rationale for selection, purposes, added-value and sustainability;
- x. FAO's role in UN-Water, including resources allocated and specific products;
- y. Collaboration with the CGIAR system;
- z. Transaction costs and resources for partnerships and alliances.

**D. Organizational set-up for water**

- aa. Roles and responsibilities on water within FAO, extent of collaboration among units, strengths and weaknesses, gaps and areas for improvement;

- bb. NRLW as 'Water focal point' in FAO for initiatives managed by other units;
- cc. Work planning mechanisms, including volume and origin of unplanned requests;
- dd. Mechanisms and resources for inter- and intra-departmental and multidisciplinary collaboration on water;
- ee. Links, collaboration and synergies between Headquarters and the decentralized structure for NRLW and other units in relation to water;
- ff. Mechanisms of collaboration with and integration of embedded arrangements (e.g. IPTRID) in the 'water structure' of FAO.

**E. Resources and financing**

- gg. Past and current Programme entities and allocations of staff and non-staff resources to water issues;
- hh. Competencies and mix of staff, work loads for NRLW and other units on water related issues;
- ii. Sources and patterns of funding across modalities (Technical Cooperation, emergency, Regular Budget, TCP, EBF, etc) for work on water;
- jj. Resource planning modality and fund raising strategy;
- kk. Assessment of desirable resources and foreseeable sources.

**F. Focus on specific aspects and issues**

80. The Expert Panel at its 1<sup>st</sup> meeting in June 2009 stated that the "the current draft of ToR of evaluation was so comprehensive that it is difficult for the Panel of experts to pinpoint focus of evaluation vis-à-vis expectations from the Management and the Programme Committee".

81. Nevertheless, the Expert Panel has stressed the importance of certain aspects and issues for the Evaluation, which will be given particular attention during the evaluation process:

- i. the recommendations of the Independent External Evaluation of FAO on the water sector;
- ii. the work and role of FAO through partnerships and alliances with other organizations;
- iii. the evaluation's conclusions and recommendations should be formulated taking into due account the evidence and lessons stemming from the past work and the challenges and opportunities represented by the FAO's reform process, the current global issues, both as challenges and opportunities and the relevant projections for the future;
- iv. the Evaluation should focus on the larger lessons learned, rather than on specific project details, in respect of FAO's Evaluation policy;
- v. the Evaluation should pay due attention to gender equality and social inclusion in FAO's work, including aspects such as empowerment, Gender and Water, mainstreaming of a gender approach in FAO's projects and normative products, etc.;
- vi. trends over time in the allocation of EB and RP resources to the water sector in FAO, across modalities of delivery;
- vii. drivers for interventions by donors and ownership at the recipient country level;
- viii. the critical mass of water expertise in FAO, its geographical distribution and mix in the decentralized structure, to respond to needs and allow a pro-active role by the Organization in this area;
- ix. how FAO responds to emerging issues in the water sector;
- x. perspectives within AQUASTAT for overcoming the paucity of data at country level;
- xi. regional differences in needs, requests and assistance provided in water-related interventions;
- xii. the evolution of the focus and resources to the water sector in FAO, across the past and future strategic and planning documents;
- xiii. the analysis of the strengths and weaknesses of interdepartmental working groups and similar mechanisms as an opportunity for the water sector in FAO to become a cross-cutting entity, including incentives for internal cooperation;
- xiv. the actual and potential role of a people-centred approach, e.g. food security and the Special programme for Food Security, in FAO's work related to water;
- xv. priority areas of assessment should be: Water policies and strategies; water control and management; water productivity and efficient management; water and land sustainable management; transboundary water management; and

xvi. existence of any link at national level between food security and water security policies, plans and programmes.

82. The Evaluation Team will be free to add any other aspect or activity that may appear as relevant during its assessment.

## **6 Evaluation approach and methodology**

### **6.1 Roles and responsibilities**

83. FAO Evaluation Service is accountable to FAO Secretariat and Member Countries for managing the evaluation and delivering the evaluation report within time-schedule. It is also responsible for drafting the Terms of Reference of the evaluation, of the individual team members and of the Expert Panel; for selection and recruitment of the team members and for organizing the Expert Panel. The Service also has a quality assurance role on the final report, in terms of presentation, compliance with the ToRs, timely delivery, quality of the evidence and analysis done.

84. The Evaluation Team is responsible vis-à-vis FAO Evaluation Service for the technical and substantive contents of the evaluation. More specifically, the Team Leader contributes to drafting the Terms of Reference and specific tools for the evaluation, guides and coordinates the team members in their specific assessment work, discusses their findings, conclusions and recommendations and prepares the final draft and the final report, with inputs from the team members. The team members participate in briefing meetings, discussions, preparation of evaluation tools, contribute to the evaluation following their individual terms of reference and contribute with written inputs to the final draft and final report.

85. The Expert Panel is an integral part of the evaluation process, with an advisory role aimed at enhancing the quality of the evaluation. In the early stages of the process, the Panel has an advisory role for the finalization of the evaluation's scope and methodology. The present final version of the ToR integrates the recommendations and suggestions of the Expert Panel. At the end of the evaluation process, the Panel reviews the final draft report and formulates comments and suggestions for its finalization. The Panel will appoint its chair from among its members.

86. FAO Secretariat contributes to the evaluation by providing information and documents and by participating in interviews and meetings with the Evaluation team and through comments and suggestions on the evaluation terms of reference and the final draft report. It prepares a Management Response to the final evaluation report, in which it expresses its overall judgment of the evaluation process and report and accepts, partially accepts or rejects each recommendation. For accepted recommendations, responsibilities and timetable for implementation are also indicated; for rejected recommendations, a justification should be provided.

### **6.2 Methodology**

87. The Evaluation will adopt a participatory approach, seeking and sharing opinions with stakeholders at different points in time and assessing FAO's role and work also from the point of view of clients and users of its products and services and of its partners. Triangulation by evaluation team members of information across stakeholders will be a key tool for the validation of evidence gathered. In addition, the team members will apply their own technical judgment in the assessment of, for example, the quality of normative, project and process outputs. Independence and rigour of analysis will underpin the whole evaluation process.

88. Stakeholders will include:

- FAO staff in HQ and at the decentralized offices;
- Staff of Governments and relevant institutions in Member Countries, at decision-making and at implementation level;
- UN organizations, International Financial Institutions, CGIAR members, international NGOs;
- National NGOs and civil society organisations, and ultimate beneficiaries as relevant.

89. The evaluation will use a wide range of quantitative and qualitative tools and methods, including stakeholder consultation through workshops, group and individual semi-structured interviews; check lists; surveys; analysis of publications, guidelines and manuals, databases, etc.; desk studies and country visits. The Evaluation Team will choose the methods and tools most suitable and effective to tackle the evaluation issues and questions. An evaluation matrix will be prepared in draft format and finalised after the 1<sup>st</sup> Expert Panel meeting, relating issues and questions to methods and tools, indicators and sources of information.

90. The Sustainable Livelihoods Framework<sup>15</sup> will be used as the reference for assessing contributions to poverty alleviation, gender mainstreaming, social and economic changes, environmental sustainability, etc. The Strengths, Weaknesses, Opportunities and Threats (SWOT) framework will be one major analytical tool for assessment of programme results<sup>16</sup>.

91. The Evaluation Team will visit a sample of countries, to assess the profile of FAO on water-related issues among national stakeholders, the field programme and the use of some selected normative products. Visits will be carried out to some FAO Regional and/or Sub-regional offices. Contacts will be made in the visited countries with all relevant national and international institutions, as appropriate.

92. The main criterion for the selection of the countries to be visited will be the concentration of work, funded through RB or EB resources and the number and size of projects that should be evaluated, as per FAO evaluation policy<sup>17</sup>. Countries hosting a regional or a sub-regional FAO office will be included in so far as relevant and possible in the sample. The projects to be assessed directly will be selected depending on their state of progress, representativeness, travel arrangements, and cost and time constraints. Country visits will offer also the opportunity to canvass the opinion of national stakeholders at the different levels, on the whole of FAO's work related to water, including its normative products.

93. All national TCPs (projects under the Technical Cooperation Programme) and projects with budget above USD 4 million in the countries selected for a team visit will be assessed in detail; a brief separate report for each will be prepared, following a specific outline<sup>18</sup>, to be presented as annex of the main evaluation report. All other relevant projects in the sample countries will be assessed in terms of their overall relevance and contribution to the country's development goals in the water sector and for any specific issue that may arise in the discussions at country level with key stakeholders.

94. The TCPs with water-related components in countries not visited by the team, will be assessed through a desk-review, aimed mainly at drawing conclusions on their area of focus, role as delivery tool of FAO's technical knowledge and as leveraging instruments for other funds and modalities of support.

95. The opinion of government stakeholders and other national and international institutions in countries that will not be visited directly by the Evaluation Team will be captured through one or more surveys, based on questionnaires circulated on-line or by email. The possibility of using pre-existing mailing lists (e.g. L-Water) will be explored, to reach a larger number of informants and users of FAO's water-related products. Furthermore, arrangements will be set-up to allow interaction with NRLW and other FAO units' staff in the non-visited decentralized offices.

96. Individual Terms of Reference will be prepared for each Team member, indicating areas of technical expertise and specific evaluation issues. Further the Evaluation Team members will have an internal briefing session, to allow all team members to have access to information on FAO as a global organization, on evaluation methods and approaches and on their respective tasks in the team.

---

<sup>15</sup> The Sustainable Livelihoods Framework identifies five different capitals (human, social, natural, financial, and physical), each including different assets. It helps in improving understanding of livelihoods, in particular of the poor. For more information, among others: [http://www.livelihoods.org/info/guidance\\_sheets\\_pdfs/section2.pdf](http://www.livelihoods.org/info/guidance_sheets_pdfs/section2.pdf)

<sup>16</sup> SWOT is a widely used strategic planning tool, useful also in analysis of projects and interventions, to assess their strengths and weaknesses and perspectives in the future. It is particularly used in focus group, but it can be adapted to individual interviews as well.

<sup>17</sup> The Charter for the Office of Evaluation (May 2009) states that all projects with a budget above USD 4 million should be evaluated independently once in their lifetime; all projects with a budget between USD 2 and USD 4 million can be evaluated through a thematic or country evaluation. In addition, Technical Cooperation projects (TCPs) are also evaluated through thematic or country evaluations.

<sup>18</sup> The outline includes: Background (not scored); Relevance; Design; Implementation; Results/effects; Sustainability and impact; Effectiveness of capacity building; Effectiveness of partnerships; Effectiveness of participation; Gender mainstreaming. Each criterion will have to be scored on a six-point scale

97. At the end of the data and evidence-gathering phase, the Evaluation Team will present and discuss its preliminary results and recommendations in a debriefing session with key stakeholders in FAO HQ.

98. The following outputs will be prepared by the Evaluation Service as background material on a CD-ROM for the Evaluation Team:

- Background information on FAO and the evaluation function in FAO;
- The inventory of water-related FAO normative products issued since 2001;
- The inventory of water-related projects implemented by FAO since 2004;
- Project documents and reports for all the projects in the sample countries, all non-evaluated projects with budget above USD 2 million, all TCPs and other most significant projects;
- Evaluation reports for water-related projects already evaluated and a synthesis of their findings and conclusions;
- the Code of Conduct and Ethical Guidelines for Evaluators, adopted by the United Nations Evaluation group and subscribed by FAO Evaluation Service (PBEE);
- the document "Principles and considerations for the respective responsibilities and working relationships of Evaluation Service Staff acting as evaluation managers and for evaluation team leaders on major evaluations, including corporate evaluations".
- Other documents that may be of interest.

99. All main outputs of the Evaluation, in particular the ToR and the final draft report will be circulated among FAO stakeholders and to the Expert panel members, for comments and suggestions.

### **6.3 The Evaluation Report**

100. The evaluation report will illustrate the evidence found responding to the evaluation issues and meeting the evaluation criteria, namely relevance, effectiveness, efficiency, quality, impact, sustainability, gender equity and social inclusion of the work conducted during the evaluation period. The report will be as clear and concise as possible, will focus on findings, conclusions and recommendations and include an executive summary. Supporting data and analysis should be annexed to the report when considered important to complement the main report and for future reference.

101. The structure of the report should facilitate in so far as possible the links between body of evidence, analysis and formulation of recommendations, that will be addressed to the different stakeholders: they may be strategic and operational and will have to be evidence-based, relevant, focused, clearly formulated and actionable.

102. The Evaluation Team Leader and the team will agree on the outline of the report early in the evaluation process. The report will be prepared in English, with numbered paragraphs.

## **7 Organization of the Evaluation**

### **7.1 Operational aspects**

103. The first step in the evaluation process was the Evaluability Assessment, conducted by PBEE with the collaboration in its final phase of the Evaluation Team Leader. It produced the current Terms of Reference. This phase of work included discussions with staff in FAO HQ, a desk review of relevant evaluation reports, of the Medium Term Plans (MTP) and Plans of Work and Budget (PWB) and of FAO Field Programme Management System (FPMIS), and the compilation of all FAO's normative products related to water since 2001. The Evaluability Assessment also allowed progressing in the identification of a number of evaluation issues, on the selection of the countries and projects to be visited, the identification of the Evaluation team members and of the key stakeholders and all the subsequent steps of the evaluation process.

104. In particular, Annex 4 of this ToR contains:

- the Evaluation matrix, illustrating issues, evaluation criteria, indicators, sources of information and methods;

- the list of countries and projects that will be assessed directly by the Evaluation Team: tentatively, the sample will tentatively include Armenia, Afghanistan or China, Egypt, Ghana, Malawi, Mali, Morocco, Saudi Arabia, Thailand and Turkey;

105. A list of internal and external stakeholders whose opinions should be canvassed by the Evaluation Team will be circulated to FAO concerned units for suggestions and contacts. Tentatively, it will include:

- FAO staff in HQ and at the decentralized offices, from NRLW and other units responsible for water-related work;
- Staff of Governments and relevant institutions in Member Countries, at decision-making and implementation level;
- UN-Water partners, International and national NGOs, CGIAR members, International Financial Institutions and other international stakeholders in the water sector;
- Project staff and consultants.

106. The evaluation in the past of water projects, conducted as single project evaluation or in the framework of country, thematic and major emergency operation evaluations, will constitute the evidence already available for the assessment of 29 projects, implemented by NRLW, TCE and TCOS. Whenever available, information stemming from project monitoring systems will also be taken in due account.

107. In particular, water-related work has been evaluated in the framework of the following major evaluations:

- the Evaluation of FAO's work in Tajikistan (on-going);
- Evaluation of FAO cooperation with India 2003-2008 (2009);
- Evaluation of the FAO response to the Pakistan earthquake (2009)
- Evaluation of FAO's role and work in statistics (2008);
- Evaluation of FAO activities in DRC 2003-2007 (2008);
- Independent External Evaluation of FAO (2007);
- Evaluation of FAO's Emergency & Rehabilitation Assistance in the Greater Horn of Africa 2004-2007;
- Real Time Evaluation of the FAO emergency and rehabilitation operation in response to the Indian Ocean Earthquake and Tsunami (2006-2007);
- the Evaluation of FAO activities in Cambodia (2002-2007)
- the Evaluation of FAO activities in Mozambique (2001-2005);
- the Evaluation of Strategic Objective D2, Conservation, Rehabilitation and Development of Environments at Greatest Risk;

108. Further, NRLW and FOM conducted two and one auto-evaluations respectively, whose reports also are available. Annex 1 contains information on previous evaluations on a project by project basis and PBEE will prepare a synthesis of all relevant evaluation reports, highlighting water-related findings and conclusions.

109. The Evaluation team will consider the possibility of conducting an institutional mapping analysis, to define FAO's future desirable role at the global level, based on its mandate and comparative advantage in the different areas of water related work.

## **7.2 *Composition and profile of the evaluation team***

110. The Evaluation will be led by a senior external consultant, supported by a multidisciplinary team of external consultants. Gender equity and geographical balance were pursued in so far as possible in the team composition, to ensure diversity of perspectives.

111. The Evaluation Team will bring together the following areas of expertise:

- 'Water and Development', at the policy and technical level, in particular in relation to water, food and agriculture;
- global processes and partnerships on water, including conventions and treaties;

- watershed management and water in forest issues;
- environmental aspects related to water, including water quality issues, water issues in a context of climate changes, inland freshwater ecology;
- irrigation engineering and operations, irrigation maintenance systems, drainage, etc.;
- water scarcity, water use efficiency and productivity;
- water and irrigation management institutions and organizations;
- gender and social development issues in water management;
- investment programmes in water-related areas;
- emergency interventions;
- capacity development;
- information systems; and
- institutional and management issues.

112. Within the thematic areas of specialization, the Team as a whole also will have experience and competence in the areas of capacity building, normative work and field programme activities, including interventions in emergency context and support to investment programmes.

113. The FAO Evaluation Service will assist the Evaluation Team through the Evaluation Manager, who will provide information and guidance on issues relating to FAO structure, working mechanisms and procedures, project and programme management and evaluation methodology and will be a full-time member of the Evaluation team. A research assistant in PBEE will collaborate through desk studies, survey management and preparation of synthesis documents.

### **7.3 *Composition of the Expert Panel***

114. The Expert Panel was to be composed of representatives of international organizations, and of experts in their personal capacity. The following organizations were invited to participate in the Expert Panel: Asian Development Bank, ESCAP, Gender and Water Alliance, ICIMOD, IFAD, IUCN, IWMI, NEPAD/CAADP, SIWI, UNEP, UNESCO and World Bank. Organizations unable to attend were the Asian Development Bank, IUCN, UNESCO and the World Bank.

### **7.4 *Evaluation time schedule***

115. The evaluation work will be organized as per the timetable below. The detailed work-schedule including travel destinations outside FAO HQ will be defined and agreed by the end of June 2009.

- 1) March-early May 2009: Evaluability Assessment
- 2) Mid-May 2009: circulation for comments of the draft ToR;
- 3) Second half of June: briefing of the evaluation team in FAO HQ; Evaluation Expert Panel (17-19 June); finalisation of the ToR and of the evaluation design; preparation of questionnaire/s for survey/s and recipients, detailed plan of work and country visits;
- 4) July-August 2009: data gathering, telephone interviews, analysis of documentation, analysis of survey results;
- 5) September – October 2009: missions to countries, institutions and FAO HQ; debriefing in FAO HQ;
- 6) October-November 2009: report writing;
- 7) 9 November 2009: circulation to stakeholders of the final draft report;
- 8) 1-3 December 2009: 2nd meeting of the Expert Panel;
- 9) 11 December 2009: circulation of the final report;
- 10) December 2009-January 2010: preparation by FAO Secretariat of the Management Response to the evaluation;
- 11) January 2010: translation of the report for the Programme Committee.
- 12) Spring 2010: presentation of the Evaluation report and of the Management Response to the Programme Committee of FAO.

# **Evaluation of FAO's role and work related to water**

## **Annex 2**

### **Profiles of Evaluation Team members**

Dr. Andrew Bullock, British, was the water in development expert and Team Leader. He holds a PhD in water resource management. Currently he is a consultant with HJP International Ltd. and has more than 20 years of professional experience in water-related policy and strategy work, with extensive experience in Africa and Asia.

Ms Tullia Aiazzi, Italian, was the Evaluation Manager and has been a staff member of FAO Office of Evaluation since 2003. She holds an MSc in Agricultural and Rural Development and has more than 20 years of professional experience in development related issues, including institutional and gender issues and evaluation.

Dr. Donald Baird, British, was the water quality and environment expert. He holds a PhD in Aquatic Ecology and has more than 25 years of professional experience in the area of aquatic environments. Currently he is a Research Scientist at the National Water Research Institute of the Government of Canada.

Mr. Bart Dominicus, Dutch, was the forests and watershed expert. He holds a BSc in Tropical Agriculture with Specialization in Soil Science and has more than 20 years of professional experience in integrated natural resource and watershed management, soil conservation and forestry, with extensive experience in Asia. Currently he works as a free-lance consultant.

Ms. Marna de Lange, South African, was the irrigation engineer and capacity development expert. She holds a BSc in Civil Engineering and has more than 15 years of professional experience in water-related rural development issues. Currently she is the Managing Director of Socio-Technical Interfacing and the co-founder and Director of the Water for Food Movement.

Mrs. Vasudha Pangare, Indian, was the gender and social development expert. She holds an MSc in Social Work. Currently she is the Director of the World Water Institute, Pune, Maharashtra, India and has more than 15 years of professional experience in water-related social and gender issues, with extensive experience in India and Asia.

Dr. Christopher Perry, British, was the water economics expert. He holds a PhD in Economics and has more than 30 years of professional experience water-related economics, water resources, irrigation and basin management, with extensive experience in Asia and the Near East. Among others, he served as World Bank water expert and Deputy Director General of IWMI.

Dr. Aidan Senzanje, Zimbabwean, was the irrigation engineer and agronomy expert. He holds a PhD in Agricultural Engineering and has more than 15 years of professional experience in irrigation and drainage and soil and water management, with extensive experience in Africa. Currently he is a Senior Lecturer in Irrigation Engineering at the University of KwaZulu Natal in Pietermaritzburg.

Dr. Saskia van Oosterhout, Zimbabwean, was the agriculture expert. She holds a PhD in Agricultural Sciences and has more than 25 years professional experience in food security and food safety, research and development projects, with extensive experience in Africa and Asia.

# Evaluation of FAO's role and work related to water

## Final Report

### Annex 3

#### Report of the Expert Panel of the Evaluation of FAO's role and work related to water

THIRD EXPERT PANEL MEETING

Rome, 1-3 February 2010  
FAO Headquarters, India Room, A327/9

#### Expert Panel Members in FAO HQ

**Audrey Nepveu de Villemarceau** (IFAD)  
**Esther de Jong** (Gender and Water Alliance)  
**Jan Lundqvist** (SIWI)  
**William Cosgrove** (Independent consultant)

#### Expert Panel Members to be reached by phone

Pay Drechsel (IWMI)  
Mats Eriksson (ICIMOD)  
Henrik Larsen (UNEP)

#### Evaluation Team

**Chris Perry** (Water Economics Expert)  
**Tullia Aiazzi** (FAO Evaluation Service, Evaluation Manager)

1. We consider the report near-final. Therefore, we will not be making far-reaching suggestions, but indicating specific amendments for finalization and giving opinions on the report. These will be outlined according the points set out in the Panel's Terms of Reference (Appendix 1).

#### ***A With regards to the logical structure, the relevance and the quality of the evidence-based findings and the conclusions provided in the Final Evaluation Report***

2. The Evaluation report is overall of good quality, well formatted and easy to read, and clearly presents the information retrieved and the conclusions reached. Nevertheless, the Panel of Experts feels that the present executive summary does not do justice to it. Considering that the executive summary is likely to be the main – if not the only – document read by delegates, it is essential that additional efforts are put to improve its accuracy and readability.

3. While a number of sections of the text throughout the report describe normative products produced, the present structure of the report induces the reader to think that these sections are only mentioned in so far as they support FAO activities on Technical Assistance, Policy assistance and Information sharing. Considering the wealth of information retrieved, the Evaluation team could have

made an overall assessment of this core function of FAO water. These points are all the more valid with regards to the advocacy function of FAO.

4. Although capacity building features clearly in FAO activities and many examples are given in the report (see also FAO website), the Expert Panel feels that more justice could be done to the efforts implemented beyond section 7.4, in particular in the executive summary.

5. It is good that recommendations are addressed to different units within the Organization.

6. The evaluation matrix in Annex 6 provides an indication of which evaluation criteria was relevant to which evaluation questions. An explanation of how this was applied would be beneficial within the report/methodology section.

***B B. With regards to the extent to which the Recommendations are firmly based on evidence and analysis, are relevant and realistic, with priorities for action made clear***

7. The evaluation shows clearly that from the assessment criteria used in the evaluation, the one on social inclusion and gender equality is poor throughout "Water at FAO" (except for a few exceptions). Therefore the expert panel is of the opinion that recommendations addressing the lack of performance in these issues should be part of the Foremost Recommendations.

8. The Panel of Experts suggests a new formulation of Recommendation 1, as it should convey a clear message. If this suggestion is not found acceptable the Experts Panel recommends that a clear, alternative mission statement is set for the water platform on the basis of the concept suggested below.

- Food security is a prime objective in the work of FAO. To realize this objective, FAO should strengthen the efforts to ensure that the policies, management and use of water and land resources are coordinated to the extent necessary and feasible. The purpose must be to improve and stabilize the productivity in the use of these resources in a long term perspective, i.e. to meet an expected increase in demand for food and other goods and services from the agricultural sector. This can only be achieved by taking the different capabilities of women, men and youth into account. Special attention must be paid to the inclusion of poor and vulnerable groups. This approach should be the basis of the design of the technical, financial and institutional arrangements.

9. The report shows that FAO is below critical mass of staff for both the water-related normative work and field programme. A recommendation to provide adequate human and financial resources to correct this problem should be addressed among the Foremost Recommendations of the report.

10. In the section supporting recommendations 34 and 35<sup>1</sup> indicating ADG of NR Department as the relevant champion for a water platform, there is little presentation of the analysis done to reach such a conclusion. Possible alternative solutions that could have been considered and discarded are not mentioned, and possible overlap of the proposed FAO water platform with the initial mandate of NR Department (see para 33 [http://www.fao.org/uploads/media/WG1WG3ReportOrganizationalStructure9Sept\\_1.pdf](http://www.fao.org/uploads/media/WG1WG3ReportOrganizationalStructure9Sept_1.pdf)) does not seem to have been looked into. This weakens the strength of the proposal made.

11. To be effective, the proposed Water Platform should have the following characteristics:
- a. The authority of ADGs themselves (no delegation) to jointly take decisions binding all parties in FAO-Water must be recognized.
  - b. The Platform under their authority should develop an overall goal and set priorities to achieve it which provides a framework for program development and allocation of resources paying particular attention to the impact focus areas.
  - c. The evaluation leaves it to "Water at FAO" to decide on the priorities of the area's of work. The expert panel agrees to that, but advises to focus on the complementarities between water – land – people as mentioned in recommendation number 1, as this is where FAO has its comparative advantage. Internal responses to the recommendations of the evaluation report should focus on those recognizing the essential interaction of water, land and people.
  - d. The Platform should monitor performance (progress towards results and application of resources) and assure quality control for programs within their domain.

---

<sup>1</sup> Recommendations 33 and 34 in final report

12. Recommendation 31<sup>2</sup> calls for an increase in human resources in many fields which probably is unrealistic, without setting priorities. It would have been preferable if priorities would have been set. This should now be dealt with by the Water Platform (see above).

13. The evaluation team was not able to capture human and financial resources mobilized for a given result, making it impossible to either judge the efficiency of effort or fully evaluate performance. Evaluation, and more importantly proper management, requires a results-based management approach that includes a clear statement of results/outputs, intermediate outcomes and long-term impacts to be expected, the criteria by which these are to be measured, the resources to be applied, a time recording system and regular reporting on the use of time and financial resources applied to a program. Such a system also will permit an informed judgment of whether the results of new proposals can be achieved with the resources available. The evaluation unit could support this work by monitoring the impact pathway of FAO projects beyond their life time through related tools and procedures to see if the outcomes have been achieved.

14. The Evaluation Report in several places makes reference to rapidly changing external factors that will affect the availability of, use of, and competition for resources. These external factors include climate change, population and economic growth, migration patterns (esp. rural-urban), land use change, technological developments, evolving energy requirements, financial turmoil, evolution of the global economic and trade regimes and environmental degradation. To enable FAO to give advice on measures to deal with the risks and uncertainties these factors may create, a foresight program assessing the impacts of these changes on water in different regions should be developed, perhaps in coordination with those in ESA who prepares the Global Perspectives.

15. With regards to references to the context of FAO water work, more emphasis could be put on the essential role of fisheries for food security, livelihoods of the poor and diversified resource uses. This would in turn clarify the strategic position taken for FAO water to complement and support the needs related to fisheries, for instance supporting aquaculture or conserving water quality.

16. The assessment and conclusions on gender and social inclusion in the report are relevant, logical and of good quality. Paragraph 514<sup>3</sup> states "there is no clarity as yet within FAO's work on water about two key concepts: "what is gender mainstreaming" and "who should be responsible for gender mainstreaming". The recommendations formulated in the report are valid and need to be taken seriously. However the panel is not convinced that these will be enough to improve the performance up to the required level.

- The combination of lack of knowledge, will and human resources to adequately mainstream gender and social inclusion into FAO's work on water seem to require more efforts than the ones already mentioned in the report. Suggestions are: capacity building of staff on gender and social inclusions issues, a stronger mandate for the PPRC (or its successor) not to approve projects or programmes unless gender and social inclusion are properly taken into consideration (a stronger mandate than Recommendation 22 has right now), improve the current GFP system by allocating sufficient time to do the work as well as appointing staff at higher level to this position, understand why there is resistance to mainstream gender and addressing these reasons, etc.

17. The reporting on water use and resources is carried out by Aquastat at national, regional and basin levels. Their contacts at these levels and expertise in the water sector make them ideally equipped to contribute the national level data to UNSD (New York) if they establish a global national water accounting system as is currently being discussed.

### *Specific comments*

18. There has been a big improvement of the clarity of the recommendations since the previous version of the report. However, they are in many cases maybe a bit too general, and therefore difficult to

---

<sup>2</sup> Recommendation 30 in final report

<sup>3</sup> Paragraph 530 in final report

address. Examples of recommendations that are quite general are for instance no 5, 6 and 9<sup>4</sup>. More detailed guidance could facilitate the uptake of the recommendations.

19. The Panel of Experts found Recommendation 26<sup>5</sup> over-ambitious and suggests to leave “all the donors” out.

20. In Recommendation 30<sup>6</sup> the current two bullets, d) and e) may be reformulated and merged into one bullet:

- Insofar as possible, at least two officers, one or more of each discipline, should be located in FAO decentralized offices to properly deal with issues related to the management of water and land resources, jointly and separately, to ensure synergies and to implement strategies to enhance productivity of water and land resources.

21. It is suggested to “bridge” the message in #257<sup>7</sup> to the definition of efficiency and productivity in #258-260<sup>8</sup>. As it is now, the formulation in #257 refers to rainfed systems, whereas the discussions in #258-260 refer to irrigation systems. This can be done by adding a couple of sentences in #258 and 260:

- ... It is essential to develop methodologies that will make it possible to estimate the efficiency/productivity in the capturing and use of the entire (potential) water resource, i.e. water in rainfed systems, supplementary irrigation, etc. It seems relevant and important for FAO and in a general sense to develop the concept of “the efficiency of the rains” (similar) and also a methodology that will make it possible to calculate efficiency/productivity in this wider perspective. Similarly, it is important to develop a conceptual and methodological basis for calculations of the productivity of land and water resources jointly (if that is possible??).

22. With regards to #278<sup>9</sup>, it is suggested to include a sentence about the need to consider price increase of inputs in food production (and, probably transport). In the current version, the food price increase is mentioned. Everything else the same, this could be good for the farmer. The key problem, however, is (and will be) the price increase of inputs that the farmers need and for which the poor farmers will have to pay the full price in the absence of subsidies. Faced with a high level of risk and uncertainty (due to climatic variability among other things) the price hike on inputs are devastating for many farmers and, indirectly, for increase in food production among the groups of farmers who most badly need to increase production and productivity.

### ***C With regards to the extent to which the report makes the information accessible and comprehensible***

23. The report in general makes the information accessible and understandable (although there may be a few exceptions noted in the detailed comments listed above or communicated directly to the Evaluation Team).

### ***D With regards to the transparency, rigour and inclusiveness of the evaluation process***

24. The Expert Panel found the variety in the composition of the Panel of experts useful, in particular for good insights into the complexity of FAO. However, the regional representation should be strengthened.

25. The timing of the evaluation was perceived as not very convenient as the structure of FAO changed as of 1st January 2010. This made it difficult to target recommendations as some structures did not exist yet at the time of the evaluation and others ceased to exist. This also complicated the assessment of the recommendations by the Panel of Experts.

26. The Panel met timely in June 2009 for the revision of the ToRs, although there was no room for major changes as the team was already selected and would start working on the following day. The choice

---

<sup>4</sup> Recommendation 11 in final report

<sup>5</sup> Recommendation 25 in final report

<sup>6</sup> Recommendation 29 in final report

<sup>7</sup> Paragraph 270 in final report

<sup>8</sup> Paragraphs 284-285 in final report

<sup>9</sup> Paragraph 306 in final report

of members of the evaluation team was appropriate to reflect the disciplines required. Even so, it is recommended that a Panel of Experts contributes to the ToR of the evaluation before the Evaluation team composition is finalized.

27. The sources of information and the people met in Rome and in the field were appropriate. However, some of the quantitative information required simply was not available (#119<sup>10</sup>), and it was impossible for the evaluation team to fulfil part of its terms of reference. Such shortcomings could be overcome following the Panel's recommendation on RBM.

28. It appears that the evaluation team has properly analyzed the information available to them and drawn appropriate conclusions.

29. We think it was useful and worthwhile for the Panel to meet prior to the evaluation team starting its work, and after the first draft was ready as well as after the final draft was presented. This clearly increased the value its contribution and enabled a more qualitative input in the second and third meeting, because the Panel had already familiarized itself with FAO, as well as built a team.

30. It is positive as well as negative that the Panel convened at the dates it has. Positive: (i) the second meeting provided the possibility to provide guidance for the final draft, and (ii) it served the purpose of defusing the situation with the stakeholders - however, that may not be the role of a panel of experts (iii) the third meeting made it possible to give comments of a different hierarchy on the final draft of the report

31. Negative: the second meeting came too early and should have come after collecting internal comments and producing the next draft. This would have made the second meeting superfluous. It would be the best use of the Panel's time to comment on the Draft at a stage where it can still be properly amended. It would also have been appropriate that the final Evaluation Report address stakeholders' comments before being submitted to the Panel of Experts.

32. As far as the Panel understood, the roles and division of work - including writing and editing - of the evaluation unit vis-à-vis the evaluation team were not clear and not very well described and communicated to the Panel. After the first meeting of the Expert Panel, most of the members were under the impression that the FAO evaluation office only had a facilitating role, while the evaluation would rest entirely on the consultant team in order to ensure objective and non-biased views. However, at the 2<sup>nd</sup> Panel meeting, it became clear that the evaluation office also had an active role in the evaluation. Thus, the roles and responsibilities between the FAO evaluation office and the consultancy team have not been entirely transparent and clear to all panel members. This should have been explained earlier in the process.

---

<sup>10</sup> Paragraph 128 in final report

## Annex 1 - Terms of Reference for the Expert Panel

1. The Expert Panel has the role of guidance and advisor and is an **integral part of the evaluation process**.

2. The first meeting of the Panel (17-19 June 2009) was convened to review the Terms of Reference (ToR) of the Evaluation and contribute to the finalization of the Evaluation's scope and methodology. The Panel met with key stakeholders in the Organization, and had the opportunity to interact with FAO Senior Managers about their views on FAO's work related to water, its mandate and comparative advantage, strengths, weaknesses and gaps in past performance and major challenges ahead. Based on the knowledge, experience and institutional role of its members the Panel provided its observations and comments in a brief report and its suggestions were integrated into the final version of the Evaluation's ToR.

3. The Expert Panel's objective, at its second meeting (2-4 December 2009), was to provide guidance to the Evaluation Team for finalizing the report. Panel members were asked to carefully review the draft working report of the Team and provide views and inputs to the finalisation process. In addition, the report had been circulated for comments among FAO stakeholders, and those received prior to the Meeting were made available to the Panel, with an initial response from the Evaluation Team. The Panel had the opportunity to meet with key stakeholders in the Organization, hear their views and concerns, and hear clarifications of any outstanding issues.

4. Based on the knowledge, experience and institutional role of its members the Panel provided its observations and comments in a brief report and its suggestions were integrated into the Final Evaluation Report. The Panel will be provided with a matrix, in which the Evaluation team outlined the actions taken on each comment.

### The Third Meeting of the Expert Panel

5. The Panel, based on the knowledge, experience and institutional role of its members, is asked to provide its overall and final opinion on the quality of the evaluation process and the evaluation report.

6. In particular, in its final report the Panel should comment on<sup>11</sup>:

7. The logical structure, the relevance and the quality of the evidence-based findings and conclusions provided in the Final Evaluation Report;

8. The extent to which the Recommendations are firmly based on evidence and analysis, are relevant and realistic, with priorities for action made clear; if the case, the Panel should indicate recommendations that it disagrees with, and the reasons why;

9. The extent to which the report makes the information accessible and comprehensible; and

10. The transparency, rigour and inclusiveness of the evaluation process.

11. The Panel will provide its observations and comments in a brief report, to be presented for discussion on the morning of Wednesday 3 February 2010. The report will be finalised as soon as possible by the Panel and will become an Annex of the Final Evaluation Report.

12. To facilitate its task, it is suggested that on Monday morning, the Panel should select a Chairperson and a rapporteur, from among Panel members. The FAO Office of Evaluation will assist the whole process.

## Annex 2 – Programme of work

*Monday 1 February 2010*

<b>13. 14:00-16:00</b>	14. Panel time: election of Chair and rapporteur, review of proposed work programme, administrative tasks, etc.
<b>15. 16:00-18:00</b>	16. Panel and Evaluation Team general discussion, questions and

<sup>11</sup> Based on UNEG standards for evaluation

	clarifications as needed.
<b>17. 18:00-19:00</b>	18. Telephone conversation with Pasquale Steduto in Canada, with Parviz Koohafkan in Rome

*Tuesday 2 February 2010*

<b>19. 08:30-09:30</b>	20. Panel discussion or meetings with FAO stakeholders
<b>21. 09:30-11:00</b>	22. Teleconference with external Panel members
<b>23. 11:00-11:20</b>	24. Coffee break
<b>25. 11:20-13:00</b>	26. Open door session for FAO stakeholders
<b>27. 13:00-14:00</b>	28. Lunch
<b>29. 14:00-15:00</b>	30. Panel and Evaluation Team discussion
<b>31. 15:30-18:00</b>	32. Panel internal discussion and initial preparation of Panel Report
<b>33. 18:00-19:00</b>	34. Telephone conversation with Andy Bullock in Tunisia, with T. Aiazzi, C. Perry and C. de Vivanco in Rome

*Wednesday 3 February 2010*

<b>35. 08:30-11:30</b>	36. Preparation of Panel's Report
<b>37. 11:30-13:00</b>	38. Presentation of Panel conclusions and recommendations to Evaluation Team and Senior Staff if so decided.
<b>39. 13:00-14:00</b>	40. Finalization of Panel Report

# Evaluation of FAO's role and work related to water

## Final report

### Annex 4

#### Evaluation methodology

1. The Evaluation adopted a participatory approach and consulted with FAO stakeholders at different points in time, namely on the ToR, the plan of work and the advanced and final draft reports. FAO staff also met with the Evaluation Expert Panel at length, on the occasion of the three Panel meetings in FAO HQ.

2. The views of internal FAO stakeholders on their own work, achievements and challenges, were canvassed extensively throughout the whole evaluation process. Equally, the views of clients and users of FAO's products and services and of the partners of the Organization in the water sector were sought and taken in due account, through interviews in the visited countries, questionnaire surveys, and phone interviews.

3. Broadly, stakeholders included:

- FAO staff in HQ, at the decentralized offices and in the FAO Representations;
- Staff of Governments and relevant institutions in Member Countries (MCs), at decision-making and implementation level;
- UN organizations, International Financial Institutions (IFIs), CGIAR<sup>1</sup> members, international NGOs;
- National NGOs and civil society organisations, and ultimate beneficiaries as relevant.

4. The OECD/DAC evaluation criteria and the UNEG<sup>2</sup> Norms and Standards informed the evaluation process; independence and rigour of analysis were maintained throughout it. Also, particular attention was given to cross-cutting issues: gender mainstreaming, social inclusion and environmental sustainability.

5. Triangulation by the Evaluation team members of information gathered was a key tool for the validation of evidence. In addition, the team members applied their own professional experience and technical judgment in the assessment of, for example, the quality of normative, project and process outputs and outcomes and in the formulation of recommendations and suggestions.

6. The evaluation used a wide range of quantitative and qualitative tools and methods, namely:

- stakeholder consultation through group and individual semi-structured interviews and phone interviews in FAO's offices (HQ, Regional and Sub-regional Offices, country representations), at country level and in International Organizations<sup>3</sup>;
- two questionnaire surveys, to Member Countries and to National and International Institutions;
- identification and mapping of all of FAO's projects with water components, through FAO FPMIS;
- inventory and review of all water-related normative outputs, including publications, guidelines and manuals, models and databases;
- review of project documents;

---

<sup>1</sup> CGIAR: Consultative Group on International Agricultural Research

<sup>2</sup> OECD/DAC: Development Aid Committee of the Organization for Economic Cooperation and development; UNEG: United Nations Development Group

<sup>3</sup> The complete list of institutions and staff met is in Annex 5 of the final Evaluation report.

7. In addition, an evaluation matrix guided the data gathering and analytical process (see Annex 6 of the final Evaluation report). The matrix was developed by related the evaluation questions to the evaluation criteria set-out in the ToR; whenever a link was possible, e.g. effectiveness of FAO's work at country level, an indicator was defined and the sources and means of gathering the relevant information. As in most wide-ranging evaluations, not all evaluation questions related to each and all evaluation criteria.

8. The Evaluation also made extensive use of past evaluation reports of programmes, projects and thematic areas relevant to water in FAO, as well as of Auto-evaluation reports. This proved to be a cost-effective approach that allowed canvassing a much larger body of evidence than would have been otherwise possible with available resources. In addition to 21 project evaluations, the following thematic and country evaluations were included:

- Evaluation of FAO's work in Tajikistan, (2009);
- Evaluation of FAO cooperation with India 2003-2008 (2009);
- Evaluation of the FAO response to the Pakistan earthquake (2009);
- Evaluation of FAO's role and work in statistics (2008);
- Evaluation of FAO activities in DRC 2003-2007 (2008);
- Independent External Evaluation of FAO (2007);
- Evaluation of FAO's Emergency & Rehabilitation Assistance in the Greater Horn of Africa 2004-2007;
- Real Time Evaluation of the FAO emergency and rehabilitation operation in response to the Indian Ocean Earthquake and Tsunami (2006-2007);
- Evaluation of FAO activities in Cambodia (2002-2007);
- Evaluation of FAO activities in Mozambique (2001-2005);
- Evaluation of Strategic Objective D2, Conservation, Rehabilitation and Development of Environments at Greatest Risk.

9. The Auto evaluations of Programme Entities included were: Agricultural Water Use Efficiency and Conservation 211A1, Land and Soil Productivity 211A2 and Integrated Land, Water and Plant Nutrition Policies, Planning and Management A3; Forest and Water 2KA07; Land and Water Information Systems 211P7 and P8.

10. During the period under evaluation, the Regular Programme (RP) of FAO was articulated and budgeted through 'Programme Entities' (PE). The Evaluation identified those relevant to the scope of the evaluation and this exercise was the basis for identifying through the FAO Field Programme Management information System (FPMIS) all field programme initiatives implemented during the period 2004-2009. The resulting inventory was circulated to all concerned FAO units for validation of the information.

11. Further, the Evaluation also analysed the objectives for each PE under NRLW's responsibility and made an attempt at linking the each Major and Biennial Outputs to the activities conducted by NRLW with the RP budget. The Evaluation noted how the wording of each Output had become increasingly detailed; however, it was not possible to clearly match these to actual outputs as described by NRLW staff. Also, details concerning inputs in terms of resources and outputs were not available, thereby not allowing for an input-output analysis of Regular Programme resources.

12. A major step in the evaluation process was the visit to Member Countries, as this offered the opportunity to get an insight and discuss the opinion of national stakeholders at the different levels on the whole of FAO's work related to water, including both projects and normative products. Thus, the selection of countries to be visited followed a rigorous process to balance regional representativeness, cost effectiveness and resources available. The first criterion was the total volume of water-related work by FAO, funded through the Regular Programme budget (RP) or extra-budgetary (EB) resources. Countries with the larger volumes of work were then screened against the variety of work, preference was given to those where different FAO units had conducted activities and

hosting projects that had to be evaluated according to FAO's evaluation policy<sup>4</sup>. Countries hosting a FAO Regional (RO) or Sub-Regional (SRO) Office were included to allow interaction with FAO staff in the decentralized offices.

13. Selected and visited countries were: China, Egypt, Ghana, Malawi, Mali, Morocco, Saudi Arabia, Thailand and Turkey. A team member travelling to his home country for holiday took the opportunity to meet the SRO there (Zimbabwe). All FAO regions were visited, excluding Latin America due to time and budget constraints and to the relative limited number of activities in the water sector in that region: the Evaluation held a phone interview with the Senior Land and Water officer in Santiago and assessed through a desk-review the relevant projects implemented during the evaluation period. Lastly, one Evaluation team member also travelled to Washington DC, USA, to meet the World Bank staff and other organizations working in the water sector while another team member met with relevant staff in the Ministry of Foreign Affairs in the Netherlands.

14. The opinion of government stakeholders in all FAO Member Countries and other National and International Institutions (NII) working in the water sector were captured through two questionnaire surveys. Rates of response were 38% for the Member Countries and 34% for NII. Relevant information resulting from the analysis of the responses has been included throughout the report; full reports were also prepared<sup>5</sup>.

15. Separate reports were prepared for all national TCPs (Technical Cooperation Projects) in the countries visited and projects with a budget above USD 4 million that were assessed<sup>6</sup>.

16. FAO Office of Evaluation<sup>7</sup> (OED) ensured the management of the Evaluation, including the identification and recruitment of the Evaluation team<sup>8</sup>. Each team member received individual Terms of Reference, indicating areas of technical expertise and specific evaluation issues, as well as background material<sup>9</sup> prepared by OED. All team members participated in an internal briefing session in June, to illustrate information on FAO as a global organization, on evaluation methods and approaches and on their respective tasks in the team. An internal debriefing week in FAO HQ was organized at the end of the country visits (October), to share and discuss findings and conclusions. Extensive communication among team members took place throughout the whole process.

17. The Evaluation team held extensive meetings in FAO HQ in late June 2009, to gather information from FAO stakeholders, before travelling to Egypt in late June and all others in September. Whenever the team could not debrief with the FAO Representative or the Regional/Sub-regional Representative in respective countries, aide-memoires were prepared and shared with them. A debriefing session was held in early October 2009, to present preliminary findings and conclusions to key stakeholders in FAO HQ: comments and suggestions formulated were taken in due account by the team during the preparation of the report.

---

<sup>4</sup> As per FAO's evaluation policy, projects with budgets of 2-4 million USD have to be evaluated, possibly within the framework of larger evaluations, and all projects with budgets above 4 million USD have to be evaluated independently in the course of the project. In addition, within larger evaluations the TCPs in countries visited need to be reviewed individually. See Annex 7, 8 and 9 for the reports of national TCPs and projects above 4 million USD.

<sup>5</sup> See Annex 12, Analysis of questionnaire survey to Member Countries and Annex 13, Analysis of questionnaire survey to National and International Institutions.

<sup>6</sup> In the final Evaluation report, see: Annex 7, Evaluation of TCP projects; Annex 8, Evaluation of UTF/SAU/011-012/SAU; Annex 9, Evaluation of IPTRID.

<sup>7</sup> The denomination of the unit changed during 2009, from Evaluation Service to Office of Evaluation. The symbol changed from PBEE to OED in January 2010.

<sup>8</sup> See Annex 2, Professional Profiles of the Evaluation team members.

<sup>9</sup> This included: Background information on FAO; notes on the evaluation function in FAO; UNEG Norms and Standards, Code of Conduct, and evaluation methodology; the inventory of water-related FAO normative products issued since 2001, as well as electronic versions of each, if available; the inventory of water-related projects implemented by FAO since 2004; project documents and other available documentation on FPMIS for all the projects in the sample countries, all non-evaluated projects with budget above USD 2 million, all TCPs and other most significant projects; evaluation reports for water-related projects and relevant themes and programs already evaluated and a synthesis of their findings and conclusions.

18. The final draft report was circulated to FAO stakeholders in Headquarters, in the Regional and Sub-Regional Offices and in the visited countries, for them to provide factual corrections, suggestions and comments. A matrix was prepared and circulated, including stakeholders' comments and the Evaluation team's answers.

19. The evaluation process was supported by an external Panel of Experts, composed of representatives of international organizations, and of experts in their personal capacity. The following organizations participated<sup>10</sup> in the first session of the Panel in June 2009, to revise the Evaluation ToR: ESCAP, Gender and Water Alliance, ICIMOD, IFAD, IWMI, NEPAD/CAADP, SIWI, UNEP<sup>11</sup>. Its comments were integrated in the Evaluation's ToR. The second session<sup>12</sup> was held in early December 2009 to comment on the final draft report, as well as review comments of FAO stakeholders. The comments were integrated as appropriate into the final Evaluation report. The Panel convened for a third session in February 2010 in the function of peer review of the evaluation process and final Evaluation report: its report has become Annex 3 of the final Evaluation report. Some of its suggestions were integrated in the final report of the Evaluation.

### Constraints and limitations

20. The Evaluation could not answer all the questions and issues raised in the ToR and could not assess all the work by FAO that had been initially foreseen.

21. The first obstacle was the absence in FAO of corporate systems for recording time inputs by staff and consultants in all normative work and to a certain extent, also in the field programme. This means that no rigorous and objective assessment of FAO's efficiency, intended as input-output flow, was possible. In consideration of the large weight of the normative component in the overall work by 'Water at FAO', this has been a major gap in the evaluation report.

22. Equally, FAO does not have a corporate system for recording specific requests by its Member Countries for assistance: the reports of FAO Committees and regional conferences are formulated at a global or regional level and can only represent a generic benchmark, unsuitable for assessment of performance at a more detailed level of analysis.

23. The fragmentation of the collaboration and inputs by TCI in support of the World Bank did not allow a proper assessment of the effectiveness of a large part of that Division's work in the area of water. For this aspect, the Evaluation had to rely on the informed judgment of World Bank staff. Also, given its complexity, TCI information system is accessible only by TCI staff: the Evaluation could not develop its own statistical data on the collaboration between TCI and IFIs.

24. In order to assess FAO's work on water under emergency context, Afghanistan had been initially selected and the mission was planned for late September. However, the level of insecurity preceding the elections led to the decision to cancel the mission, due to the impossibility of conducting a proper evaluative work in those circumstances<sup>13</sup>.

---

<sup>10</sup> Invited organizations unable to attend were the Asian Development Bank, IUCN (World Conservation Union), UNESCO (United Nations Educational, Scientific and Cultural Organization) and the World Bank.

<sup>11</sup> ESCAP: Economic and Social Commission for Asia and the Pacific; ICIMOD: International Centre for Integrated Mountain Development; IFAD: International Fund for Agricultural Development; IWMI: International Water Resources Management Institute; NEPAD: The New Partnership for Africa's Development; CAADP: Comprehensive Africa Agriculture Development Programme; UNEP: United Nations Environment Programme.

<sup>12</sup> Participants in the second meeting of the Panel were: Gender and Water Alliance, ICIMOD, IFAD, IWMI, SIWI, UNEP ESCAP and NEPAD/CAADP were unable to attend.

<sup>13</sup> The Evaluation proposed to meet the Chief Technical Adviser of the Emergency Irrigation Rehabilitation Project (EIRP) in Bangkok, but this could not be arranged.

# Evaluation of FAO's role and work related to water

## Final Report

### Annex 5

#### List of Institutions and Stakeholders met

##### **1 FAO Headquarters**

1. ADG Natural Resources
2. Director of Land and Water Division
3. Chief and Senior Staff, Water Development and Management Unit (NRLW)
4. Senior Staff, Food Quality and Standards Service (AGNS)
5. Chief and Senior Staff, Fisheries and Aquaculture Management Division (FIM)
6. Chief and Senior Staff, Forest Management Division (FOM)
7. Staff, Development Law Service (LEGN)
8. Senior Staff, Emergency Operations and Rehabilitation Division (TCE)
9. Director and Senior Staff, Investment Centre (TCI)
10. Chief and Senior Staff, Management and Coordination Service for the Special Programme for Food Security (TCOS)
11. Senior Staff, Livestock Information, Sector Analysis and Policy Branch (AGAL)
12. Senior Staff, Environment, Climate Change and Bioenergy Division (NRC)
13. Senior Staff, Plant Production and Protection Division (AGP)
14. Senior Staff, Global Perspective Studies Unit (ESAG)
15. Senior Staff, Land Tenure and Management Unit (NRLA)
16. Senior Staff, Gender, Equity and Rural Employment Division (ESWD)
17. Senior Staff, Research and Extension Division (NRRR)

##### **2 Chile**

18. Senior Land and Water Development Officer

##### **3 China**

19. Programme Officer and Staff of FAO Representation
20. Deputy Division Director, Dept of International Cooperation, Science and Technology, Ministry of Water Resources
21. Division Chief, Department of Rural Water Resources, Ministry of Water Resources
22. China Irrigation and Drainage Development Centre
23. Chinese National Committee on Irrigation and Drainage, Beijing
24. School of Water Resources and Hydropower, Wuhan University, Wuhan
25. President, Vice President and members of Sub Channel 1 Water User Association, Zhanghe Irrigation District
26. Chief of Science and Foreign Affairs Department, Shanxi Water Resources Department, Taiyuan, Shanxi
27. Deputy Bureau Chief, Jiamakou Yellow River Diversion Administration Bureau, Yuncheng City, Shanxi Province
28. Chief of the Management Section, Jiamakou Yellow River Diversion Administration Bureau, Yuncheng City, Shanxi Province
29. WUA President, Jiamakou Irrigation District

##### **4 Egypt**

30. O.i.C Regional Representative for the Near East and FAO Representative to Egypt

31. Programme Assistant and Staff for the Near East
32. Senior Irrigation and Water Resources Officer
33. Project manager and beneficiaries of three New Valley TCPs
34. Staff of the Ministry of Agriculture
35. Various Agriculture Research Institutions responsible for work in areas closely related to irrigation and water management, including the Rice Research & Development Programme;
36. The Agriculture Research & Development Council;
37. The Ministry of Water Resources and Irrigation
38. The National Water Research Institute and a few other research centres;
39. The Nile Water Sector
40. Italian Cooperation
41. Netherlands Embassy
42. World Bank
43. IFAD
44. UNESCO
45. IDRC
46. Arab Water Council

## **5 Ghana**

47. Regional Representative for Africa
48. Sub-Regional Coordinator
49. Senior Water Development Officer
50. Land and Water Officer
51. Senior Forestry Officer
52. Forestry Technical Team
53. Programme Assistant
54. Crops Officer, MoFA
55. Director for Africa, IWMI
56. Principal Researcher, IWMI
57. Environmental Scientist, IWMI
58. GIDA Senior and Project Staff
59. Senior Staff, WRI
60. Senior Staff, EPA
61. Senior Staff, KNUST
62. University of Ghana
63. Irrigation Development Authority, Ministry of Food and Agriculture
64. Groundwater Division, CSIR – Water Research Institute
65. Water Resources Commission
66. Water and Sanitation Specialist, World Bank
67. Senior staff from UNDP, WHO, UNIDO, UNICEF, and UNESCO

## **6 Kingdom of Saudi Arabia**

68. FAO Programme Coordinator/Team Leader, Riyadh, KSA
69. National Project Manager (FAO), Al-Hassa, KSA.
70. FAO CTAs
71. Director General of Irrigation Affairs (DG-AIA), Ministry of Agriculture, Riyadh, KSA
72. National Project Director, Improvement of water management in KSA, Ministry of Agriculture, Riyadh, KSA.
73. Staff of National Irrigation Agency, Ministry of Agriculture, Riyadh, KSA
74. Director General - Al Hassa Irrigation Development Authority (HIDA), Al Hassa, KSA.
75. Tissue Culture Expert, Date Palm National Research Center, Al Hassa, KSA
76. Irrigation & Drainage Engineering, Water Studies Center, King Faisal University, Hofuf, Al Hassa, KSA
77. Geophysics, Water Studies Center, King Faisal University, Hofuf, Al Hassa,

78. Manager, The National Agricultural Development Company (NADEC), Haradh, KSA.
79. Staff at the Water Quality Testing Laboratories, HIDA, Al Hassa, KSA
80. Staff at the GIS Laboratories, HIDA, Al Hassa, KSA
81. Staff at the Date Palm National Research Center, Al Hassa, KSA
82. Staff at the Water Pumping Station, Riyadh, KSA

## **7 Malawi**

83. Office of FAO Representative
84. FAO Emergency staff
85. FAO Project and District Managers
86. District Manager, FICA Project
87. Director, Department of Environmental Affairs
88. Agricultural Investments, Ministry of Agriculture
89. CISANET
90. NORAD Project Manager
91. Senior Advisor, Environment & Water Sector, Nordic Consulting Group
92. Infrastructure Specialist, African Development Bank
93. National Coordinator and Programme Advisor, Civil Society Agriculture Network
94. Ministry of Irrigation and Water Development
95. District Manager, FICA Project
96. Water Supply & Sanitation, Ministry of Irrigation and Water Development
97. Director Irrigation Services, Irrigation Department
98. Farm Income Diversification Programme
99. Irrigation Water Management Unit, Irrigation Rural Livelihoods Development Project
100. Tropical Soil Biology and Fertility Institute (TSBF-CIAT)\
101. Royal Norwegian Embassy

## **8 Mali**

102. FAO Representation staff
103. FAO Project staff
104. National SPFS coordinator
105. Conseiller Technique du Ministre chargé de l'eau, Ministère de l'Agriculture
106. WFP Representative
107. WFP staff in charge of GCP/MLI/018/WFP
108. Direction Nationale Génie Rural
109. Direction Nationale de l'Agriculture
110. Direction Nationale de l'Hydraulique, Ministère de l'Energie et de l'Eau
111. Equipe GTZ charge du PASSIP – Chef du Sous Groupe Thématique «Irrigation » du Groupe des Partenaires Techniques et Financiers intervenant dans le Secteur de l'Economie Agricole et Rurale
112. Commissariat à la Sécurité Alimentaire (CSA)
113. Operations, World Bank

## **9 Morocco**

114. FAO Representative and staff
115. FAO Project Staff
116. Director General, Direction Générale de l'Hydraulique
117. Finance and Cooperation Service Chief, Direction Générale de l'Hydraulique
118. Président du Conseil Général de Développement Agricole
119. Regional Water Demand Initiative, International Development Research Centre (IDRC-CRDI)
120. Président de l'Association Nationale de l'Amélioration Foncière, de l'Irrigation et du Drainage (ANAFID)
121. Inspecteur Général de l'Agriculture

122. Directeur et collaborateurs de l'ORMVA de Doukkala
123. Office National de l'Eau Potable
124. Association Marocaine d'Appui à la Promotion de la Petite Entreprise (AMAPPE)
125. Secrétaire Générale, Secretariat d'Etat Charge de l'Eau et de l'Environnement
126. Cooperation Division, Secretariat d'Etat Charge de l'Eau et de l'Environnement
127. Division Programmes et Financement, Secretariat d'Etat Charge de l'Eau et de l'Environnement
128. World Bank
129. Senior Staff, Ministère de l'Agriculture et de la Peche Maritime
130. Direction de l'Irrigation et de l'Aménagement du Secteur Agricole, Ministère de l'Agriculture et de la Peche Maritime
131. Director, National School of Forest Engineers (ENFI)
132. Haut Commissariat aux Eaux et Forêts et à la Lutte Contre la Désertification
133. Agronomy and Veterinary Institute Hassan II
134. Department of Water, Environment and Infrastructure, Agronomy and Veterinary Institute Hassan II
135. Water and Sanitation Specialist and Acquisitions staff, African Development Bank
136. ONEP Staff

## **10 Netherlands**

137. Directorate General of International Cooperation (DGIS), Ministry of Foreign Affairs
138. Directorate Environment & Water (DMW), Ministry of Foreign Affairs

## **11 Thailand**

139. ADG/Regional Representative
140. FAO RAP Animal Production and Health Team
141. Senior Water Management Officer, RAP
142. Technical Officer, Water Resources Development and Conservation, RAP
143. FAO CTA
144. Field Programme Officer (RAPR)
145. Department of Livestock Development (DLD), MOAC
146. Project Management Officer, Pollution Control Department (PCD), MONRE (Ministry of Natural Resources and Environment)
147. Director of Foreign Relations and International Cooperation Division, Dept of Water Resources
148. President of Thailand Water Resources Association and Member of National Water Resources Committee
149. Deputy Director General, Assistant Director General and senior officials from Royal Irrigation Department and other units, National Irrigation Academy
150. Associate Professor, Faculty of Engineering, Department of Irrigation Engineering, Kasetsart University
151. Department of Irrigation Engineering and Vice President of Kasetsart University
152. Associate Professors, Water Engineering and Management, School of Engineering and Technology, Asian Institute of Technology
153. Project Coordinator, The World Bank
154. First Secretary and Deputy Permanent Representative of Japan to ESCAP, Embassy of Japan in Thailand
155. Regional Water & Wetlands Program Asia, IUCN
156. Water Security Section staff, UN- ESCAP

## **12 Turkey**

157. FAO Sub-regional Office Senior Staff
158. Land and Water Officer
159. JPO Forestry
160. Programme Monitoring Officer

161. UN Joint Programme Manager
162. UN Joint Programme Regional Project Coordinator
163. Director of Section, Fisheries Department, GDPC, Ministry of Agriculture and Rural Affairs
164. Expert Biologist, Fisheries Department, Ministry of Agriculture and Rural Affairs
165. Director, water and Environment Pollution Section, GDPC, Ministry of Agriculture and Rural Affairs
166. Head of Utilization of Agricultural Lands Department, Ministry of Agriculture and Rural Affairs
167. Mr. Sait Tahmiscioglu, Deputy Head of Etudes and Planning Department, DSI focal point for Enhancing the Capacity of Turkey to adapt to Climate Change, DSI (State Hydraulic Works)
168. Head of Technology Department and Foreign Relations Advisor, DSI (State Hydraulic Works)
169. Director-General, DSI (State Hydraulic Works)
170. Director of Fisheries Section, Operating and Maintenance Department, DSI (State Hydraulic Works)
171. Deputy Director, TAGEM Soil, Fertilizer and Water Resources Central Research Institute
172. Head of Soil Management Section, TAGEM Soil, Fertilizer and Water Resources Central Research Institute
173. Head of Watershed Management Section, TAGEM Soil, Fertilizer and Water Resources Central Research Institute
174. Soil etudes Section, TAGEM Soil, Fertilizer and Water Resources Central Research Institute
175. Hydrology/GIS Section, TAGEM Soil, Fertilizer and Water Resources Central Research Institute
176. Deputy Director, General Forestry, Ministry of Environment and Forests
177. Forestry Engineer, Forestry General Directorate, Ministry of Environment and Forests
178. Strategy Development Department, Ministry of Environment and Forests
179. Erosion Department, Afforestation General Directorate, Ministry of Environment and Forests
180. Forest Engineer, Ministry of Environment and Forests
181. Head of Planning Department, Ministry of Environment and Forests and National Project Coordinator

### **13 Washington D.C.**

182. Senior Water Staff Africa Region, World Bank
183. Senior Water Staff India-South Asia, World Bank
184. Senior Water Staff, World Bank
185. Senior Water Staff MENA Region, World Bank
186. Senior Water Staff LAC/China Region, World Bank
187. Senior Water Staff EAP Region, World Bank
188. Senior Staff, GWP
189. Senior Staff, IFPRI
190. Senior Staff, WWC
191. Deputy Director General, IWMI
192. Senior Water Staff, ADB

### **14 Zimbabwe**

193. FAO Water Resources Officer

Ref. ToR	Evaluation questions and issues/ Evaluation criteria	Relevance			Efficiency			Effectiveness		
		Indicator/s	Source of information	Method	Indicator/s	Source of information	Method	Indicator/s	Source of information	Method
<b>A.</b>	<b>FAO's role in water</b>									
a.	FAO's mandate and visibility in meeting global, regional and national needs with respect to water, food and agriculture, among the relevant international organizations (IOs)	Mandates and overall programmes	IOs; IFIs; MCs; academia; NGOs	Desk analysis; interviews; survey;						
b.	FAO's role and comparative advantage, actual and potential, as a knowledge organization and as a provider of policy and technical assistance in relation to water, food and agriculture, at the global, regional and national level	FAO one of the main sources of advice	IOs; IFIs; MCs; academia; NGOs	Interviews; survey				FAO one of the main sources of advice	IOs; IFIs; MCs; academia; NGOs	Interviews; survey
c.	FAO's advocacy, guidance and leadership role at global, regional and national levels on water, food and agriculture							References to FAO	IOs; IFIs; MCs; academia; NGOs	Interviews; survey; national press releases
d.	FAO's clients and target groups in water, at global, regional and national level, including their awareness and expectations about the Organization	Groups of users of FAO's water products	IOs; IFIs, MCs, academia; NGOs; FAO staff (NRLW, NR, AG, FO, TC)	Surveys						
<b>B.</b>	<b>FAO's work in water</b>									
<b>B.1</b>	<b>Overall</b>									
e.	Contribution of FAO's work on water to the Organization's Global Goals in the Strategic Framework 2000-2015, including in terms of scale and geographic balance							Degree of contribution of aspects related to food security, sustainable agriculture and water use in FAO's work	Projects, normative products and evaluation reports	Desk review; project and country visits;
f.	Contribution of FAO's work on water to the Millennium Development Goals number 1, 3 and 7									

Ref. ToR	Evaluation questions and issues/ Evaluation criteria	Technical quality for all areas identified in the ToR			Impact			Sustainability-environmental		
		Indicator/s	Source of information	Method	Indicator/s	Source of information	Method	Indicator/s	Source of information	Method
<b>A.</b>	<b>FAO's role in water</b>									
a.	FAO's mandate and visibility in meeting global, regional and national needs with respect to water, food and agriculture, among the relevant international organizations (IOs)									
b.	FAO's role and comparative advantage, actual and potential, as a knowledge organization and as a provider of policy and technical assistance in relation to water, food and agriculture, at the global, regional and national level									
c.	FAO's advocacy, guidance and leadership role at global, regional and national levels on water, food and agriculture									
d.	FAO's clients and target groups in water, at global, regional and national level, including their awareness and expectations about the Organization									
<b>B.</b>	<b>FAO's work in water</b>									
<b>B.1</b>	<b>Overall</b>									
e.	Contribution of FAO's work on water to the Organization's Global Goals in the Strategic Framework 2000-2015, including in terms of scale and geographic balance									
f.	Contribution of FAO's work on water to the Millennium Development Goals number 1, 3 and 7				Degree of contribution of FAO's work in water to food security and poverty	Projects, normative products and evaluation reports	Desk review; projects visits	Degree of contribution of FAO's work in water to its conservation, development and sustainable utilization	Projects, normative products and evaluation reports	Desk review; projects visits

Ref. ToR	Evaluation questions and issues/ Evaluation criteria	Sustainability-institutional			Gender equity			Social inclusion		
		Indicator/s	Source of information	Method	Indicator/s	Source of information	Method	Indicator/s	Source of information	Method
<b>A.</b>	<b>FAO's role in water</b>									
a.	FAO's mandate and visibility in meeting global, regional and national needs with respect to water, food and agriculture, among the relevant international organizations (IOs)									
b.	FAO's role and comparative advantage, actual and potential, as a knowledge organization and as a provider of policy and technical assistance in relation to water, food and agriculture, at the global, regional and national level									
c.	FAO's advocacy, guidance and leadership role at global, regional and national levels on water, food and agriculture									
d.	FAO's clients and target groups in water, at global, regional and national level, including their awareness and expectations about the Organization									
<b>B.</b>	<b>FAO's work in water</b>									
<b>B.1</b>	<b>Overall</b>									
e.	Contribution of FAO's work on water to the Organization's Global Goals in the Strategic Framework 2000-2015, including in terms of scale and geographic balance									
f.	Contribution of FAO's work on water to the Millennium Development Goals number 1, 3 and 7				Degree of contribution of FAO's work in water to gender equity	Projects, normative products and evaluation reports	Desk review; projects visits			

Ref. ToR	Evaluation questions and issues/ Evaluation criteria	Relevance			Efficiency			Effectiveness		
		Indicator/s	Source of information	Method	Indicator/s	Source of information	Method	Indicator/s	Source of information	Method
g.	The strategic and technical priorities of FAO on water in the period under evaluation and the process and mechanisms for their identification	Degree of coherence between FAO's work on water and its mandate	FAO staff (NRLW, NR, AG, FO, TC); PWB; internal reviews	Interviews						
h.	Flexibility, adaptation and responsiveness of FAO to a changing context of social and economic and social issues around water (notably growth, employment, trade, securities, conflict avoidance and environment) and to emerging international crises	Degree of integration of emerging issues in FAO's work	Normative products; projects; FAO staff (NRLW, NR, AG, FO, TC);	Desk analysis; interviews; survey;	Timeliness of reaction	Normative products; projects; press releases	Desk analysis; interviews; survey;			
i.	FAO's response to Member Countries' needs and requests on water issues: process, modality and contents				% of requests met; timeliness	MCs; FAO staff (NRLW, NR, AG, FO, TC);	Survey, interviews			
j.	Monitoring and reporting by FAO to its membership on water related issues				Member countries' satisfaction	MCs; FAO staff (NRLW, NR, AG, FO, TC); COAG reports	Survey, interviews			
k.	Synergy, balance and feedback loops between normative and field programmes in FAO's work on water	Degree of coordinated response to MC's needs	MCs; FAO staff (NRLW, NR, AG, FO, TC);	Interviews; survey				Degree of mainstreaming of lessons learnt from and in both streams of work	Normative products; projects;	Desk review; project and country visits;
<b>B.2</b>	<b>Information and knowledge</b>									
l.	Accessibility of FAO as global repository of knowledge on water, food and agriculture				Degree of satisfaction of users	IOs; IFIs, MCs, academia; NGOs	Desk analysis; interviews; survey;			
m.	Global and specific technical, information and resource assessment products									
n.	Quality control and assurance of products				Quality control mechanisms in place	FAO staff (NRLW, NR, AG, ESS, FO, TC)	Interviews	Degree of improvement of outputs	FAO staff (NRLW, NR, AG, ESS, FO, TC)	Interviews
o.	Demand for FAO's water related products				Requests for documents	IOs; IFIs, MCs, academia; NGOs; website statistics; FAO staff (NR)	Interviews; survey;			

Ref. ToR	Evaluation questions and issues/ Evaluation criteria	Technical quality for all areas identified in the ToR			Impact			Sustainability-environmental		
		Indicator/s	Source of information	Method	Indicator/s	Source of information	Method	Indicator/s	Source of information	Method
g.	The strategic and technical priorities of FAO on water in the period under evaluation and the process and mechanisms for their identification									
h.	Flexibility, adaptation and responsiveness of FAO to a changing context of social and economic and social issues around water (notably growth, employment, trade, securities, conflict avoidance and environment) and to emerging international crises	Innovativeness of FAO's approaches to emerging issues	Normative products; projects; IOs and Governments	Desk analysis; interviews; projects and country visits; survey;						
i.	FAO's response to Member Countries' needs and requests on water issues: process, modality and contents									
j.	Monitoring and reporting by FAO to its membership on water related issues									
k.	Synergy, balance and feedback loops between normative and field programmes in FAO's work on water									
<b>B.2</b>	<b>Information and knowledge</b>									
l.	Accessibility of FAO as global repository of knowledge on water, food and agriculture									
m.	Global and specific technical, information and resource assessment products	Inventory; innovativeness and technical soundness of products	IOs; IFIs, MCs, academia; NGOs	Desk analysis; interviews; survey;						
n.	Quality control and assurance of products									
o.	Demand for FAO's water related products									

Ref. ToR	Evaluation questions and issues/ Evaluation criteria	Sustainability-institutional			Gender equity			Social inclusion		
		Indicator/s	Source of information	Method	Indicator/s	Source of information	Method	Indicator/s	Source of information	Method
g.	The strategic and technical priorities of FAO on water in the period under evaluation and the process and mechanisms for their identification									
h.	Flexibility, adaptation and responsiveness of FAO to a changing context of social and economic and social issues around water (notably growth, employment, trade, securities, conflict avoidance and environment) and to emerging international crises									
i.	FAO's response to Member Countries' needs and requests on water issues: process, modality and contents									
j.	Monitoring and reporting by FAO to its membership on water related issues									
k.	Synergy, balance and feedback loops between normative and field programmes in FAO's work on water									
<b>B.2</b>	<b>Information and knowledge</b>									
l.	Accessibility of FAO as global repository of knowledge on water, food and agriculture									
m.	Global and specific technical, information and resource assessment products				Expert assessment	IOs; governments; academia; NGOs	Interviews; survey	Expert assessment	IOs; governments; academia; NGOs	Interviews; survey
n.	Quality control and assurance of products									
o.	Demand for FAO's water related products									

Ref. ToR	Evaluation questions and issues/ Evaluation criteria	Relevance			Efficiency			Effectiveness		
		Indicator/s	Source of information	Method	Indicator/s	Source of information	Method	Indicator/s	Source of information	Method
p.	Diffusion mechanisms of FAO's water related products				Targeting of outreach	IOs; IFIs, MCs, academia; NGOs; website statistics; FAO staff (NRLW)	Interviews; survey;			
q.	Knowledge and use of FAO products on water by external clients at global, regional and national level	Awareness and knowledge among clients	IOs; IFIs, MCs, academia; NGOs;	Interviews; survey				Use and adoption by clients	IOs; governments; academia; NGOs	Interviews; survey
r.	Knowledge and use of FAO products on water by FAO users for support to the field programme and to investment initiatives	Awareness and knowledge of products across the Organization	FAO staff (NRLW, NR, AG, ESS, FO, TC)	Interviews				Use and adoption across the Organization	IOs; governments; academia; NGOs	Interviews; survey
s.	Source, extent and quality of contributions on water, food and agriculture to FAO and other organizations' flagship publications				Inventory of FAO staff's contributions to major publications	FAO staff (NRLW, NR, AG, ES, FO, TC); IOs; IFIs, publications	Desk analysis; interviews; survey;			
<b>B.3</b>	<b>Policy and technical assistance</b>									
t.	Policy and technical assistance to regional, international and transboundary processes on water, food and agriculture	Response to stakeholders' request	IOs; IFIs, MCs, academia; NGOs; ROs; project documents	Desk analysis; interviews; survey; analysis of past evaluation reports	Timeliness of approval; timeliness of implementation	IOs; IFIs; MCs; academia; NGOs; ROs;	Desk analysis; interviews; survey; analysis of past evaluation reports	Adoption and upscale of outputs	IOs; IFIs; MCs; academia; NGOs; ROs;	Desk analysis; interviews; survey; analysis of past evaluation reports
u.	Policy and technical assistance at the national level on water, food and agriculture, through the Technical Cooperation and Emergency field programme, as well as through investment projects	Response to genuine national request; coherence with national development plans	MCs; NGOs; project documents	Interviews; survey; analysis of past evaluation reports	Timeliness of approval; timeliness of implementation	MCs; NGOs;	Interviews; survey; analysis of past evaluation reports	Adoption and upscale of outputs	MCs; NGOs; beneficiaries	Interviews; survey; analysis of past evaluation reports

Ref. ToR	Evaluation questions and issues/ Evaluation criteria	Technical quality for all areas identified in the ToR			Impact			Sustainability-environmental		
		Indicator/s	Source of information	Method	Indicator/s	Source of information	Method	Indicator/s	Source of information	Method
p.	Diffusion mechanisms of FAO's water related products									
q.	Knowledge and use of FAO products on water by external clients at global, regional and national level									
r.	Knowledge and use of FAO products on water by FAO users for support to the field programme and to investment initiatives									
s.	Source, extent and quality of contributions on water, food and agriculture to FAO and other organizations' flagship publications	Innovativeness of FAO's contributions to major publications on water	FAO staff; IOs; publications	Desk analysis; interviews; survey;						
<b>B.3</b>	<b>Policy and technical assistance</b>									
t.	Policy and technical assistance to regional, international and transboundary processes on water, food and agriculture	Innovativeness and technical appropriateness of support provided	IOs; IFIs; MCs; academia; NGOs; ROs; project documents	Desk analysis; interviews; survey; analysis of past evaluation reports	Changes in institutional mechanisms and policies;	IOs; IFIs; MCs; academia; NGOs; ROs;	Desk analysis; interviews; survey; analysis of past evaluation reports	Improvement in sustainable water resource management	IOs; IFIs; MCs; academia; NGOs; ROs;	Desk analysis; interviews; survey; analysis of past evaluation reports
u.	Policy and technical assistance at the national level on water, food and agriculture, through the Technical Cooperation and Emergency field programme, as well as through investment projects	Technical appropriateness of support provided	MCs; NGOs; beneficiaries; project documents	Desk analysis; interviews; survey; analysis of past evaluation reports	Changes in institutional mechanisms and policies; changes in beneficiaries' livelihoods; leverage of additional funds	MCs; NGOs; beneficiaries	Interviews; survey; analysis of past evaluation reports; project documents	Improvement in sustainable water resource management	MCs; NGOs; beneficiaries	Interviews; survey; analysis of past evaluation reports

Ref. ToR	Evaluation questions and issues/ Evaluation criteria	Sustainability-institutional			Gender equity			Social inclusion		
		Indicator/s	Source of information	Method	Indicator/s	Source of information	Method	Indicator/s	Source of information	Method
p.	Diffusion mechanisms of FAO's water related products									
q.	Knowledge and use of FAO products on water by external clients at global, regional and national level									
r.	Knowledge and use of FAO products on water by FAO users for support to the field programme and to investment initiatives									
s.	Source, extent and quality of contributions on water, food and agriculture to FAO and other organizations' flagship publications									
<b>B.3</b>	<b>Policy and technical assistance</b>									
t.	Policy and technical assistance to regional, international and transboundary processes on water, food and agriculture	Mainstreaming of outputs in national and international water management policies	IOs; IFIs, MCs, academia; NGOs; ROs;	Desk analysis; interviews; survey; analysis of past evaluation reports	Mainstreaming of gender equity issues in outputs	IOs; IFIs, MCs, academia; NGOs; ROs;	Desk analysis; interviews; survey; analysis of past evaluation reports	Mainstreaming of social inclusion issues in outputs	IOs; IFIs, MCs, academia; NGOs; ROs;	Desk analysis; interviews; survey; analysis of past evaluation reports
u.	Policy and technical assistance at the national level on water, food and agriculture, through the Technical Cooperation and Emergency field programme, as well as through investment projects	Mainstreaming of outputs in national water management policies	MCs; NGOs; beneficiaries	Interviews; survey; analysis of past evaluation reports	Mainstreaming of gender equity issues in outputs	MCs; NGOs; beneficiaries	Interviews; survey; analysis of past evaluation reports	Mainstreaming of social inclusion issues in outputs	MCs; NGOs; beneficiaries	Interviews; survey; analysis of past evaluation reports

Ref. ToR	Evaluation questions and issues/ Evaluation criteria	Relevance			Efficiency			Effectiveness		
		Indicator/s	Source of information	Method	Indicator/s	Source of information	Method	Indicator/s	Source of information	Method
v.	Development of regional and national capacities on policy and technical aspects related to water, food and agriculture	Response to training needs	IOs; IFIs; MCs; academia; NGOs; ROs; training material	Desk analysis; interviews; survey; analysis of past evaluation reports				Use and adoption of knowledge by individuals and organizations	IOs; IFIs; MCs; NGOs; ROs;	Interviews; survey; analysis of past evaluation reports
<b>C.</b>	<b>Partnerships and alliances</b>									
w.	Partnerships with international, regional and national organisations on water-related themes, including assessment of the rationale for selection, purposes, added-value and sustainability	Response to requests for multi-stakeholder intervention	IOs; IFIs; MCs; academia; NGOs; ROs; FAO staff (NRLW, NR, AG, ES, FO, TC)	Interviews; survey				Improved outcomes due to FAO's participation	IOs; IFIs; MCs; academia; NGOs; ROs;	Interviews; survey
x.	FAO's role in UN-Water, including resources allocated and specific products	Coherence between UN-Water and FAO mandate	FAO staff (NRLW, NR); documents; UN-Water partners	Interviews; survey				Visibility and role of UN-Water over time	UN Water partners; MCs	Interviews; survey
y.	Collaboration with the CGIAR system	Response to requests for multi-stakeholder intervention	CGIAR institutions; FAO staff (NRLW, NR, AG, ES, FO)	Interviews; survey				Improved outcomes due to FAO's participation	CGIAR institutions; FAO staff (NRLW, NR, AG, ES, FO)	Interviews; survey
z.	Transaction costs and resources for partnerships and alliances				Percentage of staff and non staff resources for partnerships out of total available	FAO staff	Interviews			
<b>D.</b>	<b>Organizational set-up for water</b>									
aa.	Roles and responsibilities on water within FAO, extent of collaboration among units, strengths and weaknesses, gaps and areas for improvement				Percentage of projects without NRLW involvement;	FPMIS; FAO staff (NRLW, NR, AG, FO, TC)	Desk analysis; interviews	Existence of a clear mandate and role on water in FAO	FAO staff (NRLW, NR, AG, FO, TC); MTP; organizational statements	Interviews; desk analysis
bb.	NRLW as 'Water focal point' in FAO for initiatives managed by other units	Need for a single focus of skills and competences on water	FAO staff (NRLW, NR, AG, ES, FO, TC)	Interviews				Added value of NRLW inputs	FAO staff (NRLW, NR, AG, ES, FO, TC); project field staff	Interviews

Ref. ToR	Evaluation questions and issues/ Evaluation criteria	Technical quality for all areas identified in the ToR			Impact			Sustainability-environmental		
		Indicator/s	Source of information	Method	Indicator/s	Source of information	Method	Indicator/s	Source of information	Method
v.	Development of regional and national capacities on policy and technical aspects related to water, food and agriculture	Innovativeness of contents	IOs; IFIs; MCs; academia; NGOs; ROs; training material	Desk analysis; interviews; survey; analysis of past evaluation reports	Changes in organizational working mechanisms and contents	IOs; IFIs; MCs; NGOs; ROs;	Interviews; survey; analysis of past evaluation reports			
<b>C.</b>	<b>Partnerships and alliances</b>									
w.	Partnerships with international, regional and national organisations on water-related themes, including assessment of the rationale for selection, purposes, added-value and sustainability	Innovativeness and added value of FAO's contribution	IOs; IFIs; MCs; academia; NGOs; ROs;	Interviews; survey						
x.	FAO's role in UN-Water, including resources allocated and specific products	Innovativeness and added value of FAO's contribution	UN Water partners; MCs	Interviews; survey						
y.	Collaboration with the CGIAR system	Innovativeness and added value of FAO's contribution	CGIAR institutions;	Interviews; survey						
z.	Transaction costs and resources for partnerships and alliances									
<b>D.</b>	<b>Organizational set-up for water</b>									
aa.	Roles and responsibilities on water within FAO, extent of collaboration among units, strengths and weaknesses, gaps and areas for improvement									
bb.	NRLW as 'Water focal point' in FAO for initiatives managed by other units									

Ref. ToR	Evaluation questions and issues/ Evaluation criteria	Sustainability-institutional			Gender equity			Social inclusion		
		Indicator/s	Source of information	Method	Indicator/s	Source of information	Method	Indicator/s	Source of information	Method
v.	Development of regional and national capacities on policy and technical aspects related to water, food and agriculture				Mainstreaming of gender equity issues in training material	IOs; IFIs; MCs; academia; NGOs; ROs; training material	Desk analysis; interviews; survey; analysis of past evaluation reports	Mainstreaming of social inclusion issues in training material	IOs; IFIs; MCs; academia; NGOs; ROs; training material	Desk analysis; interviews; survey; analysis of past evaluation reports
<b>C.</b>	<b>Partnerships and alliances</b>									
w.	Partnerships with international, regional and national organisations on water-related themes, including assessment of the rationale for selection, purposes, added-value and sustainability				Mainstreaming of gender equity issues in outputs	IOs; governments; academia; NGOs;	Interviews; survey	Mainstreaming of social inclusion issues in outputs	IOs; governments; academia; NGOs;	Interviews; survey
x.	FAO's role in UN-Water, including resources allocated and specific products				Mainstreaming of gender equity issues in outputs	UN Water partners; Governments	Interviews; survey	Mainstreaming of social inclusion issues in outputs	UN Water partners; Governments	Interviews; survey
y.	Collaboration with the CGIAR system				Mainstreaming of gender equity issues in outputs	CGIAR institutions;	Interviews; survey	Mainstreaming of social inclusion issues in outputs	CGIAR institutions;	Interviews; survey
z.	Transaction costs and resources for partnerships and alliances									
<b>D.</b>	<b>Organizational set-up for water</b>									
aa.	Roles and responsibilities on water within FAO, extent of collaboration among units, strengths and weaknesses, gaps and areas for improvement									
bb.	NRLW as 'Water focal point' in FAO for initiatives managed by other units									

Ref. ToR	Evaluation questions and issues/ Evaluation criteria	Relevance			Efficiency			Effectiveness		
		Indicator/s	Source of information	Method	Indicator/s	Source of information	Method	Indicator/s	Source of information	Method
cc.	Work planning mechanisms, including volume and origin of unplanned requests				Existing mechanisms; timing and modality of requests for support	FAO staff (NRLW, NR, AG, ES, FO, TC); PWB	Interviews; desk analysis			
dd.	Mechanisms and resources for inter- and intra-departmental and multidisciplinary collaboration on water				Degree of current collaboration	FAO staff (NRLW, NR, AG, ES, FO, TC); PWB	Interviews; desk analysis	Added value of IDWG in FAO	FAO staff (NRLW, NR, AG, ES, FO, TC)	Interviews
ee.	Links, collaboration and synergies between Headquarters and the decentralized structure for NRLW and other units in relation to water				Existing mechanisms; timing and modality of requests for support	FAO staff (NRLW, NR, AG, ES, FO, TC)	Interviews	Distribution of tasks between HQ and decentralized offices	FAO staff (NRLW, NR, AG, ES, FO, TC)	Interviews
ff.	Mechanisms of collaboration with and integration of embedded arrangements (e.g. IPTRID) in the 'water structure' of FAO				Cost of arrangements versus support to Regular Budget	FAO staff (NRLW, NR); PWB	Interviews; desk analysis	Added value of arrangement versus support to Regular Budget	FAO staff (NRLW, NR); PWB	Interviews
<b>E.</b>	<b>Resources and financing</b>									
gg.	Past and current Programme entities and allocations of staff and non-staff resources to water issues				Critical mass of resources	MCs; FAO staff (NRLW, NR, AG, ES, FO, TC)	Interviews; desk analysis; survey			
hh.	Competencies and mix of staff, work loads for NRLW and other units on water related issues				Un-met requests	MCs; FAO staff (NRLW, NR, AG, ES, FO, TC)	Interviews; desk analysis; survey			
ii.	Sources and patterns of funding across modalities (Technical Cooperation, emergency, Regular Budget, TCP, EBF, etc) for work on water				Response to requests	MCs; FAO staff (NRLW, NR, AG, ES, FO, TC); FPMIS	Interviews; desk analysis; survey	Synergies between sources and patterns of funding	MCs; FAO staff (NRLW, NR, AG, ES, FO, TC); FPMIS	Interviews; desk analysis; survey
jj.	Resource planning modality and fund raising strategy				Availability of funds matching plan of work	FAO staff (NRLW, NR, AG, FO, TC) PWB; donors FPMIS	Interviews; desk analysis	Commitment by donors to fund FAO's work related to water	FAO staff (NRLW, NR, AG, FO, TC) PWB; donors FPMIS	Interviews; desk analysis

Ref. ToR	Evaluation questions and issues/ Evaluation criteria	Technical quality for all areas identified in the ToR			Impact			Sustainability-environmental		
		Indicator/s	Source of information	Method	Indicator/s	Source of information	Method	Indicator/s	Source of information	Method
cc.	Work planning mechanisms, including volume and origin of unplanned requests									
dd.	Mechanisms and resources for inter- and intra-departmental and multidisciplinary collaboration on water									
ee.	Links, collaboration and synergies between Headquarters and the decentralized structure for NRLW and other units in relation to water									
ff.	Mechanisms of collaboration with and integration of embedded arrangements (e.g. IPTRID) in the 'water structure' of FAO									
<b>E.</b>	<b>Resources and financing</b>									
gg.	Past and current Programme entities and allocations of staff and non-staff resources to water issues									
hh.	Competencies and mix of staff, work loads for NRLW and other units on water related issues									
ii.	Sources and patterns of funding across modalities (Technical Cooperation, emergency, Regular Budget, TCP, EBF, etc) for work on water									
jj.	Resource planning modality and fund raising strategy									

Ref. ToR	Evaluation questions and issues/ Evaluation criteria	Sustainability-institutional			Gender equity			Social inclusion		
		Indicator/s	Source of information	Method	Indicator/s	Source of information	Method	Indicator/s	Source of information	Method
cc.	Work planning mechanisms, including volume and origin of unplanned requests									
dd.	Mechanisms and resources for inter- and intra-departmental and multidisciplinary collaboration on water									
ee.	Links, collaboration and synergies between Headquarters and the decentralized structure for NRLW and other units in relation to water									
ff.	Mechanisms of collaboration with and integration of embedded arrangements (e.g. IPTRID) in the 'water structure' of FAO									
<b>E.</b>	<b>Resources and financing</b>									
gg.	Past and current Programme entities and allocations of staff and non-staff resources to water issues									
hh.	Competencies and mix of staff, work loads for NRLW and other units on water related issues									
ii.	Sources and patterns of funding across modalities (Technical Cooperation, emergency, Regular Budget, TCP, EBF, etc) for work on water									
jj.	Resource planning modality and fund raising strategy									

# Evaluation of FAO's role and work related to water

## Final report

### Annex 7

#### Evaluation of TCP projects

#### 1 Intensification and diversification of agricultural production systems, in support to the SPFS in the New Valley, TCP/EGY/3101

##### Box 1. Project basic data

<i>Symbol</i>	TCP/EGY/3101
<i>Budget USD</i>	234,000
<i>Duration</i>	11/2006-01/2009

##### Box 2. Evaluation assessment

Evaluation criteria	Score *
<i>Relevance</i>	4
<i>Design</i>	3
<i>Implementation</i>	3
<i>Results/Effects</i>	2
<i>Sustainability and Impact</i>	1
<i>Effectiveness of Capacity Building</i>	1
<i>Effectiveness of Partnerships</i>	na
<i>Effectiveness of Participation</i>	1
<i>Gender Equality</i>	1
<i>Social Inclusion</i>	1

\*: 1=very poor; 2=poor; 3=inadequate; 4=adequate; 5=good; 6=excellent

#### 1.1 Background

1. In Egypt, most of the population lives in the Nile River Delta and the country is facing increasing challenges due to population pressure on limited land and water resources for food supply and the Country is increasingly dependent on food imports to meet its requirements.

2. The Government is working on various fronts to deal with the compounded problems, aggravated by effects of climate change on the Nile River Delta. One of the possible options has been the improvement of agricultural practices in the area called the "New Valley", which represents about 37% of Egypt's total area, and about 67% of the western desert area.

3. The area's population was about 200,000 people in 2006 and the cultivated land hardly exceeded 70,000 feddans in wintertime, while in summer it is reduced by half, due to water shortages. The only source of water is underground water. At the current state of knowledge and technology, it is estimated that the aquifers will be depleted in 50 years

4. Agricultural and irrigation practices caused high water losses in the delivery system and on-farm and crop yields per unit of water and of land were very low. FAO started assisting the GoE through the Special Programme for Food Security in the New Valley in 2000, until late 2002 through two TCP initiatives. At the completion of the two projects, reported outputs included Training of Trainers on the technological package of improved production practices along with the improved methods of irrigation including sprinkler and drip irrigation, and piloting on farmers' fields of the innovative practices with good results in terms of increased yields with lower volumes of water, with savings between 25% to 40% in comparison to traditional methods of irrigation.

5. During the previous TCPs, national experts had identified in the increase of plant population another potential for reaching higher yield per unit/area under the new systems of water saving. The Government set-up a team who prepared a project proposal which was assessed by a FAO two-expert team to the New Valley. The final proposal was submitted to FAO for funding under the TCP mechanism. Overall, the project approval process took 3 or more years.

## **1.2 Relevance**

6. There is clear evidence that Egypt is facing tremendous challenges in relation to the food security and economic development, in the context of its limited water resources and desert conditions on most of its national territory.

7. The option of improving agricultural yields in the New Valley is one among few and there are no alternatives to the use of groundwater resources for agriculture there. It is also known that there are clear limitations to the long-term use of groundwater resources, given the very reduced re-charge potential of the aquifers. Thus, any attempt at improving the productivity of water should be priority, even though the sustainability of agriculture in this area is reduced.

8. Focus of this initiative was on crop production based on improved irrigation systems that had been introduced earlier. The need for a third intervention to pilot crop intensification and diversification did not appear totally justified, given that this should have been part of the previous projects. A more suitable option would have been a major investment by the GoE to diffuse the new techniques introduced earlier. Thus, the Evaluation considers that overall relevance of the TCP was only adequate.

## **1.3 Design**

9. The objective of the TCP was to help farmers in the New Valley governorate to improve their food security and reach rapid increases in cereal and horticultural crops through crop intensification and diversification activities under irrigation, and a continuous participatory analysis of constraints to agricultural development in the project area and later in the whole country. The three immediate objectives were as follows:

- Intensification of agricultural production through the introduction of adapted agronomic intensification technologies and new high yielding crop varieties
- Promoting particularly fodder and horticultural crops as a basis for agricultural diversification,
- Monitoring and Evaluation of the several activities promoted by the project

10. The project was planned over 24 months, with subsequent phases of testing, demonstration, training, monitoring and a final appraisal of farmers' opinion of the project's benefits. A National Project Coordinator was to be appointed by the Government to manage and implement the project.

11. A wide range of national consultants were foreseen, supported by two international experts and FAO's expertise. Training of farmers was to take place through '*The farmer's demonstrations and field schools*': it was not better specified whether this was the Farmer Field School model or something else. In any case, no provisions existed in the project for a Training of Trainers in the FFS

approach or for Master Trainers to assist, which are necessary building stones for proper FFS implementation and uptake.

12. The design was standard, without giving due attention to the local circumstances and no analysis of the actual constraints. As mentioned, the modality of the training was unclear as much as the contents to be provided by the different consultants. The Project Document basically described a pilot project of applied research, with no clear mechanism for ensuring its uptake and sustainability.

#### **1.4 Implementation**

13. Project implementation started with an inception workshop in November 2006, after appointment of the National Project Director (NPD) in the person of the Director of El Kharga Agriculture Research Station, and the set-up of the Project Steering Committee. In 2008, two months extension were requested and granted, and the project was completed by the end of 2008.

14. Implementation ran somewhat delayed and on a smaller scale than initially planned: when the project took off, the irrigation systems that had been set-up by the previous projects were in bad conditions or had gone missing. Also, due to the long gap between the conclusion of the previous TCPs and the start up of the new one, not all groups that had participated earlier were interested any longer in collaborating with the project.

15. Out of seven initially foreseen sites, six were retained for this TCP, four were from previous projects and two new groups. The Evaluation had however some concerns about the concept of groups used by the project: during its visit, only individual farmers were available for a meeting and during the interviews no evidence appeared of the existence of 'a group of farmers' participating in project activities. Thus, it appears that the project worked with a number of individual farmers located close to each other or in different sites.

16. Project activities consisted in the rehabilitation or supply of new drip, sprinklers or delivery irrigation systems for 15 farmers in six locations in the New Valley, together with seeds, fertilizers and materials. Training of farmers and of Training of Trainers took place on agricultural intensification techniques. Training events seem to have reached few participants. Overall, the project had limited outputs and reached only a small number of beneficiaries.

#### **1.5 Results/effects**

17. The Evaluation had evidence of results in terms of the use by visited beneficiaries of the drip irrigation equipment that had been distributed free by the Project. There was no evidence of uptakes of the Project techniques beyond direct beneficiaries: no credit facilities are available for small farmers and direct purchase of these equipments, with associated works, appeared to be beyond the capacity of local small farming households.

#### **1.6 Sustainability and impact**

18. The project has introduced some new cropping and irrigation techniques. Unless the Government establishes mechanisms that facilitate the uptake of these innovations by small holders, there will be no diffusion and uptake. However, the Evaluation noted that MoA statements were of no intention to push efforts further in this region for small farming households.

19. Thus, apart from the few project beneficiaries, impact and sustainability were beyond the achievements of the TCP.

20. A terminal report was prepared, as well as a concept note based on recommendations formulated in the project final workshop. This proposes a new project with a budget of approximately USD 5 million, with a strong credit component, to upscale the adoption of modern irrigation systems.

21. The Evaluation team considered that key information on the economic and financial sustainability of the proposed irrigation systems and its impact on farmers' incomes was a missing output from the closed project. The purpose of such an analysis would be to provide clear evidence on

the economic returns from the investment in new irrigation techniques, along with the evident environmental benefits of important reductions in irrigation water use. In its absence, it is impossible to draw solid conclusions on the benefits of the techniques introduced and on the scope for upscaling.

22. Thus, the Evaluation team suggested to concerned parties, i.e. MoA and FAO Egypt, to discuss on this possible extra step, to complement the work done so far and provide evidence on the sustainability of the investments proposed.

### ***1.7 Effectiveness of capacity building***

23. The Evaluation could not assess the quality of the training sessions: farmers who were trained seemed capable of maintaining their equipment, but it was not possible to meet with officials who had taken part in the sessions.

### ***1.8 Effectiveness of partnerships***

24. No partnerships were developed by the TCP: this was a missed opportunity as involvement of other partners might have helped in making more resources available, expanding out-reach and possibly consolidating results.

### ***1.9 Effectiveness of participation***

25. The Evaluation had no evidence that participants would have taken part in the project in the absence of free inputs.

### ***1.10 Gender equality and Social Inclusion***

26. The Project was very poorly conceived on social and gender issues, also taking into account the local social context and the gender division of labour in farming households in Egypt. In at least one case, the beneficiary was a former MoA officer who could have access to equipment and knowledge independently from the Project; a second farmer was clearly among the better off in the area, given the number of cattle heads he owned and related equipment. If this could be justified in terms of a pilot and demonstration project, it also undermined further any possible sustainability of the initiative.

## 2 Development of irrigation policy, strategies and regulatory measures, TCP/GHA/3002

### Box 3. Project basic data

<i>Symbol</i>	TCP/GHA/3002
<i>Budget USD</i>	216,595
<i>Duration</i>	03/2005-05/2006

### Box 4. Evaluation assessment

Evaluation criteria	Score *
<i>Relevance</i>	4
<i>Design</i>	4
<i>Implementation</i>	4
<i>Results/Effects</i>	1
<i>Sustainability and Impact</i>	2
<i>Effectiveness of Capacity Building</i>	3
<i>Effectiveness of Partnerships</i>	4
<i>Effectiveness of Participation</i>	4
<i>Gender Equality</i>	4
<i>Social Inclusion</i>	4

\*: 1=very poor; 2=poor; 3=inadequate; 4=adequate; 5=good; 6=excellent

### 2.1 Background

27. Since the 1960s, formal smallholder irrigation schemes, i.e. government supported, had been developed to a total of some 8000 ha. This happened mostly through the Ghana Irrigation Development Authority (GIFDA), which was established by an Act of Parliament for this purpose in 1977, and reported directly to the President's office at the time. Later it was transferred and until today resorts under the Ministry of Food and Agriculture (MoFA).

28. In the past decade, informal smallholder irrigation, i.e. not developed or managed by government, based on individual pumping had seen very rapid growth and quickly exceeded the total hectareage of formal smallholder irrigation schemes. IWMI reports that in the area around Kumasi alone, in the Central Region, informal smallholder irrigation exceeds 12000 ha. Formal smallholder irrigation schemes had been plagued with low productivity and some were not active.

29. Although irrigation has historically played a minor role in Ghana agriculture, the Government of Ghana (GoG) wished to expand irrigation substantially to improve food security and agricultural productivity. In 2004, a National Forum on Irrigation Development and Management in Ghana was held from 21 to 22 January 2004, organized with assistance from GTZ, IWMI and JICA as a first step towards the development of a national irrigation policy, strategies and regulatory measures.

30. As a follow-up, GIDA requested support from these and other partners to elaborate its national irrigation policy. The FAO TCP project document emphasised the need to improve the performance of formal smallholder irrigation schemes, and to support expansion of commercial irrigation development, for example in the Accra Plains.

### 2.2 Relevance

31. The overall goal of the project was to facilitate the sustainable development of irrigated agriculture and enhance its productivity towards improved food availability, food security and poverty alleviation in Ghana. The objectives of the FAO TCP to the Ghana Ministry of Food and Agriculture were:

1. to draft National irrigation Policy, Strategies and Regulatory Measures

2. to review any existing policies and strategies and draft a National Irrigation Policy and Strategy Document (NIPSD) which covers both formal and informal irrigation and is consistent with demands of current situations and circumstances such as Private and Public Participation (PPP), irrigation management transfer to farmers at scheme level, provision of sound irrigation extension services to irrigators, socio-economic and environmental sustainability, etc; and
3. to review and reformulate existing legislation and regulatory measures in line with the proposed policy.

32. Irrigation policy development was of very high relevance to Ghana at the time; the Evaluation was told that donors had been insisting on an irrigation policy to underpin further development in irrigation in Ghana. Indeed the project document states: *"By providing a policy and strategy framework for government irrigation programme, it will improve the policy environment for the whole subsector and thereby facilitate private investment in irrigation development and enhance the sustainability of the subsector."*

### **2.3 Design**

33. The Project Document aimed at developing the policy through a participatory process and stressed that *"the policy and strategy formulation approach will adhere to the principles of national ownership"*. Consultation with a wide range of stakeholders was foreseen, as groups or individuals. An initial workshop was planned, followed by a review of existing legislation, field visits, drafting of the legislation, stakeholder consultation and finalization. RAF was to be heavily involved across all its disciplines, in supporting the process.

34. The Evaluation identified specific deficiencies in the design of the project as follows:
- apparently there was no agronomist in the policy development team; this was particularly serious in the light of a finding of the Evaluation that there is an ongoing deficiency in this regard in GIDA's approach to irrigation development;
  - the absence of the Water Resources Commission (WRC)/water ministry from the policy steering committee;
  - confused roles for MoFA and GIDA in the policy development process; they were sometimes referred to as one and sometimes recognised as separate entities; as these organizations have distinctly different roles in policy development and implementation, this should have been recognised in setting up the reporting lines for the project;
  - the absence of a strong political 'champion' as a rule reduced the chances for adoption and fast-tracking of policies dramatically, and this policy was no exception.

35. Last, the design did not provide for an 'investment framework' for irrigation: this feature emerged only in successive irrigation policies supported by FAO in other African countries.

### **2.4 Implementation**

36. The project began in March 2005 in response to a request from Government of Ghana and was nominally completed in May 2006. The policy development was driven from inside the GoG, and the products envisaged by the project document were delivered. Stakeholders in Ghana expressed their appreciation of this support provided by FAO. RAF was well known and strongly recognised at the time of the policy development, but the Senior Water Officer had retired 18 months' prior and the resultant break in relationship with RAF was deeply regretted by GIDA and other partners in Ghana.

37. The project intended to work in synergy with any relevant ongoing projects, especially the Special Programme for Food Security (SPFS). However, better farmer engagement would have yielded better description of farmer typologies, challenges and stronger development of support

options from current realities, especially for the strongest-growing and yet unsupported, informal smallholder irrigator sector.

38. The expected outputs were the following:
  - a. Draft National Irrigation Policy Document (NIPSD)
  - b. Draft institutional framework for sustainable irrigation development
  - c. Draft legislation required for effective implementation of the national irrigation policy and strategy

39. As these outputs were in fact produced, Implementation was scored positively. However, the criterion Results/Effectiveness was scored as 'very poor due to the fact that the policy had not been ratified by the time of the Evaluation mission in September 2009, more than three years later.

40. Reportedly, initially it was referred back for further consultation with other ministries and state institutions, most notably to the Water Resources Council for alignment with the Water Resources Act. This should not have been necessary, had the policy development process achieved its stated objective to do justice to such alignment.

41. Next, it was turned away to conform to new requirements for the format for Cabinet Memorandums, again an oversight that should not have occurred. The Evaluation is of the opinion that, had the irrigation policy been championed by a strong political figure, none of these deficiencies would have led to such dramatic delays.

## **2.5 Results/effects**

42. The project supported the development of the irrigation policy, some legislative changes to provide a broader mandate for Ghana Irrigation Development Authority (GIDA) and for irrigation service provision to Water Users Associations (WUAs), as well as an institutional framework for irrigation development and service provision.

43. The TCP project document intended to align with poverty and food security policy in Ghana, but the irrigation policy document failed to give effect to this beyond statements of intent, with the result that the policy's relevance for food security is lower than desirable. There is no analysis of the overall potential for different types of irrigation development to impact food insecurity; there is no mapping of what opportunities coincide with locations of concentrated poverty or vulnerability; nor are there recommendations on targeting. Finally, the policy fails to respond adequately to the informal smallholder irrigation sector's support needs, the fastest-growing irrigation sector in Ghana and to improve its sustainability and unlock its potential for further development.

44. It would seem that the policy development process was dominated by the need to create a mandate for GIDA to supply irrigation services beyond the formal (i.e government) irrigation schemes and that this preoccupation diverted attention from the need to analyse issues on the ground.

45. The proposed structure for GIDA to fulfil a broader mandate in irrigation development and services provision, still fails to address a major disconnection in the current system, namely meaningful interdisciplinary collaboration in irrigation design and implementation, which has suffered particularly from lack of collaboration between engineering and agronomy, but also with other disciplines, e.g. to ensure social inclusion and gender-appropriateness of design and support.

## **2.6 Sustainability and impact**

46. The Evaluation is not convinced that, even when adopted, the policy document, proposed legislative changes and institutional framework will necessarily result in accelerated irrigation development and improved irrigation services in Ghana, or at least not in the short term. The proposed changes to legislation for irrigation services provision to WUAs places decision-making powers in the hands of government and will provide little scope for true farmer-led management.

47. Diagnostic work, particularly on informal smallholder irrigation, needs to be deepened and pragmatic solutions found to this fast growing sector, in respectful collaboration between MoFA,

GIDA, informal smallholder irrigators and equipment suppliers and other players in industry, and with IWMI, possibly through the Bill & Melinda Gates funded project.

48. On formal smallholder schemes, work by the Japan International Cooperation Agency (JICA) has laid a foundation and should be built on through a very practical and consistent field based effort to develop good practice in service provision, with proper roles for smallholder organisations, GIDA and local government structures in a way that will ring-fence farmers' (including women's) roles in decision-making.

## **2.7 *Effectiveness of capacity building***

49. The irrigation policy process was deliberately designed to actively involve GIDA in the policy development process, so as to build their capacity to implement the policy. The stakeholder workshops were also viewed as contributions to capacity development.

50. There were no provisions for deliberate capacity building of a representative range of farmers in the project document. In this respect, examples from elsewhere could have been usefully inspired the project, by including: separate preparatory workshop or working sessions with farmer groups, prior to the main workshop, in the vernacular, and with participation of a representative cross section of farmers; on-scheme investigations with irrigators to build up a portfolio of policy interventions in their own context, to be presented at workshop's by the farmers themselves; deliberate and disaggregated representation of women's constraints and policy needs, similarly developed with them, and presented by them; etc.

## **2.8 *Effectiveness of partnerships***

51. There was close and effective collaboration between GoG, IWMI, JICA and GTZ, around the National Irrigation Policy Forum mentioned above and throughout project implementation with FAO.

## **2.9 *Effectiveness of participation***

52. Interactions between relevant ministries were deepened through the insistence of Cabinet for written endorsement of the irrigation policy by affected ministries.

53. Participation of farmers, especially smallholder farmers (informal and formal), and especially women, did not feature strongly in the TCP project document or the policy document. This may well have contributed to the lack of depth of analysis of farmers' issues. The policy development process seemed to depend to a large degree on people being literate in order to respond to drafts. This dramatically reduced the opportunity for many smallholders to contribute to the policy formulation process.

## **2.10 *Gender equality and social inclusion***

54. The policy document mentions gender, but is unconvincing in its proposals and makes no provision on how to mainstream women's recognition and participation in decision-making on irrigation matters.

55. Social inclusion issues could have been dealt with more effectively.

### 3 Formulation de projets d'appui à la sécurité alimentaire pour financement par la BOAD et sur les fonds du PPTE, TCP/MLI/2908

#### Box 5. Project basic data

<i>Symbol</i>	TCP/MLI/2908
<i>Budget USD</i>	276,137
<i>Duration</i>	02/2004-03/2005

#### Box 6. Evaluation assessment

Evaluation criteria	Score *
<i>Relevance</i>	5
<i>Design</i>	5
<i>Implementation</i>	5
<i>Results/Effects</i>	1 and 5
<i>Sustainability and Impact</i>	1 and 5
<i>Effectiveness of Capacity Building</i>	na
<i>Effectiveness of Partnerships</i>	4
<i>Effectiveness of Participation</i>	4
<i>Gender Equality</i>	na
<i>Social Inclusion</i>	na

\*: 1=very poor; 2=poor; 3=inadequate; 4=adequate; 5=good; 6=excellent

56. This TCP was aimed at the formulation of two projects in support of food security in Mali, one for the expansion of the experience of the SPFS in the country and the second for the implementation of the National Programme for Water Management and Irrigation Development. Potential donors had been identified in the West African Development Bank (WADB/BOAD) and in the funds available under the Highly Indebted Countries Initiative, respectively.

57. The TCP foresaw for both formulations, similar processes: close collaboration with respective national organizations concerned, stock taking of the national context, drafting of the two projects and development of a proposal for improved national coordination mechanisms.

58. The TCP made provisions and recruited two national consultants for the preparation of the projects and ensured backstopping from RAF Senior Water Officer and TCI. The Evaluation was told could not find details of the TCP implementation in the country, as this had been completed four years earlier. It appears that all ran smoothly, with a reasonable level of participation and ownership by national organizations.

59. One of the proposals received no follow up: no funds were made available by WADB/BOAD to any country for the expansion of the SPFS, but for the Benin proposal. Reasons for rejection were never provided.

60. The project for the National Programme for Water Management and Irrigation development contained a proposal for a GoM unit on valley bottom development. A unit for this specific area of work was then set-up as an outcome of that analysis and has proved to be effective once in operations. The new GTZ funded programme on Small Scale irrigation (PASSIP) was informed by the recommendations of this project and by the conclusions of the consultation process supported in parallel through TCP/MLI/3200.

#### 4 Réparation d'urgence du Barrage de Id Daoud, TCP/MOR/2903

##### Box 7. Project basic data

<i>Symbol</i>	TCP/MOR/2903
<i>Budget USD</i>	13,213
<i>Duration</i>	01/2004-06/2004

61. In Morocco, the Evaluation had identified one additional TCP, titled "Réparation d'urgence du Barrage de Id Daoud (recoded from TCP/MOR/2803) with symbol TCP/MOR/2903. This project was aimed at repairing a small dam that had been constructed within the framework of a FAO implemented, Italian-funded project.

62. When the damage occurred, FAO fielded immediately a mission to assess the problem and formulated a proposal to the Government of Morocco; the cause was apparently a defect of construction. The only available funds were from the TCP source, thus quite limited.

63. Unfortunately, parties concerned did not reach an agreement and no repair works were conducted. The TCP thus was charged only with the cost of the assessment mission.

64. The whole issue did not appear as being of any importance in the FAO-Morocco relationship, to the point that it was extremely complicated to trace any information on the facts. The information collected at country level confirmed what NRLW staff informed of the facts had referred. The Evaluation decided to report on it only briefly for the sake of completeness of information.

## 5 Policies and strategic planning for the Thailand irrigation sector reform programme, TCP/THAI/3101

### Box 8. Project basic data

<i>Symbol</i>	TCP/THA/3101
<i>Budget USD</i>	350263
<i>Duration</i>	07/2006-06/2009

### Box 9. Evaluation assessment

Evaluation criteria	Score *
<i>Relevance</i>	4
<i>Design</i>	4
<i>Implementation</i>	4
<i>Results/Effects</i>	3
<i>Sustainability and Impact</i>	2
<i>Effectiveness of Capacity Building</i>	5
<i>Effectiveness of Partnerships</i>	5
<i>Effectiveness of Participation</i>	3
<i>Gender Equality</i>	2
<i>Social Inclusion</i>	1

\*: 1=very poor; 2=poor; 3=inadequate; 4=adequate; 5=good; 6=excellent

### 5.1 Background

65. The prevailing political vision of the Government of Thailand is to double paddy production within the next 10-20 years, primarily through dry season cultivation, where water is not reliable. Irrigation service fees have not been charged and irrigation is provided by the State as a free service and without obligation to farmers. The costs of development have mostly been born by the nation, although farmer investment in traditional small-scale systems is historically important. Also, most farmers now have small-motorized portable pumps, which are used extensively, often to cope with poor and erratic water supply especially in the dry season. Hence, the financial dimension of irrigation reform is a key direction in financing investment into an expanded irrigation base.

66. The project began in mid-2006 in response to demand from RID, and was nominally completed in June 2009.

### 5.2 Relevance

67. The objective of FAO Technical Assistance to the Thailand Royal Irrigation Department (RID) in the Ministry of Agriculture and Rural Cooperatives for policies and strategic planning for the Irrigation Sector Reform Programme was to provide the initial essential expertise and information to enable RID to design and adopt a comprehensive and sustainable Irrigation Sector Reform Programme.

68. The support of FAO was in accordance with the country's general institutional reform processes, the 1999 Decentralisation Act and subsequent political and administrative developments. Government policy in the irrigation sector had the objective of reducing public expenditure, increased efficiency and sustainability of irrigation and drainage systems. In the context of the reform financed by the Asian Development Bank (ADB), and in addition to the rehabilitation of irrigation infrastructure, the Government intended to adopt a comprehensive set of reforms which comprise five key components:

4. Participatory Irrigation Management (PIM);
5. Cost sharing for operation and management (O&M), rehabilitation and upgrading

6. Service agreements between water users' organisations (WUO), the Royal Irrigation Department (RID) and other service providers
7. Privatisation and contracting for O&M services and
8. Restructuring of the RID.

69. The TCP was to assist RID in its transformation from an agency focused on design and construction of irrigation projects to an agency focused on their management and improvement. The project aimed to stimulate this a) within RID as an organization and b) at project level, including large, medium and small-scale irrigation systems.

70. The objective had relevance to an increase of agricultural production through capacity of a major partner delivering support to primary beneficiaries. By its broad targeting at project level, farmer household beneficiaries would be in irrigation systems of different types and sizes, and across the country.

71. In Thailand, as well as in China, RAP's role has focused on support to capacity efforts in irrigation modernization. This is entirely legitimate and sensible in light of the high absorptive capacity and financing capabilities of these two partner countries.

### **5.3 Design**

72. The Project Document stated that the assistance aimed at supporting the Government of Thailand in finalising the operational design of the irrigation sector reform package and facilitate the adoption of the programme, building on RID's own efforts and sector support from the World Bank and Asian Development Bank, in the context of the Agriculture Sector Program Loan (ASPL).

73. The TCP was intended to deliver a long list of outcomes, with assistance by RAP:
- a. Necessary legal expertise to enable RID to review present legislation and formulate appropriate administrative regulations for water users organizations, irrigation service agreements and water use rights.
  - b. Essential advisory and training support for organizing effective WUOs and transfer of management to them.
  - c. Essential advisory and research support to enable RID and representatives of WUOs to follow up and modify appropriate cost sharing arrangements for irrigation O&M, rehabilitation and upgrading, emergency repairs and new construction.
  - d. Technical support for the development of procedures and guides for service agreements, irrigation management audits and contracting for O&M services, and PI&SS.
  - e. Expertise in RID in methods of strategic planning, to facilitate a comprehensive strategic planning process in support of the restructuring of RID, consistent with the ISR Programme.
  - f. Upgraded training curricula and material and facilities at the Irrigation Development Institute to provide essential and practical training in modern water control, operation and management concepts and water measurement to present and future operation and management staff of RID as well as of WUOs and future private operators.
  - g. Capacity building and further technical assistance requirements identified for implementation of the Irrigation Sector Reform Programme.
  - h. Functional linkages and relationship between RID and Tambon Administration Offices (TAO) in relation to irrigation management transfer.

74. Funds were to be used for technical assistance, including one international consultant, 7 national consultants and backstopping support from FAO staff; a training component including national workshops and study tours for two RID officers to USA and the construction of a model canal at the Royal Irrigation College.

75. At design, it was assessed that a substantial component of the assistance was better suited to alternative financial sources. In particular, it was unclear why such activities, if deemed important and urgent, had not been embedded in the ADB ASPL loan and why the fullest participation of

Government staff had not been secured shifting diagnosis onto consultants outside RID, to the likely detriment of capacity and sustainability within RID itself.

76. FAO managers raised two primary concerns at design, first, that the availability of follow-up funding (Government or other sources) should be confirmed in advance to ensure the sustainability of the project; second, that the construction works of the type/magnitude envisaged in the 'Construction of the model canal' were not normally covered and recommended that the item should be deleted at revision before implementation.

#### **5.4 Implementation**

77. The project was developed in a strategic planning framework, set at both central RID and project levels, implemented by a core team within RID. Personnel inputs were met as envisaged in the Project Document.

78. National consultations fed into the analytical work by the core team. Training focused on canal design and operation, strategic planning and diagnostic survey. FAO brought together 20 staff into working groups across different offices, exchanging knowledge on water management and financial design.

79. The construction and use of a model canal facility for practical training in water measurement and water level and flow control, was intended as a key to measuring water provision, and a cornerstone to negotiating improved service delivery with water users. However, at the time of Evaluation, this Technical Assistance remained stalled by procurement challenges. Approaches to 20 international suppliers had yielded no interest, and concern has emerged that the facilities can only be provided by a single Thai supplier, and that the installation of the facilities after supply is requiring of an extended timeframe. While FAO's procurement officers were investing major efforts to resolve practical issues to convert to purchase actions, the lengthy timeframe of the procurement was posing real practical problems for FAO given that the TCP support had formally closed, to the extent of needing to consider a Project extension or Second Phase merely to accommodate this disbursement procedurally.

80. With an acknowledged effective input through LEGN, the TCP investigated legal impediments to improved participation, and further legal reform in both water resources management, land administration and user participation. The project team undertook some important steps to better identify the costs and benefits of irrigated agriculture (ability to pay) and costs and benefits of system operation, farm level water user organization and operation set against a benchmark of the costs of pumping already incurred by farmers.

81. At project level, the project was implemented at six pilot projects, farmer managed irrigation and pumped systems, representing a range of large, medium and small-scale systems in three regions of Thailand, but with greater emphasis on the north east and on the central plain and Chao Phraya Delta. Fieldwork was primarily of a diagnostic nature, informed by a Rapid Appraisal of six pilot projects. These determined that levels of service were generally low, user participation poorly developed and that both the design and condition of irrigation infrastructure posed significant obstacles to good service delivery.

82. The project undertook a practical process (MASSCOTE) of diagnosing system constraints in more detail at one project, Tab Salao. Diagnosis did not progress to design for modernization based on service needs, management abilities and user needs, all contextualised by their costs.

83. The project piloted improved participation, with moderate success at one large scale system (Petchaburi). However, post-project analysis recognised that a better job of diagnosis and understanding had been conducted than in implementing possible solutions. Progress on that solutions required further efforts, with greater familiarity with new concepts, and a better practical understanding of the hydraulic principles of water control. With measurement of flow data being rare in Thai irrigation systems, managers were struggling to know the actual service level they had been delivering. Understanding actual performance is an important foundation from which improved service can be negotiated and developed with users.

84. Advised of significant delays in procurement of goods and services under the 'Thailand Irrigation Sector Reform Programme', the Evaluation records the goodwill on all sides to progress this potentially-disruptive issue to a satisfactory conclusion, and that those involved are striving to resolve procurement through due diligence, irrespective of delay.

85. In the final national consultation, held in June 2008, RID committed itself to continue the work of the project to further improve service, and support this with new and improved legislation and improved training.

### **5.5 Results/effects**

86. The TCP conducted a thorough diagnosis of irrigation sector issues. Six reports from the Core Team and National Consultants made recommendations for follow-up actions. These are largely a restatement of the original TCP objectives, albeit of a more specific nature, but were more likely to be effective among a more sensitised RID capacity, especially RID's economists.

87. Among Thai stakeholders, it is recognised that the TCP performed an effective diagnosis, and RID economists benefited especially. Senior management at RID consulted by the Evaluation remained very concerned around economic issues, and legal aspects in particular. Efforts on pricing and cost recovery were not substantially evolved to the degree anticipated by RID.

88. Small-holder irrigation transfer in the North-east of the country was ongoing at the time of TCP origination, and had more or less been completed by the time the TCP came to a close, with over 8,000 Small Scale Irrigation schemes transferred. Evaluation scores have risen from 2-3 previously to 6-7. But even after transfer, RID were finding that local administrations lacked strength, and continued to face efficiency challenges. However, the TCP was not designed to be responsive to new challenges emerging in the institutions assuming functions by irrigation transfer, where impact on primary beneficiaries would be most direct.

89. With cost recovery so far inadequately progresses, RID is currently investing Thai Baht 1 million into each project to self-manage system. Medium-scale schemes are intended to be self-financing through fees, but with farmers attuned to Government subsidy to infrastructure costs, RID is currently paying wet season fees; with the long-term intention that farmers will pay fees for the dry-season second crop, RID is currently splitting these fees on a 50:50 basis.

### **5.6 Sustainability and impact**

90. The diagnostic work has laid a foundation for further technical assistance to support a very practical and consistent field based effort to develop good practice in service provision. This Technical Assistance need not necessarily originate from FAO, as good capacity has been built within RID.

91. In the absence of legal code or unified law on water allocation, no licensing and 25 River Basin Committees 6-7 years old, FAO is rightly responding to the importance of water allocation tools within the institutional setting of river basin management through "GCP/RAS/241/JPN, Study on Analysis of Sustainable Water Resources Use". In line with strengthening capacities, the exchange of experiences across four countries has merit, provided varied basin experiences of allocation frameworks are brought to the table. However, the Evaluation Mission has concerns over the engagement with farmer households as primary beneficiaries of such work.

### **5.7 Effectiveness of capacity building**

92. In relation to RID capacity, the TCP brought better operations management by involving farmers, increasing cooperation up to multiple demands, by collaboration with other agencies. The TCP was considered to have supported RID also in going through process of thinking, and to have made practical impact in changing design criteria.

93. National consultants reported attendance at a training course on MASSCOTE. Seeing merit in system appraisal, MASSCOTE presented many indicators to give a starting point (type of

structures, response, costs etc). While recognised as a good framework, appropriate for developed countries and universities, uptake posed heavy challenges to developed countries.

94. RID welcomed FAO role's in light of the many steps to progress reform in large, medium and small-scale irrigation, as well as FAO's ability to provide guidance to its staff, and bring in international expertise with experiences from other countries.

95. 'Best practice' schemes have become integrated knowledge centres, and the Thai Royal Family, under the Royal Initiative, is highly supportive of knowledge transfer between schemes.

96. Effective work was conducted on legal and economic issues, but these will need to continue with urgency within RID. As will efforts on cost recovery and O&M costs.

### **5.8 *Effectiveness of partnerships***

97. A new partnership has been built with the Royal Irrigation Department, being the principal actor in Thailand's water use and management. This is a promising foundation that the Evaluation encourages to evolve further. Senior officials seem unaware of what FAO can offer, and expressed interest to the mission particularly in the legal and economic areas of irrigation.

98. RAP has a strong platform, small but focused, for continuing engagement in China, and has built a new foundation for an evolving partnership with the Thailand Royal Irrigation Department and associated academic institutions, for example AIT and Kametsart University.

### **5.9 *Effectiveness of participation***

99. While the approach around small schemes focused on asset transfer, reform on medium- and large-scale irrigation schemes centred on formation of Water User institutions. This was principally targeted at recovery of electricity costs for pumping. On medium-scale schemes, FAO were effective in developing group to be administratively organised to the level to the canal, and, at lower levels, through associations and administrative committee. Where functioning, participation by farmers brought them closer to information about amounts of water available before season's starts enabling all farmers to schedule production. Allocation based on proportion of land.

100. In large-scale schemes, farmers were being enabled to set their own internal rules and penalties to assist RID to manage the assets.

### **5.10 *Gender equality***

101. Women contribute significantly to agriculture and water management at the household level and therefore are included in, and benefit from, any interventions at the farm level. While reform actions targeted farmer households generally, there was no evidence of deliberate mainstreaming of gender.

### **5.11 *Social inclusion***

102. RAP has rightly advocated a broad modernization agenda in large-scale systems, that is as much about policy, institutions and economics as it is about infrastructure rehabilitation and technical irrigation issues. However, while acknowledging that the limited resources performed well in focused geographic areas, the Mission was advised of FAO's deficiencies in promoting viable small-scale technologies (rainwater harvesting), groundwater opportunities, wastewater re-use and drainage across the country as a whole in ways that recognised the way that different farmer households engage in water management.

103. However, FAO should not work on the technical foundation alone, but must link more to social and economic development. RID explicitly advised that it required further support in social inclusion. This appears to be vital given concerns raised by other Thai stakeholders of rich farmers and middlemen profiting from irrigation reform and Government investments, with poor farmer

households merely extending their exposure to risk and seeing little if any tangible change in household revenues. Poor farmers have tended to isolate themselves within dysfunctional irrigation schemes, developing alternate supply systems. FAO's diagnosis of technical aspects has been judged to be good, but their strategy has been judged to have been weak.

## 6 Development of public participation and improvement of socio-economic prosperity in mountain communities: Yunttagi Model

### Box 10. Project basic data

<i>Symbol</i>	TCP/TUR/3102
<i>Budget USD</i>	391,210
<i>Duration</i>	January 2008 – December 2009

### Box 11. Evaluation assessment

Evaluation criteria	Score *
<i>Relevance</i>	4
<i>Design</i>	2
<i>Implementation</i>	3
<i>Results/Effects</i>	2
<i>Sustainability and Impact</i>	2
<i>Effectiveness of Capacity Building</i>	3
<i>Effectiveness of Partnerships</i>	2
<i>Effectiveness of Participation</i>	2
<i>Gender Equality</i>	2
<i>Social Inclusion</i>	2

\*: 1=very poor; 2=poor; 3=inadequate; 4=adequate; 5=good; 6=excellent

### 6.1 Background

104. Turkey actively observed the International Year of Mountains (IYM) 2002. It joined 77 other countries in establishing National Committees which, at the country level, created an increased awareness of mountain issues and initiated concrete action to improve mountain environments and mountain livelihoods.

105. The country joined the Mountain Partnership launched at the World Summit on Sustainable Development (WSSD) in Johannesburg and as a signatory to the Convention on Biological Diversity, Turkey adopted a programme of work on mountain biodiversity as a set of actions addressing characteristics and problems that are specific to mountain ecosystems. However, concrete steps towards implementing the recommendations from the national symposium and the Bolu workshop had not been initiated yet.

106. The EU pre-accession process in which Turkey was engaged at the time of the Evaluation, required the GoT to work towards compliance with the EU's Rural Development Directive, in particular the harmonizing of livelihood conditions in currently less advantaged areas in accordance with EU norms.

107. Recognising FAO's experience in sustainable mountain development and watershed management, the Government of Turkey requested FAO's assistance through its Technical Cooperation Programme in addressing the urgent problems in mountain areas by contributing to the filling of the above mentioned critical methodological gaps and by initiating concrete action on the ground. A draft proposal was submitted to FAO, on the basis of which the design process was launched.

108. The Evaluation was aware that the water component of this TCP was rather limited; still it was selected as it reunited relevant issues of watershed management, in a country with a FAO Sub-regional Office.

### 6.2 Relevance

109. The project objective, "to assist the Government of Turkey to implement sustainable development in its mountain areas and to improve the livelihoods of rural mountain people", was

relevant and aligned with broader efforts of the GoT to reduce the income (poverty) gap between its largely mountainous rural areas and urban centres.

### 6.3 Design

110. The immediate objectives, of introducing multidisciplinary and participatory approaches to mountain development, establishing the framework for sustainable mountain management planning at the national level, pilot testing modern approaches to sustainable management of mountain ecosystems and improvement of income generation at the field level, appeared to be over ambitious.

111. It was not clear how the desired output, such as preparation of draft policy related documents, training of ministerial staff, creation of a “permanent institutional mechanism for the implementation of sustainable mountain development”, framework for describing and defining mountain areas, could be achieved and who would be responsible for them.

112. The Project Document contained a broad institutional set-up, but without clear indication of responsibilities, mandate and location for the implementation of activities and achievement of foreseen project outputs. Important issues that would help in securing viability and permanence of the project's results were not tackled at all. Furthermore, although collaboration in the field work with national scientific bodies was foreseen in the ProDoc, these were not better specified or identified.

113. The same can be said of the field level outputs, which included the replication of an institutional mechanism at district and provincial level, project specific surveys, a series of equally project specific stakeholder training events and implementation of pilot interventions by the project.

114. By and large the specific nature of outputs made it difficult to appreciate how institutional adaptation and influence on national policy could be attributed to the project. Similar tension, between nation wide institutional ambitions and beyond and the limited project scope, could also be found under the project justification.

115. The Evaluation considered that the project design was short of requirements in terms of realism and ground-validation. The bulk of justification was associated with: UN related initiatives; Turkey being a signatory to a number of international conventions<sup>1</sup>, its participation in the International Year of Mountains, a FAO initiated and supported<sup>2</sup> workshop and development of promotional materials<sup>3</sup>.

116. At the same time, the ProDoc admitted that “apart from the promotional activities and publications produced in the framework of the International Year of Mountains” Turkey had as yet to start with implementation of mountain development related symposium and WS recommendations and that so far no specific national mountain development related programmes or projects had been initiated. This more than five years after the IYM.

117. Indeed, the project justification was an accurate reflection of the existing complexity: national policy, legal and institutional reform processes, competing national priorities, and limitations in available resources to comprehensively address the issue of sustainable national mountain development. The logical consequence would have been the scaling back of project ambitions to a limited and partial contribution to national processes. However, these issues were not taken into due account in the design of the project nor in the approval process.

---

<sup>1</sup> Resolutions of the World Summit on Sustainable Development (WSSD) in Johannesburg, the Convention on Biological Diversity, the Convention to Combat Desertification

<sup>2</sup> Funded to the tune of US\$ 10,000.-

<sup>3</sup> A symposium on Turkish mountains and the Bolu workshop on Mountain Management Planning

## 6.4 Implementation

118. The pilot has been almost exclusively concentrated in a single village (65 HH). If this choice was somewhat obliged by the size of the project, the very limited scale of the pilot<sup>4</sup> automatically distanced it from the dynamics<sup>5</sup> of large national or provincial programmes.

119. The project started implementing too many interventions in an unrealistically short time span. Within a two year period it tried to complete resource and livelihood surveys, conduct PRA based participatory planning exercises and implement a host of physical interventions. Given the time pressure it is hardly surprising that interventions had not been formally anchored in existing village, district, provincial or national planning frameworks. The over-ambitious approach and output formulation distracted the project focus from an efficient process contribution.

120. Nevertheless, a positive aspect of the TCP was that the national expert for institutional development engaged by FAO was a retired civil servant of MoEF, had been part of and still maintained close connections with the drafting committee of the national rural development sector expertise report, which feeds into the State Planning Organization's five year policy formulation and planning cycle<sup>6</sup>. This helped in linking the project experience into the national policy processes.

## 6.5 Results/Effects

121. The GoT-FAO engagement is driven by Turkey's EU pre-accession process. The GoT has an interest in further participation and integration in international networks. FAO acts as one of several access points to strengthen such relationships. As was conveyed to the Evaluation on several occasions, the objective of this active engagement, as well as Turkey becoming an emerging donor to FAO is to contribute to an ongoing process of Government institutional reform and modernization.

122. On a more practical level, the TCP results can be looked at in terms of their concrete contribution to policy reform. Apart from the quality and practicality of the policy message conveyed, project's effectiveness mainly depends on the correct pathway to insert the message in national policy process. The appropriate choice of national consultants with sufficient influence on national policy formulation bodies<sup>7</sup> is fundamental to this. While the evaluation sees potential for the TCP related dialogue to enter into national policy process, through the national consultant, it is far more sceptical about the effectiveness of the field component.

123. The TCP opted for an attempt to create a model village. Besides the inherent unsustainability of similar approaches, and despite the proclaimed wish to create a holistic and integrated model of natural resource management and sustainable livelihood improvement, the Evaluation has no indication this had succeeded.

124. The majority of interventions have been to the disproportional benefit of a few households receiving valuable grant based inputs or whose land was the subject of physical improvement by the project. The criteria for the selection of these households were not clarified to the Evaluation mission, though FAO had closely followed the process. Additional subsidies have also inflated households unit investment costs over those ordinarily applied by national programmes.

125. During a meeting at the level of the Provincial Administration, the national stakeholders firmly stated to the Evaluation that the TCP had not introduced any innovations, technical, policy or planning wise, with bearing on future rural development interventions in the Province.

---

<sup>4</sup> In the design of pilots matters of scale count. Making a pilot too small tends to lead to increase of transaction cost, which subsequently stand in the way of up scaling

<sup>5</sup> planning, budgeting, implementation logistics including communication and technical assistance

<sup>6</sup> Planning cycle will be 7 years hence-forth

<sup>7</sup> Such bodies, are often divers and cut across Ministries. In this particular case one could consider Policy and Strategy Development departments in relevant technical line ministries, MoEF, MARA, as well as the Ministry of Finance and possibly the Ministry of Public Works and Settlements, and lastly the State Planning Organization.

126. An extension for the project was discussed with the GoT, but this appears unlikely to happen. The Evaluation is of the opinion that no further value will be added by extending the project. However activities already committed to the villagers and for which funding has been set aside, need to be completed.

## **6.6 Sustainability and Impact**

127. The TCP wanted to actively contribute to sustainable mountain based natural resource management. As such it has a clear environmental objective. Project implementation records and reporting<sup>8</sup> provide evidence that environmental concerns have been taken on board as a serious issue. Amongst these, the potential of aquifer over-extraction common in the Mediterranean region features prominently. Equally so, the issue of sustainable land management including wood extraction play an important role.

128. Several of the selected project supported interventions had a bearing on environmental management. The project has supported the introduction of 10 solar boilers on grant basis. Livestock fodder cultivation on previously degraded farmland is meant to reduce the negative impact of free range grazing.

129. In the course of the TCP, concerns were expressed on behalf of FAO, regarding the introduction of a more water demanding grape variety<sup>9</sup> in a second project village<sup>10</sup>, which would have included combined project and provincial government supported well construction. Meanwhile in the main project village, deep tube well construction is underway under such national assistance. This tube well is meant to be shared for drip irrigation among cooperative members of two neighbouring villages. By and large all grape production in the Turkmen location has over the years been converted and now relies on the improved grape variety. The Evaluation was informed by the village authorities that with the new tube well in place; it is the intention to expand the local area under grape cultivation from 25 to 40 Ha. This expansion is apparently the minimum cultivated area to produce sufficient tonnage for merchants to come and buy the quality grapes produced in the area.

130. The Evaluation feels it important to point out that despite the positive environmental intentions of the TCP, its impact in this field must be seen as at best minimal. Equally, the project leverage on GoT and provincial decision making in regard of environmental management, and importantly, decisions surrounding water extraction issues was little if at all. The single village approach, without much guarantee of real innovation and replication, must be seen as the principle reason for limited impact.

131. The evaluation rates the TCP sustainability of asserting influence on GoT rural development policies as modest. Admittedly the project had not been completed yet by the time of the Evaluation and these processes tend to be lengthy. Moreover, ongoing WB and EU supported initiatives by the GoT, although not explicitly termed sustainable mountain development, appear to address similar issues in a parallel way. Still, the Evaluation considers that the translation of a policy process into legislation, regulations and implementation requires a far longer and differently structured type of engagement with the GoT.

132. The sustainability of local level natural resource management interventions can also not be accurately evaluated. Certain interventions, such as tick control for sheep and an experiment with fodder production may have low environmentally positive or neutral effect and will have the potential to somewhat raise local productivity.

133. Increased irrigation and conversion to drip irrigation for grapes was taking place regardless of the TCP, its long term sustainability obviously depending on aquifer extraction rates and the maximum feasible expansion of cultivated area under grapes. Despite the potential for raising local incomes from grape production, it is estimated that this will not lead to considerable increased employment opportunities or will affect (seasonal) out migration. After all, migration to urban areas is

---

<sup>8</sup> Aide Memoire backstopping visit FAO LTU Officer.

<sup>9</sup> alphonse

<sup>10</sup> Recepli village

in part testimony of the success of national education policies and benefits the often older village inhabitants in the form of remittances<sup>11</sup>.

134. The evaluation is of the opinion that the TCP may well have contributed to the knowledge that, depending on the context, there may not always be sustainable solutions to externally perceived problems with management of mountain development. After all there is considerable documented history of out-migration and changing functions of mountain environment in advancing and developed economies. There is no reason to believe that, at least in this particular area, of the Turkish Western coastal area the situation would be different.

### **6.7 Effectiveness of capacity building**

135. The notable training activity that was mentioned was a training for women in grape farming, and jam making. It was not clear whether the training was provided under the rural development activities of the government or whether the TCP facilitated the training which was provided by government authorities. It is also not clear if the women specifically asked for this training.

136. Women remembered this training event very well. It benefited 13 women headed households. Since a majority of the young people have left the village to work in the city, young girls and elderly men and women are left behind to tend the grape farms. Within this context, providing training in grape farming to women was an appropriate intervention.

137. The introduction of the new variety of grapes, provision of irrigation facilities by the government and training in grape farming will contribute to improving the incomes of these women, whether or not the TCP is implemented. This is also a very good example of how women can contribute significantly to economic development at the household and community level through mainstream livelihood activities and the importance therefore of facilitating and strengthening these activities, rather than "adding on" typically "female" interventions.

138. Documents related to the project such as technical back-stopping reports mention two activities that have not been taken up, one is marketing and promoting handicrafts and the other is training in health and nutrition. Both are typically "add on" activities for women in development projects.

139. The Evaluation specifically inquired about the health and nutrition training component since it had come up in the socio-economic survey. What the women actually wanted was information about what food crops they could grow in their farms in order to ensure a healthy diet for their families, not a "training" on health and nutrition (which can be out-sourced to an NGO or the health department) as has been suggested<sup>12</sup>. It should not have been difficult to provide this information to them.

### **6.8 Effectiveness of partnerships**

140. The Evaluation found no evidence of any partnership developed through the TCP. It may be argued that had emphasis being given to partnerships and co-financing arrangements with national and donor invested programmes (TCP criterion 10), the Project could have produced a broader, more imbedded and therefore more policy relevant field experience.

### **6.9 Effectiveness of Participation**

141. Improved planning inclusiveness on increased institutional transaction cost (time and money) has not been taken into account. This suggests that the introduction of participatory mechanisms has dominated over more collaborative approaches. This was entirely understandable within the existing limited time allocation, but not in line with the lessons learned from FAO's own review in relation to the new generation of WSM Programmes and projects.

---

<sup>11</sup> close to 50% of HH in Turkmen village seem to have at least one or more family member working in the nearby urban centers.

<sup>12</sup> Aide Memoire backstopping visit FAO LTU Officer

## **6.10 Gender Equality and Social Inclusion**

142. The project proposal and PPRC document did not mention any specific strategy for incorporating gender concerns, other than using SEAGA field guide for gender analysis and that gender concerns will be taken into account through training and capacity building activities. It is not clear on what basis this assumption was made, that within the context of the project, women's concerns could be addressed through capacity building.

143. There was also an explicit reliance on gender related components receiving particular attention due to Turkey's pre-accession to the EU plans<sup>13</sup>. This pre-disposition of the government to address women's concerns, and the fact that the village was being covered by a rural development plan of the provincial government made it difficult to differentiate between government and project related interventions.

144. In addition, the Project Coordinator of the TCP was the local government official in the Provincial Directorate of Environment and Forestry who visits the village in both capacities. It was evident during the field visit, that the government authorities were taking note of, and assisting with, problems faced by the village such as the need to repair the pipeline that supplies drinking water to the village, and providing a tube-well for irrigation purposes. In the course of the discussions with women in the village, it was difficult to establish whether they had participated in any planning exercise for prioritizing the project activities.

145. Due to a poor project design in terms of gender mainstreaming, and inadequate attempts to follow up on needs identified by the women in the socio-economic survey conducted by the project, FAO has lost the opportunity to demonstrate the importance of strengthening the role of women in the changing agricultural scenario, the "feminisation of agriculture". Women in Turkmen village have benefited from government interventions, not because of the TCP.

---

<sup>13</sup> The National Development Plan 2007-2014 has been influenced by the international agenda and integrates the principles of sustainability, public participation and women's issues

# Evaluation of FAO's role and work related to water

## Final report

### Annex 8

#### Evaluation of projects UTF/SAU/011/SAU and UTF/SAU/012/SAU

#### 1 Improvement of Irrigation Water Management in the Kingdom of Saudi Arabia

##### Box 1. Project basic data

<i>Symbol</i>	UTF/SAU/011/SAU
<i>Budget USD</i>	3,964,040
<i>Duration</i>	August 2007 – August 2012

##### Box 2. Evaluation assessment

Evaluation criteria	Score *
<i>Relevance</i>	5
<i>Design</i>	5
<i>Implementation</i>	4
<i>Results/Effects</i>	3
<i>Sustainability and Impact</i>	4
<i>Effectiveness of Capacity Building</i>	4
<i>Effectiveness of Partnerships</i>	4
<i>Effectiveness of Participation</i>	3
<i>Gender Equality</i>	2
<i>Social Inclusion</i>	1

\*: 1=very poor; 2=poor; 3=inadequate; 4=adequate; 5=good; 6=excellent

#### 1.1 Background

1. Agro-ecologically, the Kingdom of Saudi Arabia (KSA) is 40% desert and its water resources are very limited with renewable resources constituting a very small percentage of the total water withdrawals. Renewable resources are composed of groundwater recharge, spate flows, desalinated sea water, and treated waste water. Non-renewable groundwater resources are being depleted at alarming rates, and the agriculture sector is blamed for this depletion, as it consumes 88.3% of all water withdrawals in KSA.

2. Agriculture contributes very little to the GDP of KSA (about 4.2%) and most of it is dependent on irrigation. Irrigation is based mainly on underground water resources (86%) while the remaining 14% make use of water sources other than wells (dams, springs and others). Irrigation practices in KSA are very varied, from traditional surface irrigation systems to the modern ones such as center pivots and trickle irrigation. However, although the statistics show that modern irrigation technology is dominant (68%), the hydraulic performance of irrigation is very low in terms of efficiency. Modern systems are either poorly designed, poorly installed and operated.

3. Irrigators have a tendency to over-irrigate applying a lot more water than what would be required by the crops. Modern irrigation scheduling techniques are only used in few large corporate farms, under center pivots. Farm water management as well as good operation of collective irrigation distribution systems are lacking in KSA.

4. The main challenge now facing the KSA is how to get the water consumption by the irrigation sector reduced. Obviously, this has to go through demand management mechanisms, chief among them being the improvement of irrigation water management. Despite all these concerns, the KSA is encouraging diversification into agriculture as a way of reducing dependence on fossil fuel for driving economic growth and development.

5. Water insecurity on the medium and long range is evident and calls for a reform of agriculture policies and of the water resources sector, through adequate planning and management of the available resources from both supply and demand side. KSA, in collaboration with the WB is re-organising the water sector and has created a Ministry of Water & Electricity (MoWE) as well as the removal of various subsidies that encouraged excessive water use.

6. The water sector faces the following issues and challenges: high water consumption; limited wastewater reuse; high agricultural water use; unsustainable groundwater extraction; focus on water supply rather than demand management; weak regulations and enforcement; highly subsidized sector representing a high fiscal burden; inadequate human capacity to deal with the challenge; and lack of adequate and reliable data on both the resources and the demands or uses, and implications for planning.

7. In this context, the major issues facing irrigation in KSA are:

- a. non-adapted policies on water use and non-enforcement of the existing regulatory framework;
- b. the absence of a comprehensive strategy on irrigation;
- c. the lack of updated data and information about irrigation practices and of a database system;
- d. poor management of water use in agriculture, especially at the farm level, and where private pumping is practiced; and
- e. low resources and capacity to manage irrigated agriculture.

## **1.2 Relevance**

8.

9. The main objective of the project was to achieve sustainable irrigation water use through the rational, efficient and effective planning and management of irrigation water, with due consideration to preserving the current irrigated area, balancing water supply and demand and promoting the productivity of water use. The specific objectives of the project were to:

- i. Develop the national capacity to use demand management as a means for better balancing supply and demand for irrigation water;
- ii. Promote the sustainability, cost-effectiveness and competitiveness of irrigated agriculture; and
- iii. Develop knowledge for improved management of treated waste water in irrigated agriculture.

10. The project was to be funded by the the KSA to the tune of USD 3,964,040 dollars over a 5 year period, under the 2006–2011 framework of the Technical Cooperation Agreement between FAO and KSA, and to start January 2007. In reality the project only started in September 2007 with the recruitment of a fulltime CTA. Also, project budget was reduced by 25% when the project started.

11. FAO has been involved in previous UTF projects with KSA over the last 15-20 years; FAO is also assumed to enable access to worldwide updated and adapted technology and human resources at competitive costs. FAO's knowledge and experience is considered one of the best and the focus on food and agriculture merges very well with the MoA activities in KSA. In addition, FAO also has a worldwide presence.

12. The project is very relevant to the needs of KSA given the problems the country is facing regarding management of water resources in agriculture and the attempt to improve efficiency of water use and its productivity. A focus on improved water use is very important given the alarming rates of abstraction of fossil groundwater for irrigation. The project is comprehensive in that it attempts to address all the issues at various levels, from field level up to policy guidance.

13. At the field level some of the work conducted by the project tackles aspects of crop and irrigation water requirements leading on to the selection of crops best suited to various regions of KSA, irrigation scheduling studies intended to improve on-farm water management, evaluation of system performance to get a baseline of the current performance and hence the potential for improvement, and technology testing to assist farmers in migrating from inefficient surface methods to more efficient drip and localised irrigation technologies.

14. At the intermediate level, attention to capacity building was also an important aspect given that KSA has financial resources but no capacity to implement good on-farm water management. A significant proportion of water management activities, including monitoring pumping groundwater rates, irrigation scheduling, system evaluation, etc., require capacitated human resources. This aspect was proven or established quite soon after the beginning of the project when it was found that there was limited available competences on the ground. Subsequent revisions or adjustments of the project took this into account and made capacity development a key output area.

15. At the policy level, data and information generated by the project will be used to guide policy in MoA and MoWE. For example, once the crop and irrigation water requirements of the various crops will be mapped by the project, recommendations will be made to guide the government on suitable cropping patterns for the different regions in KSA.

16. In the 1<sup>st</sup> backstopping report of January 2008, it is interesting to note the following being reported "...informed the meeting that H.E. the Minister of Agriculture had read the project document and found it very relevant (emphasis added) to the needs of both the Ministry and the agriculture sector. H.E. the Minister recommended hastening the elaboration of a national irrigation strategy instead of waiting until the end of the project as planned in the project document. The other priority recommended by H.E. the Minister concerns the determination of water requirements figures for all major crops practiced in the country, to be used when enacting and implementing the new policies. Assessment of reasonable water requirements is also an expected output of the project". This is an indication that the authorities in KSA found the project to be relevant to the water problems they were facing.

### **1.3 Design**

17. The way the UTF was designed was quite good and comprehensive. It is apparent that an effort was made to fully understand the water issues bedeviling KSA and come up with a project that would try and address these as much as possible. Effective planning would be achieved through the capacity building of staff in MoA institutions involved in irrigation, with regards to their skills and strategic vision, and by bridging gaps on information and data. Efficient and effective management of irrigation water was to be achieved through the implementation of field programs in pilot projects in three regions, to demonstrate the use of improved irrigation techniques and management methods by using less water for irrigation and increasing water productivity.

18. Project documentation seems to suggest that there was wide consultation during formulation of the project; inputs from a wide range of experts were also envisaged during implementation. These consultations allowed the project to capture the essence of the key issues.

19. The project has several intermediate results, with sub-objectives, activities and outputs, namely:

- The knowledge base on irrigation practices is created,
- The institutional capacity of MOA to manage irrigation water is developed,
- Treated Waste Water (TWW) use and management around Riyadh is improved,
- Modern on-farm water management is demonstrated in Domat Al Jandal and Najran,

- Off farm water management is improved in Domat Al Jandal and Najran, and
- Irrigation advisory services and extension are provided to the farmers.

20. To ensure that the above results would be achieved, the project proposed the following key inputs funded by KSA through FAO:

- A CTA who would be responsible for all FAO activities and inputs in the project;
- International and national consultants to cover the various technical areas (e.g., hydrology, irrigation design, crop water requirements, agronomy, environment, waste water, soil science, etc)
- Backstopping technical support and supervisory services from RNE in Cairo (TS&SS)
- Expendable and non-expendable equipment,
- International and local training, and
- Support staff and staff travel.

21. The design envisaged project management being driven by the CTA on FAO side and a National Project Director (NPD) for the KSA side of the project budget, in liaison with the resident project coordinator (PC).

22. The project was designed in phases: Phase I with a duration of 1 year, mainly preparatory work), Phase II with a duration of 3 years, mainly all the key activities of the project and, lastly, Phase III for 1 year mainly for dissemination of results.

23. The down-side of a comprehensively designed project is that sometimes it becomes too big, has too many activities and outputs that may end up being unachievable. Some aspects of this are revealed in the results and implementation sections.

#### **1.4 Implementation**

24. As established during country visits, the project did not start on time due to the delays in the recruitment of the CTA. Effectively the project was delayed to September 1, 2007 (instead of January 1, 2007). This meant that all project activities were delayed as well.

25. By January 2008, a good number of the Phase I activities had been implemented. Mainly: the recruitment of the CTA, identification and nomination of the local NPD within the General Administration of Irrigation Affairs (GAIA) in the MoA, embedding the project within MoA and establishing links with MoWE, securing office space, acquisition of office equipment, networking with local institutions and potential consultants, reviewing and updating the project document and the project work plans, preparing and holding the inception workshop, and writing the inception report. Later, project implementation slowed down significantly.

26. During the country visit, a number of problems were highlighted regarding project implementation. One of these was that it took time to find dedicated and properly qualified local counterparts for the project. This was mainly due to the structure of the MoA and the housing of irrigation therein. The structure (organogram) has the Director General of GAIA at the top and directly below there are the two units of Irrigation Technology and that of Drainage, and below these there is the National Irrigation Administration (NIA) and also Irrigation and Drainage Projects (I&DP). The organization was very thin on human resources, and some of the incumbents had no adequate background in the discipline of irrigation. This is mainly due to the national system of appointment, through which middle and high level officials can take up professional positions outside their area of expertise.

27. Thus, the general shortage of staff in the GAIA to do most of the project work, affected project implementation: the project had no staff except the CTA and NPD, and the few people in place had no experience in irrigation. The project decided to focus more strongly on capacity development, as this was one of the expected outcomes of the project anyway.

28. By the 2<sup>nd</sup> backstopping visit of February 2009, the project implementation had made some progress, but overall was still lagging somewhat behind schedule. The set of problems encountered

included: the inability to raise or identify willing consultants at the local level to work on some aspects of the project; poor quality of work by some consultants; lack of competent local staff to work alongside international consultants; unrealistic bids by consultants; and the reluctance and lack of interest by local consultants to work on field activities the project. Despite all these problems, project implementation was recorded as satisfactory taking into account what had been achieved to date.

29. Due to the problems associated with getting adequately competent and committed staff at the local level, the project has since agreed to engage an international consultant at the P3 level to work on a number of the tasks that are lagging behind. This international consultant was due to start in Riyadh on 1<sup>st</sup> October 2009, after the Evaluation mission.

### ***1.5 Results/Effects***

30. The project was still on-going at the time of the Evaluation. A number of outputs had been produced:

- the assessment of the irrigation technologies in use in KSA had been completed;
- key water use efficiency problems have been identified;
- some work on crop water requirements has been completed, although the quality of work required some improvements;
- preparations were at an advanced stage for the national irrigation strategy, although behind schedule;
- some data on crop water use had been collected;
- national research centres to conduct some of the research work had been identified; and
- some in country training as well as study abroad tours for local staff had been undertaken; these are discussed in detail later on in the report.

31. Other field activities included the design of irrigation field demonstration in Najran and Domat Al Jandal in October-November 2008, the design of field demonstrations in Riyadh with emphasis on treated wastewater in November-December 2008. Various documents and reports had been produced.

### ***1.6 Sustainability and Impact***

32. Despite the problems associated with scarce national human resources, which has affected the project implementation schedule, the prospects of sustainability seem good, because the KSA staff involved are fulltime employees of the government of KSA and are likely to remain in place for a long time to come. All the staff who have undergone training are nationals. Additionally, unlike many places where FAO is involved through TCP projects, KSA is well resourced and thus is in a position to fund continued activities in these areas of concern in water.

33. The project seems to have had some impact and is quite visible in and around Riyadh. From lower level KSA officers all the way to the minister of agriculture, all are acknowledging the importance and relevance of this UTF project to water issues in KSA. The buy-in obtained from the interested minister of agriculture is expected to give good payback through continued and sustained work in this area.

### ***1.7 Effectiveness of Capacity Building***

34. The project has a focus on capacity building. It has achieved reasonable outputs in terms of trained staff in the various ministries on KSA and other partners. As of early 2009, the following training and capacity building activities had taken place:

- Lysimeters and Irrigation Research: joint activity with UTF/SAU/015/SAU, benefited the following projects UTF/SAU/011/SAU, UTF/SAU/012/SAU, UTF/SAU/015/SAU,

UTF/SAU/016/SAU, UTF/SAU/018/SAU, and UTF/SAU/019/SAU through excellent cooperation and organization. Training was 4 days long (22-25 Mar 2008) in Al Hassa.

- Design of Sprinkler Irrigation Systems: benefited UTF/SAU/011/SAU, UTF/SAU/012/SAU, UTF/SAU/015/SAU, UTF/SAU/016/SAU, UTF/SAU/019/SAU; training duration was 5 days (7-11 June 2008), in Riyadh.
- Study tour to Morocco: Lysimeters, irrigation research and management, for 10 participants for 2 weeks (29 June – 14 July 2008). Beneficiary participants were from UTF/SAU/011/SAU, UTF/SAU/012/SAU, UTF/SAU/015/SAU, UTF/SAU/016/SAU, UTF/SAU/018/SAU and UTF/SAU/019/SAU.

35. Capacity building is still on-going. The projects and KSA are yet to fully benefit from the training that has taken place so far. The prospects for such benefits seem good.

36. It is of interest to delve a little more into the capacity building activities. Initially the training envisaged included long term, e.g. MSc studies, and short term training, e.g., 1-2 weeks duration or conferences. For the long term training, disappointingly, no national candidates were identified: that component of the training program was changed to include short term trainings such as laboratory work, lysimeter training, etc, ranging from 2 – 6 months.

37. The original short term training were undertaken and included: irrigation design and management, monitoring and evaluation of irrigation systems, improvement of drip irrigation systems, computers in irrigation, and irrigation scheduling. MoA and MoWE staff also went on study tours to Spain, for senior staff to study automated irrigation; to Italy, for senior staff for large scale irrigation with automated hydrants; and to Morocco for lysimeter and research management. More study tours are planned to Morocco on IWRM, to Cyprus on irrigation advisory services and to California on irrigation districts.

38. What is missing is the training of farmers, but that is not explicitly stated in the project objectives and outcomes.

## **1.8 Effectiveness of Partnerships**

39. The project has established a wide range of partnerships that include departments in various KSA government ministries (especially MoA and MoWE), other UTF projects (specifically UTF/SAU/012/SAU, UTF/SAU/014/SAU, UTF/SAU/015/SAU, UTF/SAU/016/SAU, UTF/SAU/018/SAU and UTF/SAU/019/SAU), private consultants, researchers from the universities of KSU and KFU, research stations in KSA (specifically the Mango Research Centre, the Citrus Research Centre in Najran, the Date Palm Research Centre in Al Hassa, and the Olive Production Research Centre in Al Diouf), private companies interested participating in irrigation demonstration and related activities.

40. One important partnership is missing with the Desert Research Centre in Aleppo<sup>1</sup>, Syria. The Evaluation considers that the project should link with this centre since they both work on crop production under desert conditions.

## **1.9 Effectiveness of Participation**

41. Just as is the case with partnership, the Evaluation's findings indicate that there has been fairly effective participation in the project. There is a lot of complementarity in activities between various projects related to UTF/SAU/011/SAU as indicated in the training given above. At the inception workshop there were 44 participants from various ministries and department, the local universities, FAO and others.

---

<sup>1</sup> Some of the work for the AquaCrop model was done by researchers in Aleppo.

42. What was not evident to the Evaluation was the participation of farmers in a lot of the work taking place. Admittedly, most of the work is taking place at demo plots at research stations and the Evaluation had not enough time to explore this issue in detail.

### ***1.10 Gender Equality and Social Inclusion***

43. There is no evidence of gender issues being taken into consideration. No women were part of the staff trained as part of the capacity development activities. It was only indicated that where water is distributed, e.g. TWW, any farmer (male or female) who is entitled to such water will have access to it.

44. The Evaluation is aware that in KSA, gender seclusion makes it impossible for women to take part in capacity building activities, thus these criteria cannot be applied fully in the case of these projects.

## 2 Sustainable Development for Irrigated Agriculture in Al-Hassa, UTF/SAU/012/SAU

### Box 3. *Project basic data*

<i>Symbol</i>	UTF/SAU/012/SAU
<i>Budget USD</i>	4,042,010
<i>Duration</i>	July 2007 – July 2012

### Box 4. *Evaluation assessment*

<b>Evaluation criteria</b>	<b>Score *</b>
<i>Relevance</i>	5
<i>Design</i>	4
<i>Implementation</i>	4
<i>Results/Effects</i>	4
<i>Sustainability and Impact</i>	4
<i>Effectiveness of Capacity Building</i>	5
<i>Effectiveness of Partnerships</i>	4
<i>Effectiveness of Participation</i>	3
<i>Gender Equality</i>	1
<i>Social Inclusion</i>	1

\*: 1=very poor; 2=poor; 3=inadequate; 4=adequate; 5=good; 6=excellent

### 2.1 *Background*

45. The Kingdom of Saudi Arabia (KSA) is a desert country where the overall water resource potential is limited and non-renewable. The total water supply in the Kingdom in 1999 was 20 billion cubic-meters, the bulk of which came from non-renewable groundwater (80%), with desalination and reclaimed wastewater accounting for 6% and renewable surface runoff and groundwater accounting for the remaining 14%. Of the total area under agricultural production, about 1.2 million hectares are under irrigation.

46. The Al-Hassa Oasis, the largest one block irrigated area in the KSA, is suffering from rapidly deteriorating irrigation conditions. The cultivated area of Al-Hassa Oasis is about 16,000 hectares, out of which 7,800 hectares are irrigated agriculture. Total number of farm holdings is approximately 23,000, with an average cultivate area of 3390 m<sup>2</sup>. The Al-Hassa Irrigation and Drainage Authority (HIDA) has full control of the water irrigating an area of about 3,300 hectares, while the remaining area (ca. 4,500 hectares) is irrigated by privately owned wells. Until recently, dates constituted the main agricultural production (more than 80%) in addition to forage or animal feed, fruit trees and other commodities.

47. The Al-Hassa Irrigation and Drainage Authority (HIDA) is a public authority under the Ministry of Agriculture (MoA), providing support for irrigation and a variety of agricultural services to a large number of farms in Al-Hassa. The Authority operates the wells, maintains the water irrigation and drainage networks, in addition to which it provides a wide variety of other services to farmers free of charge, such as: extension, provision of seedlings, disposal of old plantations, land preparation, etc.

48. In addition, HIDA is responsible for the agricultural improvement and development projects in Al-Qatif and Al-Aflaj. HIDA had also established a date packing factory to support farmers in selling and marketing their products. HIDA comprises a staff of around 1500, out of which 400 deal with irrigation water control and distribution and consists of four main technical departments, three projects, a date packing factory, financial and administrative departments and the planning and evaluation section. The four main technical departments are the Irrigation Department, Extension Services Department, Engineering Department, and the General Maintenance Department.

49. The current situation of water resources in Al-Hassa is critical, as demands increase while supply is limited. Studies in the 1970's showed that the safe yield from the aquifer feeding groundwater in Al-Hassa is about 10m<sup>3</sup> per second. However, the ever increasing demand for water for different purposes reached up to ca. 15m<sup>3</sup> per second in 2002, and led to a considerable drop in the groundwater table (40 to 60 meters) as well as deterioration in water quality. The current concentration of total dissolved solids (TDS) of pumped groundwater is about 1750 ppm.

50. The above situation shows that groundwater is not reliable for sustainable developments in Al-Hassa, and justifies actions to allocate additional new sources of water to reduce demands from irrigation water and to protect existing resources. In facing this challenge, HIDA is already planning to receive and utilize significant amounts of treated wastewater (up to 530,000m<sup>3</sup> per day) from several wastewater treatment plants in the near future (2010). These amounts will cover irrigation water requirements for the whole Al-Hassa area and will allow groundwater to be considered as a spare resource (to be used in emergencies).

## **2.2 Project objectives**

51. The project was a product of two previously proposed projects by HIDA in Al-Hassa: one on the use of non-conventional water resources, and the other on agricultural irrigation water management in general. However, due to a limited budget, the MoA had agreed to finance the current project entitled "Sustainable Development for Irrigated Agriculture in Al-Hassa" also covering the second component.

52. The development objective of UTF/SAU/12/SAU was to assist HIDA to achieve sustainable development for its irrigated agriculture. The long-term objective was to strengthen and build HIDA's capacity for managing irrigation water demands. The four immediate objectives were: (a) Reduce demands on irrigation water; (b) Facilitate and improve irrigation management; (c) Reduce salt build-up; and (d) Achieve higher professional performance.

53. The project funded within the 2006–2011 Framework of the Technical Cooperation Agreement between FAO and KSA and was to start in January 2007 with an estimated budget of USD 4,042,010. MoA was the responsible agency for its implementation. However, it started later than planned, in August 2007, due to various delays.

54. When the project was initially conceptualized it was going to tackle specific problems that existed in Al-Hassa regarding groundwater mining and operational inefficiencies of the HIDA. However, by the time the project commenced, conditions on the ground had changed and the KSA had introduced some new policies on water use. A full assessment of water issues in the Al-Hassa Oasis was conducted to lead to the final project design, which adapted to these new changes and put forward a revised set of objectives and expected outcomes.

55. The revised project objectives are: i) improve the whole framework of water quality monitoring in HIDA; ii) Reduce demands on irrigation water; iii) develop knowledge for improved management of wastewater & drainage water reuse; iv) facilitate and improve irrigation management; v) reduce salt build-up; and vi) achieve higher professional performance.

56. The project is expected to achieve the following outcomes: a) water savings and reduced demands on water consumption for irrigation; b) easy operations and efficient control of the water distribution system; c) establishment of a water quality monitoring and management system; d) less salinity problems and increased soil fertility; e) high institutional and technical performance in HIDA including the use of information technology and GIS; f) at least one active water user group (association) is formed and can participate in water distribution effectively; and g) high awareness regarding water conservation.

## **2.3 Relevance**

57. The project is considered very relevant as it set out to address real problems in Al-Hassa and within the HIDA organisation. The expected outcomes were, among other issues, a decrease in the

demand on irrigation water, use of treated wastewater (TWW) for irrigation to conserve groundwater, and improve the capacity for water quality monitoring. The operationalisation of the project through FAO was well within the Framework of the Technical Cooperation Agreement between FAO and KSA.

58. FAO had comparative advantage as the executing agency, based on its leadership for management and development of irrigated agriculture, its experience over the past forty years in this area of work and the due consideration it gives to scientific and technological developments, the related costs and adaptability to local conditions, without bias.

## **2.4 Project Design**

59. Project design was adequate to address the issues that existed in the Al-Hassa Oasis and within the HIDA. However, the project design considered most of the existing problems regarding water use, and did not give adequate attention to issues associated with availability and capacity of human resources. This led to some delays and problems during the implementation phase.

60. Project design included the essential elements for ensuring sustainability of results included, namely: continuous support for the extension programs, innovative incentives to save water and encourage farmer participation; support from MoA to implement proposed actions aiming at water savings and solving soil salinity problems; a fully functional information system (in terms of updating, analysis and dissemination); and continuous training and capacity building.

## **2.5 Implementation**

61. As indicated, project start-up was delayed from January 2007 to August 2007. This was due to problems related to getting all required staff into place, including the Chief Technical Advisor and National Project Director. The NPD was appointed in July 2007, and the Project Steering Committee only came into existence in December 2007. Surprisingly, despite the late start, the project implementation picked up its pace quickly. By the time the inception report was prepared (June 2008), a number of activities had been implemented, including:

- Establishing working arrangements (setting-up and equipping the project premises and procuring the necessary equipment);
- Arranging meetings with HIDA management and staff to create awareness about the project and its implementation arrangements;
- Inception Workshop attended by 25 participants from HIDA, King Faisal University, and the Water Studies Centre. The event was based on a presentation of the project scope, objectives and activities made by the project CTA and subsequent discussion by participants;
- Fielding of the GIS-IT Local Consultant;
- Review and updating of the project document;
- Fielding of Soil and Drainage International Consultant;
- Establishment of the GIS unit: most of the necessary equipment and software was procured (incl. workstation, server, plotter& scanner, GPS equipment, satellite images, GIS software, and GPS software); and
- Arranging a study tour for six trainees from HIDA laboratories to the High Institute of Public Health, Alexandria University, Egypt. This program aims at improving the performance of the trainees in the field of physical, chemical, and biological wastewater analyses.

62. Outcomes of the inception workshop that had implications on future project activities included:

- the need for the project to focus on increasing water productivity in Al-Hassa as the main output;
- the importance of taking into consideration the relevant research activities conducted by university and research centres in Al-Hassa;

- the need to relax the KSA standards on wastewater reuse based on the new WHO-FAO-UNEP guidelines;
- the need to assess the performance of the drainage system installed in Al-Hassa, and
- the important role of the Project Steering Committee in supervising and guiding the project.

63. By the time of the Mid-term progress Review (September 2009), more project activities had been undertaken in line with the stated objectives. Significant progress had been made towards meeting these objectives. Some of the most relevant aspects will be integrated in the sections that follow, e.g. results and capacity building.

## **2.6 Results/Effects**

64. According to the Mid-term Review, results achieved included some of the following:

### Objective 1 – Improve framework of water quality monitoring:

- Fielding of local and international GIS-IT consultants
- Establishment of the GIS Unit
- Formulation of an information system group – 6 HIDA staff were identified to run the GIS tasks under the supervision of the FAO GIS consultant
- Digitisation of all irrigation and drainage network maps
- Establishing of 4 GIS layers (out of 6) of the irrigation and drainage networks
- Preparation of GIS maps for the location of 100 observation wells
- Conversion of old soils map into GIS format
- Update of data on non-conventional water resources in Al-Hassa

### Objective 2 – Reduce demands on irrigation water:

- Fielding (3 missions) of international irrigation consultant
- Analysis of crop water requirements
- Definition of weaknesses and opportunities for improvements to save and allocate water adequately and compare options

### Objective 3 – Develop knowledge for improve management of wastewater and drainage water reuse:

- Fielding (3 missions) of soil and drainage international consultant
- Update of data on quantities of agricultural drainage water (ADW) reused in HIDA in 2007 & 2008 as well as an assessment of the sustainability of this non-conventional water resource
- Identification of the most suitable treatment process for HIDA
- Preparation of detailed specifications and tender documents for the ADW treatment plant
- Introduction of a simple and practical way to measure and monitor rootzone soil salinity using the SoluSampler®
- Update and upgrade of the soil map to GIS

65. Results varied and depended on the activity undertaken. Work completed by the project is already producing applicable results, for example, the appropriate blending ratio of TWW, ADW and groundwater for crop irrigation. Overall the progress made is rated quite well.

## **2.7 Sustainability and Impact**

66. One of the main factors supporting the high prospect for sustainability is the total involvement of local staff in the activities. All training activities benefited local people who were already employed by the government of KSA. The newly developed water quality monitoring

laboratories, the tools for monitoring soil salinity, and the approaches for monitoring pumped boreholes are all staffed by nationals.

67. Therefore upon project completion, as long as resources are available, work should continue. Any savings in groundwater achieved by using TWW and ADW will be to the benefit of the Al-Hassa Oasis and environmental sustainability.

## **2.8 Effectiveness of Capacity Building**

68. The project has undertaken a significant amount of training and capacity building of local manpower in both government and local institutions, such as universities. Training activities are categorised as external and internal.

69. External training undertaken by August 2009 included:

- Training on physical, chemical and biological analyses of wastewater. This training was conducted in Egypt over a 3 week period March/April 2008. Six HIDA staff members benefitted from this training.
- GIS training held in Hanover, Germany in February 2009. Six HIDA staff from the GIS unit benefitted from this training
- Internal short-term training undertaken by the project comprised:
- The use of GPS – held at HIDA in March/April 2009 for six HIDA members from the GIS unit
- Sustainable salinity management in Al-Hassa irrigated date palm orchards – held in November 2008 at HIDA for 16 trainees from KFU, HIDA and the Palm and Date Research Centre
- Introduction to GIS – held at HIDA in January 2009 benefitting 13 trainees from HIDA and Saudi Electricity Company
- Basic crop water requirements and irrigation scheduling – held at HIDA in August 2009 for 15 trainees from HIDA, Directorate of Irrigation, Horticultural Development Centre, National Date Palm Research Centre, Directorate of Agriculture, and Al-Qateef Agricultural Development Project
- Professional use of EM38 and mapping of soil characteristics – held at HIDA Headquarters in August 2009 for 2 weeks for 19 trainees from HIDA and the research centres

70. Training activities are still on-going. The project appears to be on track with training programs, which are benefitting HIDA employees and some of their partners in KSA. FAO played a key role in all of the training, either directly or through the consultants that offered the training services. The project utilised some of the top experts in the various fields, e.g. salinity, crop water requirement and GIS. The project is commended for the quality of its training programs

## **2.9 Effectiveness of partnerships**

71. Information available seems to indicate a good level of partnerships with local institutions, government departments, universities (KFU). The partnership between the local institutions, HIDA and FAO are good.

72. The project also is working in close collaboration with the other UTF projects (UTF/SAU/011/SAU, UTF/SAU/015/SAU, UTF/SAU/016/SAU, UTF/SAU/018/SAU, UTF/SAU/019/SAU) in an attempt to find synergies and an effective utilisation of limited resources, e.g., in training activities.

## **2.10 Effectiveness of Participation**

73. All the HIDA staff involved in the project seem committed and after training were said to take pride in their tasks, e.g., in the HIDA water quality monitoring laboratories. However, it may be

too early to tell as the project is still on-going. For those involved in the project, there is a fair level of participation.

74. Although no farmers were met during the evaluation mission, indications were made that the various project components interacted with farmers.

### ***2.11 Gender Equality and Social Inclusion***

75. There is no evidence of gender issues being taken into consideration. No women were part of the staff trained as part of the capacity development activities. Neither was attention given visibly to issues of social inclusion.

76. The Evaluation is aware that in KSA, gender seclusion makes it impossible for women to take part in capacity building activities, thus these criteria cannot be applied fully in the case of these projects.

# Evaluation of FAO's role and work related to water

## Final Report

### Annex 9

#### Evaluation of the International Programme for Technology and Research in Irrigation and Drainage (IPTRID)

**Box 1.** *International Programme for Technology Research in Irrigation and Drainage: project basic data*

<i>Symbol</i>	GCP/INT/705/MUL
<i>Budget USD</i>	4,781,656
<i>Duration</i>	July 2001 – June 2009

**Box 2.** *Iptrid-IWMI Collaborative Research and Knowledge Networking: project basic data*

<i>Symbol</i>	GCP /INT/834/ NET
<i>Budget USD</i>	900,000
<i>Duration</i>	October 2001 – December 2006

**Box 3.** *Centre Virtuel de l'Eau Agricole, Contribution française au système de Gestion et de Diffusion de l'Information de l'IPTRID: project basic data*

<i>Symbol</i>	GCP /INT/855/ FRA
<i>Budget USD</i>	511,701
<i>Duration</i>	October 2004 – December 2008

**Box 4.** *Evaluation assessment*

<b>Evaluation criteria</b>	<b>Score *</b>
<i>Relevance</i>	5
<i>Design</i>	2
<i>Implementation</i>	2
<i>Results/Effects</i>	2
<i>Sustainability and Impact</i>	2
<i>Effectiveness of Capacity Building</i>	3
<i>Effectiveness of Partnerships</i>	3
<i>Effectiveness of Participation</i>	4
<i>Gender Equality</i>	2
<i>Social Inclusion</i>	1

\*: 1=very poor; 2=poor; 3=inadequate; 4=adequate; 5=good; 6=excellent

## **1.1 Background**

1. The International Program on Technology Research in Irrigation and Drainage (IPTRID) in FAO has been funded by various donors, through a multi-donor initiative, one Netherlands-funded project and a France-funded project, focused on the Centre Virtuel de l'Eau. Project symbols and titles are listed above.

2. Originally an initiative of the Congress of the International Commission for Irrigation and Drainage (ICID) in late 1980s, IPTRID started in 1990 to promote application of research results and new research in developing countries on technology for Irrigation and Drainage. During the period 1990-1998, IPTRID, hosted in Washington by the World Bank, focused on three themes of applied research, namely:

- i. Large-scale irrigation
- ii. Conservation and maintenance of I&D controls
- iii. Control of salinity through land drainage

3. The Programme manager, theme managers and activities were financed primarily by the Netherlands, Germany, UK and France. Country reports with needs analyses around the three themes were prepared, for example for China, India, Egypt, Mexico, Pakistan, and the Aral Sea Basin. These were seen as successful, and in some cases, taken as the starting point for modernization programmes and land reclamation. These field activities, often funded as part of World Bank projects supporting irrigation investments, were also credited with increasing the capacity and relevance of national institutions, for example the Mexican Institute for Water Research.

4. In mid-1998, the IPTRID Secretariat moved from the World Bank to FAO, with continuing core financial support from the World Bank. Its mandate remained unchanged and IPTRID remained closely connected with ICID, holding concurrent annual meetings. IPTRID was guided by a Consultative Group, which established a programme of activities and core budget. During the period 1998-2002, IPTRID developed a network of centres, hosted by, for example, HR Wallingford in the UK, Wageningen in the Netherlands and FAO, and boosted the publication of 'issues papers'.

5. The GRID magazine, published 2-3 times a year, acted as the IPTRID Journal. GRID, translated into English, French and Spanish, contained keynote articles, information on meetings, and reviews of new books.

6. The period 2001-2002 witnessed a significant change in IPTRID. With a new manager, IPTRID aimed to shift from its original research mandate towards capacity development. To a degree, this created an overlap with FAO AG/NR-LW, similarly mandated in capacity development.

7. Financial support for IPTRID was always variable. While the period 2004-2005, and from that date onwards, the Program appeared to decline. This is evident, for example, through the declining interest among many of the original donors.

8. The activities of IPTRID during the review period were originally set in the Logical Framework (2003-2005) which reoriented IPTRID's purpose towards supporting capacity development for Sustainable Agricultural Water Management in order to:

- Increase irrigation efficiency and productivity for irrigated agricultural production (more crop per drop);
- reduce water-logging and salinization of soils;
- protect people and land against water damage through flood mitigation;
- collect runoff through water harvesting; and
- improve water resources management to conserve water quantity and quality.

9. The outputs were strongly focused on capacity building activities at country level, development of national and regional strategies and programmes for agricultural water management, information services, public-private partnership and development in the water sector.

10. With the MoU between FAO and IPTRID due to expire in 2004, FAO's view was that the arrangements should not be renewed. However, following a change in IPTRID management, the MoU was renewed but in FAO's opinion problems persisted. Although IPTRID was not integrated within

FAO's Water Unit, it was located in FAO, its management Committee was chaired by the Chief of AGLW and the Programme was managed de facto as an AGLW activity. With closely related areas of interest, there was neither integration nor clear division of responsibilities. IPTRID had become a facility on capacity building within FAO that was competing with FAO itself.

11. The 2005 Triennial External Evaluation of the Program confirmed the relevance of the Programme but also identified problems, including its relationship with FAO.

12. With a 'renewed mission' from 2005/06 onwards, efforts were made to bring to closure all those ongoing or committed activities that were not in line with the new Programme direction. At the same time, new activities were pursued and developed, taking into consideration the required focus on issues dealing with technology and research.

13. A new purpose was set in the 2006-2008 Logical Framework, namely to "*enhance uptake of research, exchange of technology and management innovations in irrigation and drainage in targeted (developing) countries in Africa and Asia*". Indicators were set as: the increase of modernized irrigation area, number of new research applications introduced, and the number of farmers influenced by IPTRID activities.

14. In 2007, IPTRID was again renewed by a new strategic framework, and the former Chief of AGLW conducted an extensive analysis and consultation. An Expert Consultation was held with FAO donors and countries active in the work, identifying "many good outputs". The main 'problem' identified was IPTRID's governance, with a lack of accountability and responsibility. IPTRID's Secretariat had become IPTRID itself, rather than acting as a Secretariat. FAO viewed IPTRID with a high degree of scepticism and felt it was proving damaging to FAO's credibility. Financing was limited solely to FAO's contribution, with one manager at Director (D1) level and USD 100,000 for non-staff resources, and France. The FAO contribution was ring-fenced, and so was protected from cuts elsewhere in the house, including within the AG/NRLW.

15. FAO closed the MoU in 2007, as scheduled. This evoked concern from the Government of France regarding the status of two seconded staff as their secondment schedule did not match with that of the MoU. Consequently, a one year 'bridging' period was agreed, including a USD 25,000 contribution from DFID, with the commitment that this period would be decisive regarding continuation or closure of IPTRID. If successful, this period would lead to a new MoU. If not, IPTRID would be phased out.

16. During 2008, efforts were devoted to the development of a new strategy, backed by an Expert Group. However, after its preparation the remainder of the year proved of insufficient duration to be decisive. At this time, a number of new donors began to show interest, with the possibility of a multi-donor trust fund. Proposals for improved governance include a Steering Committee composed of a donor representative, ICID President, Chair and FAO. Decentralized hubs, one per region, have been proposed, building on the existing network of ICID, CGIAR and National Agriculture Research Institutes (NARIs).

17. IPTRID activities were mainly funded through three projects in the period under evaluation<sup>1</sup> amounting to USD 6 million. In addition, additional funding was provided through the FAO Regular Program and other sources.

18. In sum, for IPTRID the period since 2004 was dominated by variable levels of funding, threats of closure, reviews, repeated attempts at "renewal", difficult relationships with FAO and successively revised strategic frameworks. Evaluating output against these constantly varying objectives is difficult, if not impossible, but the Evaluation has no grounds to disagree with the 2007 donor review that concluded that there had been "many good outputs", though most of these originated in the period prior to this evaluation.

## **1.2 Relevance**

19. The relevance of IPTRID's original agenda (research) and current emphasis (technology uptake) are high.

---

<sup>1</sup> See Boxes 1, 2 and 3 of this Annex

### 1.3 Design

20. The original design of IPTRID as a complementary activity within the World Bank projects was quite effective. As this arrangement wound down, finding new ways to pursue IPTRID's agenda has proved very difficult as evidenced by regular "renewal", often to significant degrees. Currently bridging support is an inadequate basis for a substantive programme, even if this could be defined independently of NRLW's activities.

### 1.4 Implementation

21. After years of strength (up to 2002), albeit at low levels of funding, the Evaluation Period has witnessed IPTRID decline to what is now virtually the verge of extinction. Declining donor responses to a highly relevant purpose can be seen as a key indicator of IPTRID's performance.

### 1.5 Results/Effects

22. Many outputs are undoubtedly of acceptable quality individually. However, they constitute a set of fragmented outputs, lacking any credible critical mass or direction, not evidently reaching farmer households. The completed outputs reported by IPTRID in different phases are included in Box 5 below. In addition, outputs relative to specific projects and donor priorities are listed accordingly below.

#### Box 5. IPTRID outputs in different phases

2003-2004	<ul style="list-style-type: none"> <li>• HORTICA, Identification of a capacity building project for drip irrigation in the Niayes region, Senegal</li> <li>• IPTRID International Conference: Towards a strategy for sustainable irrigated agriculture with feasible investment in drainage, Aral Sea Basin, Central Asia</li> <li>• Database on Capacity Building Programmes for Irrigation Modernization</li> <li>• Special One-day Session on ICT Application in Water Sector; International Conference on Information and Communication Technologies: From Theory to Application. Damascus, Syria.</li> <li>• Towards Integrated Planning of Irrigation and Drainage, Egypt</li> </ul>
2005	<ul style="list-style-type: none"> <li>• International Forum on Performance Benchmarking in the Irrigation Sector, January 2005, Aurungabad, India</li> <li>• South East Asia Regional Workshop on Management and Prioritization of Research, Malaysia</li> <li>• Workshop Appropriate Water-Lifting Technologies in West Africa</li> <li>• IPTRID internal guidelines for defining areas of interventions</li> <li>• Workshop on Design and Implementation of Capacity Development Strategies, Beijing</li> <li>• Workshop on benchmarking In Irrigation and Drainage, Beijing</li> <li>• Workshop: Financing Water for Agriculture</li> <li>• Virtual Centre for Water in Agriculture</li> <li>• East Africa Regional Workshop on Management and Prioritization of Research, Tanzania</li> <li>• Training workshop for the NWRC in Egypt on Project preparation and proposal writing</li> </ul>
2006	<ul style="list-style-type: none"> <li>• IWMI-IPTRID Collaborative research and knowledge networking</li> <li>• Training Programme on "Project design and management for professionals in the water sector in the Near East Region"</li> <li>• Series of workshops on Capacity development strategies in agricultural water management</li> <li>• Virtual centre for water in agriculture – CISeau</li> <li>• First E-conference on the "Management of irrigated-induced salt-affected soils"</li> <li>• Second E-conference on "Impact of irrigation and agricultural intensification on water quality"</li> <li>• International Symposium on Irrigation modernization: constraints and solutions, March 2006, Damascus, Syria</li> <li>• Management and prioritization of irrigation and drainage research, Ethiopia</li> <li>• APPIA seminar on "Improvement of performances of irrigation in Africa", June 2006, Rome</li> <li>• Small-scale irrigation: challenges and perspectives, Mali</li> <li>• Workshop on Monitoring and evaluation of capacity development strategies in agricultural water management, Kuala Lumpur, Malaysia</li> </ul>

	<ul style="list-style-type: none"> <li>• International Forum on Water and agriculture, November 2006, Vientiane, PDR Laos</li> <li>• Participation in the Water Summer School of UMR GEAU</li> <li>• Translation into Russian of the Synthesis Report on the Aral Sea Basin Initiative: Towards a strategy for sustainable irrigated agriculture with feasible investment in drainage, Central Asia</li> </ul>
--	--

23. Programme deliverables under GCP /INT/705/MUL included:
- Swiss Cooperation: Survey on Adoption and Technical Performance Evaluation of the Swiss Concrete Pedal Pump (PEP)
  - Évaluation du projet «Amélioration des performances des périmètres irrigués en Afrique (APPIA) (Govt of France)
  - Evaluation Of The 'Strategie de gestion et d'economie d'eau agricole au Proche-Orient' and of the French Regional Mission for Water and Agriculture
24. DFID general support (2007-2008) was aimed at:
- Grid Magazine—Issues 27 and 28
  - Issue paper # 6 on informal irrigation
  - Syrian proceedings on modernization
  - Training Manual—Middle East Region
  - Egypt "Research Uptake" final report
  - Upgrading IPTRID main webpage
  - IPTRID Programme consultations
  - IPTRID Programme document development
  - Expert meeting
  - Workshop on T&R needs
25. Programme deliverables under GCP /INT/834/NET were to include:
- Work with partners to help in formulating national research and development (R&D) programmes and capacity building activities, with IPTRID and IWMI collaboration in smallholder irrigation in sub-Saharan Africa.
  - An electronic database on performance of irrigation systems and backed by web access, as a central data repository for benchmarking irrigation performance by IPTRID.
  - New tools and methodologies for use by researchers, practitioners and policymakers in the South, with the aim to reduce the digital divide in the water and other natural resources sectors. This would include tailoring IWMI's PODIUM to the conditions of individual countries
26. GCP /INT/855/FRA was to develop a Virtual Centre enabling access and dissemination of experience and knowledge of IPTRID's partners to field actors.
27. IPTRID established a very wide and diverse contact base for outreach, with a database that has 3,985 entries; distributed by language preference as follows: English (1,485), Arabic (1,000), French (800) and Spanish (700).
28. As of 2006, the contact list comprised:
- IPTRID Governance Bodies: CG, MC and Secretariat
  - Government Agencies
  - International Organizations
  - Institutes
  - Local Organizations
  - Ministries
  - IPTRID partners
  - Private Consultants
  - Universities

29. IPTRID's flagship magazine, GRID, was published twice per year. Issue 24, published in February 2006 (6 200 copies), was widely disseminated during the 4th World Water Forum held in Mexico City in March, 2006 and 4 400 copies of the following issue (GRID 25) were printed, including distribution during the 57th ICID Executive Council Meeting held in Kuala Lumpur, Malaysia.

### **1.6 Sustainability and Impact**

30. The potential impact of IPTRID should be high, given the existing volume of research findings and the strong case for improving performance and productivity in agricultural water management. However, actual impact is assessed as low.

31. As previously described, IPTRID has been in continuous upheaval over issues of governance, financing, staffing, hosting and direction. Given that these factors have persisted for 6-7 years, and despite numerous efforts to resolve them, the sustainability of any similar arrangement into the future must be rated as low.

### **1.7 Effectiveness of Capacity Building**

32. Capacity building is at the core of IPTRID's current mandate and the need has remained as highly relevant as it was at its inception. The Programme's effectiveness in building capacity has been hamstrung by poor relationships with its current host. On the positive side, through its range of side events on Capacity Development (CD) at four consecutive annual ICID Congresses, IPTRID helped to bring recent thinking and theory on CD into the agricultural water sector and document useful country case studies. However, its advice on CD to for instance Zambia was too vague and resource intensive to be of much practical use.

33. The inventory and database of CD opportunities on irrigation and drainage holds only two entries for Sub-Saharan Africa, failing to capture training opportunities at a number of major learning institutions in the region, and again reflecting a strong northern bias. However, recent work, for instance the evaluation of the Swiss concrete pump, reflects an appreciation of field realities in SSA.

34. Many of the conferences and workshops organised and supported by IPTRID were particularly useful for debate within and among countries of local and sub-regional priorities in I&D, but the Programme could not always follow through on workshop recommendations.

35. Nonetheless, some of the ideas generated were taken up by others at times. An example: at the 1995 Harare workshop on irrigation technology transfer, the use of small motorised pumps for irrigation was discussed and was followed up with further workshops in later years, e.g. on water lifting in West Africa, and have in recent years experienced rapid uptake. Unfortunately, the need to share technical information, especially standard plans and design tools among neighbouring countries to help quicken the pace of irrigation development (e.g. for building of earth dams), still has not been acted upon.

36. The PRDA manual developed through the APPIA project for assessment of pumped irrigation schemes is particularly relevant for SSA as a capacity development tool, and an effort similar to that employed for the introduction of MASSCOTE in Asia is needed. This would benefit from direct collaboration in a few PRDA processes in SSA by the FAO staff that have been responsible for the MASSCOTE processes in Asia.

### **1.8 Effectiveness of Partnerships**

37. The entire rationale for IPTRID is founded on partnerships: *"The collaborative program will be driven by the actual demand in the field in which IWMI will respond to specific research and information needs conveyed to IPTRID by its member-partners. Greater emphasis will be placed on the needs of the NGOs and local community organizations engaged in small-scale irrigation and water management systems"*.

38. As of 2003-2005 and 2006, IPTRID counted among its members a number of centres of excellence including:

- Food and Agriculture Organization of the United Nations, FAO, both as a donor and partner;

- International Commission on Irrigation and Drainage, ICID;
- International Water Management Institute, IWMI;
- Hydraulics Research, Wallingford (United Kingdom);
- Alterra- ILRI (The Netherlands);
- Cemagref (France);
- Istituto Agronomico Mediterraneo-Bari (Italy);
- DGDR-MAPA (Spain);
- NWRC (Egypt);
- ICWC Interstate Coordination Water Commission (Aral Sea Basin);
- EIER-ETSHER (West Africa);
- Brace Center for Water Management (Canada);
- Global Water Partnership (GWP).

39. Under the strong partnership with IWMI forged under GCP /INT/834/ NET, IWMI was to continue to publish research findings in the externally reviewed IWMI Research Report series as well as joint IPTRID-IWMI publications, and standard peer reviewed scientific journals.

40. Although a number of strong partnerships were forged, it was not always easy to detect the added value of IPTRID in partnership. In some cases, IPTRID was operating ostensibly on 'in-out' money: *"IPTRID is seeking USD900,000 for the period 2001-2003, from the Government of the Netherlands (GoN). It is proposed that the funds be directly transferred to IWMI on yearly basis according to the following procedure: GoN to release the first annual tranche on the basis of this document. IWMI will submit an annual progress report to IPTRID, which it will certify and pass on to GoN for releasing the next annual tranche."*

41. Partnerships with developing country institutions, primarily in Africa, are not prominent among the declared partners. These remained northern-based despite expressed intentions on capacity-building.

## ***1.9 Gender Equality and Social Inclusion***

42. Despite the importance of women farmers, and their role in farming households, mainstreaming of gender by IPTRID appears minimal.

43. Outwardly, IPTRID appears to have adopted minimal farmer targeting, differentiation of products to different types of farmers or efforts to widen its partnerships to improve social inclusion.



**Evaluation of FAO's role and work related to water- Final Report - Annex 11 - Inventory of normative outputs, Publications**

<b>Ref.</b>	<b>Title</b>	<b>Department</b>	<b>Year</b>	<b>Partner organisations</b>
1	Dams, fish and fisheries: Opportunities, challenges and conflict resolution, <i>FAO Fisheries Technical Paper No. 419</i> , Gerd Marmulla	FI	<a href="#">2001</a>	
2	Fisheries in irrigation systems of arid Asia, <i>FAO Fisheries Technical Paper No. 430</i> , Torni Petr	FI	<a href="#">2003</a>	
3	Legislation on water users' organizations: A comparative analysis, <i>FAO Legislative Study #79</i> , Stephen Hodgson	LEGN	<a href="#">2003</a>	
4	Capacity development in irrigation and drainage: Issues, challenges and the way ahead, <i>FAO Water Reports 26</i> , <i>Proceedings of the International Workshop held on 16 September 2003 during the International Commission on Irrigation and Drainage Fifty- fourth International Executive Council Meeting (Montpellier, France)</i>	NR	<a href="#">2004</a>	ICID-CIID
5	Collecte des eaux pluviales, conservation des terres arides en Tunisie: Succès d'un partenariat , GCP/TUN/028/ITA	RAP	<a href="#">2004</a>	
6	Drought impact mitigation and prevention in the Limpopo River Basin: A situation analysis, <i>Land and Water Discussion Paper 4</i>	FAO SRO Southern & East Africa	<a href="#">2004</a>	
7	Economic valuation of water resources in agriculture: From the sectoral to a functional perspective of natural resource management, <i>FAO Water Reports 27</i> , K.Turner et.al., J.Burke	NR	<a href="#">2004</a>	
8	Land and Water - the rights interface, <i>FAO Legislative Study 84</i> , S. Hodgson	LEG	<a href="#">2004</a>	
9	L'eau, l'agriculture et l'alimentation, Une contribution au <i>Rapport mondial sur la mise en valeur des ressources en eau</i>		<a href="#">2004</a>	
10	Nile Basin Water Resources Management/Bassin du Nil gestion des ressources en eau	NR	<a href="#">2004</a>	Government of Italy Cooperation Programme
11	Payment Schemes for Environmental Services in Watersheds	NRLW	<a href="#">2004</a>	
12	Water charging in irrigated agriculture: An analysis of international experience, <i>FAO Water Reports 28</i> , G.Cornish, B.Bosworth, C.Perry, J.Burke	NR	<a href="#">2004</a>	HR Wallingford
13	Forests and Floods: Drowning in fiction or thriving on facts?, <i>RAP Publications 2005/03 Forest Perspectives 2</i>	RAP	<a href="#">2005</a>	
14	From Vision to Action: A Synthesis of Experiences in Least-Developed Countries in Southeast Asia, <i>RAP Publication 2004/32</i> , L.H.Ti, T.Facon	RAP	<a href="#">2004</a>	
15	Groundwater in international law: Compilations of treaties and other legal instruments, <i>FAO Legislative Study 86</i> , S. Burchi, K. Mechlem	LEG	<a href="#">2005</a>	
16	Irrigation in Africa in figures: AQUASTAT Survey 2005, <i>FAO Water Reports 29</i> , K. Frenken	NR	<a href="#">2005</a>	
17	Livestock Environment and Development in Watersheds: Policy Note, R.R.Pushkar et.al.	AG	<a href="#">2005</a>	
18	Development and validation of the global map of irrigation areas, Siebert, S. et al., 2005, <i>Hydrology and Earth System Sciences</i> , 9, pp.535-547.		<a href="#">2005</a>	
19	Soil and Water Conservation to Conservation Agriculture Practices: experiences and lessons from the efforts Eotulelo Farmer Field School , M.Bwalya	NR	<a href="#">2005</a>	
20	The interface between customary and statutory water rights - A statutory perspective, <i>FAO Legal Paper Online #45</i> , Stefano Burchi	LEGN	<a href="#">2005</a>	

**Evaluation of FAO's role and work related to water- Final Report - Annex 11 - Inventory of normative outputs, Publications**

<b>Ref.</b>	<b>Title</b>	<b>Department</b>	<b>Year</b>	<b>Partner organisations</b>
21	Access to water, pastoral resource management and pastoralists' livelihoods: Lessons learned from water development in selected areas of Eastern Africa (Kenya, Ethiopia, Somalia), <i>LSP Working Paper 26</i> , N.Gomes	Livelihood Support Programme	<a href="#">2006</a>	
22	Arsenic contamination of irrigation water, soil and crops in Bangladesh: Risk implications for sustainable agriculture and food safety in Asia, <i>RAP Publication 2006/20</i> , A. Heikens	RAP & NRLW	<a href="#">2006</a>	
23	Demand for products of irrigated agriculture for sub-Saharan Africa, <i>FAO Water Reports 31</i> , P.J. Riddell, M.Westlake, J. Burke	NR	<a href="#">2006</a>	
24	Floods in Bangladesh: History, Dynamics and Rethinking the Role of the Himalayas, T.Hofer, B. Messerli, United Nations University Press	FAO	2006	United Nations University Press,
25	Irrigation in Africa, Europe and Latin America: Update of the Digital Global Map of Irrigation Areas to Version 4, <i>Frankfurt Hydrology Paper 5</i> , S.Siebert, J.Hoogeveen, K.Frenken	NRLW	<a href="#">2006</a>	Universitaet Frankfurt am Main
26	Land and water rights in the Sahel: Tenure challenges of improving access to water for agriculture, <i>LSP Working Paper 25</i> , L. Cotula et.al.	Livelihood Support Programme	<a href="#">2006</a>	IIED
27	Livestock's Long Shadow: Environmental Issues and Options	AG	<a href="#">2006</a>	LEAD
28	Malta Water Resources Review	NR	<a href="#">2006</a>	
29	Modern water rights: Theory and practice, <i>FAO Legislative Study 92</i> , S. Hodgson	LEG	<a href="#">2006</a>	
30	Stakeholder-oriented valuation to support water resources management processes: Confronting concepts with local practice, <i>FAO Water Reports 30</i> , L.Hermans, D.Renault, L.Emerton et.al.	NR	<a href="#">2006</a>	Imperial College, IUCN, IWMI
31	Water desalination for agricultural application, <i>Land and Water Discussion Paper 5</i> , J. Martínez Beltrán, S. Koo-Oshima	NRLW	<a href="#">2006</a>	
32	AquaCrop: a new model for crop prediction under water deficit conditions, P.Steduto et.al	NRLW	<a href="#">2007</a>	K.U. Leuven University, IAS-CSIS, Department of Land, Air and Water Resources, University of California, Joint FAO/IAEA Programme of Nuclear Techniques in Food and Agriculture
33	Balancing development and environmental conservation and protection of the water resource base - The "greening" of water laws, <i>FAO Legal Paper Online #66</i> , Stefano Burchi	LEGN	<a href="#">2007</a>	
34	Dams and Agriculture in Africa, FAO Aquastat Dams Africa 070524	AQUASTAT, NRLW, NRL	<a href="#">2007</a>	
35	Forests and Water, <i>Unasylva</i> No. 229, Vol. 58 2007/4	FO	<a href="#">2007</a>	
36	Irrigation management transfer: Worldwide efforts and results, <i>FAO Water Reports 32</i> , C. Garces-Restrepo, G.Munoz, D. Vermillion	NR	<a href="#">2007</a>	IWMI
37	Modernizing irrigation management - the MASSCOTE approach, <i>FAO Irrigation and Drainage Paper 63</i> , D. Renault, T. Facon, R. Wahaj	NRLW	<a href="#">2007</a>	



**Evaluation of FAO's role and work related to water- Final Report - Annex 11 - Inventory of normative outputs, Publications**

<b>Ref.</b>	<b>Title</b>	<b>Department</b>	<b>Year</b>	<b>Partner organisations</b>
250	Policies for Water Management and Food Security under Water-scarcity Conditions: The Case of GCC Countries.	RNE	2005	
252	Financing Agriculture Water in the Near East Region: Opportunities for Reversing the Declining Trends.	RNE	2005	
254	Wastewater Reuse in the Near East Region: Updated Data and Practices Report. FAO/RNE, Cairo, Egypt, 2007. English	RNE	2007	
255	Irrigation of Date Palm and Associated Crops – A Synthesis Report of National Studies	RNE	2007	
256	The Paradox of Water-scarcity and Ill-reuse of Water in the Near East Region.	RNE	2007	
258	Salinity Status in the Near East Region. Cairo, FAO/RNE, January 2007. English	RNE	2007	
259	A Review of Drought Occurrence and Monitoring and Planning Activities in the Near East Region. Cairo, FAO/RNE and National Drought Mitigation Center, University of Nebraska-Lincoln, Nebraska, USA, May 2008 English, French and Arabic	RNE	2008	

# Evaluation of FAO's role and work related to water

## Annex 12

### Analysis of the questionnaire survey to FAO Member Countries

### Final Report

#### 1 Background information

1. The questionnaire for Member Countries<sup>1</sup> was addressed to senior officers in national institutions of FAO Member Countries, responsible for dealing with water and agriculture and watershed management and who could respond on behalf of their organizations. Its main purpose was to collect evidence on FAO's relevance and usefulness to its membership in the water sector, from a larger number of countries and organizations than could be reached through visits by the Evaluation Team.

2. The questionnaire was sent to 136 Member Countries, wherein FAO has a presence of some kind, either through a fully-fledged Representation, double accreditation, Out-posted Technical Officers or National Correspondents. All regions<sup>2</sup> were approached and the questionnaire was circulated in the language of correspondence with FAO (English, French or Spanish). The questionnaire could be filled in on-line, in electronic format (word file) or as a print-out.

3. In most cases, the questionnaire was sent through the responsible FAO office who was asked to forward it to the concerned national organization/s. Through an earlier request to the same offices, FAO Office of Evaluation (PBEE) had contacts for a number of national institutions in 25 countries, most of which were contacted directly by PBEE. There was no difference in the rate of responses between the direct mailing by PBEE and the forwarding through the responsible FAO offices.

4. In total, 94 institutions replied from 51 different countries. This represents 37% of contacted Member Countries, which is within the usual rate of response that FAO's Office of Evaluation has obtained over the years in similar exercises. It was not possible to know how many institutions actually received the questionnaire from FAO's offices as these were not asked to provide detail on this. Therefore, it is not possible to know what 94 institutions actually represent in percentage terms.

5. It is important to note that the scope of the evaluation included ministries of agriculture, of water resources and of forests and watershed management, as well as universities and water resource boards: this means that the potential universe of respondents remains unknown. However, the questionnaire had no intention of providing statistically valid results and no direct extrapolation of information to the whole membership was done.

#### 2 Results

6. The first step in the analysis was to divide respondents in three groups: Agriculture (AgIs), Water (WatIs) and Environment (EnvIs) institutions. The hypothesis was that each group would have different interests and knowledge of FAO's role and work related to water. However, in some regions the number of countries and/or respondents was too small to allow grouping. Thus, only in some cases

---

<sup>1</sup> The word version of the questionnaire for Member Countries can be found attached in the Appendix.

<sup>2</sup> FAO regions are: Africa; Asia and the Pacific; Europe and Central Asia; Latin America and the Caribbean; Near East and North Africa.

the difference across groups in the same region was explored in detail. Global groups (e.g. AgIs in all regions) have also been analysed and results discussed as appropriate.

7. Globally, WatIs provided most replies (52%), followed by AgIs (26%) and EnvIs (22%), but they may have been the most frequently mailed group. On a regional basis, the lowest rate of replies was from Asia/Pacific (28%) and the two highest from Africa and the Near East/North Africa (42% and 43%).

8. Virtually all respondents had heard about FAO (96%); a large majority (77%) had used FAO's products and services since 2004, with more than half having done so for a longer period of time.

9. In spite of the awareness of FAO, respondents' knowledge of FAO's work in the water sector was low (See Figures 1-5). The sum of negative and Do Not Know/Blank replies across all regions ranged from 41% in the Near East/North Africa to 68% in Latin America/Caribbean. The areas for which FAO was best known were Water and Food Security in Africa and Asia, Rehabilitation and modernization of irrigation schemes and Policies and Strategies in the Near East/North Africa, Water and Food Safety in Europe/Central Asia and On-farm water use, productivity and efficiency in Latin America/Caribbean.

10. The least known areas were Drainage and Desalinization in Africa, Agriculture and Wetlands Interactions in Asia, Fresh Water Management for Aquaculture in the Near East/North Africa and in Latin America/Caribbean, Economic returns, water pricing, cost recovery in Europe/Central Asia. Across groups, AgIs tended to have a better knowledge of FAO's water work, with an exception in Latin America/Caribbean where they were the least knowledgeable.

11. Knowledge of FAO's products and services (see Figures 6-10) followed the same pattern, with Publications and Website being the best known products (only exception was Europe/Central Asia), and Capacity development ranking second among the 'most useful products'. Advocacy was the least known product in most regions. Other low scores were for Policy dialogue in Africa, and Development Projects in Latin America/Caribbean.

12. The majority of organizations across the three groups and all regions had asked FAO for assistance and see it as one partner along with others. JICA, IFAD, the EU, UNDP and the International Financial Institutions (IFIs) were the most frequently quoted other partners. This was confirmed through the country visits. No country mentioned any downturn of requests for assistance. Institutions that had never requested assistance from FAO explained this was due to:

- lack of awareness about what FAO could offer them;
- easy access to other partners;
- difficult access to FAO from the institutional point of view.

13. Frequency of use of FAO's products (see Figures 11-15) was either low or unknown by the majority of respondents across regions and groups.

14. Replies to the assessment of the quality of FAO's work in water (see Figures 16-20) were in most cases Blank or Do not Know. The two together scored from 52% to 72% in four regions. Only in the Near East/North Africa the majority of replies was a positive assessment (54%), with Land and Water Interactions being considered the best. No clear pattern emerged in terms of 'best work'. Possible explanations are that the assessment of quality requires a more complex discussion of the term, or that respondents did not want to express their real thoughts on the quality of FAO's work. The percentage of negative replies was between 5 and 17% across the regions.

15. Replies to the assessment of FAO's comparative advantage (see Figures 21-25) followed a very similar trend to the quality question, again with the Near East/North Africa region being the only one in which positive replies were the majority (57%). Water and Food Security scored among the highest in all regions except Latin America/Caribbean which identified On farm water use and efficiency and Water Information Systems as FAO's work with the highest comparative advantage.

16. Respondents' opinion about FAO's relevance and effectiveness (see Figures 26-30) was positive in more than half of the replies (51-71%) in Africa, Asia/Pacific and Near East/North Africa. In Europe/Central Asia the Blank/Do not Know replies were the majority and in Latin America/Caribbean, positive replies were 44% and Blanks 41%. There was an overall consensus that

FAO's work was relevant to most organizations, but needs for policy and technical assistance were not fully met.

17. Most institutions consider that FAO should focus on more areas of work: 67% of WatIs and 79% of AgIs support this view. Around 20% of WatIs consider that the current range should be maintained, and a similar percentage of EnvIs consider that FAO should reduce its focus. However, in this case, priorities appear very thinly dispersed across many sub-sectors.

18. It appears that 'focus on more areas of work' meant mostly more of the same, across almost all sectors and a number of products listed. The most frequently listed topic was Water management linked to water availability and scarcity, followed by same scoring for Rehabilitation and modernization of irrigation schemes, Watershed Management and Water information Systems.

19. All respondents want more support from FAO in the future by a comfortable majority (58-84%), with the exception of Asia/Pacific (48%). Water management linked to water availability and scarcity was ranked first in Africa, Asia/Pacific and the Near East/North Africa; Europe/Central Asia gave priority to Water and Food Safety, and Latin America/Caribbean opted for Sustainability of agricultural water use and competing uses (See Figures 31-35). Preferred products and services (See Figures 36-40) were Publications in Africa, Capacity development in Asia/Pacific and Near East/North Africa, and several options in Europe/Central Asia and Latin America/Caribbean.

20. Assistance seems to be required in all forms: highly specialized experts as well as generalists in the water sector, of both national and regional/international origin. There is a clear preference for "recurrent visits over an extended period of time (years)", followed by "a stay in the institution for several months", with the least interest lying in "one intensive visit".

21. Capacity development is highly requested in all regions. Among different possible forms, Training courses on technical issues are the preferred option, followed at a distance by Training courses, on-the job training on policy development and meetings.

22. The publications listed as a final question were largely unknown: only 14-16% of respondents answered affirmatively, and 27% in the Near East/North Africa.

### **3 Conclusions**

23. FAO is known and its work in water is relevant to its clients as well as appreciated. However, this more so in principle than in practice, as it seems to be not well known at all. Data confirms that organizations may know what FAO does in their countries in their area, but not at regional, let alone global level. Indirectly, this seems to indicate that FAO-Water has not developed networks and links among national stakeholders at regional/sub-regional level.

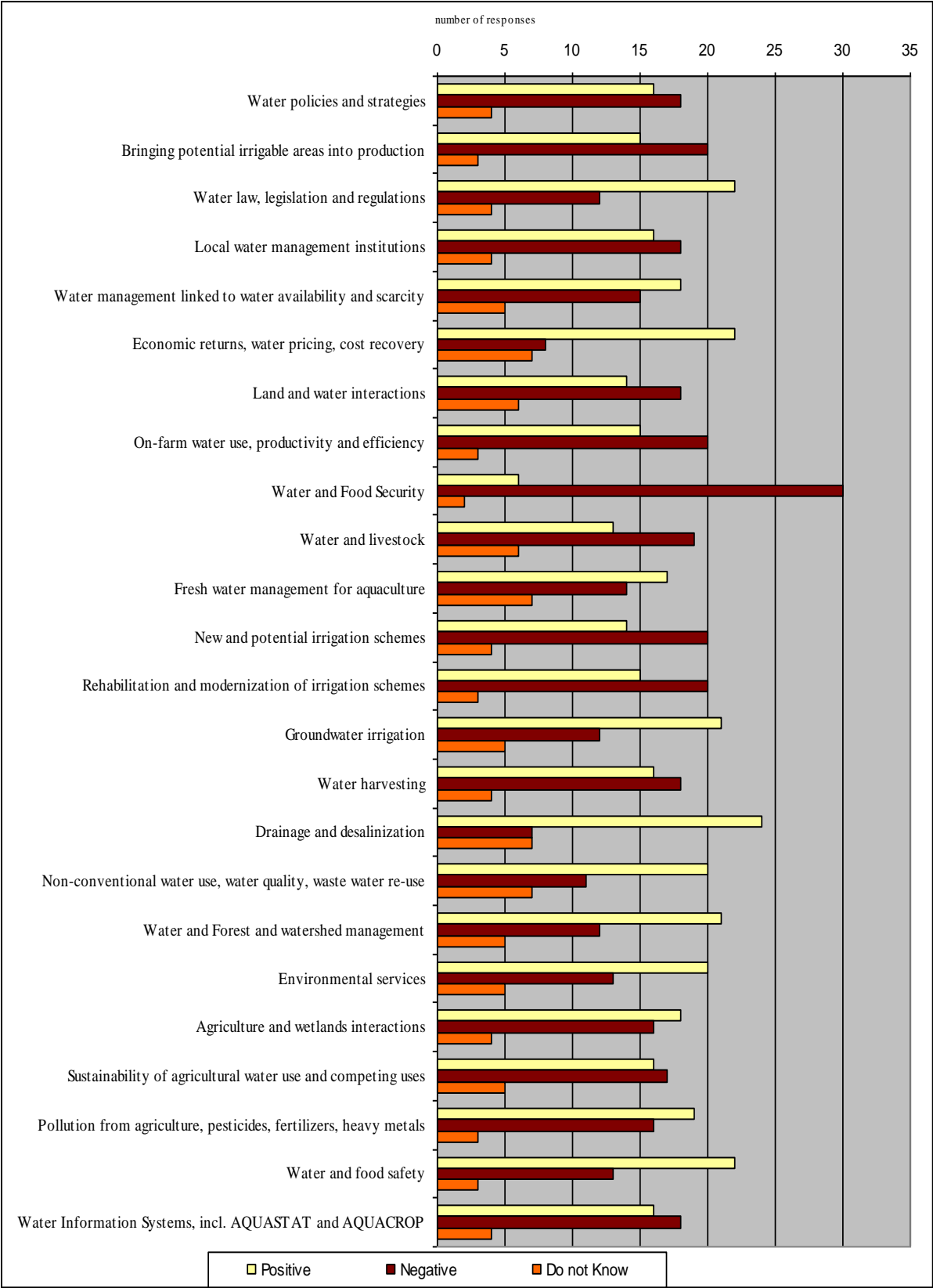
24. Data also confirms in-country observations. FAO is known for publications, but individuals and organizations do not know what FAO-Water produces, with very few exceptions. Access was confirmed to be difficult. This strengthens the in-country observations about the need for a pro-active diffusion of information on documents, if not of documents themselves.

25. FAO-Water is one of many players. The quality of its work does not stand out for any particular thematic area or product/service, exceptions made for Publications, Website and Capacity Development. This may also be a confirmation to some extent of a few NII replies about overlapping of FAO's work with theirs.

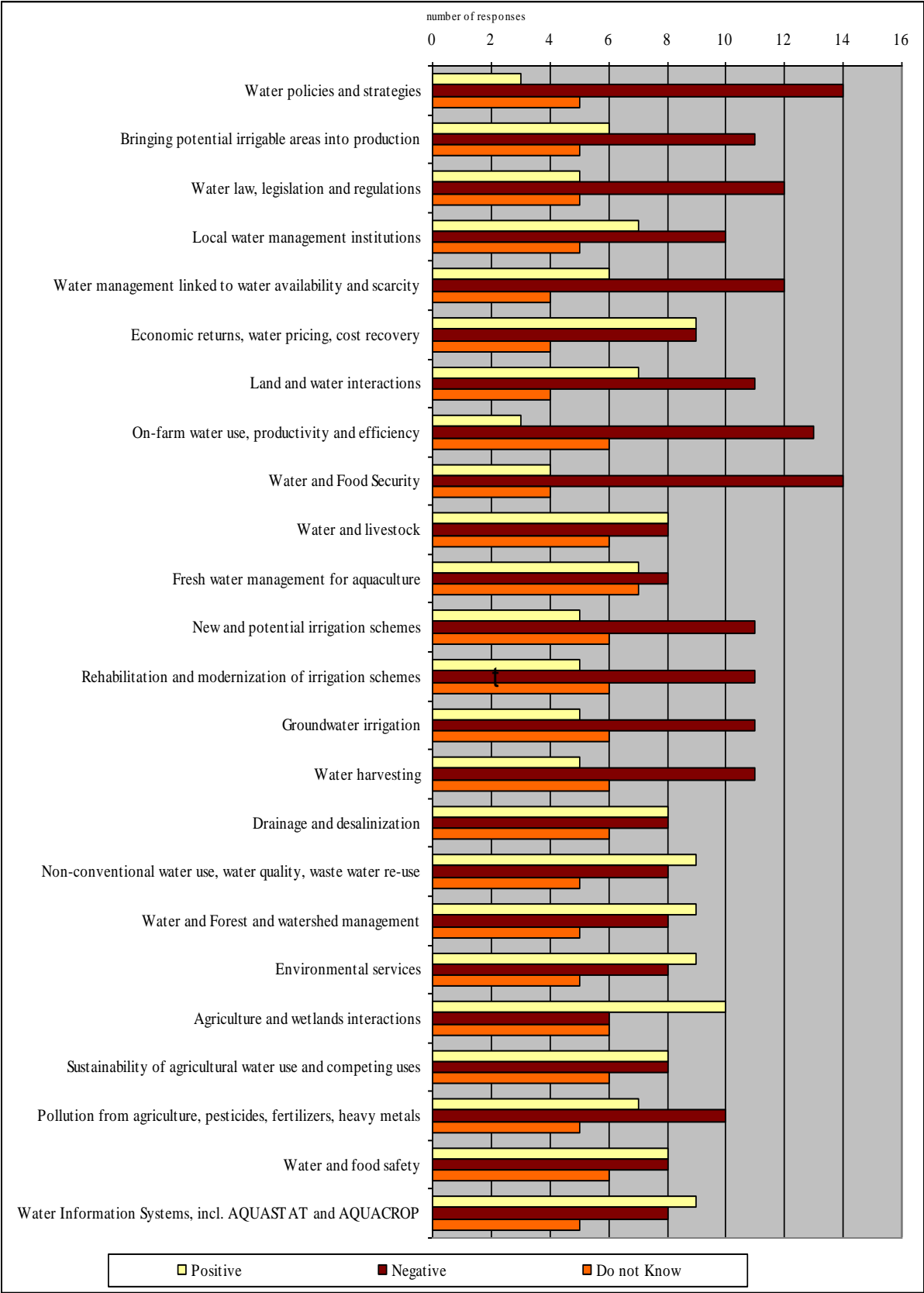
26. The great priority overall is 'More efficient water resource management' and Capacity Development; how to implement these becomes a regional if not a sub-regional issue. Priorities for focus should be established most probably at the level of sub-region, and this should also guide the matching of profiles and competences in terms of staff. The questionnaire results can provide guidance to some extent, but a more in-depth assessment should be conducted through sub-regional workshops with concerned organizations or by an analysis of NMTPF, water and irrigation policies and country assessments.

27. Clear indications were given for modalities of assistance and capacity development: these have to match the institutional absorption capacity (repeated and over a long period of time), on technical issues, both general and specialized, with inputs from both national and international level.

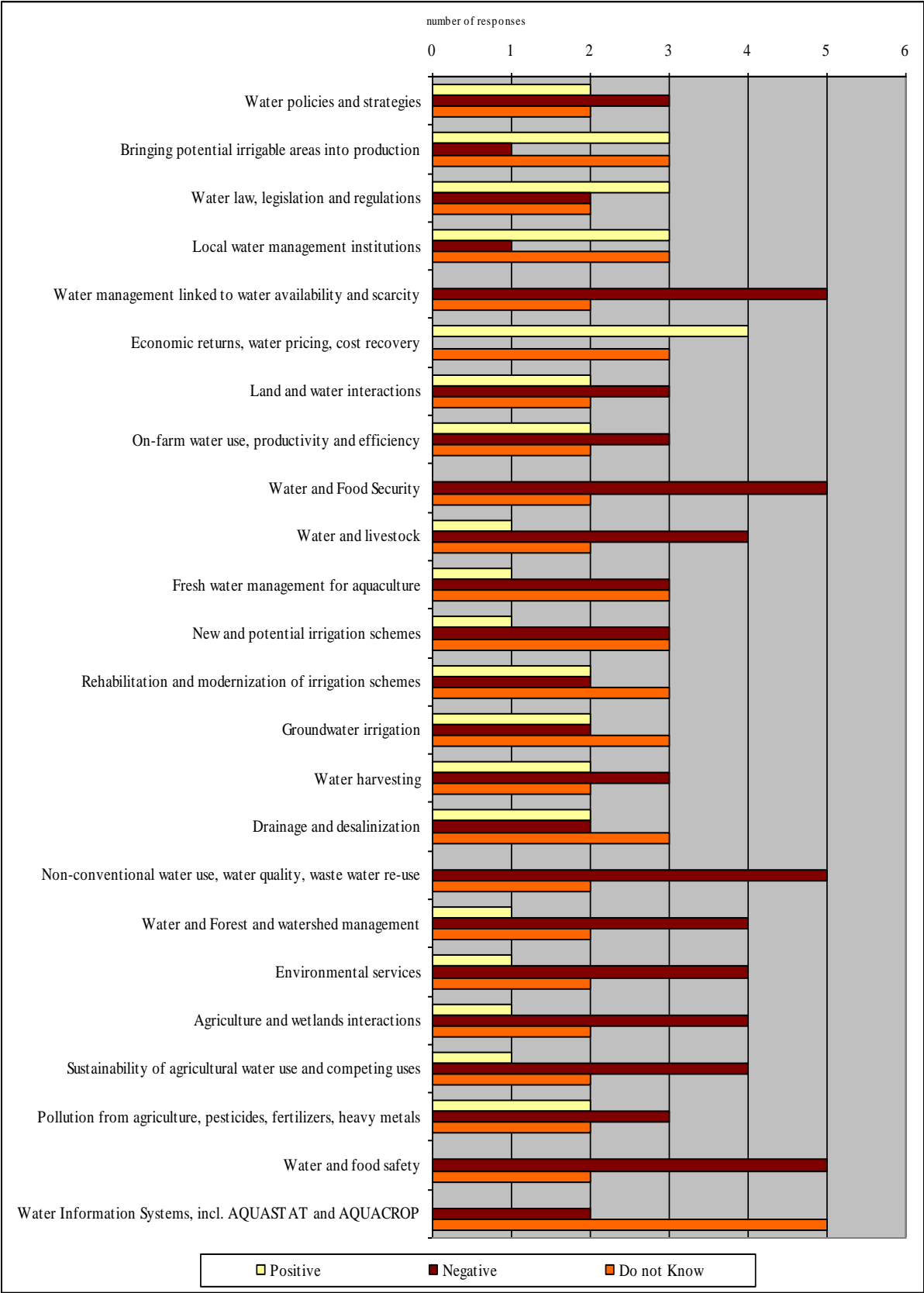
**Figure 1: Knowledge of FAO's work in the Water Sector – Africa**



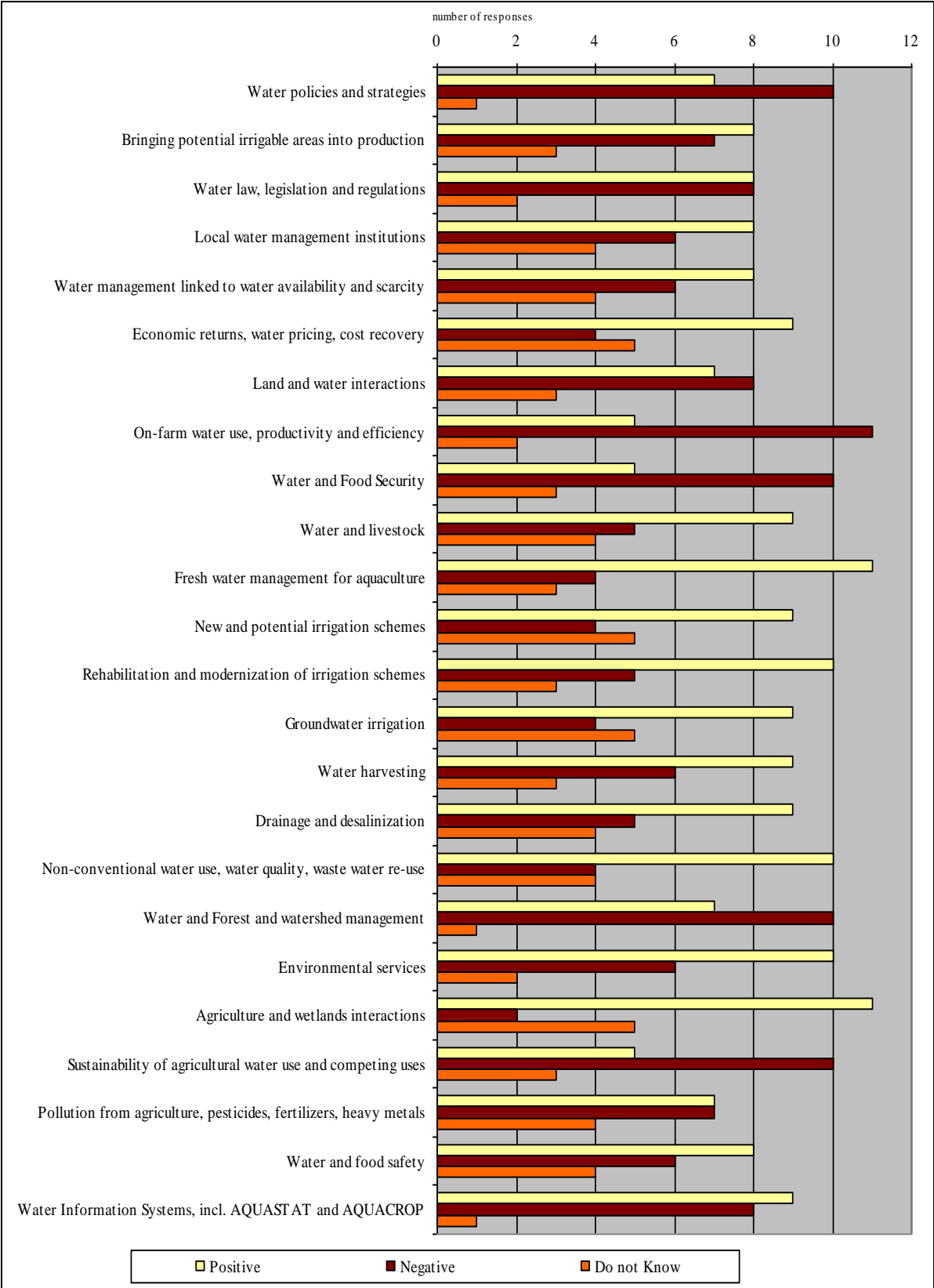
**Figure 2: Knowledge of FAO's work in the Water Sector - Asia & Pacific**



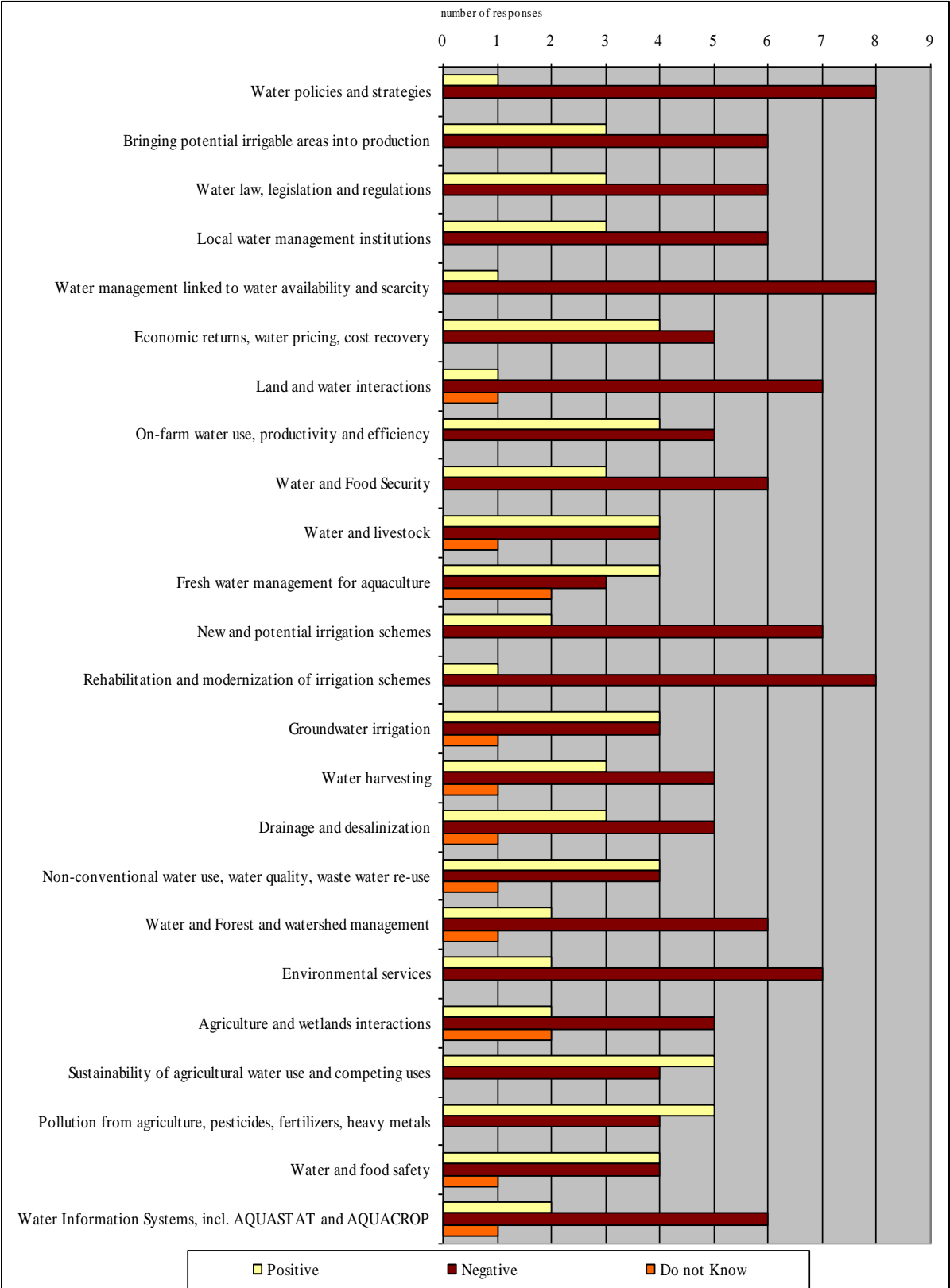
**Figure 3: Knowledge of FAO's work in the Water Sector - Europe & Central Asia**



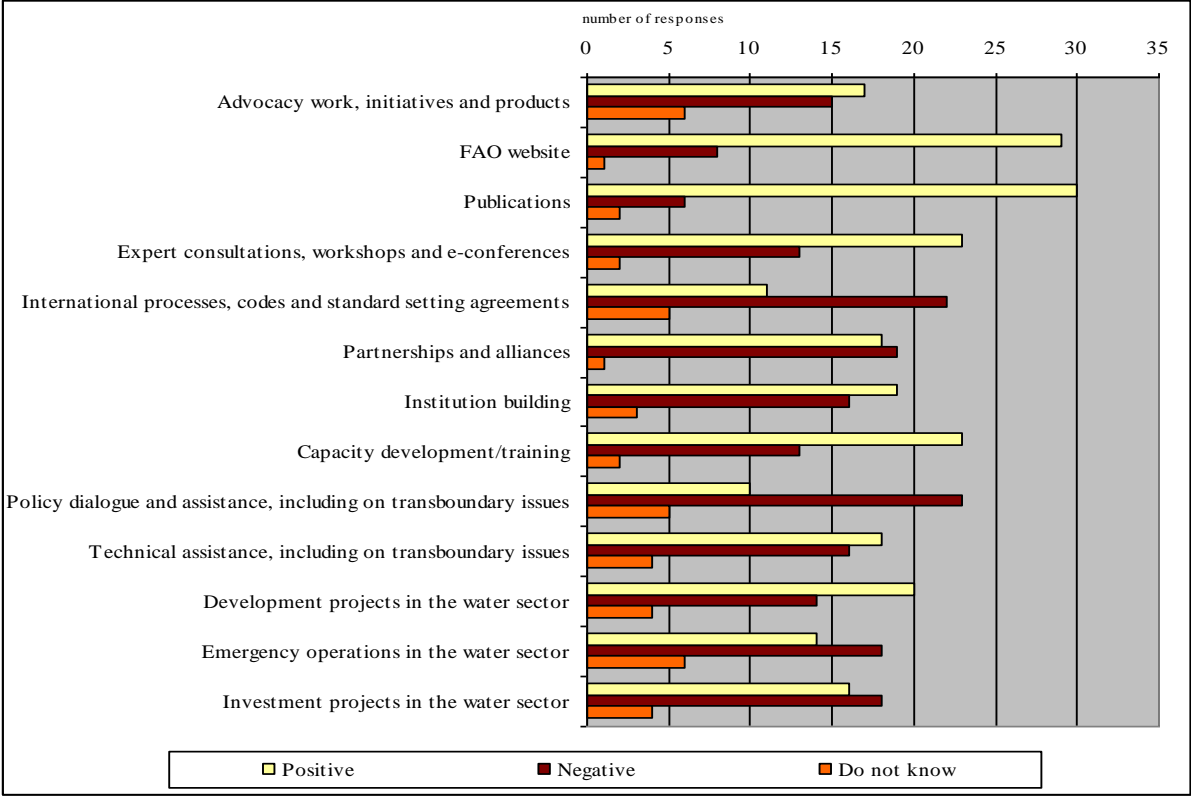
**Figure 4: Knowledge of FAO's work in the Water Sector - Latin America & Caribbean**



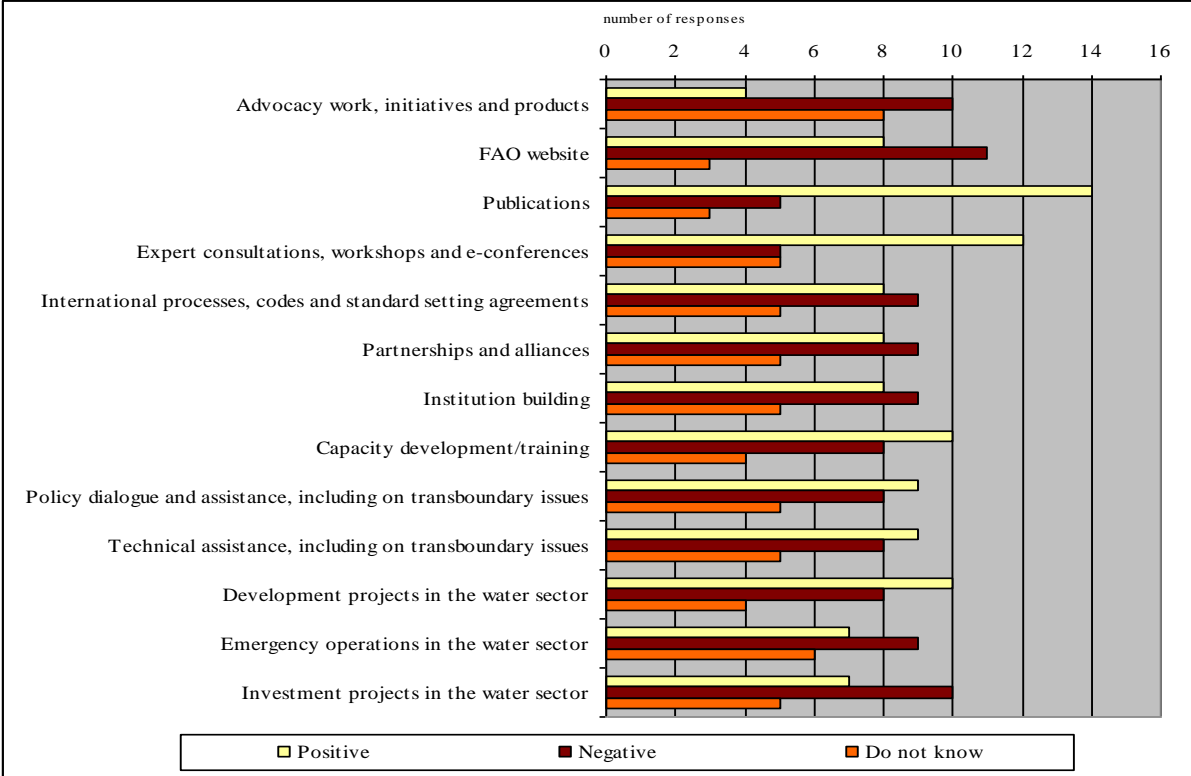
**Figure 5: Knowledge of FAO's work in the Water Sector - Near East & North Africa**



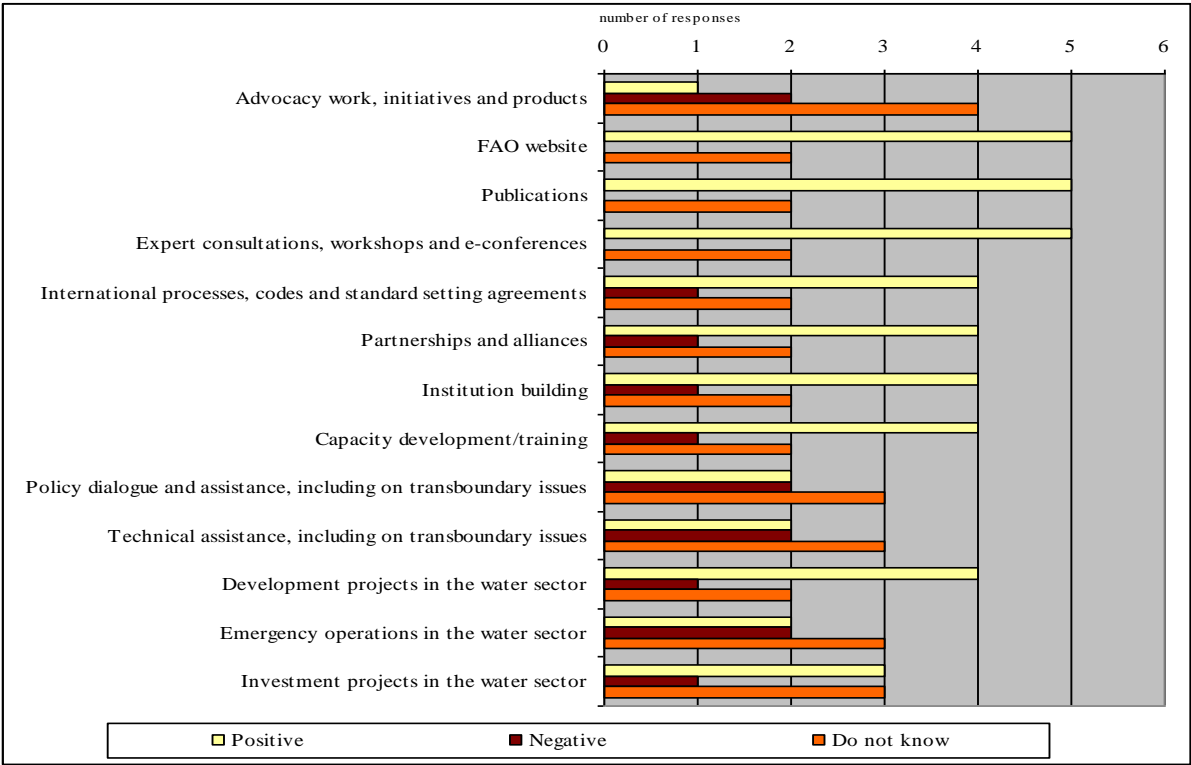
**Figure 6: Knowledge of FAO's Products and Services in the Water Sector - Africa**



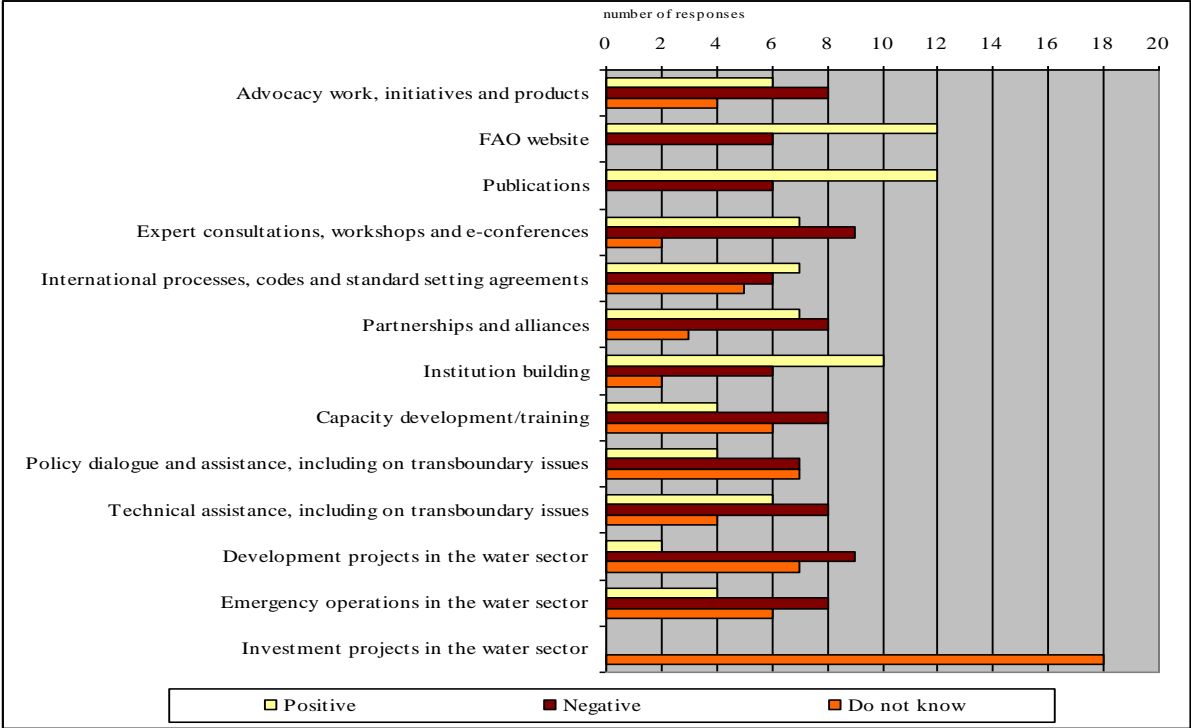
**Figure 7: Knowledge of FAO's Products and Services in the Water Sector- Asia & Pacific**



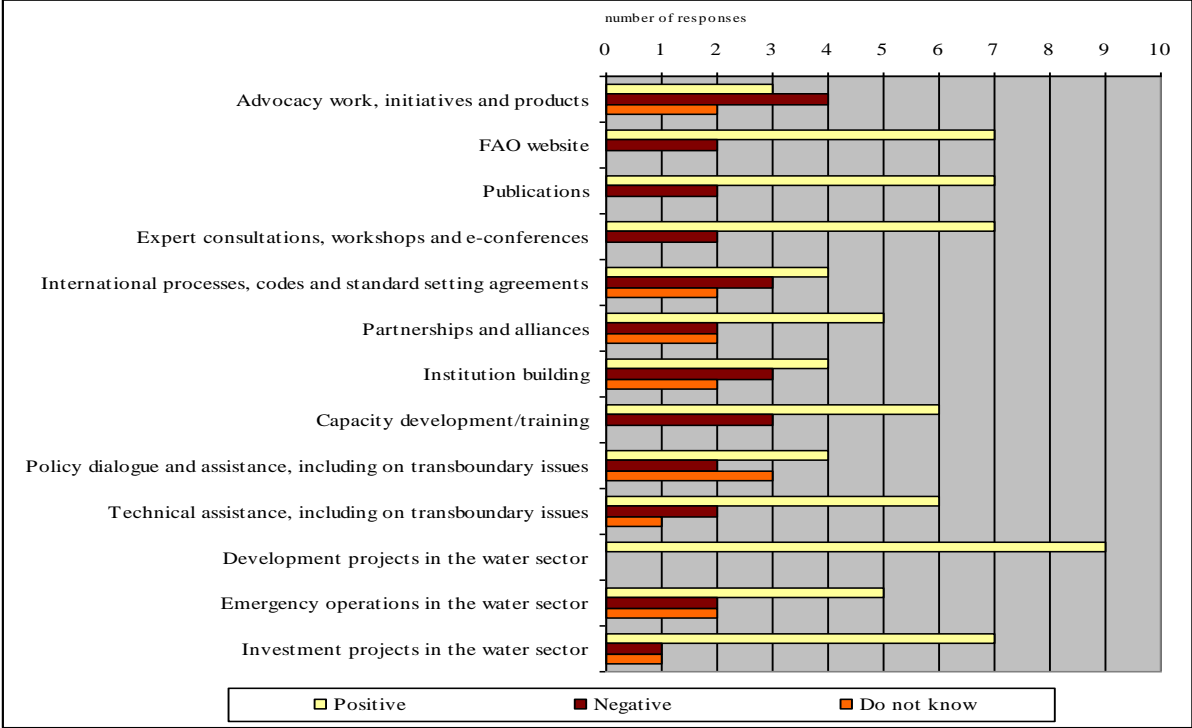
**Figure 8: Knowledge of FAO's Products and Services in the Water Sector - Europe & Central Asia**



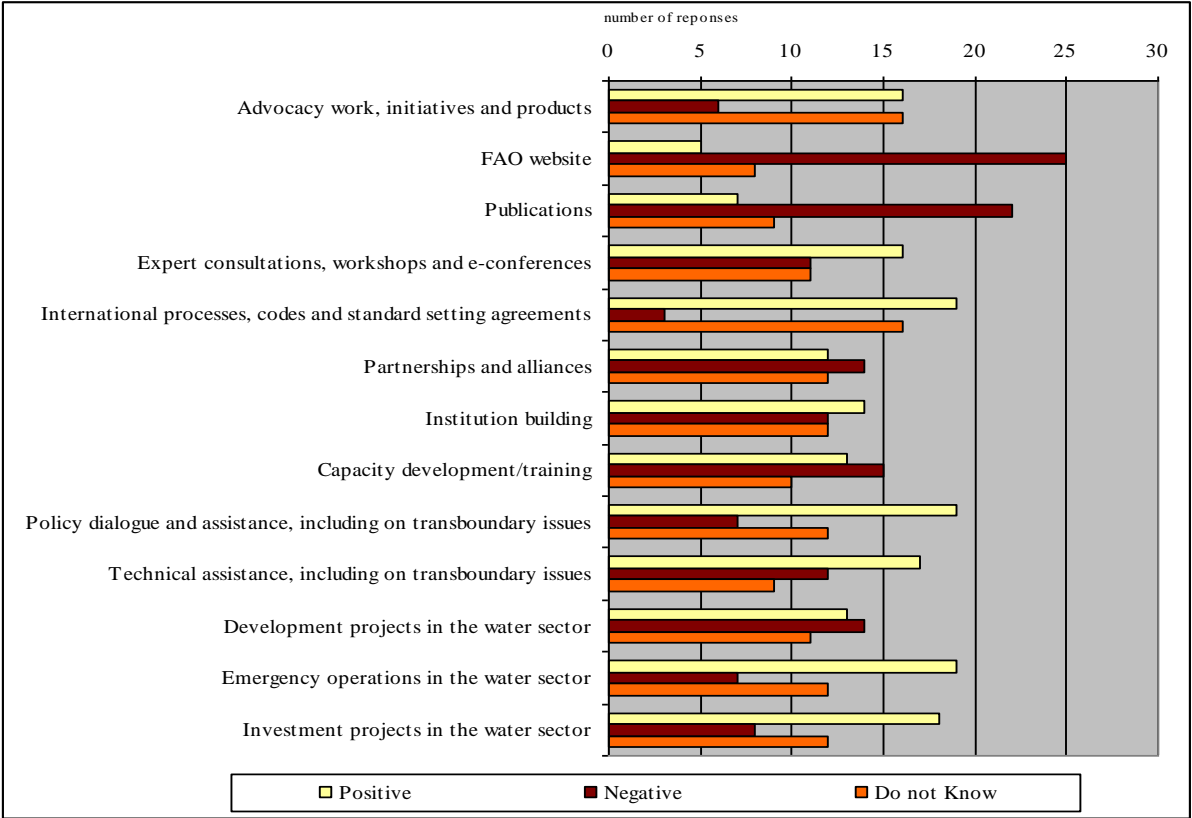
**Figure 9: Knowledge of FAO's Products and Services in the Water Sector - Latin America & Caribbean**



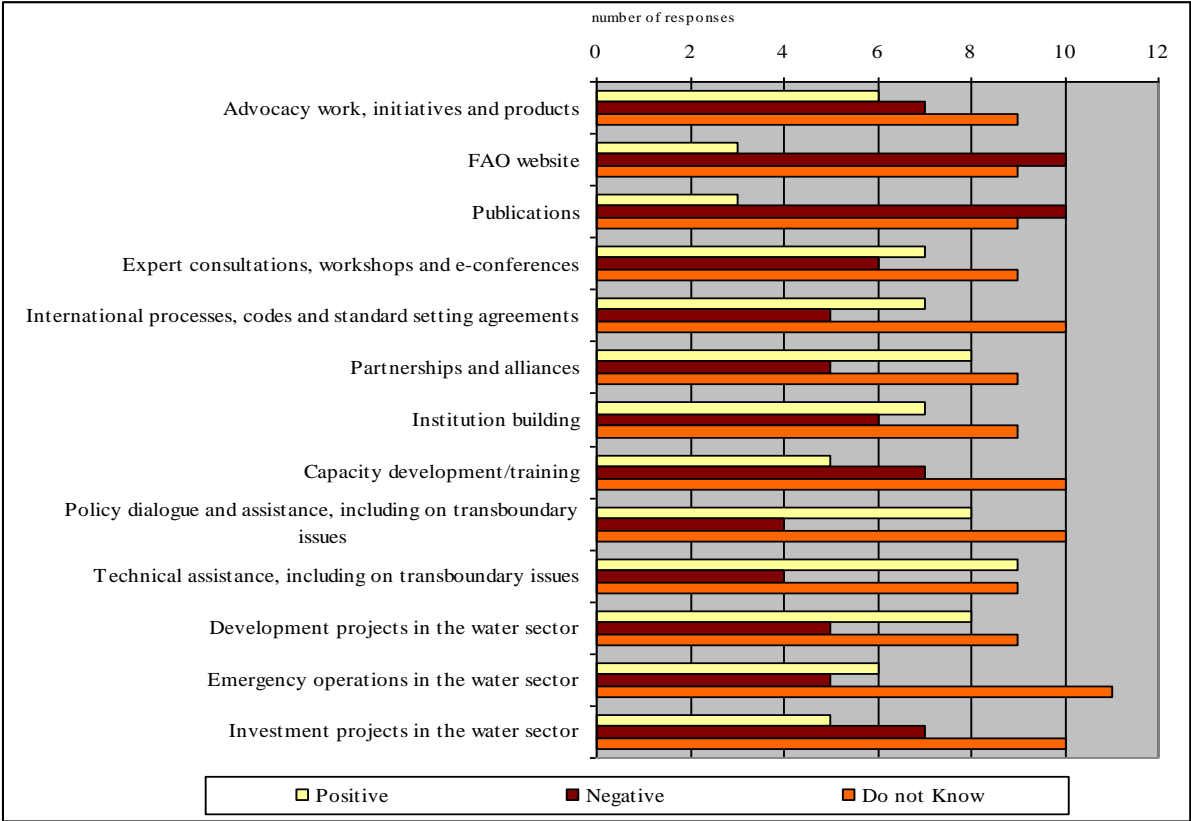
**Figure 10: Knowledge of FAO's Products and Services in the Water Sector - Near East & North Africa**



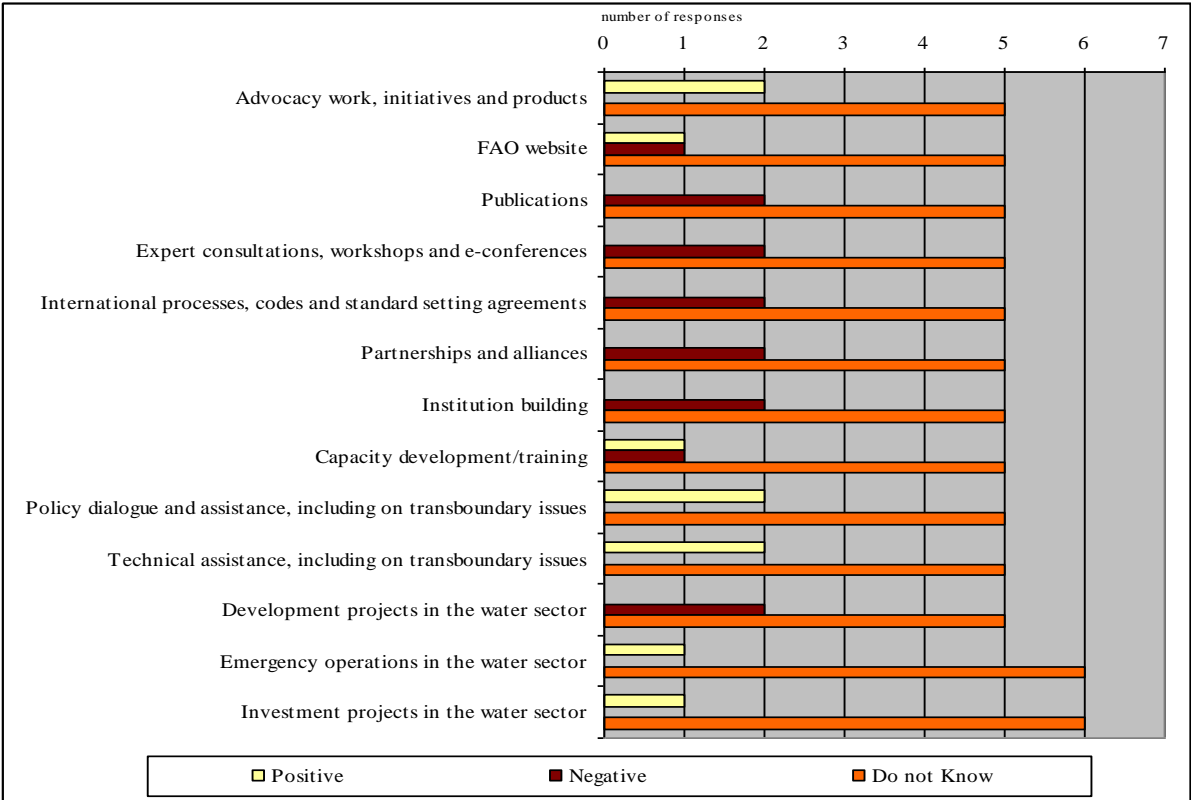
**Figure 11: Frequency of use of FAO's Products and Services - Africa**



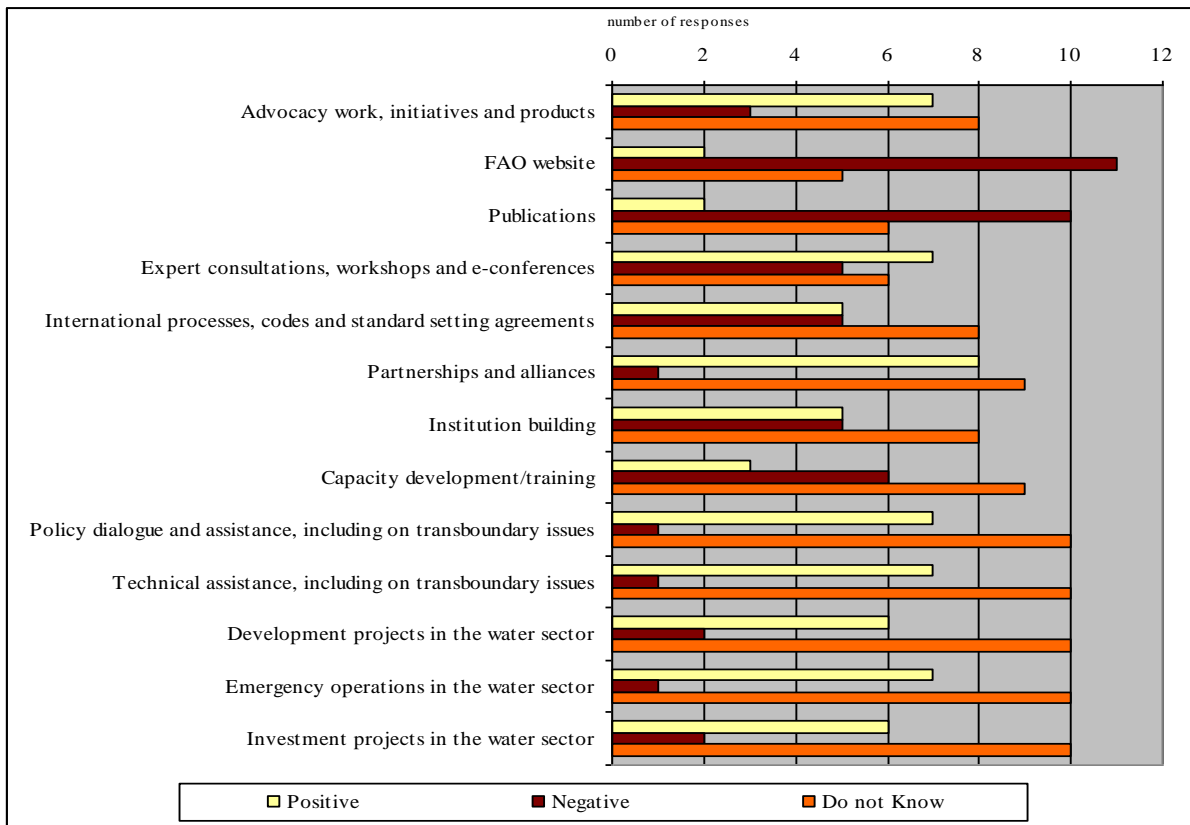
**Figure 12: Frequency of use of FAO's Products and Services - Asia & Pacific**



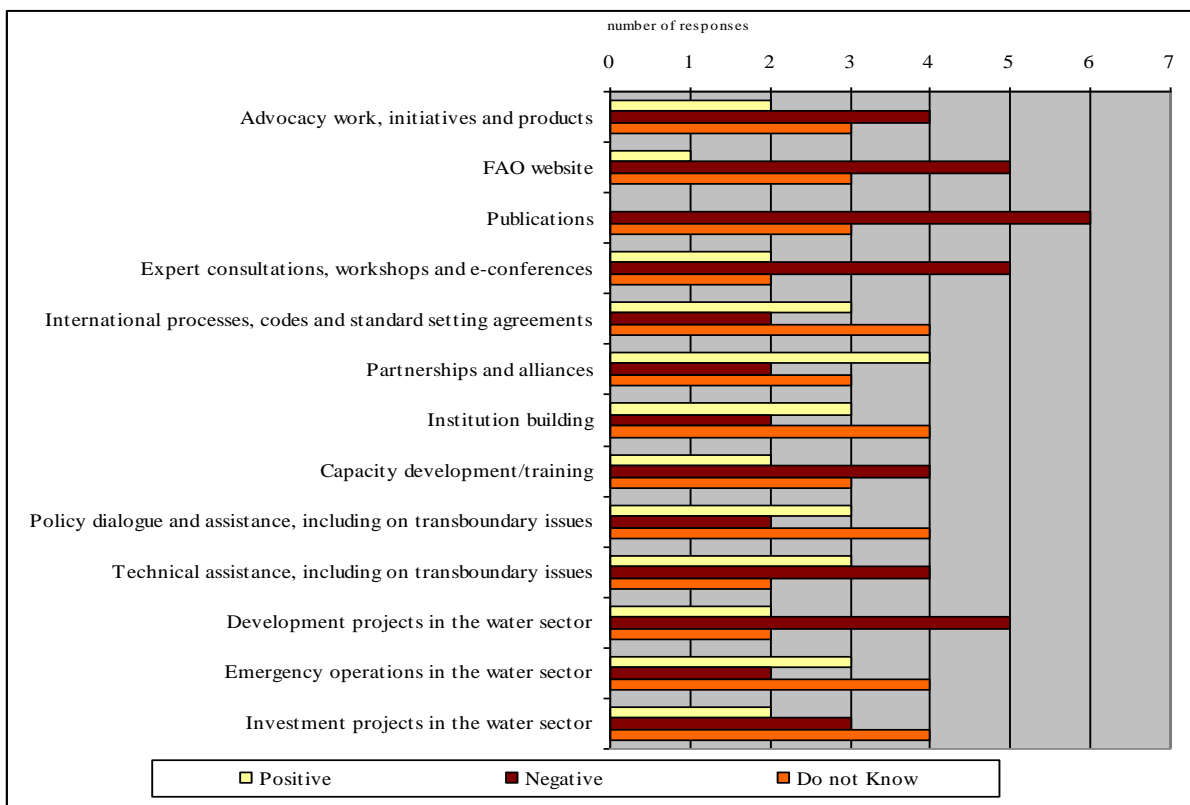
**Figure 13: Frequency of use of FAO's Products and Services - Europe & Central Asia**



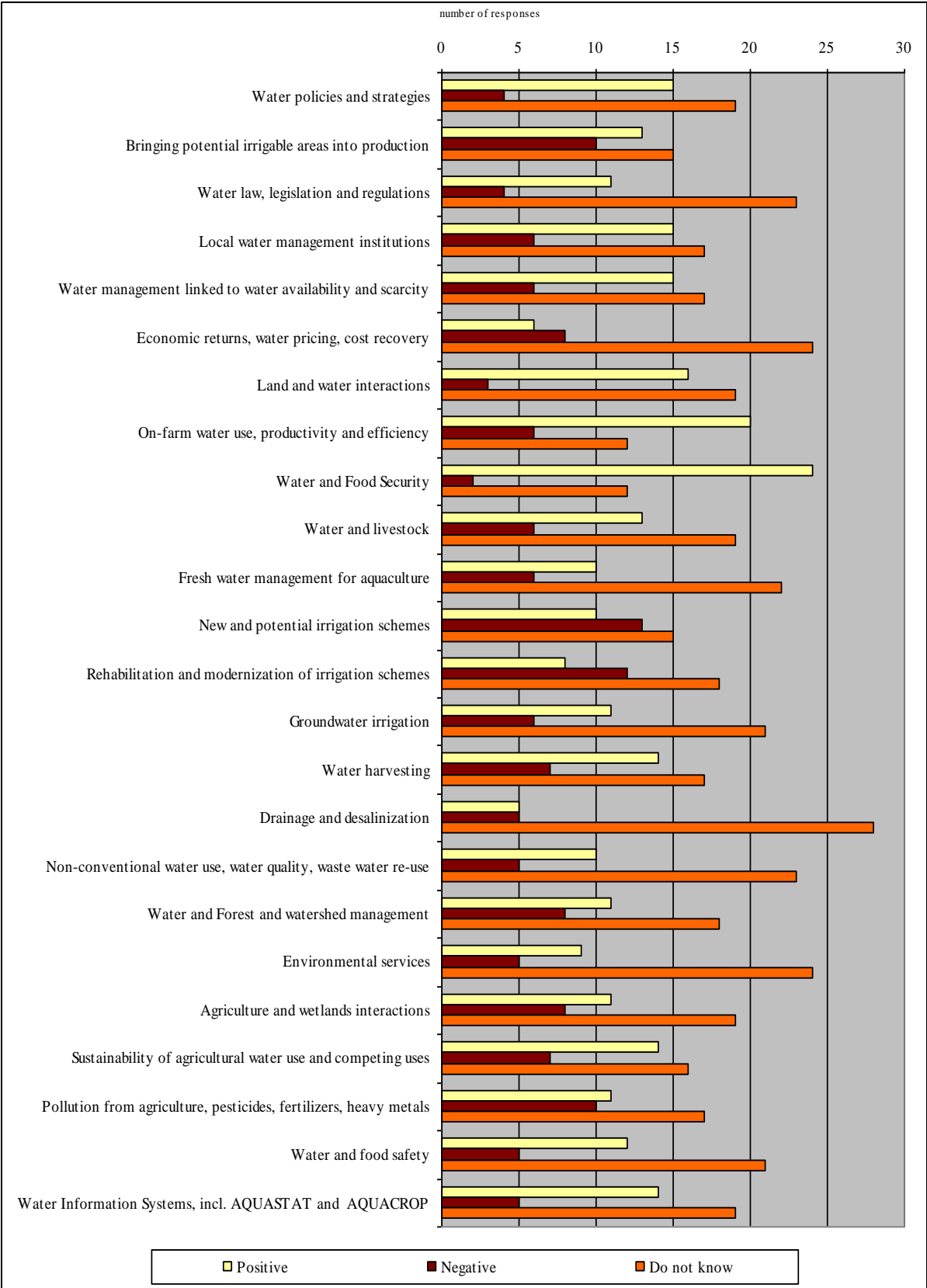
**Figure 14: Frequency of use of FAO's Products and Services - Latin America & Caribbean**



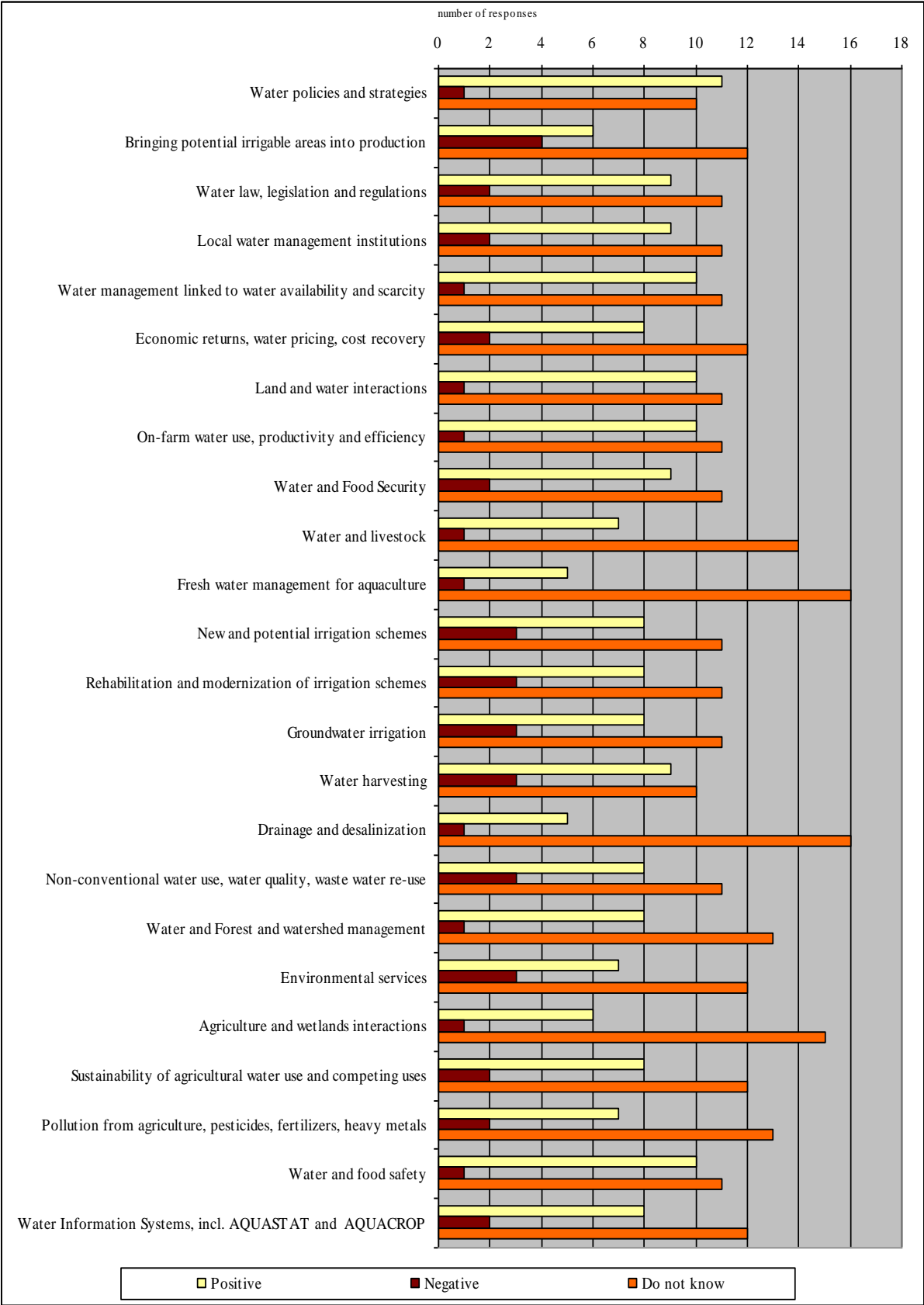
**Figure 15: Frequency of use of FAO's Products and Services - Near East & North Africa**



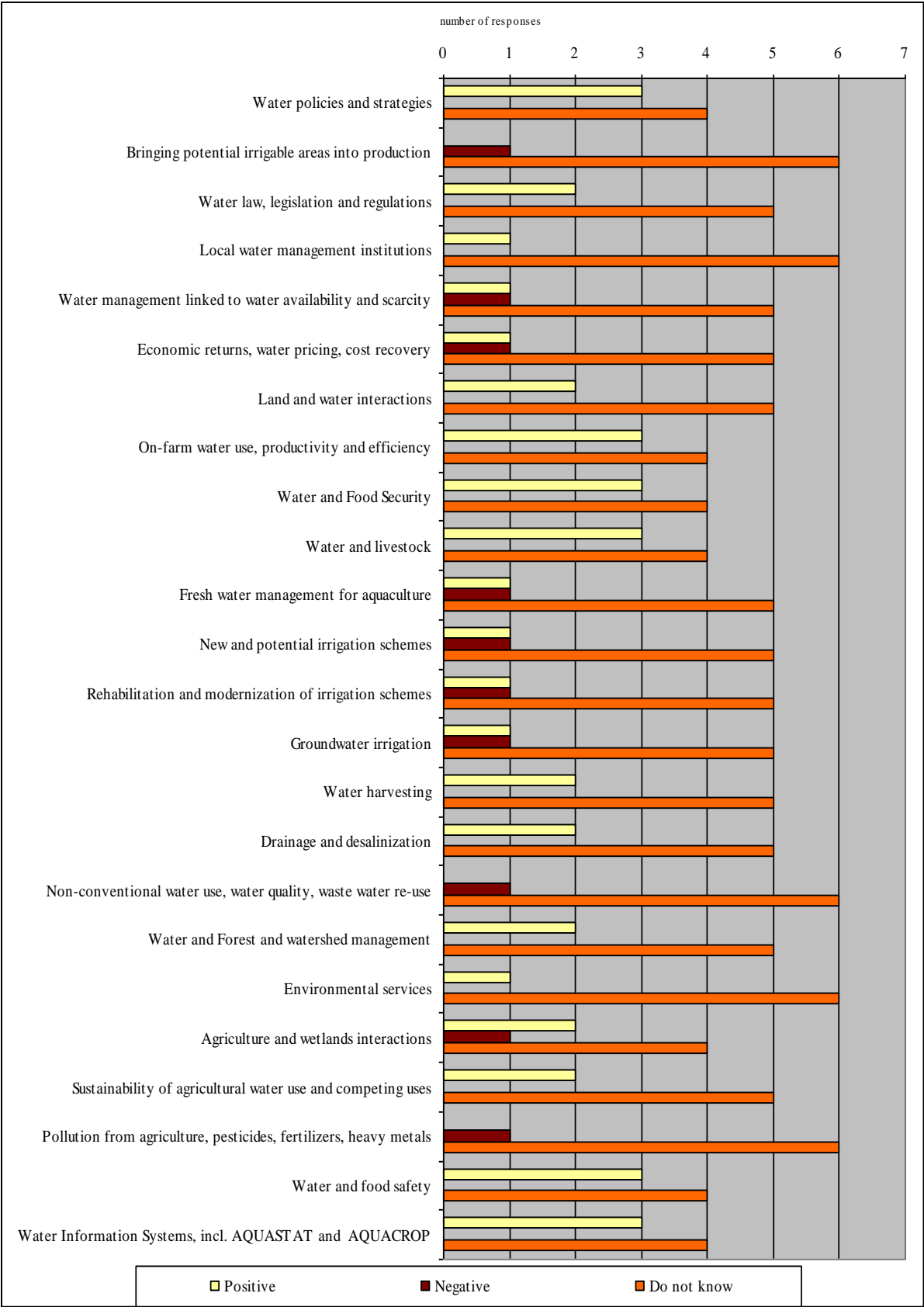
**Figure 16: Quality of FAO's work in the Water Sector - Africa**



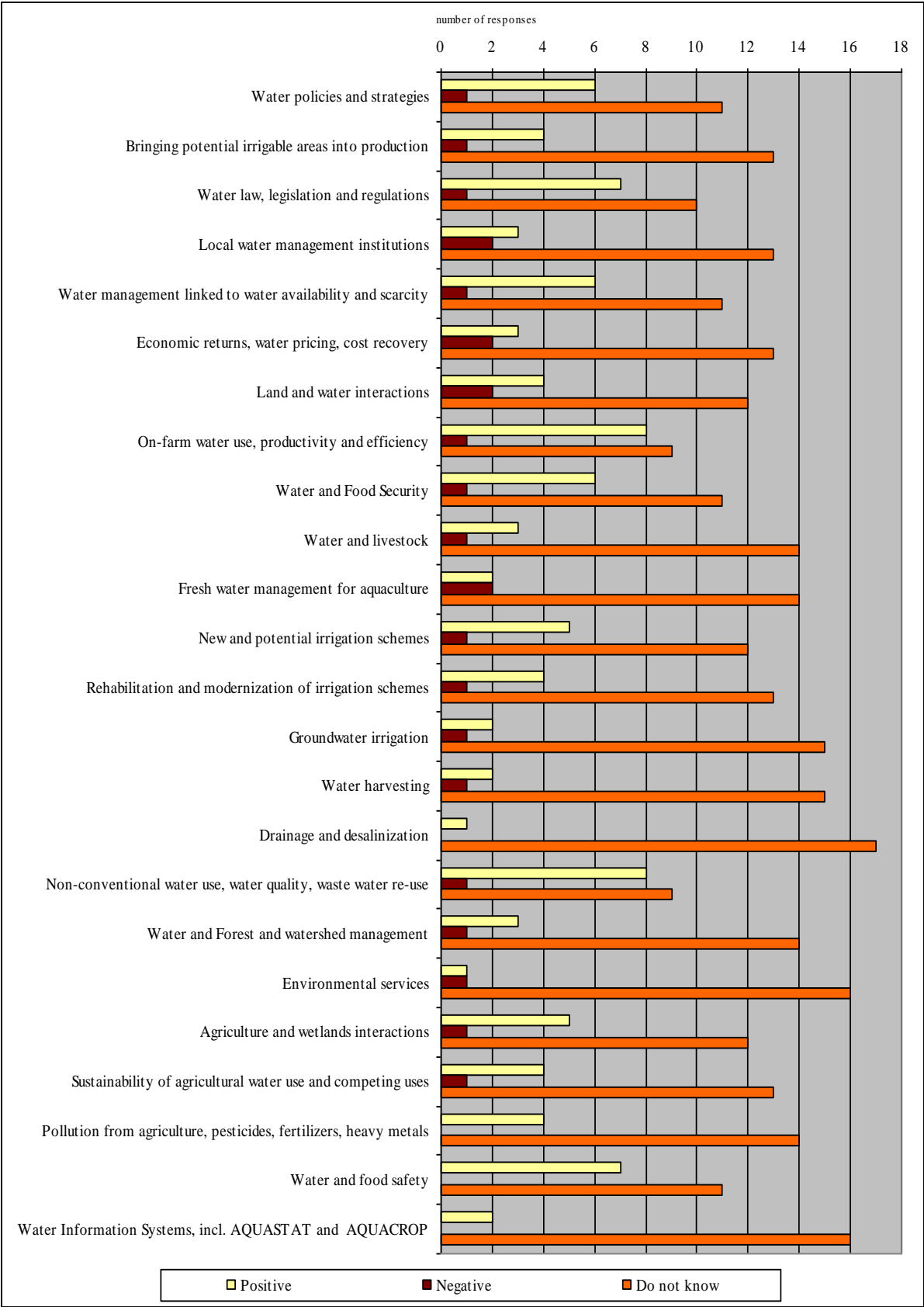
**Figure 17: Quality of FAO's work in the Water Sector - Asia & Pacific**



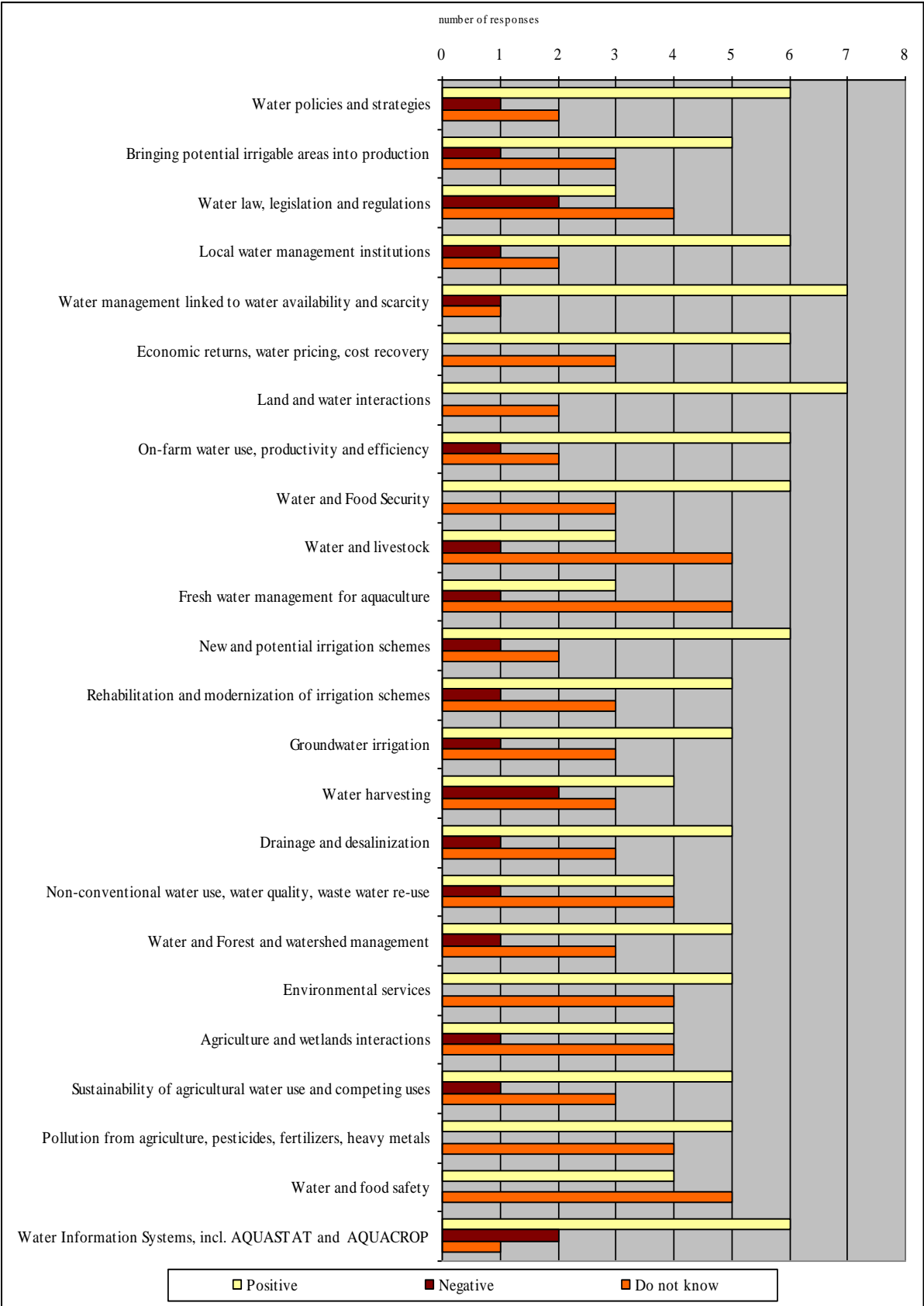
**Figure 18: Quality of FAO's work in the Water Sector - Europe & Central Asia**



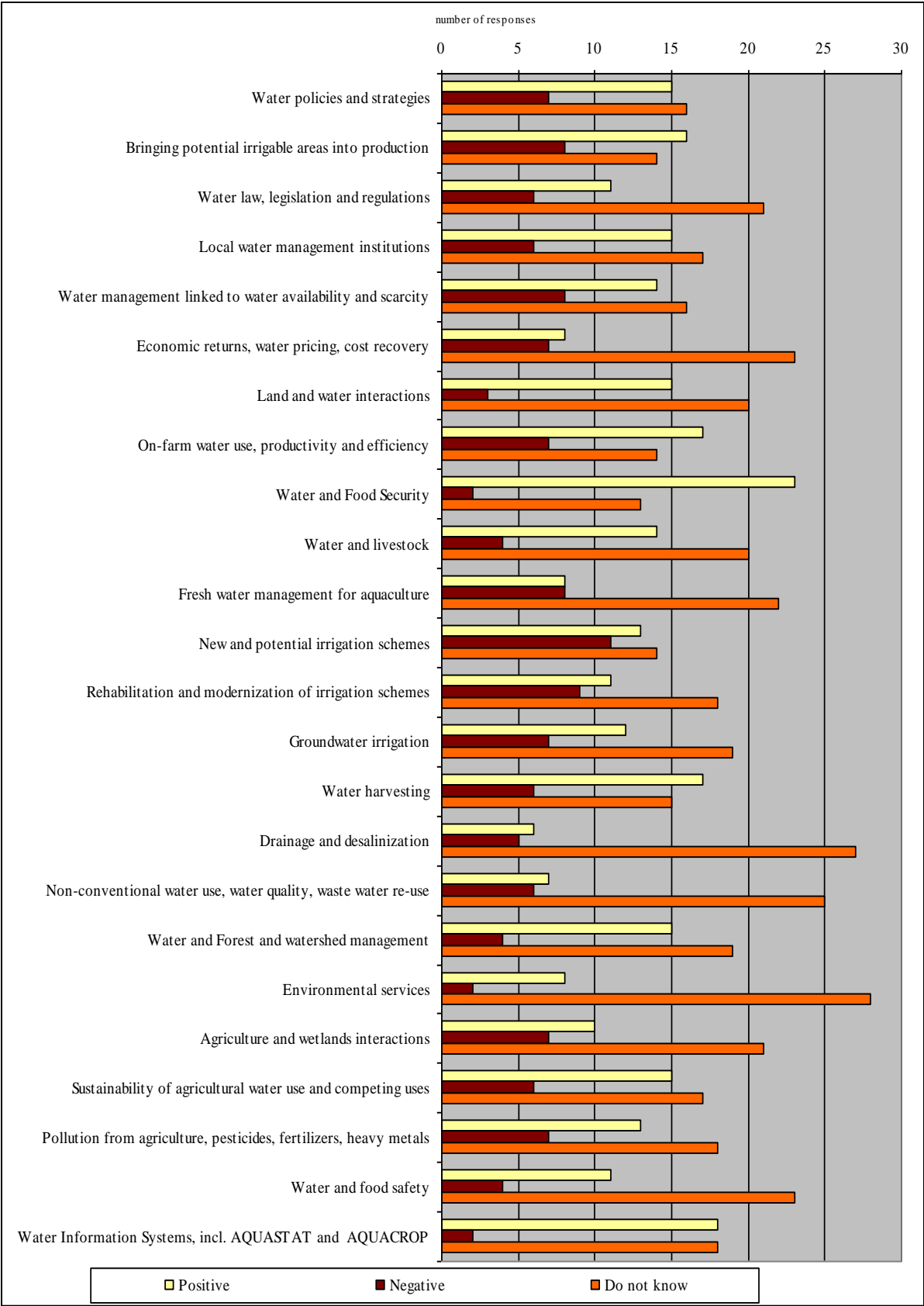
**Figure 19: Quality of FAO's work in the Water Sector - Latin America & Caribbean**



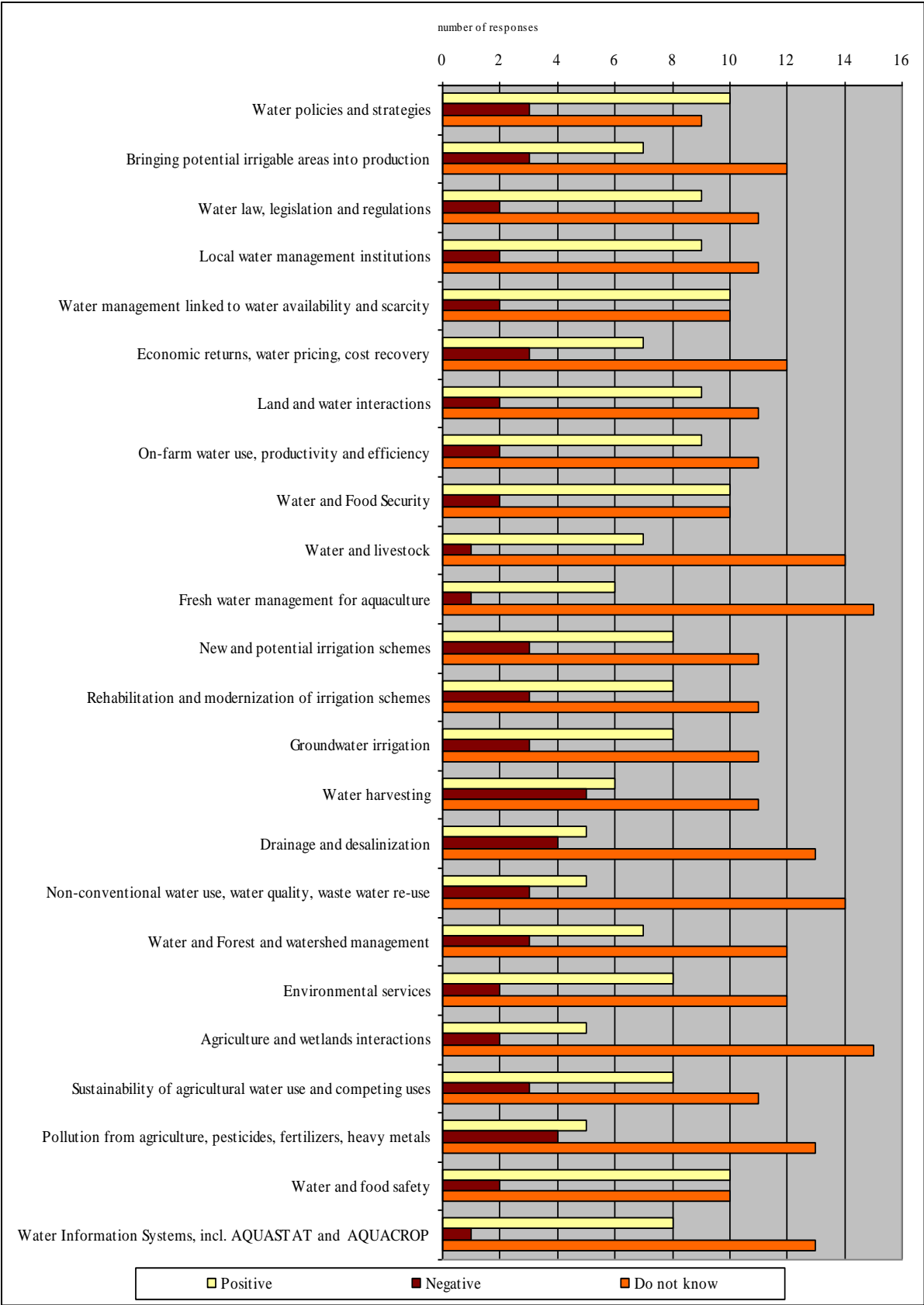
**Figure 20: Quality of FAO's work in the Water Sector - Near East & North Africa**



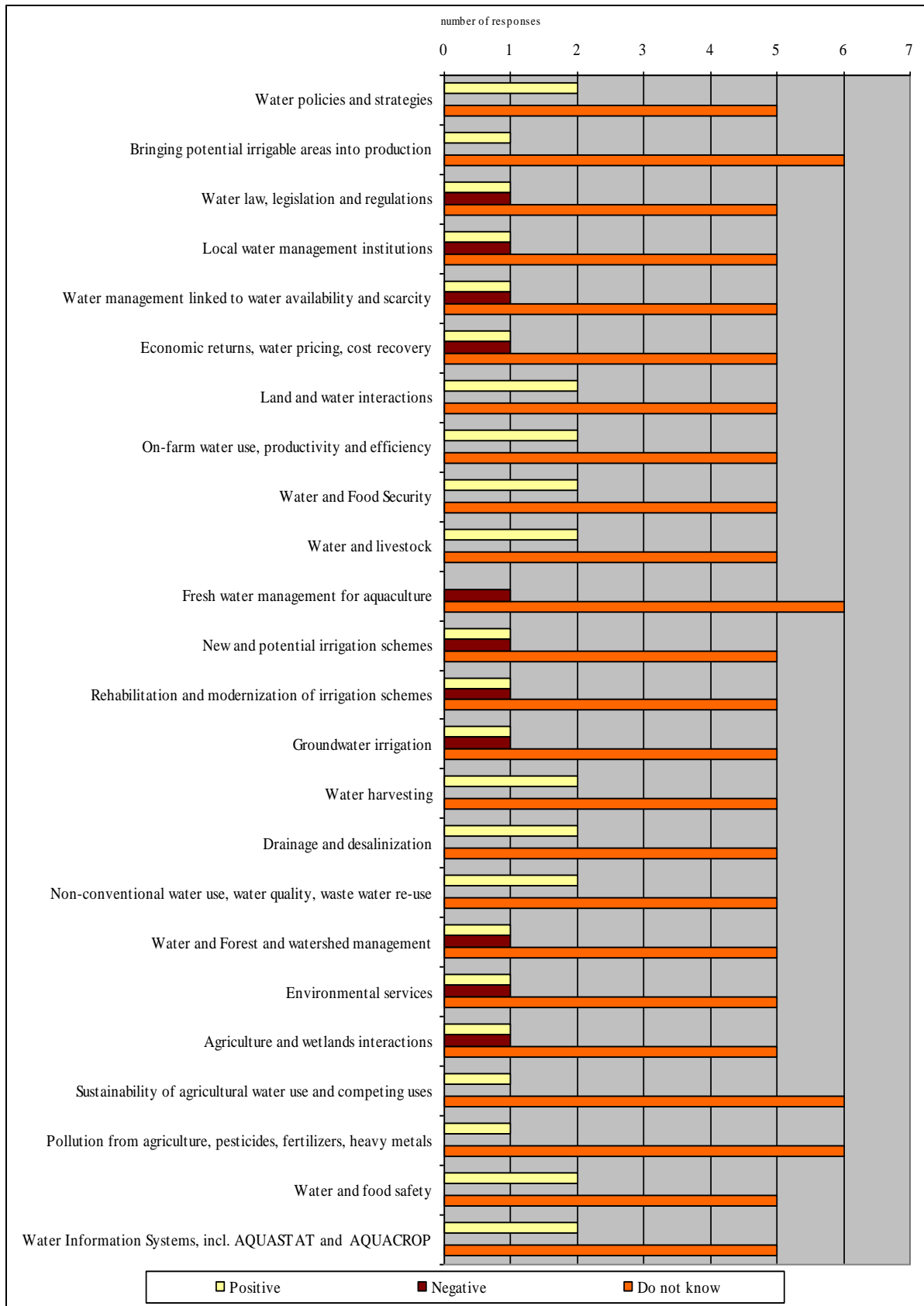
**Figure 21: FAO's Comparative Advantage in the Water Sector - Africa**



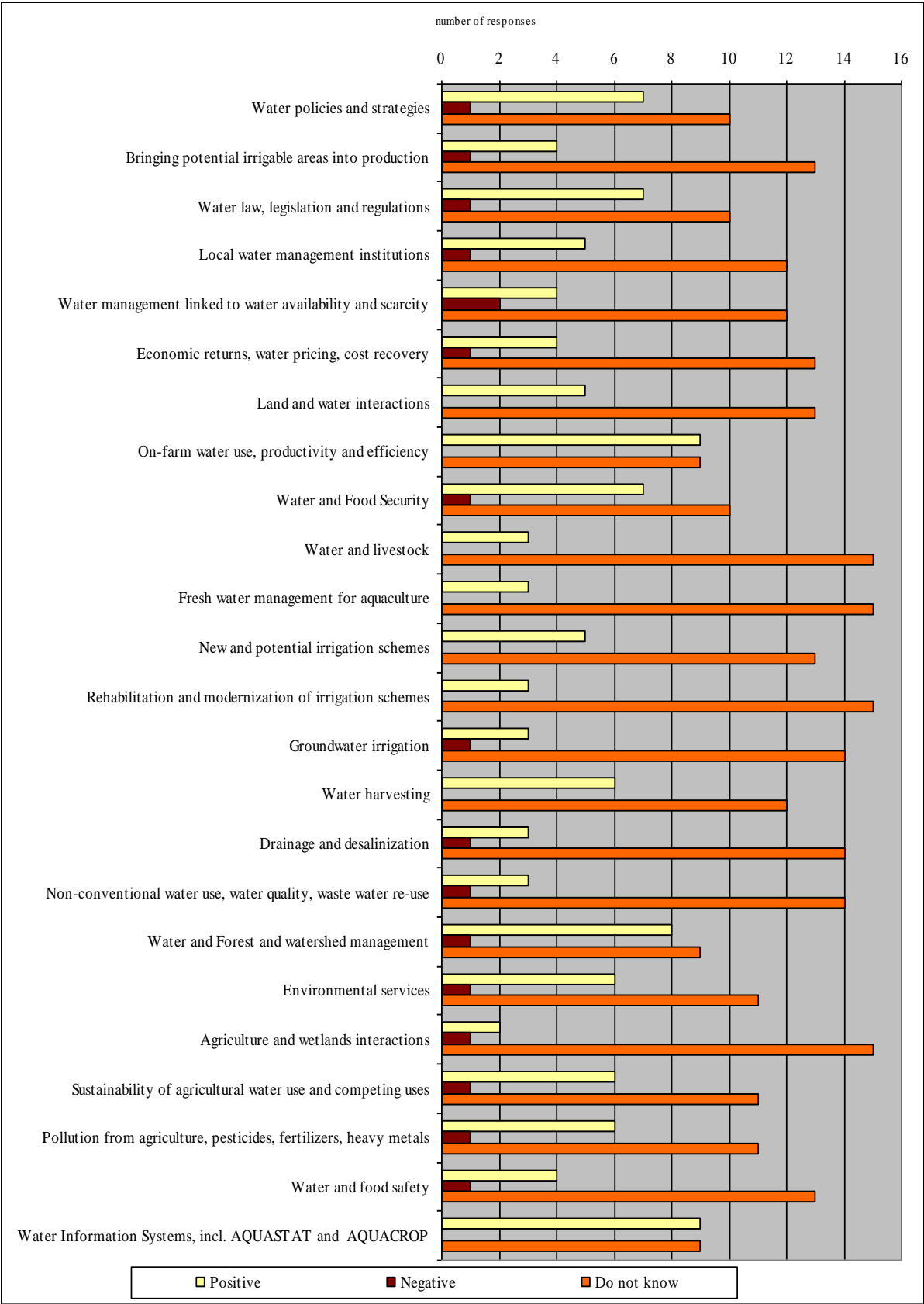
**Figure 22: FAO's Comparative Advantage in the Water Sector - Asia & Pacific**



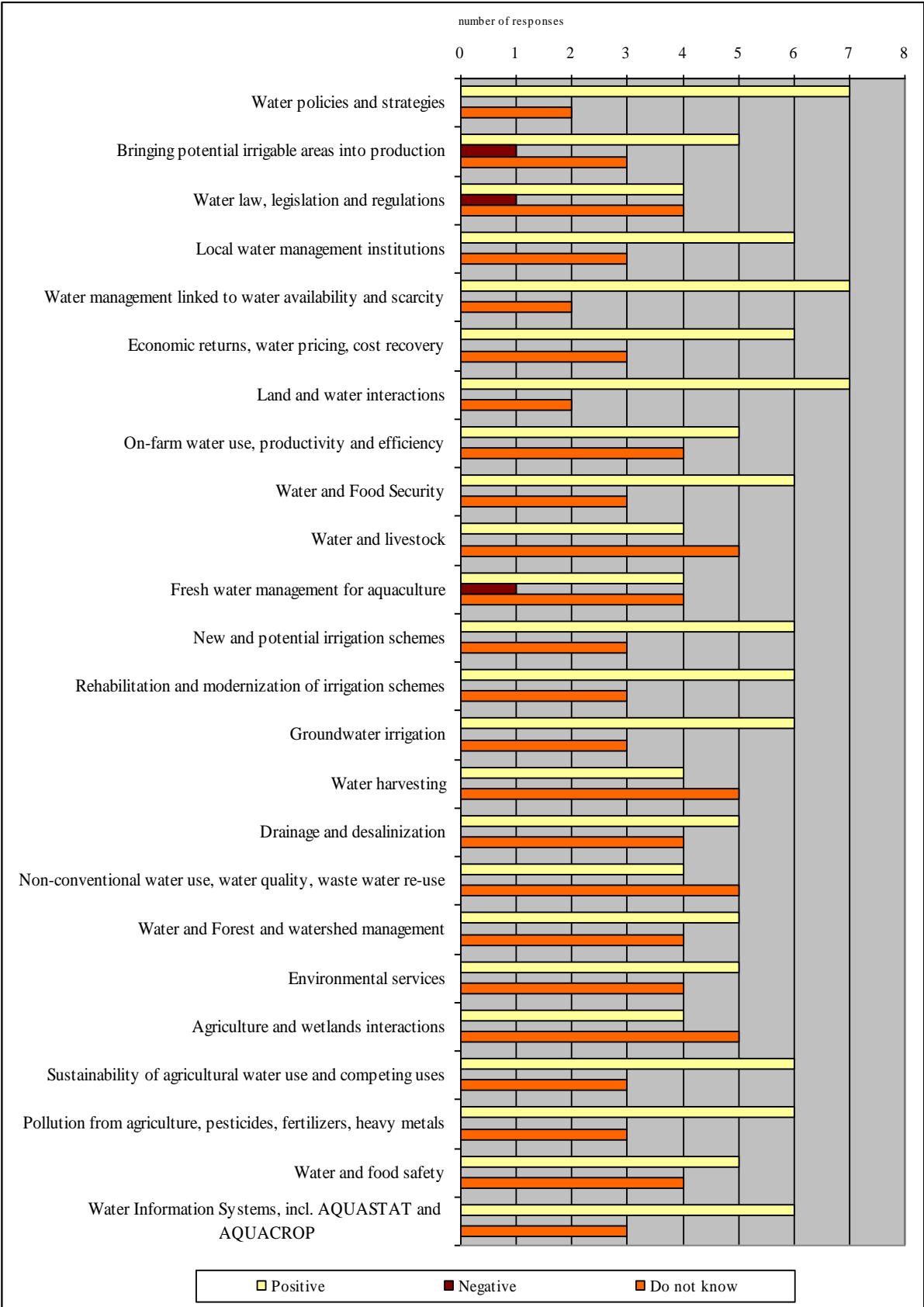
**Figure 23: FAO's Comparative Advantage in the Water Sector - Europe & Central Asia**



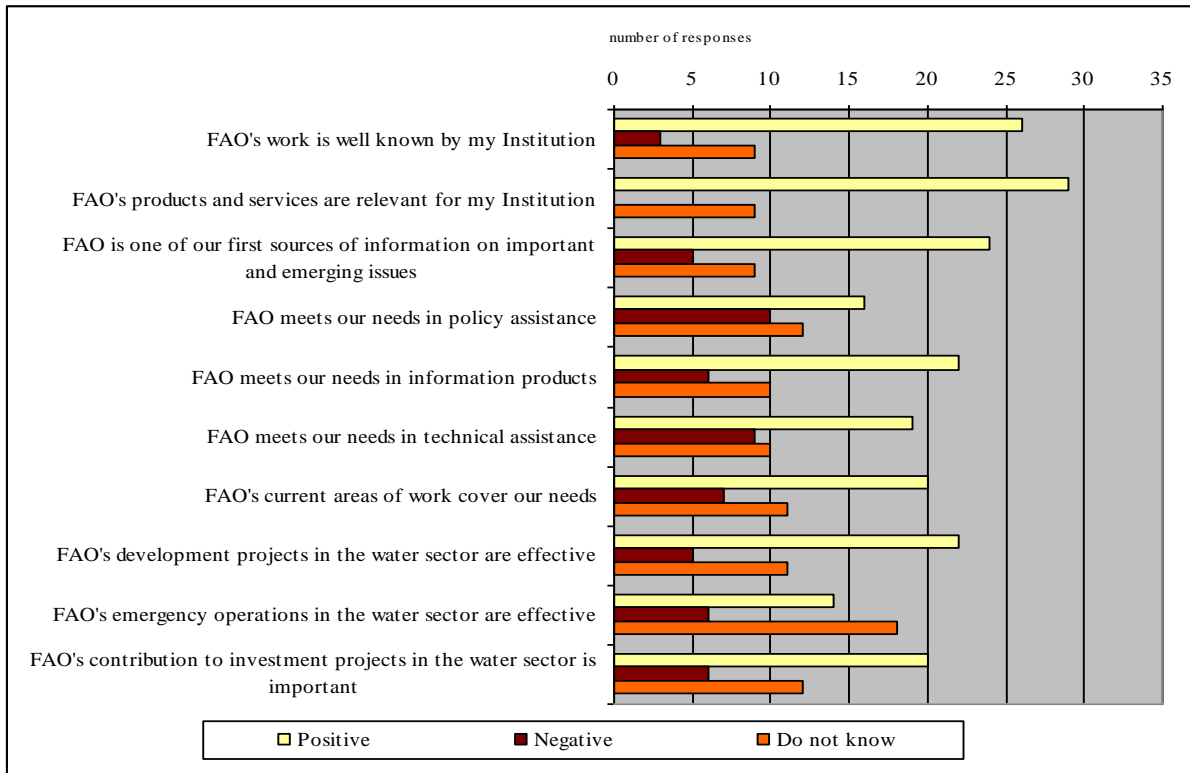
**Figure 24: FAO's Comparative Advantage in the Water Sector - Latin America & Caribbean**



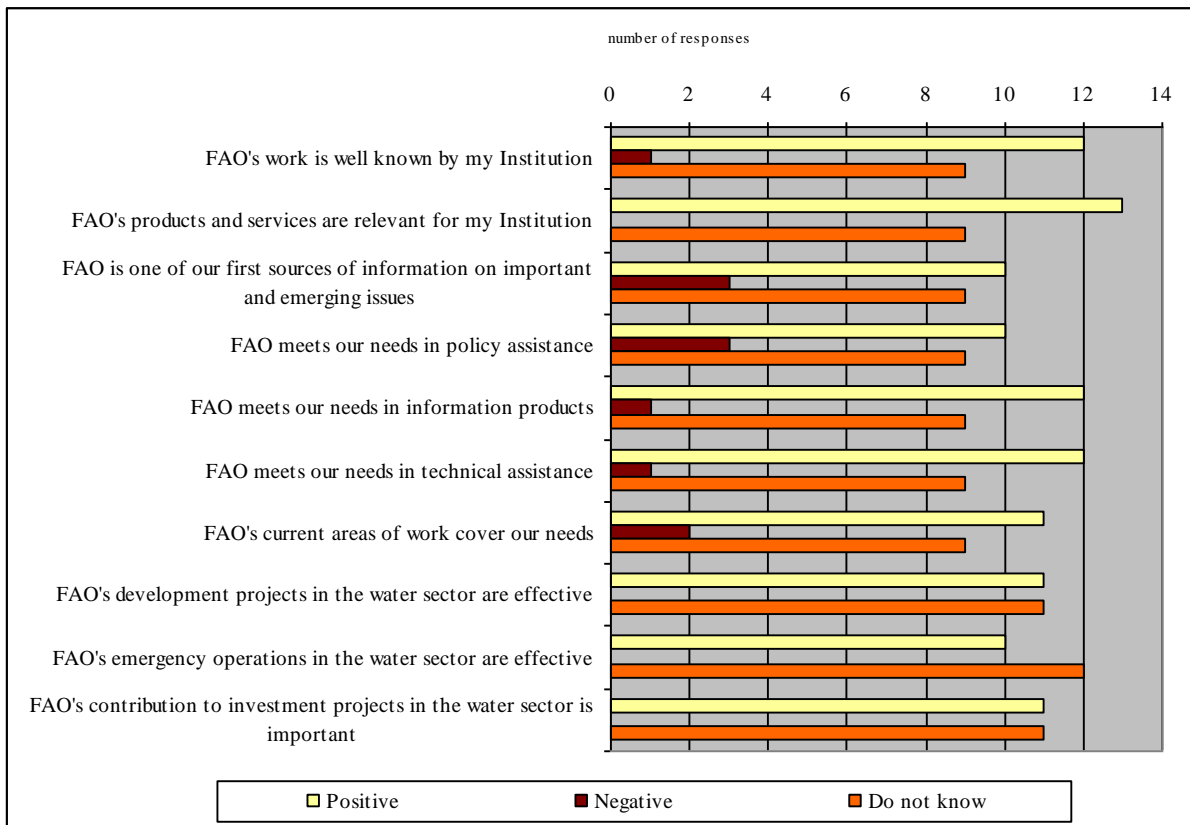
**Figure 25: FAO's Comparative Advantage in Water Sector - Near East & North Africa**



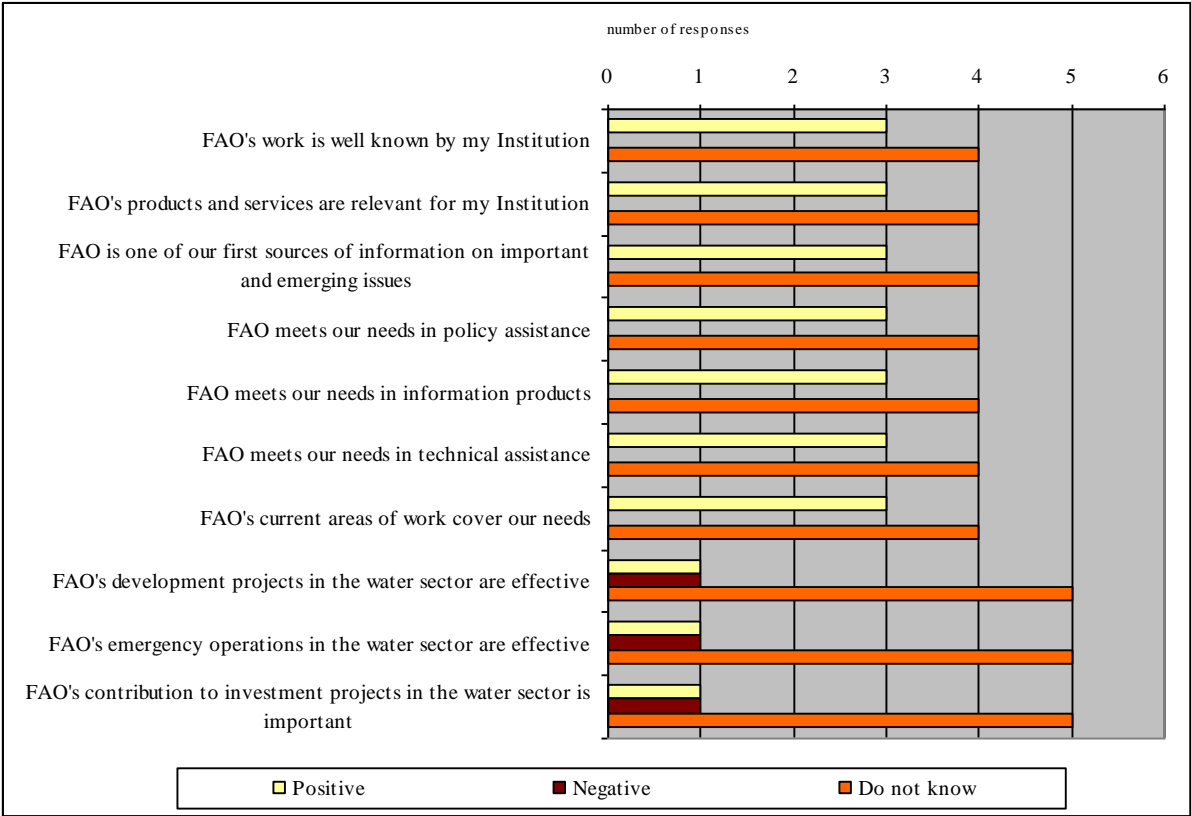
**Figure 26: Opinion about FAO's work in the Water Sector - Africa**



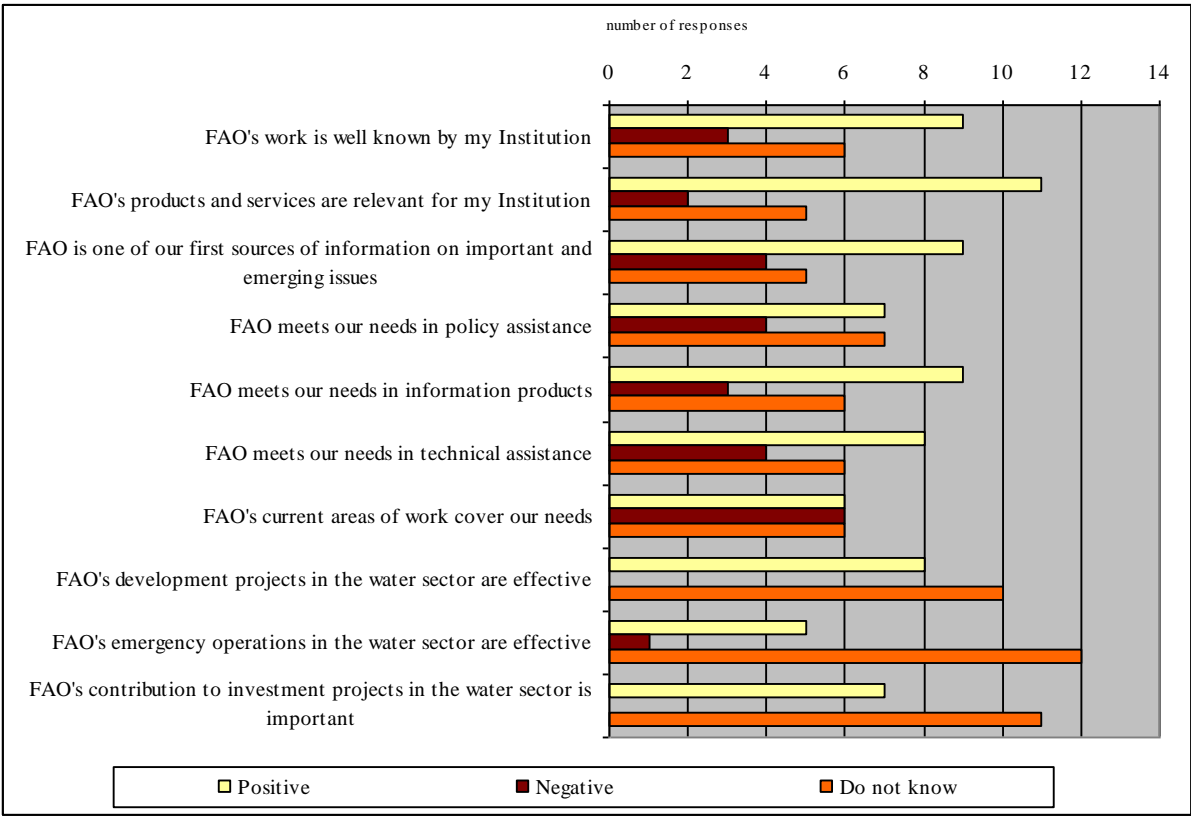
**Figure 27: Opinion about FAO's work in the Water Sector – Asia & Pacific**



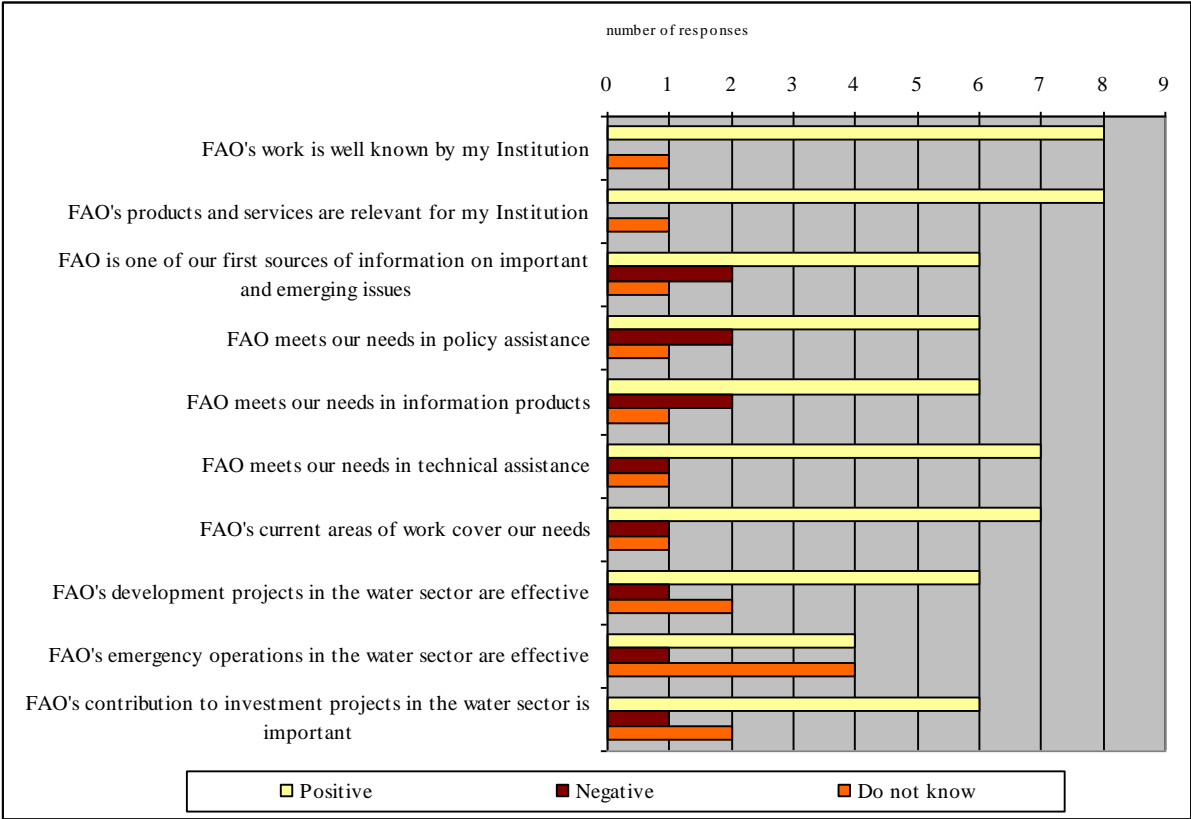
**Figure 28: Opinion about FAO’s work in the Water Sector – Europe & Central Asia**



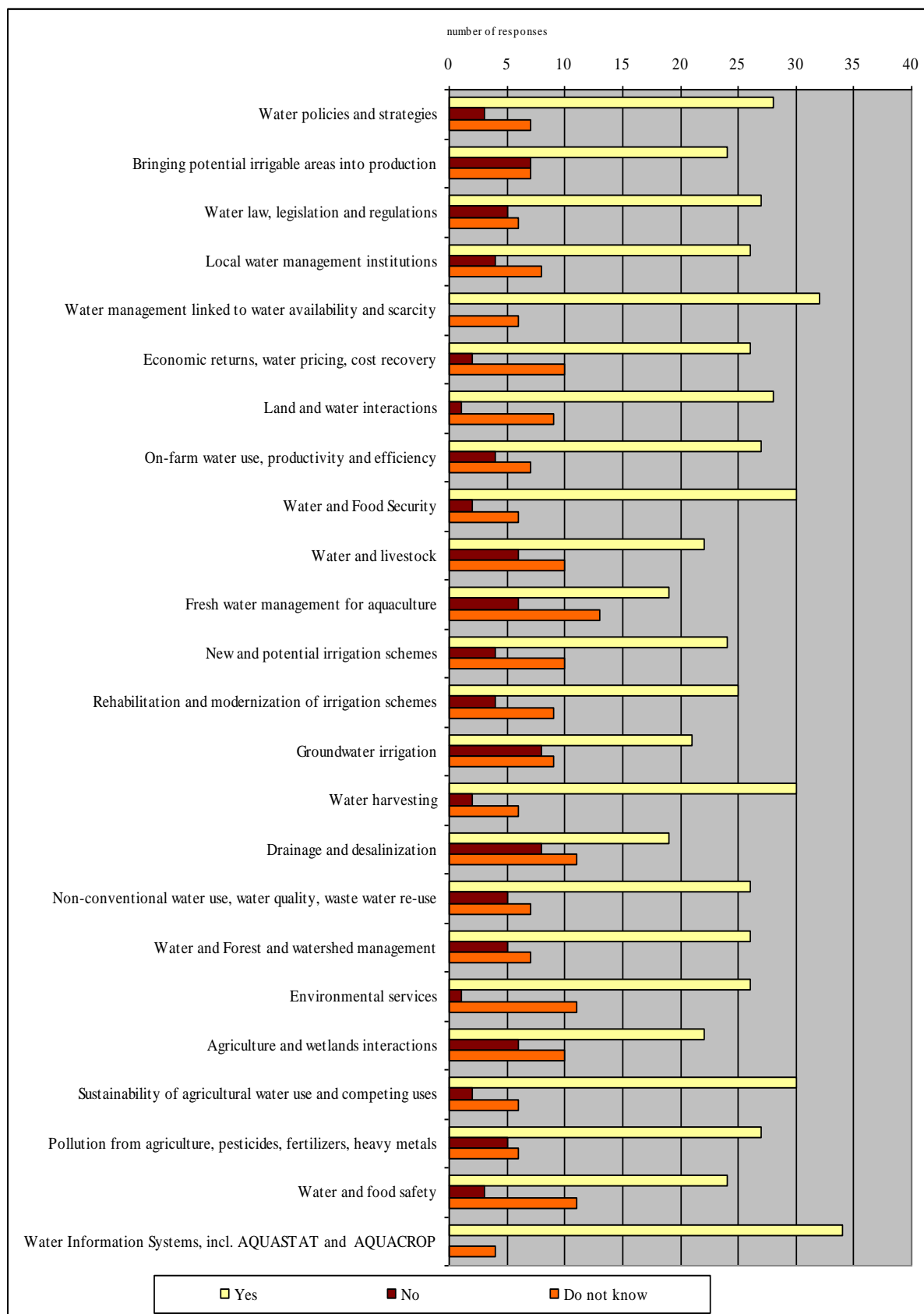
**Figure 29: Opinion about FAO’s work in the Water Sector – Latin America & Caribbean**



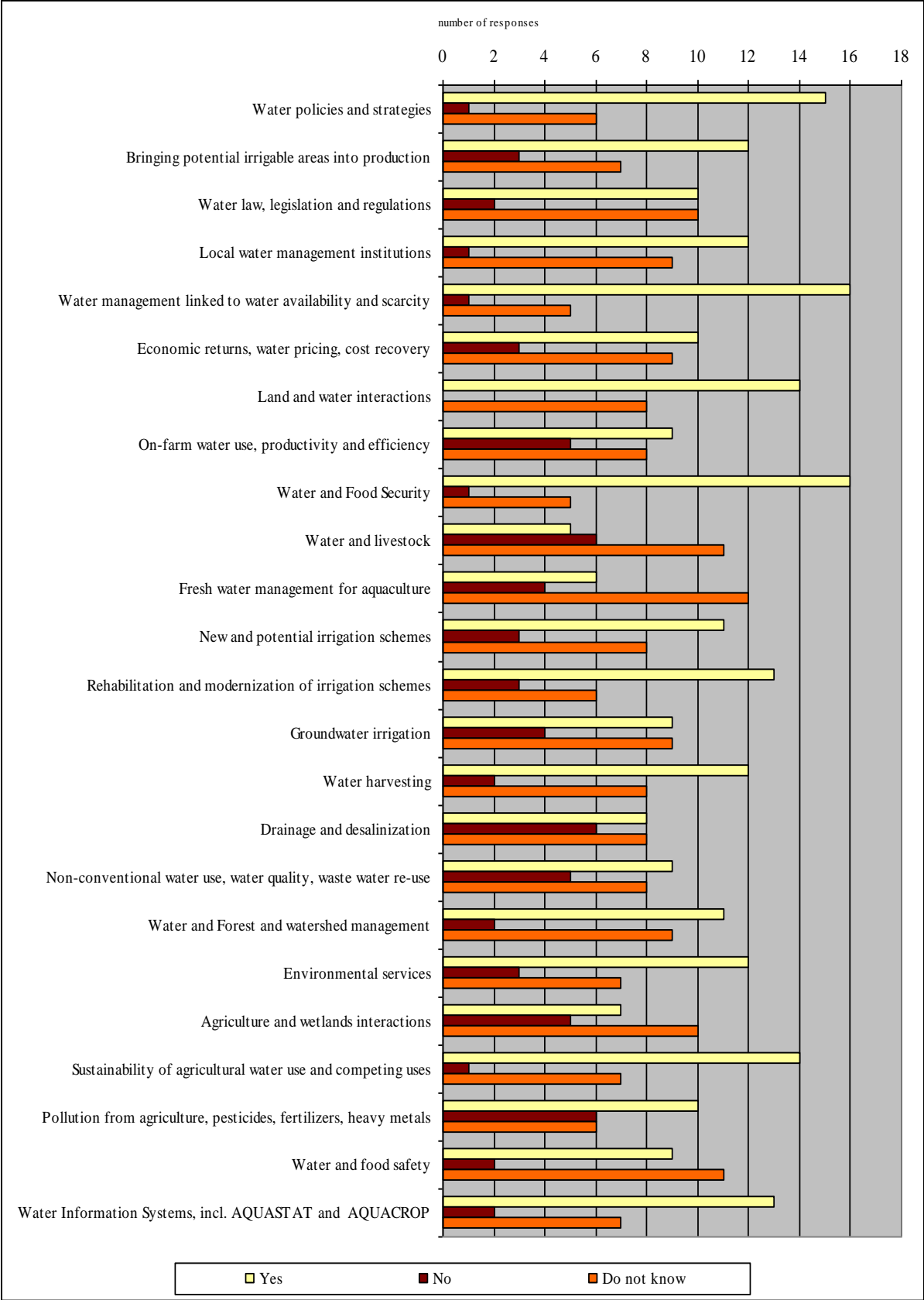
**Figure 30: Opinion about FAO's work in the Water Sector – Near East & North Africa**



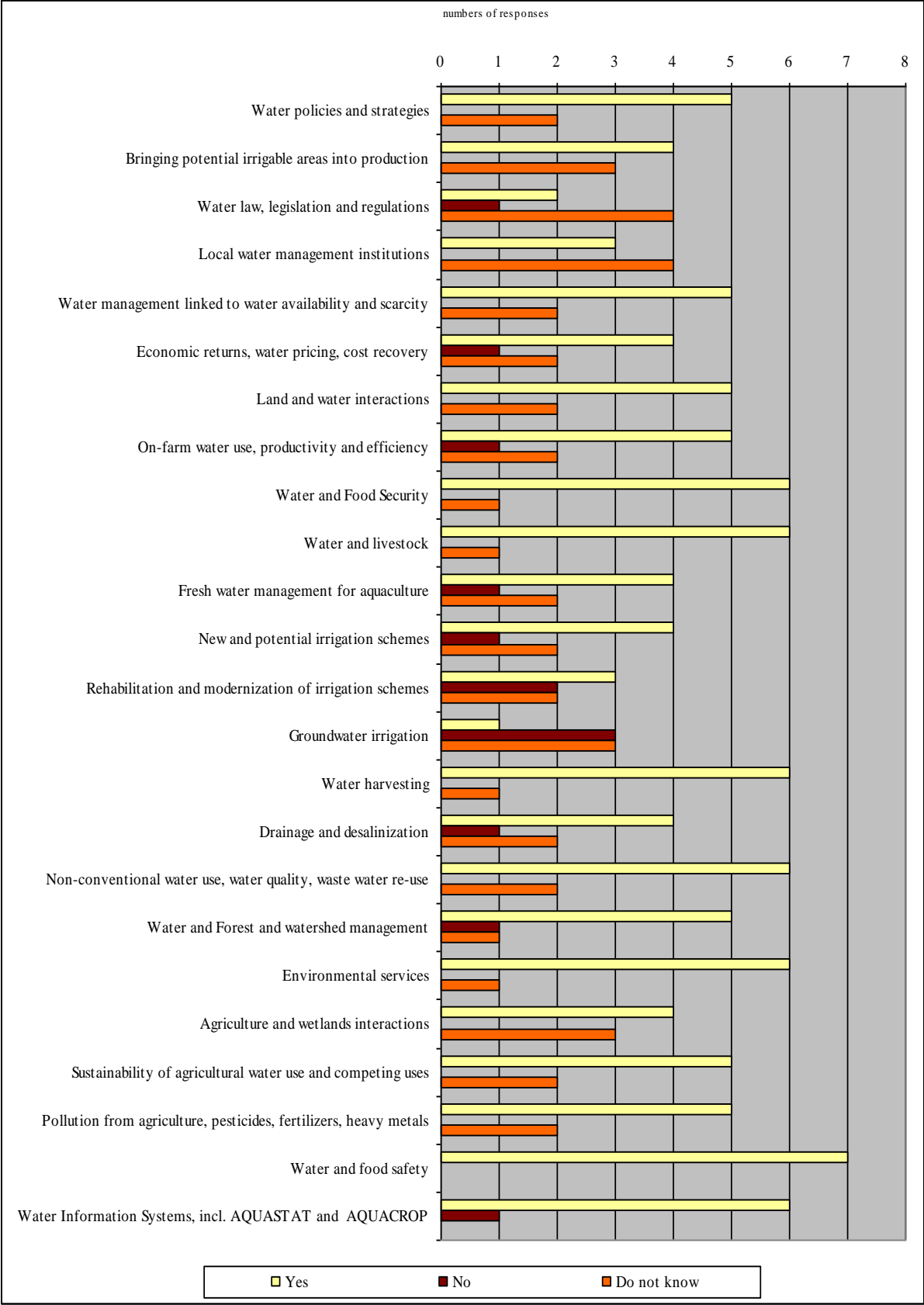
**Figure 31: Areas for future collaboration - Africa**



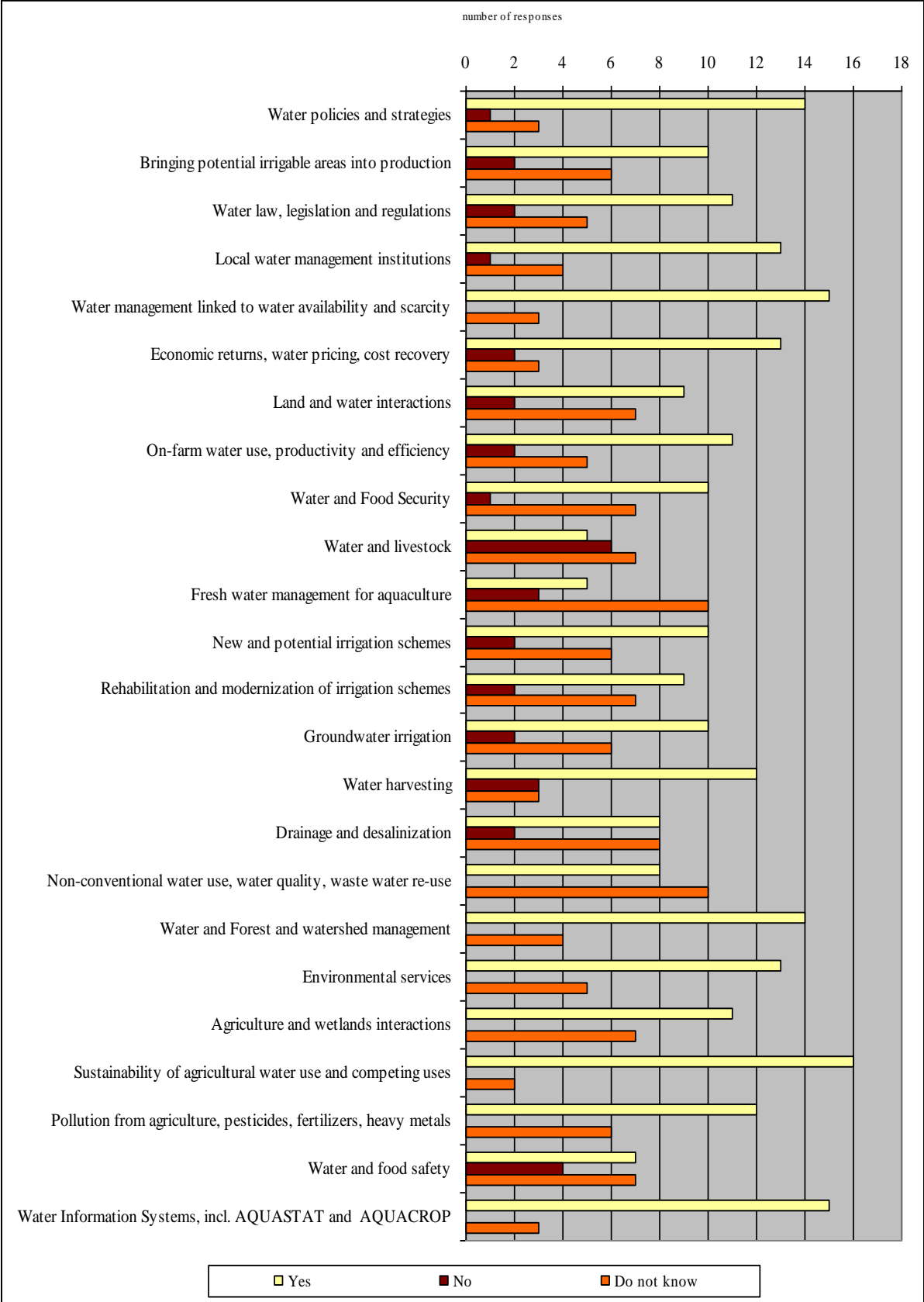
**Figure 32: Areas for future collaboration – Asia & Pacific**



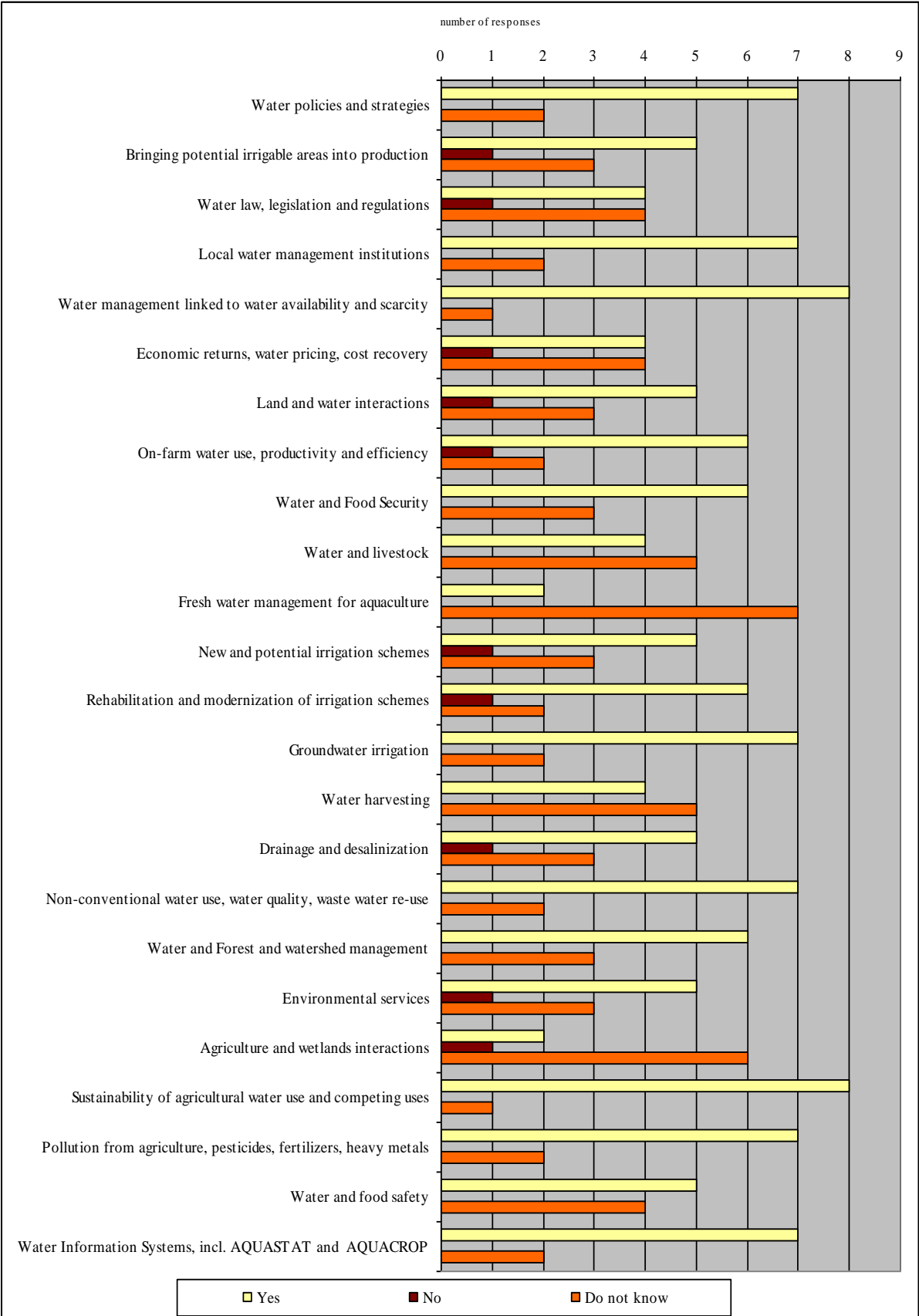
**Figure 33: Areas for future collaboration – Europe & Central Asia**



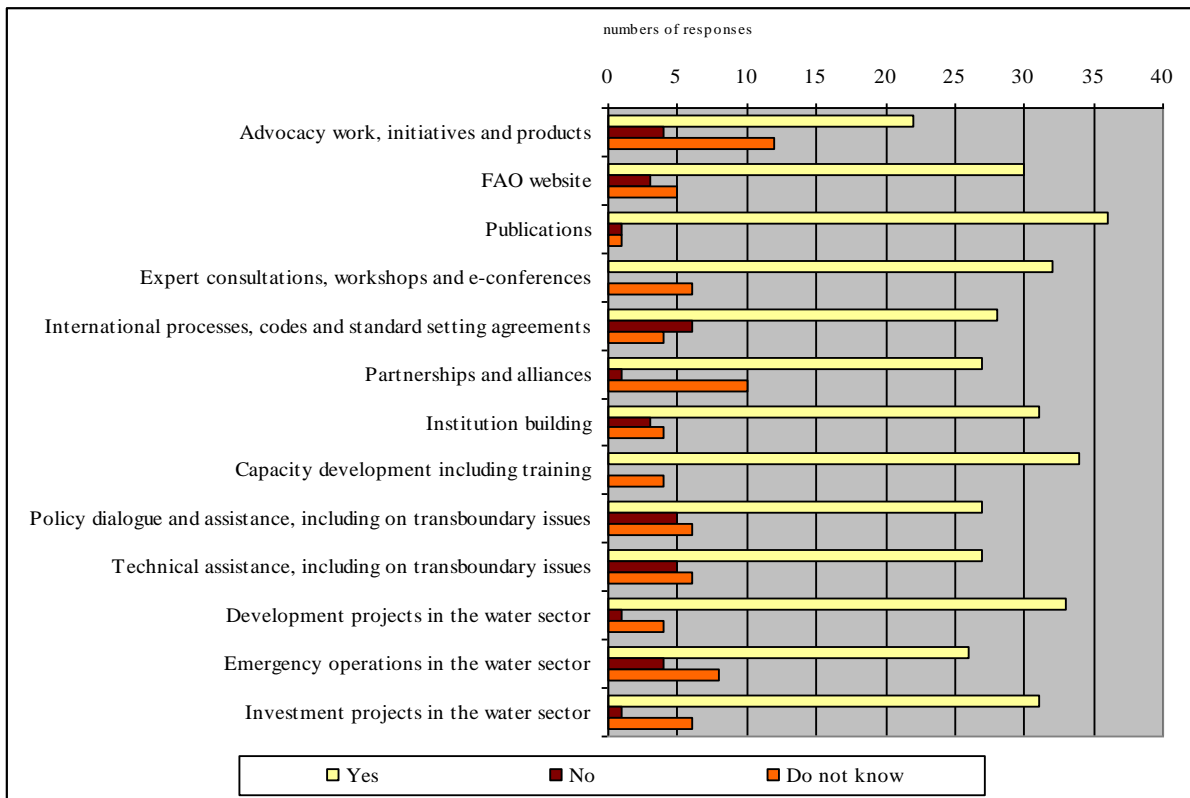
**Figure 34: Areas for future collaboration - Latin America & Caribbean**



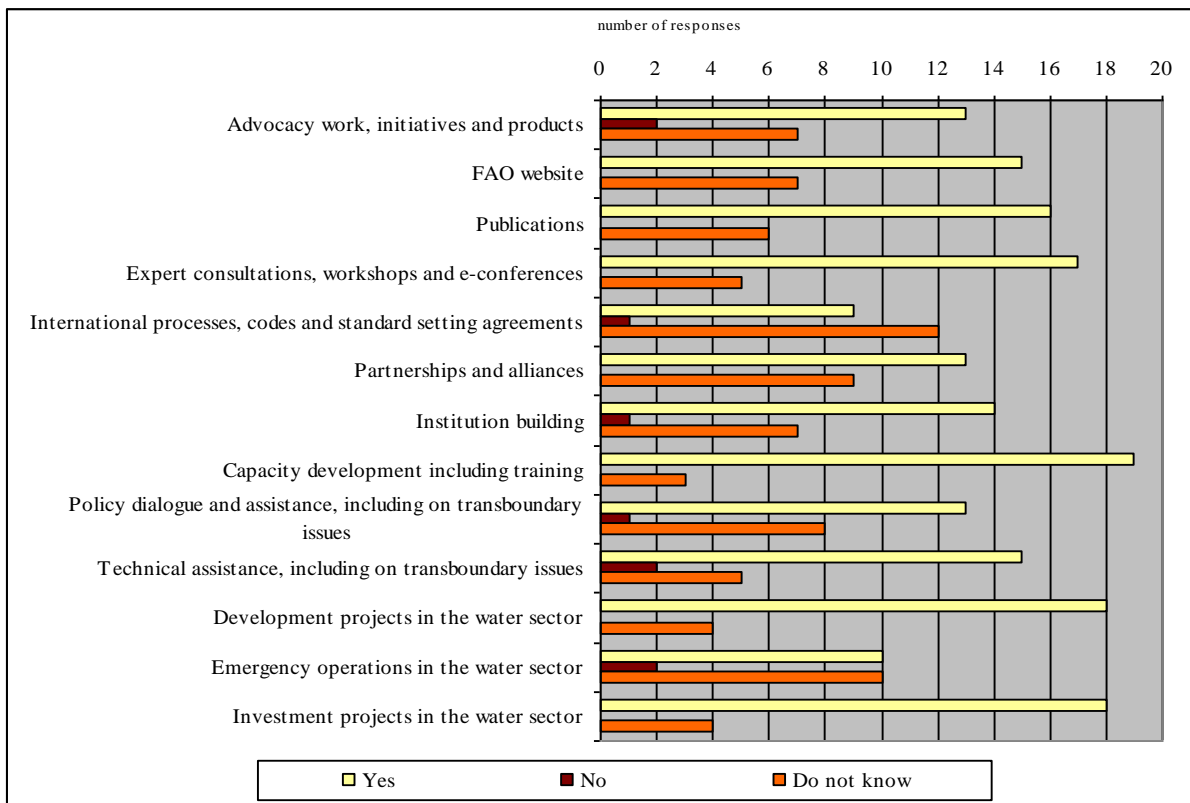
**Figure 35: Areas for future collaboration – Near East & North Africa**



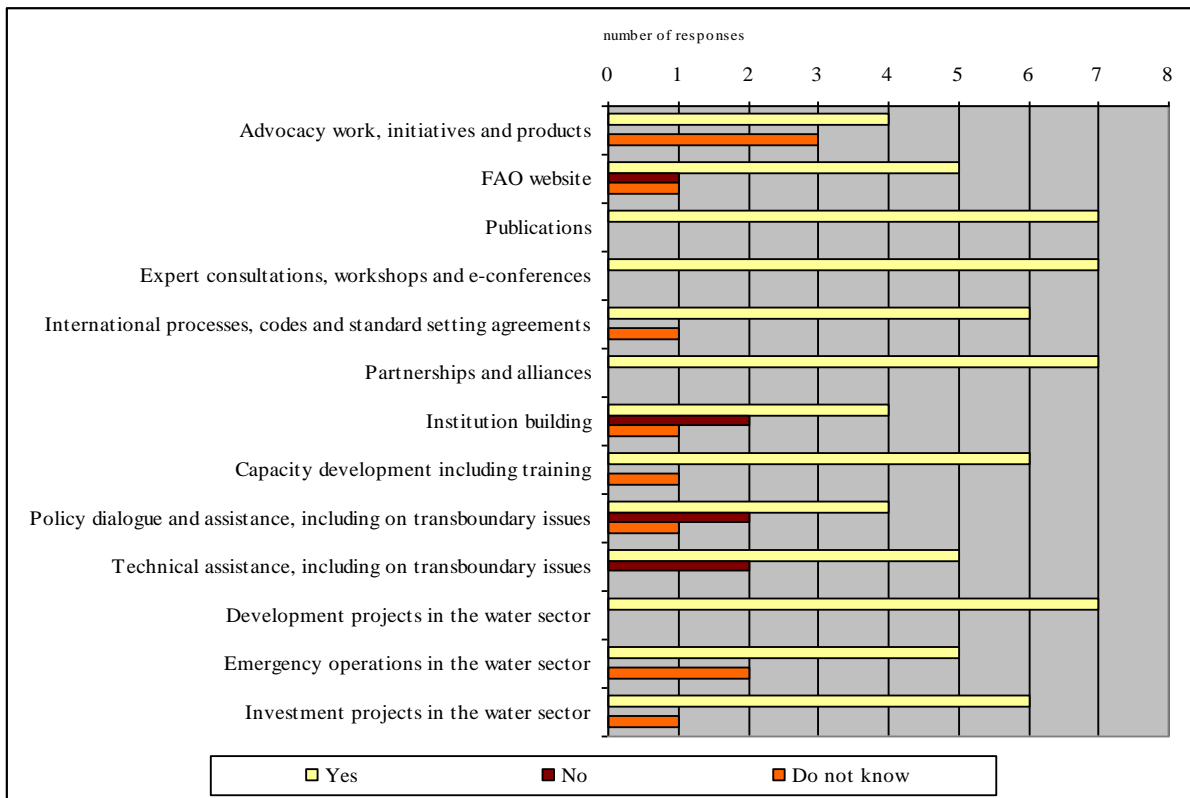
**Figure 36: Products and services for future collaboration – Africa**



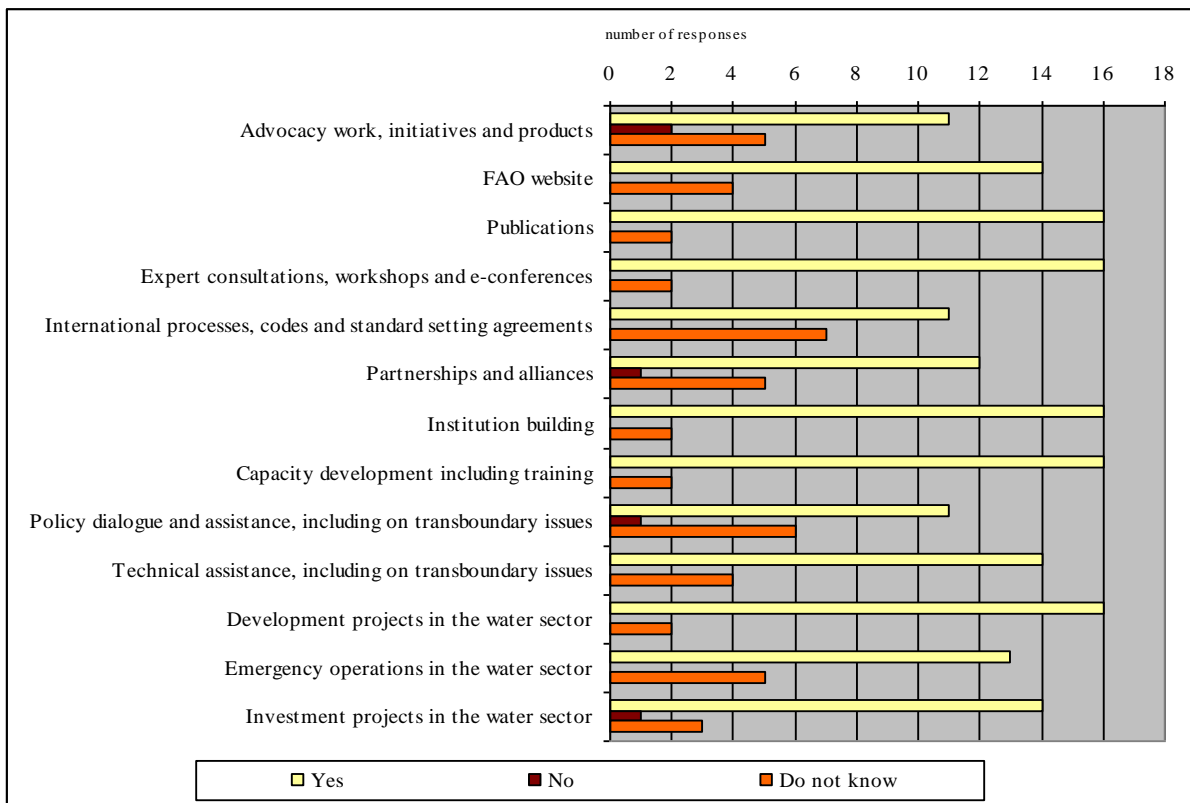
**Figure 37: Products and services for future collaboration – Asia & Pacific**



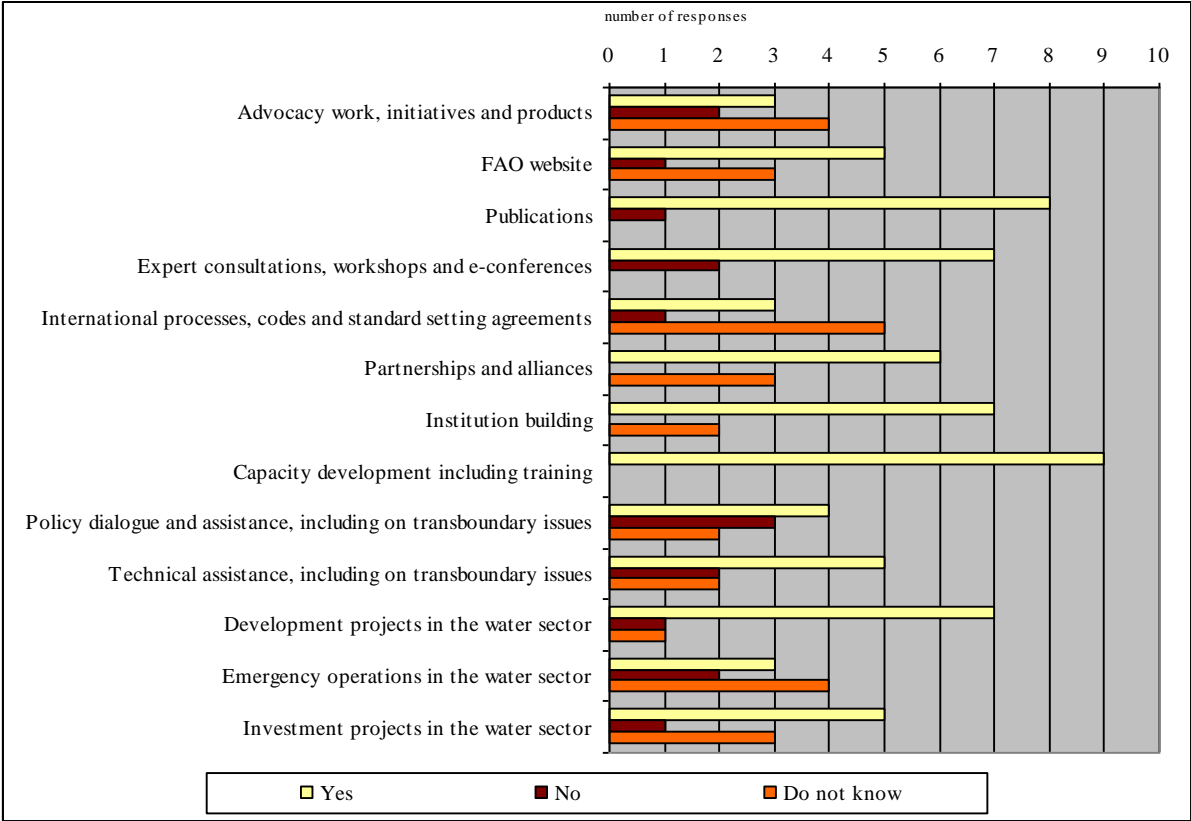
**Figure 38: Products and services for future collaboration – Europe & Central Asia**



**Figure 39: Products and services for future collaboration – Latin America & Caribbean**



**Figure 40: Products and services for future collaboration – Near East & North Africa**



# Evaluation of FAO's role and work related to water

## Questionnaire for the Member Countries

### FOREWORD

FAO is undertaking an evaluation of its role and work related to water over the past five years. The evaluation is conducted during the period June-December 2009, by a multi-disciplinary team of international consultants with managerial support provided by the FAO Evaluation Service. The Terms of Reference of the Evaluation are attached.

The **main purpose** of the Evaluation is to provide FAO's Member Countries and Secretariat with evidence and lessons on past performance as a basis for recommendations on the future role and scope of the Organization in its work related to water. The Evaluation will also provide accountability to FAO Member Countries and Secretariat about the Organization's performance and comparative advantage in this area of work.

The **scope** of the Evaluation is FAO's work related to water, defined as all activities conducted by the Organization for the conservation, development and sustainable utilization of water resources for agricultural development, including the responses to global environmental challenges affecting food and agriculture. This **excludes all work related to marine waters** and all kind of fisheries resources, as well as any work that **does not relate** to the management and development of the water resource. Within this definition, the evaluation encompasses **all activities** implemented during **the period 2004-2008**, irrespective of source of funding (Regular Programme or extra budgetary resources) or from where they are managed (Headquarters, Regional and Sub-regional Offices and FAO Representations).

The **major focus** of the Evaluation is to determine the relevance, effectiveness, impact and sustainability of FAO's work related to water as defined above.

**You and your organization are among the key stakeholders of FAO's work in the Water Sector. Your views are very important to the overall conduct of the Evaluation and will constitute an important part of the evidence base from which findings and recommendations for future cooperation will be drawn. The Evaluation team thanks you warmly in advance for your attention, time and precious collaboration.**

## Section A. Instructions for filling in the questionnaire

28. The questionnaire is addressed to a wide number and range of ministries, departments and organizations. To simplify the questions, we have used the term **institution** to refer to all the responding organizations.

29. **The questionnaire should be completed by or under the responsibility of the Senior Officer in each Institution addressed, be he/she the Director, Chief, etc.**

30. This is a qualitative assessment, with four types of questions: questions that have a **Yes/No answer**; questions that require you to provide **ranking on a six-point scale**; questions that ask you to **prioritize** as well as **open-ended questions**.

31. The six-point scoring system is as follows:

- 1: none/very poor/never;**
- 2: little/poor/rarely;**
- 3: some/inadequate/occasionally;**
- 4: fair/adequate/sometimes;**
- 5: good/good/often;**
- 6: excellent/excellent/always.**

**Please tick the box “Do not know” when you have no information on the issue.**

32. Please answer all the ranked questions by marking an **X** in the corresponding box. The open-ended questions will allow you to provide further comments on each aspect discussed, as well as any other aspect you may wish to raise. **Please feel free to use as much space as required for your answers.**

**The questionnaire can be filled in the MS Word format or through a web-based tool, depending on your preference and ease of access to Internet. The link to the web-based questionnaire is:**

[https://www.surveymonkey.com/s.aspx?sm=LwL76EiommlEJrXHdFbCFA\\_3d\\_3d](https://www.surveymonkey.com/s.aspx?sm=LwL76EiommlEJrXHdFbCFA_3d_3d)

33. If you are filling the questionnaire as a print-out or in its Word version, please return it as an email attachment to Ms. Carlotta De Vivanco, Evaluation Service, PBEE, FAO Rome, email: [Carlotta.DeVivanco@fao.org](mailto:Carlotta.DeVivanco@fao.org) or by fax to +390657054403.

34. The deadline for responses is **Friday 31 July 2009**. Respecting the deadline is very important to allow proper analysis of the responses.

**Your assistance in completing the questionnaire is greatly appreciated.**

## Section B. OVERVIEW OF FAO'S WORK IN THE WATER SECTOR

35. The Evaluation will assess the work related to water, conducted by FAO as a whole, irrespective of departments and unit. Below, are listed the technical areas, clustered in major themes, that have been identified as the most important in FAO's work in water, as well as the major types of support at country level.

### *FAO' AREAS OF WORK IN THE WATER SECTOR*

	<b>Water policy, legal and economic aspects</b>
<b>1</b>	Water policies and Strategies
<b>2</b>	Bringing potential physical and economic irrigable areas into production
<b>3</b>	Water law, legislation and regulations
<b>4</b>	Local water management institutions
<b>5</b>	Water management linked to water availability and scarcity, including agricultural withdrawals within river basin management and associated (multi-purpose) storage and conveyance infrastructure
<b>6</b>	Economic returns, water pricing, and cost recovery
	<b>Water in production systems</b>
<b>7</b>	Land and water interactions, including reclamation of contaminated land
<b>8</b>	On-farm water use, productivity and efficiency for agricultural production
<b>9</b>	Water and Food Security
<b>10</b>	Water and livestock
<b>11</b>	Fresh water management for aquaculture
	<b>Water system feasibility, design and technology</b>
<b>12</b>	New and potential irrigation schemes
<b>13</b>	Rehabilitation and modernization of irrigation schemes
<b>14</b>	Groundwater irrigation
<b>15</b>	Water harvesting
<b>16</b>	Drainage and desalinization
<b>17</b>	Non-conventional water use, notably water quality, waste water re-use, desalinized water and urban/peri-urban water use
	<b>Water and environment</b>
<b>18</b>	Water and Forest and watershed management
<b>19</b>	Environmental services
<b>20</b>	Agriculture and wetlands interactions
<b>21</b>	Sustainability of agricultural water use in the context of competing water uses and climate change
<b>22</b>	Pollution from agriculture, including from pesticides, fertilizers and heavy metals, on ecosystems
<b>23</b>	Water and food safety
	<b>Water information Systems</b>
<b>24</b>	Water Information Systems, models and decision-support tools including AQUASTAT and AQUACROP

36. The questionnaire also refers to a list of **products and services** that FAO provides to its Member Countries. To facilitate a common understanding of terms, please see Box 2 for an explanation of each service/product.

**FAO'S SERVICES AND PRODUCTS IN THE WATER SECTOR**

<b>Service/product</b>	<b>Explanation</b>
<b><i>Advocacy work, initiatives and products</i></b>	Advocacy work by FAO on water related themes, including press releases, briefs, brochures, audiovisual products, etc.
<b><i>FAO website</i></b>	Access to and use of information, documents, databases and links on water related themes, available on <a href="http://www.fao.org">www.fao.org</a> , including FAO Water, FAO Forest and Water, etc.
<b><i>Publications</i></b>	FAO's publications on water related issues, on-line and/or in hard-copy
<b><i>Expert consultations, workshops and e-conferences</i></b>	Meetings of experts on technical issues, part or not of larger programmes and processes. Examples are the technical expert consultation on Land and Water Use or the E-conference on Water scarcity and biotechnology
<b><i>International processes, codes and standard setting agreements</i></b>	Participation in code and standard setting processes associated with water related themes, wherein FAO is the lead agency or one of the lead agencies. Examples are FAO's role in UN Water, in watershed management networks, the Codex Alimentarius standards, etc.
<b><i>Partnerships and alliances</i></b>	FAO's collaboration and partnership in water-related initiatives with other UN agencies, international and national organizations including CGIAR, under any form of assistance.
<b><i>Institution building</i></b>	Any form of FAO's assistance in support of water-related organizations, ranging from ministries to Water Users Groups, aimed at strengthening their competences, skills, management systems, etc.
<b><i>Capacity development including training</i></b>	Any form of FAO's assistance in support of development and strengthening of knowledge, skills and competences of women and men staff, farmers, fishers, forest users, etc.
<b><i>Policy dialogue and assistance, including transboundary issues</i></b>	Any form of FAO's assistance in support of the development of policy dialogue, formulation of new policies or revision of existing ones, at national or international level.
<b><i>Technical assistance, including transboundary issues</i></b>	Any form of FAO's assistance on technical aspects of water-related themes at national or international level.
<b><i>Development projects in the water sector</i></b>	Implementation by FAO of development projects or programmes related to water and watershed management, directly or through the Government and/or other partner organizations.
<b><i>Emergency operations in the water sector</i></b>	Implementation by FAO of emergency projects or programmes related to water and watershed management, directly or through the Government and/or other partner organizations.
<b><i>Investment projects in the water sector</i></b>	FAO's participation in the identification, preparation and supervision of investment projects related to water and watershed management, funded by any of the International Financial Institutions
<b><i>Other (specify)</i></b>	Any other water-related service, product or function you wish to mention, that is not included in the list above.

**Section C. Information on the Responding Institution**

- 1. Please indicate the full name of your Institution as detailed as possible, your country of location and the position of the Respondent<sup>3</sup>.**

<i>N.</i>		
<i>1.1</i>	<i>Institution, full name</i>	
<i>1.2</i>	<i>Country</i>	
<i>1.3</i>	<i>Position of respondent</i>	

- 3.1 Please provide your contact details if you are willing to be consulted later in the process, should more information be necessary. All responses will be treated with strict confidence by the Evaluation team.**

<i>Name of respondent</i>			
<i>Telephone number</i>		<i>Email address</i>	

---

<sup>3</sup> The respondent is the person who is responsible for the content of the answers and to whom questions may be asked if necessary as follow up

**Section D. Your knowledge about FAO**

This section aims at understanding the **KNOWLEDGE** and awareness that you and your Institution have of FAO's **WORK RELATED TO WATER**.

2. **Have you and/or your Institution heard of FAO's work, products and services?**

N.	Yes	No
2.1		

3.2 *If Yes, please go to question Q.3. If No, please go to Section F, page 13*

3. **Please indicate the level of your knowledge about the work by FAO in the WATER SECTOR.**

N.	FAO's areas of work in the Water Sector	None	Little	Some	Fair	Good	Excellent	Do not know
3.1	Water policies and strategies							
3.2	Bringing potential irrigable areas into production							
3.3	Water law, legislation and regulations							
3.4	Local water management institutions							
3.5	Water management linked to water availability and scarcity							
3.6	Economic returns, water pricing, cost recovery							
3.7	Land and water interactions							
3.8	On-farm water use, productivity and efficiency							
3.9	Water and Food Security							
3.10	Water and livestock							
3.11	Fresh water management for aquaculture							
3.12	New and potential irrigation schemes							
3.13	Rehabilitation and modernization of irrigation schemes							
3.14	Groundwater irrigation							
3.15	Water harvesting							
3.16	Drainage and desalinization							
3.17	Non-conventional water use, water quality, waste water re-use							
3.18	Water and Forest and watershed management							
3.19	Environmental services							
3.20	Agriculture and wetlands interactions							
3.21	Sustainability of agricultural water use and competing uses							

3.22	Pollution from agriculture, pesticides, fertilizers, heavy metals							
3.23	Water and food safety							
3.24	Water Information Systems, incl. AQUASTAT and AQUACROP							
3.25	Other (specify)							

**4. Please indicate the level of your knowledge about the following PRODUCTS AND SERVICES by FAO in the WATER SECTOR.**

N.	FAO's products and services	None	Little	Some	Fair	Good	Excellent	Do not know
4.1	Advocacy work, initiatives and products							
4.2	FAO website							
4.3	Publications							
4.4	Expert consultations, workshops and e-conferences							
4.5	International processes, codes and standard setting agreements							
4.6	Partnerships and alliances							
4.7	Institution building							
4.8	Capacity development/training							
4.9	Policy dialogue and assistance, including on transboundary issues							
4.10	Technical assistance, including on transboundary issues							
4.11	Development projects in the water sector							
4.12	Emergency operations in the water sector							
4.13	Investment projects in the water sector							
4.14	Other (specify)							

**Section E. Use of FAO's work, products and services since 2004**

This section aims at understanding the **USE** that your Institution made of FAO's products and services in the **WATER SECTOR since 2004**, and your assessment.

**5. Since 2004, have you and/or your Institution used FAO's work, products and services?**

N.	Yes	No
5.1		

**3.3** *If your answer is Yes, please go to question Q.6*

**3.4** *If your answer is No, please go to Section F , page 13*

**6. For how long has your Institution used FAO's work, products and services in the WATER SECTOR?**

N.	Period of time
6.1	<i>Less than one year</i>
6.2	<i>1-2 years</i>
6.3	<i>3-5 years</i>
6.4	<i>more than 5 years</i>

**7. Since 2004, have you and your Institution ever requested assistance from FAO in the WATER SECTOR?**

N.	Yes	No	Do not know
7.1			

**3.5** *If your answer is Yes, please go to question Q.8.*

**3.6** *If your answer is No, please go to question Q.11.*

**3.7** *If your answer is Do not Know, go to question Q. 12*

**8. Since 2004, has your Institution received assistance from FAO and/or any other international organization in the WATER SECTOR?**

N.	Received			Not received from FAO	Do not know
	Yes, only from FAO	Yes, from FAO and others	Yes, from others only		

**9. If you have received assistance from others in the WATER SECTOR, please list the organizations that have assisted you.**

**10. If you requested FAO for assistance in the WATER SECTOR and did not receive it, please explain why.**

**11. If you have never requested assistance from FAO in the WATER SECTOR, please explain why.**

**12. Since 2004, please indicate HOW OFTEN your Institution has used FAO's PRODUCTS AND SERVICES in the WATER SECTOR listed below.**

N.	FAO's products and services	Never	Rarely	Occasionally	Sometimes	Often	Always	Do not know
12.1	Advocacy work, initiatives and products							
12.2	FAO website							
12.3	Publications							
12.4	Expert consultations, workshops and e-conferences							
12.5	International processes, codes and standard setting agreements							
12.6	Partnerships and alliances							
12.7	Institution building							
12.8	Capacity development/training							
12.9	Policy dialogue and assistance, incl. on transboundary issues							
12.10	Technical assistance, including on transboundary issues							
12.11	Development projects in the water sector							
12.12	Emergency operations in the water sector							
12.13	Investment projects in the water sector							
12.14	Other (please specify)							

**13. Please name ANY PRODUCT AND SERVICE in any of FAO's areas of work in the WATER SECTOR that you have found most useful.**

**14. Please assess the QUALITY of FAO'S WORK IN THE WATER SECTOR since 2004, in the areas listed below.**

N.	FAO's areas of work in the Water Sector	1. Very poor	2. Poor	3. Inadequate	4. Adequate	5. Good	6. Excellent	Do not know
14.1	Water policies and strategies							
14.2	Bringing potential irrigable areas into production							
14.3	Water law, legislation and regulations							
14.4	Local water management institutions							
14.5	Water management linked to water availability and scarcity							
14.6	Economic returns, water pricing, cost recovery							
14.7	Land and water interactions							
14.8	On-farm water use, productivity and efficiency							
14.9	Water and Food Security							
14.10	Water and livestock							
14.11	Fresh water management for aquaculture							
14.12	New and potential irrigation schemes							
14.13	Rehabilitation and modernization of irrigation schemes							
14.14	Groundwater irrigation							
14.15	Water harvesting							
14.16	Drainage and de/salinization							
14.17	Non-conventional water use, water quality, waste water re-use							
14.18	Water and Forest and watershed management							
14.19	Environmental services							
14.20	Agriculture and wetlands interactions							
14.21	Sustainability of agricultural water use and competing uses							
14.22	Pollution from agriculture, pesticides, fertilizers, heavy metals							
14.23	Water and food safety							
14.24	Water Information Systems, incl. AQUASTAT and AQUACROP							
14.25	Other (specify)							

--	--	--	--	--	--	--	--	--

**15. Please provide examples and name products and services for the areas that you have rated as 1-2 and 5-6 in question Q.14 above.**

**16. Please assess FAO's current COMPARATIVE ADVANTAGE in relation to other international organizations in its areas of work in the WATER SECTOR.**

N.	FAO's areas of work in the Water Sector	Very poor	Poor	Inadequate	Adequate	Good	Excellent	Do not know
16.1	Water policies and strategies							
16.2	Bringing potential irrigable areas into production							
16.3	Water law, legislation and regulations							
16.4	Local water management institutions							
16.5	Water management linked to water availability and scarcity							
16.6	Economic returns, water pricing, cost recovery							
16.7	Land and water interactions							
16.8	On-farm water use, productivity and efficiency							
16.9	Water and Food Security							
16.10	Water and livestock							
16.11	Fresh water management for aquaculture							
16.12	New and potential irrigation schemes							
16.13	Rehabilitation and modernization of irrigation schemes							
16.14	Groundwater irrigation							
16.15	Water harvesting							
16.16	Drainage and de/salinization							
16.17	Non-conventional water use, water quality, waste water re-use							
16.18	Water and Forest and watershed management							
16.19	Environmental services							
16.20	Agriculture and wetlands interactions							
16.21	Sustainability of agricultural water use and competing uses							

<b>16.22</b>	Pollution from agriculture, pesticides, fertilizers, heavy metals							
<b>16.23</b>	Water and food safety							
<b>16.24</b>	Water Information Systems, incl. AQUASTAT and AQUACROP							
<b>16.25</b>	Other (specify)							

**17. What is your overall opinion at present about FAO's work in the WATER SECTOR?  
Please indicate your agreement or disagreement with the statements below.**

<b>N.</b>	<b>Statements</b>	<b>Strongly disagree</b>	<b>Disagree</b>	<b>Mildly disagree</b>	<b>Mildly agree</b>	<b>Agree</b>	<b>Strongly agree</b>	<b>Do not know</b>
<b>17.1</b>	FAO's work is well known by my Institution							
<b>17.2</b>	FAO's products and services are relevant for my Institution							
<b>17.3</b>	FAO is one of our first sources of information on important and emerging issues							
<b>17.4</b>	FAO meets our needs in policy assistance							
<b>17.5</b>	FAO meets our needs in information products							
<b>17.6</b>	FAO meets our needs in technical assistance							
<b>17.7</b>	FAO's current areas of work cover our needs							
<b>17.8</b>	FAO's development projects in the water sector are effective							
<b>17.9</b>	FAO's emergency operations in the water sector are effective							
<b>17.10</b>	FAO's contribution to investment projects in the water sector is important							

**Section F. Expectations from FAO for the future (2010-2015)**

This section aims at describing what **EXPECTATIONS** you and your Institution have in relation to FAO in the **WATER SECTOR**, in terms of products and services, collaboration and modality of assistance, **for the next years (2010-2015)**

**18. Do you think that FAO in the WATER SECTOR in future should focus on less, more or the same areas of work as now?**

N.	Less	More	Same as now	Do not know
18.1				

*3.8 If your answer is Less, please go to question Q.19.*

*3.9 If your answer is More, please go to question Q. 20.*

*3.10 If your answer is Same as now or Do not Know, please go to question Q. 22*

**19. If you think that FAO should focus its work in a smaller number of areas in the WATER SECTOR, please indicate your first four priorities for FAO's WORK: tick ONLY four areas, according to your priority ranking.**

N.	FAO's areas of work in the Water Sector	First priority	Second priority	Third priority	Fourth priority
19.1	Water policies and strategies				
19.2	Bringing potential irrigable areas into production				
19.3	Water law, legislation and regulations				
19.4	Local water management institutions				
19.5	Water management linked to water availability and scarcity				
19.6	Economic returns, water pricing, cost recovery				
19.7	Land and water interactions				
19.8	On-farm water use, productivity and efficiency				
19.9	Water and Food Security				
19.10	Water and livestock				
19.11	Fresh water management for aquaculture				
19.12	New and potential irrigation schemes				
19.13	Rehabilitation and modernization of irrigation schemes				
19.14	Groundwater irrigation				
19.15	Water harvesting				
19.16	Drainage and de/salinization				
19.17	Non-conventional water use, water quality, waste water re-use				
19.18	Water and Forest and watershed management				
19.19	Environmental services				
19.20	Agriculture and wetlands interactions				
19.21	Sustainability of agricultural water use and competing uses				
19.22	Pollution from agriculture, pesticides, fertilizers, heavy metals				
19.23	Water and food safety				
19.24	Water Information Systems, incl. AQUASTAT and AQUACROP				
19.25	Other (specify)				
19.26	Do not know				

20. **If you think that FAO should expand its work to more areas in the WATER SECTOR, please list up to four additional priority areas**

N.	Priority ranking	Area of work
20.1	1 <sup>st</sup> priority	
20.2	2 <sup>nd</sup> priority	
20.3	3 <sup>rd</sup> priority	
20.4	4 <sup>th</sup> priority	

21. **If you wish, please add any other comment supporting your assessment above and choice of priority.**

22. **In future, would you like to receive support from FAO in any of the following areas of work in THE WATER SECTOR?**

N.	FAO's areas of work in the Water Sector	Yes	No	Do not know
22.1	Water policies and strategies			
22.2	Bringing potential irrigable areas into production			
22.3	Water law, legislation and regulations			
22.4	Local water management institutions			
22.5	Water management linked to water availability and scarcity			
22.6	Economic returns, water pricing, cost recovery			
22.7	Land and water interactions			
22.8	On-farm water use, productivity and efficiency			
22.9	Water and Food Security			
22.10	Water and livestock			
22.11	Fresh water management for aquaculture			
22.12	New and potential irrigation schemes			
22.13	Rehabilitation and modernization of irrigation schemes			
22.14	Groundwater irrigation			
22.15	Water harvesting			
22.16	Drainage and de/salinization			
22.17	Non-conventional water use, water quality, waste water re-use			
22.18	Water and Forest and watershed management			
22.19	Environmental services			
22.20	Agriculture and wetlands interactions			
22.21	Sustainability of agricultural water use and competing uses			
22.22	Pollution from agriculture, pesticides, fertilizers, heavy metals			
22.23	Water and food safety			
22.24	Water Information Systems, incl. AQUASTAT and AQUACROP			
22.25	Other (specify)			

23. **In future, would you like to receive support from FAO in any of the PRODUCTS AND SERVICES in the WATER SECTOR listed below?**

N.	FAO's products and services	Yes	No	Do not know
23.1	Advocacy work, initiatives and products			

23.2	FAO website			
23.3	Publications			
23.4	Expert consultations, workshops and e-conferences			
23.5	International processes, codes and standard setting agreements			
23.6	Partnerships and alliances			
23.7	Institution building			
23.8	Capacity development/training			
23.9	Policy dialogue and assistance, incl. on transboundary issues			
23.10	Technical assistance, including on transboundary issues			
23.11	Development projects in the water sector			
23.12	Emergency operations in the water sector			
23.13	Investment projects in the water sector			
23.14	Other (please specify)			

**24. In future, if you want to receive support from FAO through technical or policy assistance at in-country level, how would it be most useful for your Institution?**

N.	Typology	Yes	No	Do not know
	<i>What type of experts would you prefer?</i>			
24.1	Experts with a comprehensive overall knowledge of the water sector			
24.2	Highly specialized technical experts in the water sector			
	<i>Where should the expertise come from?</i>			
24.3	National experts			
24.4	Regional/international experts			
	<i>What type of support would you like to receive?</i>			
24.5	One intensive visit to your institution/country			
24.6	Recurrent visits over an extended period (one or two years)			
24.7	Stay in your institution for several months			

**25. If you consider that capacity development is an area where FAO could be a valid partner, please indicate your first four priorities for the modality of assistance: tick ONLY four modalities according to your priority ranking.**

N.	Modality of capacity building	First priority	Second priority	Third priority	Fourth priority
25.1	Meetings/workshops for exchange of experience and learning				
25.2	Handbooks, operations manuals, teaching materials, etc.				
25.3	Training courses on technical issues				
25.4	On-the-job training on technical issues				
25.5	Training courses on policy development				
25.6	On-the-job training on policy development				
25.7	Training courses on development of regulatory frameworks				
25.8	On-the-job training on development of regulatory frameworks				
25.9	Other – specify				
25.10	FAO could not be a valid partner for us in capacity development				
25.11	Do not know				

**26. Please add any comment you wish in relation to the support your institution would like to receive from FAO in the WATER SECTOR.**

**27. THIS IS THE LAST QUESTION, PLEASE BE PATIENT: indicate if you have ever used the FAO products in the list below.**

N.	FAO's product	Yes	No	Do not know
27.1	Dams, fish and fisheries: Opportunities, challenges and conflict resolution, FAO Fisheries Technical Paper No. 419, Gerd Marmulla			
27.2	Payment Schemes for Environmental Services in Watersheds			
27.3	The interface between customary and statutory water rights - A statutory perspective, FAO Legal Paper Online #45, Stefano Burchi			
27.4	Stakeholder-oriented valuation to support water resources management processes: Confronting concepts with local practice, FAO Water Reports 30, L.Hermans, D.Renault, L.Emerton et.al.			
27.5	Performance analysis of On-demand Pressurized Irrigation Systems, FAO Irrigation and Drainage Paper 59, N. Lamaddalena, J.A. Sagardoy			
27.6	Water and Cereals in Drylands, P. Koohafkan & B.A. Stewart			
27.7	Hazard characterization for pathogens in food and water, Microbiological Risk Assessment Series No. 3			
27.8	WHO Guidelines for the safe use of wastewater, excreta and greywater. Volume II Wastewater use in agriculture, S. Koo-Oshima			
27.9	Guidelines on Agriculture and Wetlands Interactions (GAWI)			
27.10	AQUASTAT - Review of agricultural water use per country			
27.11	Water at FAO, Information Note			
27.12	Report of the Regional Workshop on Salt-Affected Soils from Sea Water Intrusion: Strategies for Rehabilitation and Management, RAP Publication 2005/11			
27.13	Workshop on Environmental and Health Consequences of Irrigation with Poor-Quality Water at the International Conference on Irrigation and Drainage, Kuala Lumpur, Malaysia, September 2006.			
27.14	Capacity Building in Food Safety, Water Safety and Nutrition, through Training and Education, Joint FAO/WHO/OIE/ICD Meeting September 2008			
27.15	Status Report on Integrated Water Resources Management and Water Efficiency Plans, Prepared for the 16th session of the Commission on Sustainable Development - May 2008			
27.16	Coping with water scarcity: A strategic issue and priority for system-wide action, UN-Water Thematic Initiatives			
27.17	Articles on the Law of Transboundary Aquifers, "acknowledged" by UNGA Res. 63/124 adopted on 11 December 2008			
27.18	Appropriate Water-Lifting Technologies in West Africa: Findings and Proposal for a Research Uptake Programme, M. Snell			
27.19	Agricultural trade liberalization: Implications for irrigated agriculture, Issue Paper 5, G.A.Cornish, S. Fernandez			
27.20	IPTRID Manuel: Diagnostic Participatif Rapide et Planification des Actions d'amélioration des performances des périmètres irrigués, Application à l'Afrique de l'Ouest (DPRP).			

**MANY THANKS AGAIN FOR YOUR CONTRIBUTION: IT IS HIGHLY APPRECIATED  
AND WILL CONTRIBUTE TO AN IMPROVED SERVICE DELIVERY BY FAO TO YOUR  
INSTITUTION.**

# Evaluation of FAO's role and work related to water

## Annex 13

### Analysis of the questionnaire survey to national and international organizations (NII)

#### Final report

#### 1 Background information

1. The NII questionnaire<sup>1</sup> was sent to 92 organizations; of these, 15 organizations that had previously been contacted were mailed the questionnaire with a cover letter explaining the parallel processes and providing a justification for them not to fill in the second one. In fact, only one out of this group replied. Thus we consider that the total number of organizations contacted was 77 (92-15).

2. 22 replies were received. In addition, 4 organizations were erroneously mailed the Member Countries questionnaire by the FAO Representations. In consideration of the fact that many questions were exactly the same across the two questionnaires (see Appendixes), 4 questionnaires from the MC list were swapped over to the NII list. In total 26 replies were received, which represents a response rate of 34%. This is not a good result but acceptable with some caution. In addition, three organizations replied by email stating they knew too little about FAO to fill it in. This was taken into account in the conclusions.

#### 2 Results

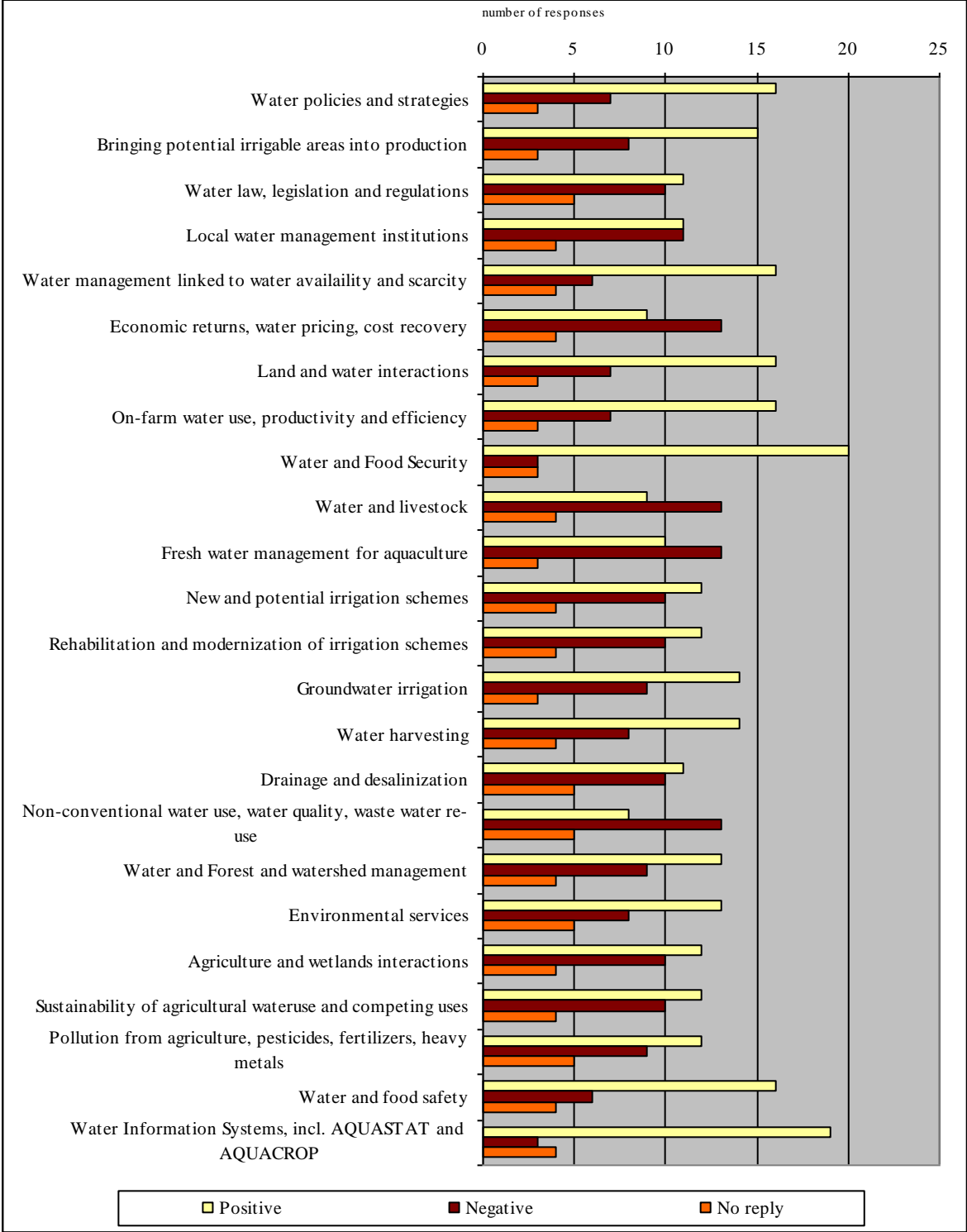
3. Respondents included UN (14) and non UN organizations (12), some national and international NGOs, a couple of bilateral cooperation bodies, one CGIAR, a couple of sub-regional organizations. The analysis was done for UN versus non-UN organizations. Geographical location was biased in the mailing list, so it was not considered.

Respondents largely knew FAO: only two said they unaware of FAO's work, products and services, which should be added to the other 3 who replied by email. Therefore, this means that a minimum of 6% and possibly many more of the contacted organizations, have no information about FAO's work in water. Among respondents, the great majority of those who knew the Organization and its work are long-standing users/partners (above 5 years).

---

<sup>1</sup> A copy of the word version of the questionnaire for national and international organizations can be found in the Appendix to this Annex.

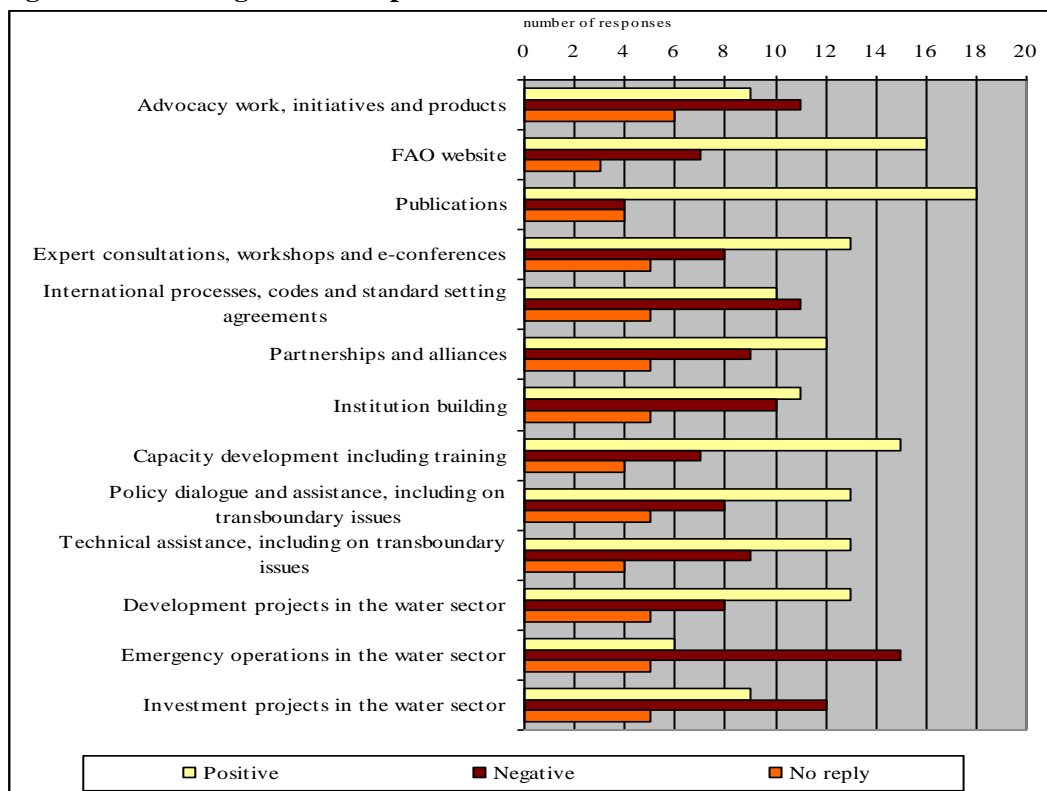
**Figure 1: Knowledge of FAO's work in the Water Sector**



4. Knowledge of areas of work is linked to each organization's mandate and is thus heavily influenced by who the respondent was. To some extent it may also reflect the amount of work done in any single area, but not necessarily. Almost half of the responses (49%) were positive knowledge about FAO's areas of work in water (see Figure 1), though this was quite skewed: best known were *Water and Food Security*, especially by non-UN, *AQUASTAT and models*, especially by UN, followed

at some distance by *policies, land and water interactions, water availability and scarcity, on farm water use, water and food safety*. The least known were *economic returns in water, water and livestock, freshwater management for aquaculture and non-conventional water use*.

**Figure 2: Knowledge of FAO's products and services in the Water Sector**



5. Knowledge of products and services (see Figure 2) was lower, with 57% of responses being either low levels of knowledge or blanks. The best known products are *publications* followed by the *website* for non-UN organizations and *capacity development* for UN organizations. The least known products were *emergency* and *investment projects*, whereas *development projects* were quite well known. *Advocacy work* was known very little also among UN agencies, which has some implications with regards to the returns from chairing UN-Water, at least in the present, for FAO.

6. Most respondents (21 out of 26) collaborate with FAO and others, among which the World Bank, UN Water, World Water Council and IWMI are the most frequent. Three respondents who do not collaborate were not aware that FAO could be a partner.

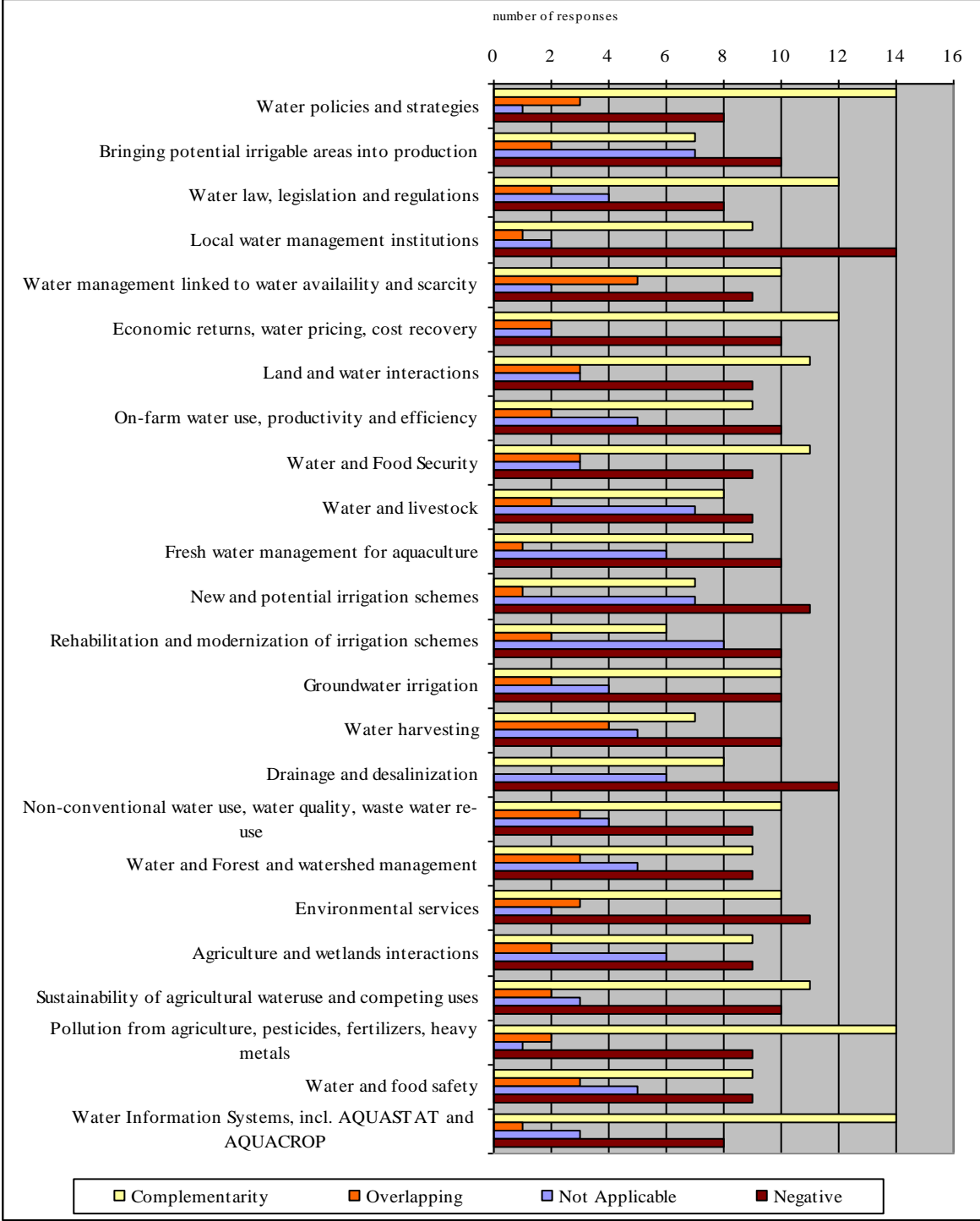
7. Frequency of use of FAO's products is rather low: only 38% of responses were "sometimes" or more. Again, *publications* and the *website* were the products used most frequently, with *AQUASTAT* ranking first among the most useful. Technical assistance and publications on legal issues, including transboundary water issues, were specifically mentioned as well, as was policy assistance. Legal issues seem to be interesting for all categories of respondents (UN, sub-regional bodies, bilaterals and NGOs).<sup>2</sup>

<sup>8</sup> The quality assessment of FAO's work resulted in 48% of responses being blank/Do Not Know, 4% negative and 48% positive. Among the positive, "Good" replies were more frequent than "Adequate", but "Excellent" were only 5.5% of the total. Areas ranking best were *Pollution from agriculture, Sustainability of agricultural water use and water policies*. Areas ranking the lowest were *Economic returns and, freshwater management for aquaculture and water re-use. AQUASTAT*

<sup>2</sup> Answers to questions 12.

received more “Excellent” responses than any other sector, however there were also three “Inadequate” responses. A suggestion was made for improvement of FAO LEX: “ better research engine, be updated more frequently; be more complete, especially with respect to translated versions of international Asian treaties”.

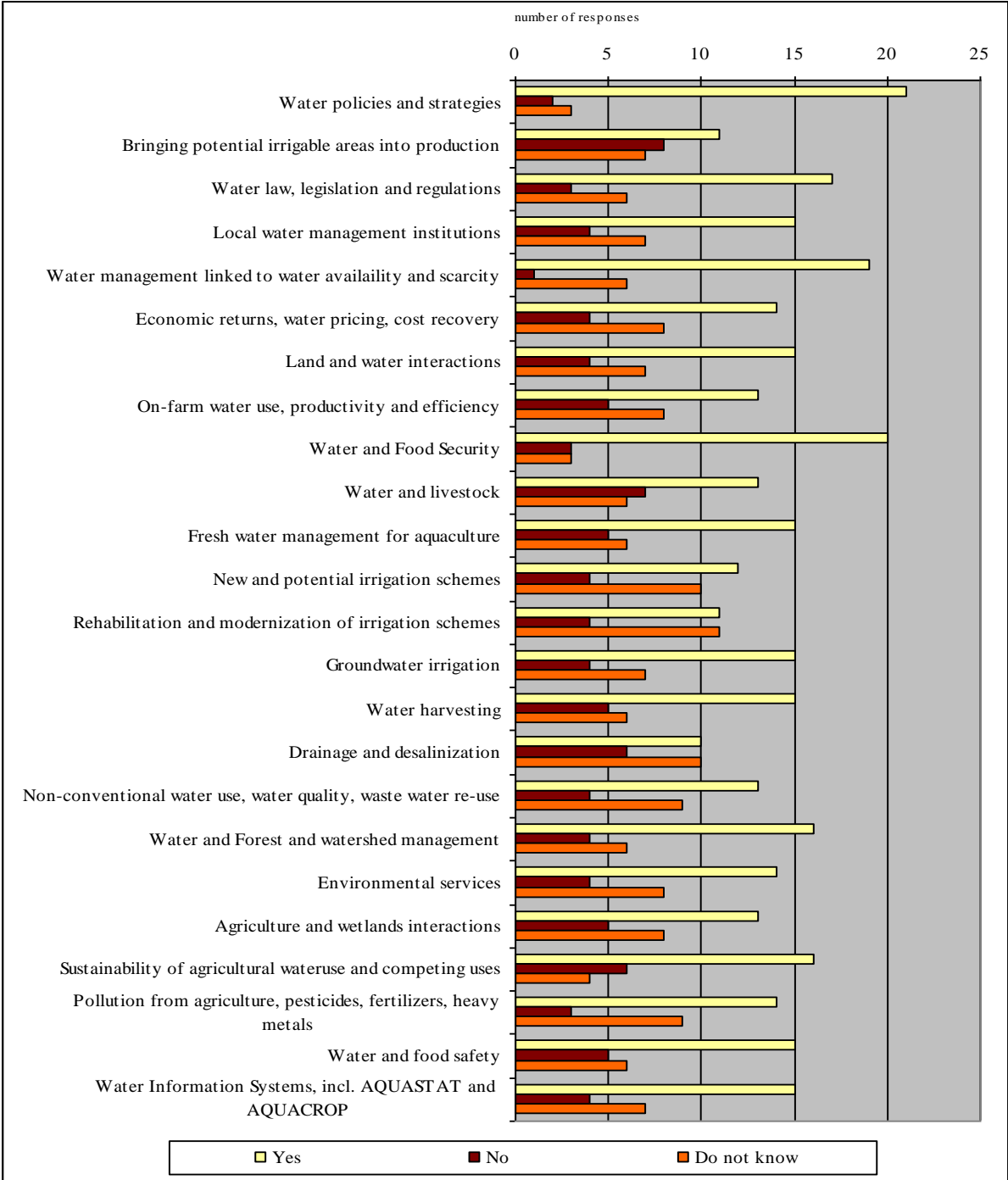
**Figure 3: Complementarity or overlap with FAO’s work in the Water Sector**



9. Complementarity and overlapping with FAO (see Figure 3) received 41% and 15% of responses respectively from UN agencies, whereas 52% of non-UN organizations did not reply to the question. Greatest overlap and blank replies went to *Water management linked to water availability and scarcity* and to *Water harvesting*, whereas greatest complementarity was attributed to *Policies and strategies* and *Pollution from agriculture*. Two UN agencies stated a lot of overlapping.

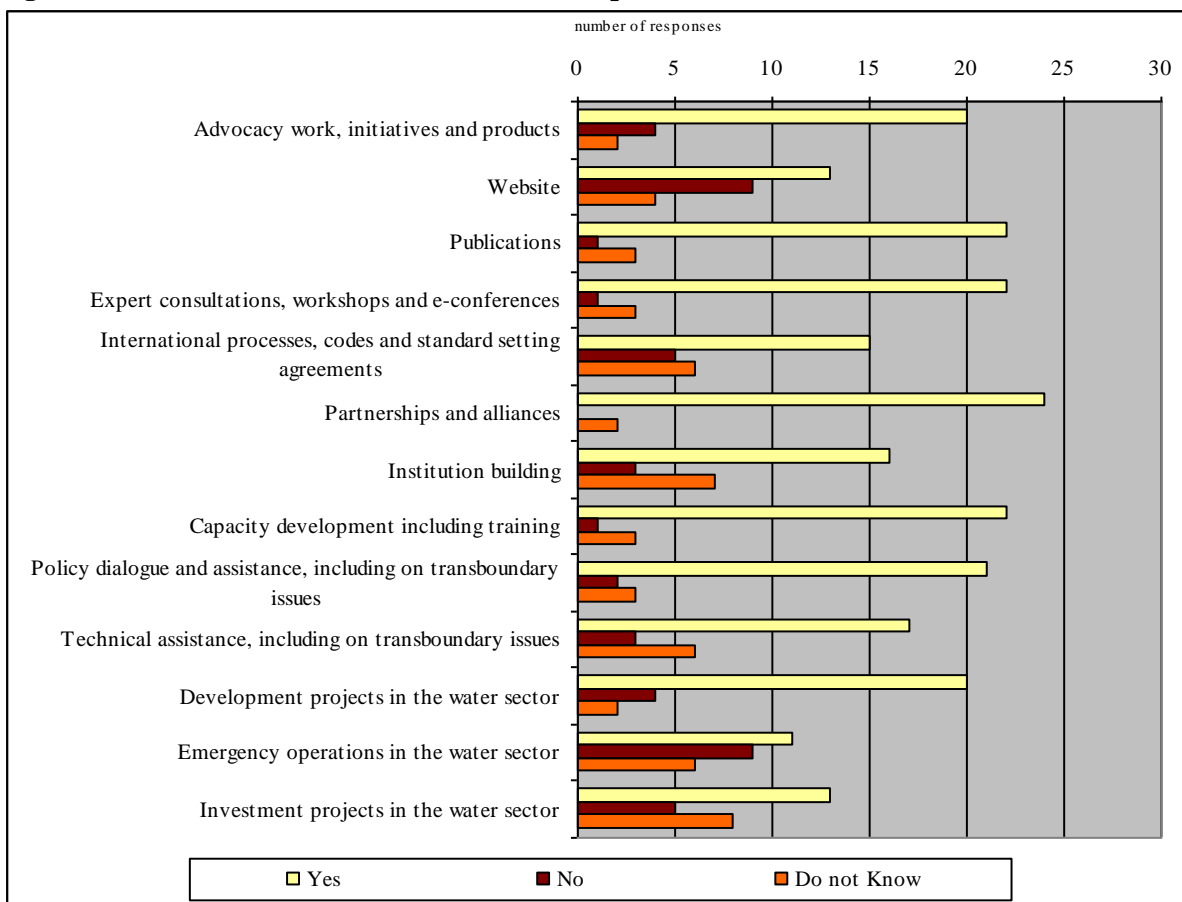
10. Statements about FAO's usefulness were rated as positive with 53% of responses, most of the remaining replies being Do Not Know or Blanks.

**Figure 4: Areas for future collaboration - FAO's work**



11. Collaboration with FAO on thematic areas (see Figure 4) is desired in 55% of responses, mainly in *Water Policies and Strategies* (both UN and non-UN), *Water and Food Security* (non-UN) and *Water management for availability and scarcity* (both). Lowest interest was shown for *Water and livestock* and for *Bringing potential irrigable areas into production*.

**Figure 5: Areas for future collaboration - FAO's products and services**



12. As far as FAO's products (see Figure 5) are concerned, interest for collaboration is higher, almost 70% for UN and 61% for non-UN. For both groups, *Partnerships and Alliances* are the highest, followed by *Development projects* for non-UN. Strong interest goes to *publications*, *expert consultations*, *capacity development* and *policy dialogue*. Least interest is given to *emergency and investment projects* with FAO. Collaboration within UN-Water was highly appreciated; an NGO criticized lack of modesty among FAO's experts; more collaboration requested by Ramsar Convention and WHO, in particular on research and development.

13. The use of the products listed in the last questions was very low: only 32% of responses were positive, with 68% being a mix of No, Do not Know and Blank. AQUASTAT was the best known, followed by *Coping with water scarcity: A strategic issue and priority for system-wide action* and UN-Water Thematic Initiatives. The least known were a regional product and work on water and trade.

### **3 Conclusions**

14. Many know that FAO works in the water sector, but very few know well what FAO does; the few who seem to know are positive in their appreciation of the quality of work, but the question remains open about all the others.

15. AQUASTAT and models are by far the best known products. FAO's work on water policies and strategies and on Water and Food Security is also well known and appreciated. Work in advocacy, investment and emergency projects is virtually invisible. Some areas of work are clearly known better by specialized organizations (e.g. wetlands).

16. Indirectly, replies confirm that FAO works in many more areas than anybody else, exception made for IFAD and UNDP who stated a high level of overlap. A response from IWMI would have been interesting in this respect. Furthermore, It is interesting to note that water harvesting was also considered an area with high overlap by these two organizations, whereas in Africa it was raised frequently as an area where FAO should work.

17. Collaboration is fine, much more is asked for in terms of partnerships and alliances and capacity development in the different sectors. The limited use of the random list of products confirms field level observations in Africa that very little of what FAO produces is accessible, known and used. There is a lot to do to improve this aspect.

## Evaluation of FAO's role and work related to water

### Questionnaire for National and International Institutions

#### FOREWORD

FAO is undertaking an evaluation of its role and work related to water over the past five years. The evaluation is conducted during the period June-December 2009, by a multi-disciplinary team of international consultants with managerial support provided by the FAO Evaluation Service. The Terms of Reference of the Evaluation are attached.

The **main purpose** of the Evaluation is to provide FAO's Member Countries and Secretariat with evidence and lessons on past performance as a basis for recommendations on the future role and scope of the Organization in its work related to water. The Evaluation will also provide accountability to FAO Member Countries and Secretariat about the Organization's performance and comparative advantage in this area of work.

The **scope** of the Evaluation is FAO's work related to water, defined as all activities conducted by the Organization for the conservation, development and sustainable utilization of water resources for agricultural development, including the responses to global environmental challenges affecting food and agriculture. This **excludes all work related to marine waters** and all kind of fisheries resources, as well as any work that **does not relate** to the management and development of the water resource. Within this definition, the evaluation encompasses **all activities** implemented during **the period 2004-2008**, irrespective of source of funding (Regular Programme or extra budgetary resources) or from where they are managed (Headquarters, Regional and Sub-regional Offices and FAO Representations).

The **major focus** of the Evaluation is to determine the relevance, effectiveness, impact and sustainability of FAO's work related to water as defined above.

**You and your organization are among the key stakeholders of FAO's work in the Water Sector. Your views are very important to the overall conduct of the Evaluation and will constitute an important part of the evidence base from which findings and recommendations for future cooperation will be drawn. The Evaluation team thanks you warmly in advance for your attention, time and precious collaboration.**

## Section A. Instructions for filling in the questionnaire

18. The questionnaire is addressed to a wide number and range of organizations, national and international, in the UN and CGIAR systems and outside these. To simplify the questions, we have used the term **institution** to refer to all the responding organizations.

19. The questionnaire should be completed by or under the responsibility of the Senior Officer in each Institution addressed, be he/she the Director, Chief, etc.

20. This is a qualitative assessment, with four types of questions: questions that have a Yes/No answer; questions that require you to provide ranking on a six-point scale; questions that ask you to indicate priorities as well as open-ended questions. The **six-point scoring system** is as follows:

**1: none/very poor/never;**

**2: little/poor/rarely;**

**3: some/inadequate/occasionally;**

**4: fair/adequate/sometimes;**

**5: good/good/often;**

**6: excellent/excellent/always.**

**Please tick the box “Do not know” when you have no information on the issue**

21. Please answer all the ranked questions by marking an **X** in the corresponding box. The open-ended questions will allow you to provide further comments on each aspect discussed, as well as any other aspect you may wish to raise. **Please feel free to use as much space as required for your answers.**

22.

**The questionnaire can be filled in the MS Word format or through a web-based tool, depending on your preference and ease of access to Internet. The link to the web-site is:**

23.

24. If you are filling the questionnaire as a print-out or in its Word version, please return it as an email attachment to Ms. Carlotta De Vivanco, Evaluation Service, PBEE, FAO Rome, email: [Carlotta.DeVivanco@fao.org](mailto:Carlotta.DeVivanco@fao.org) or by fax to +390657054403.

25.

26. The deadline for responses is **Friday 31 July 2009**. Respecting the deadline is very important to allow proper analysis of the responses.

**Your assistance in completing the questionnaire is greatly appreciated.**

## Section B. OVERVIEW OF FAO'S WORK IN THE WATER SECTOR

27. The Evaluation will assess the work related to water, conducted by FAO as a whole, irrespective of departments and unit. Below, are listed the technical areas, clustered in major themes, that have been identified as the most important in FAO's work in water, as well as the major types of support at country level.

### *FAO' AREAS OF WORK IN THE WATER SECTOR*

	<b>Water policy, legal and economic aspects</b>
<b>1</b>	Water policies and Strategies
<b>2</b>	Bringing potential physical and economic irrigable areas into production
<b>3</b>	Water law, legislation and regulations
<b>4</b>	Local water management institutions
<b>5</b>	Water management linked to water availability and scarcity, including agricultural withdrawals within river basin management and associated (multi-purpose) storage and conveyance infrastructure
<b>6</b>	Economic returns, water pricing, and cost recovery
	<b>Water in production systems</b>
<b>7</b>	Land and water interactions, including reclamation of contaminated land
<b>8</b>	On-farm water use, productivity and efficiency for agricultural production
<b>9</b>	Water and Food Security
<b>10</b>	Water and livestock
<b>11</b>	Fresh water management for aquaculture
	<b>Water system feasibility, design and technology</b>
<b>12</b>	New and potential irrigation schemes
<b>13</b>	Rehabilitation and modernization of irrigation schemes
<b>14</b>	Groundwater irrigation
<b>15</b>	Water harvesting
<b>16</b>	Drainage and desalinization
<b>17</b>	Non-conventional water use, notably water quality, waste water re-use, desalinized water and urban/peri-urban water use
	<b>Water and environment</b>
<b>18</b>	Water and Forest and watershed management
<b>19</b>	Environmental services
<b>20</b>	Agriculture and wetlands interactions
<b>21</b>	Sustainability of agricultural water use in the context of competing water uses and climate change
<b>22</b>	Pollution from agriculture, including from pesticides, fertilizers and heavy metals, on ecosystems
<b>23</b>	Water and food safety
	<b>Water information Systems</b>
<b>24</b>	Water Information Systems, models and decision-support tools including AQUASTAT and AQUACROP

28. The questionnaire also refers also to a list of **products and services** that FAO provides to its Member Countries. To facilitate a common understanding of terms, please see Box 2 for an explanation of each service/product is.

### ***FAO'S SERVICES AND PRODUCTS IN THE WATER SECTOR***

<b>Service/product</b>	<b>Explanation</b>
<b><i>Advocacy work, initiatives and products</i></b>	Advocacy work by FAO on water related themes, including press releases, briefs, brochures, audiovisual products, etc.
<b><i>FAO website</i></b>	Access to and use of information, documents, databases and links on water related themes, available on <a href="http://www.fao.org">www.fao.org</a> , including FAO Water, FAO Forest and Water, etc.
<b><i>Publications</i></b>	FAO's publications on water related issues, on-line or in hard-copy
<b><i>Expert consultations, workshops and e-conferences</i></b>	Meetings of experts on technical issues, part or not of larger programmes and processes. Examples are the technical expert consultation on Land and Water Use or the E-conference on Water scarcity and biotechnology
<b><i>International processes, codes and standard setting agreements</i></b>	Participation in code and standard setting processes associated with water related themes, wherein FAO is the lead agency or one of the lead agencies. Examples are FAO's role in UN Water, in watershed management networks, the Codex Alimentarius standards, etc.
<b><i>Partnerships and alliances</i></b>	FAO's collaboration and partnership in water-related initiatives with other UN agencies, international and national organizations including CGIAR, under any form of assistance.
<b><i>Institution building</i></b>	Any form of FAO's assistance in support of water-related organizations, ranging from ministries to Water Users Groups, aimed at strengthening their competences, skills, management systems, etc.
<b><i>Capacity development/training</i></b>	Any form of FAO's assistance in support of development and strengthening of knowledge, skills and competences of women and men staff, farmers, fishers, forest users, etc.
<b><i>Policy dialogue and assistance, including transboundary issues</i></b>	Any form of FAO's assistance in support of the development of policy dialogue, formulation of new policies or revision of existing ones, at national or international level.
<b><i>Technical assistance, including transboundary issues</i></b>	Any form of FAO's assistance on technical aspects of water-related themes at national or international level.
<b><i>Development projects in the water sector</i></b>	Implementation by FAO of development projects or programmes related to water and watershed management, directly or through the Government and/or other partner organizations.
<b><i>Emergency operations in the water sector</i></b>	Implementation by FAO of emergency projects or programmes related to water and watershed management, directly or through the Government and/or other partner organizations.
<b><i>Investment projects in the water sector</i></b>	FAO's participation in the identification, preparation and supervision of investment projects related to water and watershed management, funded by any of the International Financial Institutions
<b><i>Other (specify)</i></b>	Any other water-related service, product or function you wish to mention, that is not included in the list above.

### Section C. Information on the Responding Institution

1. Please indicate the full name of your Institution as detailed as possible, your country of location and the position of the Respondent<sup>3</sup>.

N.		
1.1	Institution, full name	
1.2	Country	
1.3	Position of respondent	

- 3.1 Please provide your contact details if you are willing to be consulted later in the process, should more information be necessary. All responses will be treated in strict confidence by the Evaluation team.

Name of respondent			
Telephone number		Email address	

### Section D. Your knowledge about FAO

This section aims at understanding what is the **KNOWLEDGE** and awareness that you and your Institution have of FAO's **WORK RELATED TO WATER**

2. Have you and/or your Institution heard of FAO's work, products and services?

N.	Yes	No
2.1		

- 3.2 If Yes, please go to Q.3. If No, please go to Section F, page **XX**

3. Please indicate the level of your knowledge about the work by FAO in the **WATER SECTOR**

N.	FAO's areas of work in the Water Sector	None	Little	Some	Fair	Good	Excellent	Do not know
3.1	Water policies and strategies							
3.2	Bringing potential irrigable areas into production							
3.3	Water law, legislation and regulations							
3.4	Local water management institutions							
3.5	Water management linked to water availability and scarcity							
3.6	Economic returns, water pricing, cost							

<sup>3</sup> The respondent is the person who is responsible for the content of the answers and to whom questions may be asked if necessary as follow up

	recovery							
3.7	Land and water interactions							
3.8	On-farm water use, productivity and efficiency							
3.9	Water and Food Security							
3.10	Water and livestock							
3.11	Fresh water management for aquaculture							
3.12	New and potential irrigation schemes							
3.13	Rehabilitation and modernization of irrigation schemes							
3.14	Groundwater irrigation							
3.15	Water harvesting							
3.16	Drainage and desalinization							
3.17	Non-conventional water use, water quality, waste water re-use							
3.18	Water and Forest and watershed management							
3.19	Environmental services							
3.20	Agriculture and wetlands interactions							
3.21	Sustainability of agricultural water use and competing uses							
3.22	Pollution from agriculture, pesticides, fertilizers, heavy metals							
3.23	Water and food safety							
3.24	Water Information Systems, incl. AQUASTAT and AQUACROP							
3.25	Other (specify)							

**4. Please indicate the level of your knowledge about the following PRODUCTS AND SERVICES by FAO in the WATER SECTOR**

N.	FAO's products and services	None	Little	Some	Fair	Good	Excellent	Do not know
4.1	Advocacy work, initiatives and products							
4.2	FAO website							
4.3	Publications							
4.4	Expert consultations, workshops and e-conferences							
4.5	International processes, codes and standard setting agreements							
4.6	Partnerships and alliances							

4.7	Institution building							
4.8	Capacity development/training							
4.9	Policy dialogue and assistance, including on transboundary issues							
4.10	Technical assistance, including on transboundary issues							
4.11	Development projects in the water sector							
4.12	Emergency operations in the water sector							
4.13	Investment projects in the water sector							
4.14	Other (specify)							

### Section E. Use of FAO's work, products and services since 2004

This section aims at understanding the **USE** that your Institution made of FAO's products and services in the **WATER SECTOR since 2004**, and your assessment.

#### 5. Since 2004, have you and/or your Institution used FAO's work, products and services?

N.	Yes	No
5.1		

3.3 If your answer is Yes, please go to Q.6

3.4 If your answer is No, please go to Section F, page **XX**

#### 6. For how long has your Institution used FAO's work, products and services in the WATER SECTOR?

N.	Period of time
6.1	Less than one year
6.2	1-2 years
6.3	3-5 years
6.4	more than 5 years

#### 7. Since 2004, has your Institution collaborated with FAO and/or any other INTERNATIONAL INSTITUTION in the WATER SECTOR?

N.	Collaboration			Do not know
	Yes, only with FAO	Yes, with FAO and others	Yes, with others only	
7.1				

8. If you have collaborated with INTERNATIONAL INSTITUTIONS other than FAO in the WATER SECTOR, please list them

9. If you asked FAO to collaborate in the Water Sector and this did not happen, please explain why

**10. If you have never asked FAO to collaborate with your institution in the WATER SECTOR, please explain why.**

**11. Since 2004, please indicate HOW OFTEN your institution has used FAO's PRODUCTS AND SERVICES in the WATER SECTOR listed below.**

N.	FAO's products and services	1. Never	2. Rarely	3. Occasionally	4. Sometimes	5. Often	6. Always	Do not know
11.1	Advocacy work, initiatives and products							
11.2	FAO website							
11.3	Publications							
11.4	Expert consultations, workshops and e-conferences							
11.5	International processes, codes and standard setting agreements							
11.6	Partnerships and alliances							
11.7	Institution building							
11.8	Capacity development/training							
11.9	Policy dialogue and assistance, incl. on transboundary issues							
11.10	Technical assistance, including on transboundary issues							
11.11	Development projects in the water sector							
11.12	Emergency operations in the water sector							
11.13	Investment projects in the water sector							
11.14	Other (please specify)							

**12. Please name ANY PRODUCT AND SERVICE in any of FAO's areas of work in the WATER SECTOR that you have found most useful**

**13. Please assess the QUALITY of FAO'S WORK IN THE WATER SECTOR since 2004, in the areas listed below**

N.	FAO's areas of work in the Water Sector	1. Very poor	2. Poor	3. Inadequate	4. Adequate	5. Good	6. Excellent	Do not know
13.1	Water policies and strategies							
13.2	Bringing potential irrigable areas into production							
13.3	Water law, legislation and regulations							
13.4	Local water management institutions							

<i>13.5</i>	Water management linked to water availability and scarcity							
<i>13.6</i>	Economic returns, water pricing, cost recovery							
<i>13.7</i>	Land and water interactions							
<i>13.8</i>	On-farm water use, productivity and efficiency							
<i>13.9</i>	Water and Food Security							
<i>13.10</i>	Water and livestock							
<i>13.11</i>	Fresh water management for aquaculture							
<i>13.12</i>	New and potential irrigation schemes							
<i>13.13</i>	Rehabilitation and modernization of irrigation schemes							
<i>13.14</i>	Groundwater irrigation							
<i>13.15</i>	Water harvesting							
<i>13.16</i>	Drainage and desalinization							
<i>13.17</i>	Non-conventional water use, water quality, waste water re-use							
<i>13.18</i>	Water and Forest and watershed management							
<i>13.19</i>	Environmental services							
<i>13.20</i>	Agriculture and wetlands interactions							
<i>13.21</i>	Sustainability of agricultural water use and competing uses							
<i>13.22</i>	Pollution from agriculture, pesticides, fertilizers, heavy metals							
<i>13.23</i>	Water and food safety							
<i>13.24</i>	Water Information Systems, incl. AQUASTAT and AQUACROP							
<i>13.25</i>	Other (specify)							

**14. Please provide examples and name products and services for the areas that you have rated as 1-2 and 5-6 in Q.14 above**

- 15. Please indicate if you think that YOUR Institution and FAO COMPLEMENT each other or OVERLAP in the areas of work in the WATER SECTOR listed below. Tick one column for each row.**

<b>N.</b>	<b>FAO's areas of work in the Water Sector</b>	<b>Complementarity</b>	<b>Overlapping</b>	<b>Do not know</b>	<b>Not Applicable</b>
<i>15.1</i>	Water policies and strategies				
<i>15.2</i>	Bringing potential irrigable areas into production				
<i>15.3</i>	Water law, legislation and regulations				
<i>15.4</i>	Local water management institutions				
<i>15.5</i>	Water management linked to water availability and scarcity				
<i>15.6</i>	Economic returns, water pricing, cost recovery				
<i>15.7</i>	Land and water interactions				
<i>15.8</i>	On-farm water use, productivity and efficiency				
<i>15.9</i>	Water and Food Security				
<i>15.10</i>	Water and livestock				
<i>15.11</i>	Fresh water management for aquaculture				
<i>15.12</i>	New and potential irrigation schemes				
<i>15.13</i>	Rehabilitation and modernization of irrigation schemes				
<i>15.14</i>	Groundwater irrigation				
<i>15.15</i>	Water harvesting				
<i>15.16</i>	Drainage and desalinization				
<i>15.17</i>	Non-conventional water use, water quality, waste water re-use				
<i>15.18</i>	Water and Forest and watershed management				
<i>15.19</i>	Environmental services				
<i>15.20</i>	Agriculture and wetlands interactions				
<i>15.21</i>	Sustainability of agricultural water use and competing uses				
<i>15.22</i>	Pollution from agriculture, pesticides, fertilizers, heavy metals				
<i>15.23</i>	Water and food safety				

15.24	Water Information Systems				
15.25	Other (specify)				

**16. What is your overall opinion at present about FAO's work in the WATER SECTOR?  
Please indicate your agreement or disagreement with the statements below.**

N.	Statements	Strongly disagree	Disagree	Mildly disagree	Mildly agree	Agree	Strongly agree	Do not know
17.1	FAO's work is well known by my Institution							
17.2	FAO is one of our best partners							
17.3	FAO's products and services are useful for my Institution							
17.4	FAO is one of our first sources of information on important and emerging issues							
17.5	FAO should focus more on work at the normative and global level							
17.6	FAO should focus more on work at country and field level							
17.7	FAO's development projects in the water sector are effective							
17.8	FAO's emergency operations in the water sector are effective							
17.9	FAO's contribution to investment projects in the water sector is important							

**Section F. Expectations from FAO for the future (2010-2015)**

This section aims at describing what **EXPECTATIONS** you and your Institution have in relation to FAO in the **WATER SECTOR**, in terms of products and services, collaboration and modality of assistance, **for the next years (2010-2015)**

**17. In future, would you like to collaborate with FAO in any of the following areas of work in the WATER SECTOR?**

N.	Technical areas of FAO's work	Yes	No	Do not know
22.1	Water policies and strategies			
22.2	Bringing potential irrigable areas into production			
22.3	Water law, legislation and regulations			
22.4	Local water management institutions			
22.5	Water management linked to water availability and scarcity			
22.6	Economic returns, water pricing, cost recovery			
22.7	Land and water interactions			
22.8	On-farm water use, productivity and efficiency			
22.9	Water and Food Security			
22.10	Water and livestock			
22.11	Fresh water management for aquaculture			

22.12	New and potential irrigation schemes			
22.13	Rehabilitation and modernization of irrigation schemes			
22.14	Groundwater irrigation			
22.15	Water harvesting			
22.16	Drainage and desalinization			
22.17	Non-conventional water use, water quality, waste water re-use			
22.18	Water and Forest and watershed management			
22.19	Environmental services			
22.20	Agriculture and wetlands interactions			
22.21	Sustainability of agricultural water use and competing uses			
22.22	Pollution from agriculture, pesticides, fertilizers, heavy metals			
22.23	Water and food safety			
22.24	Water Information Systems			
22.25	Other (specify)			

**18. In future, would you like to collaborate with FAO in any of the PRODUCTS AND SERVICES IN THE WATER SECTOR listed below?**

N.	FAO's products and services	Yes	No	Do not know
23.1	Advocacy work, initiatives and products			
23.2	Websites			
23.3	Publications			
23.4	Expert consultations, workshops and e-conferences			
23.5	International processes, codes and standard setting agreements			
23.6	Partnerships and alliances			
23.7	Institution building			
23.8	Capacity development/training			
23.9	Policy dialogue and assistance, incl. on transboundary issues			
23.10	Technical assistance, including on transboundary issues			
23.11	Development projects in the water sector			
23.12	Emergency operations in the water sector			
23.13	Investment projects in the water sector			
23.14	Other (please specify)			

**19. Please add any comment you wish in relation to the collaboration your institution would like to receive from FAO in THE WATER SECTOR**

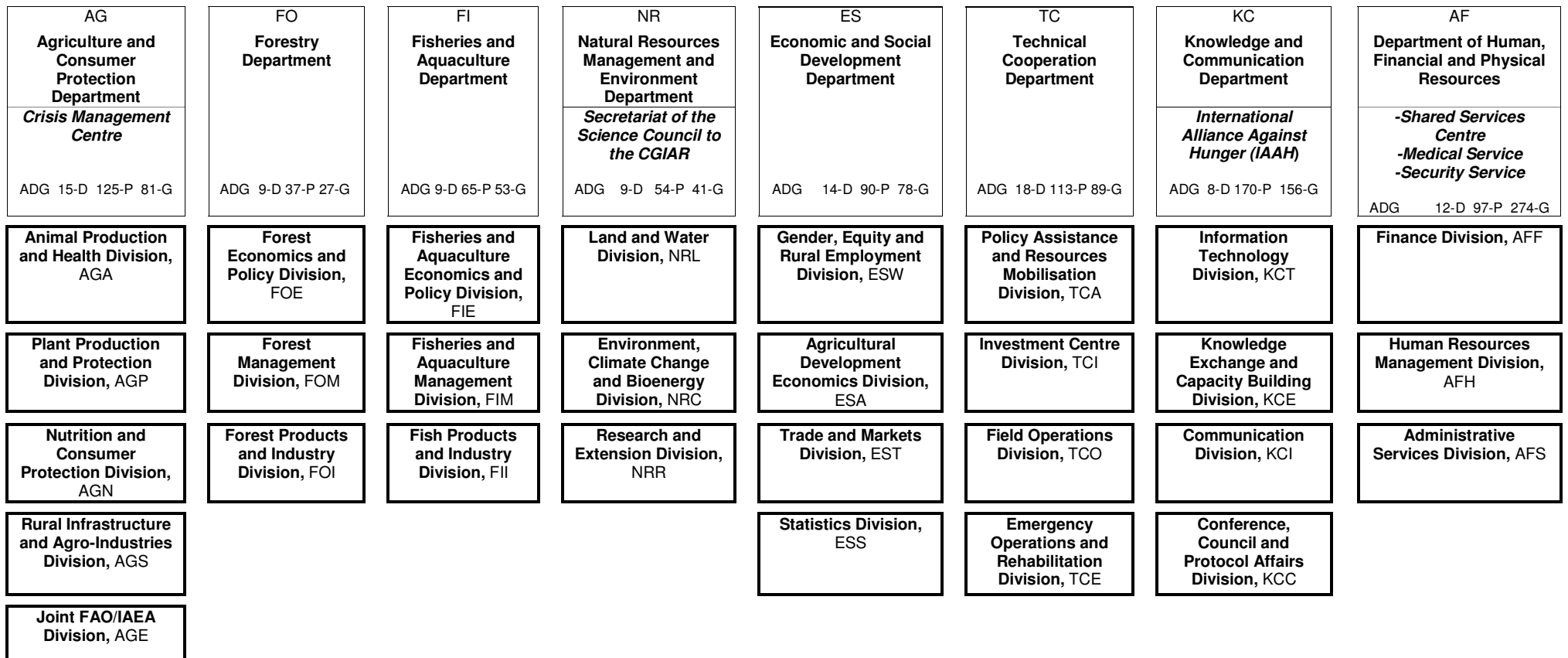
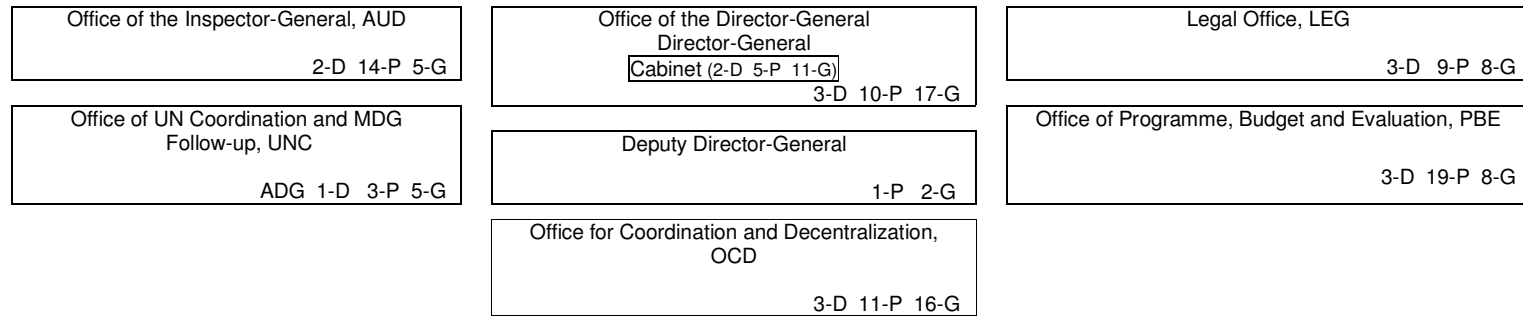
**20. THIS IS THE LAST QUESTION, PLEASE BE PATIENT: indicate if you and your Institution have ever used the FAO products in the list below**

N.	FAO's product	Yes	No	Do not know
	Dams, fish and fisheries: Opportunities, challenges and conflict resolution, FAO Fisheries Technical Paper No. 419, Gerd Marmulla			
	Payment Schemes for Environmental Services in Watersheds			
	The interface between customary and statutory water rights - A statutory perspective, FAO Legal Paper Online #45, Stefano Burchi			
	Stakeholder-oriented valuation to support water resources management processes: Confronting concepts with local practice, FAO Water Reports 30, L.Hermans, D.Renault, L.Emerton et.al.			
	Performance analysis of On-demand Pressurized Irrigation Systems, FAO Irrigation and Drainage Paper 59, N. Lamaddalena, J.A. Sagardoy			
	Water and Cereals in Drylands, P. Koohafkan & B.A. Stewart			

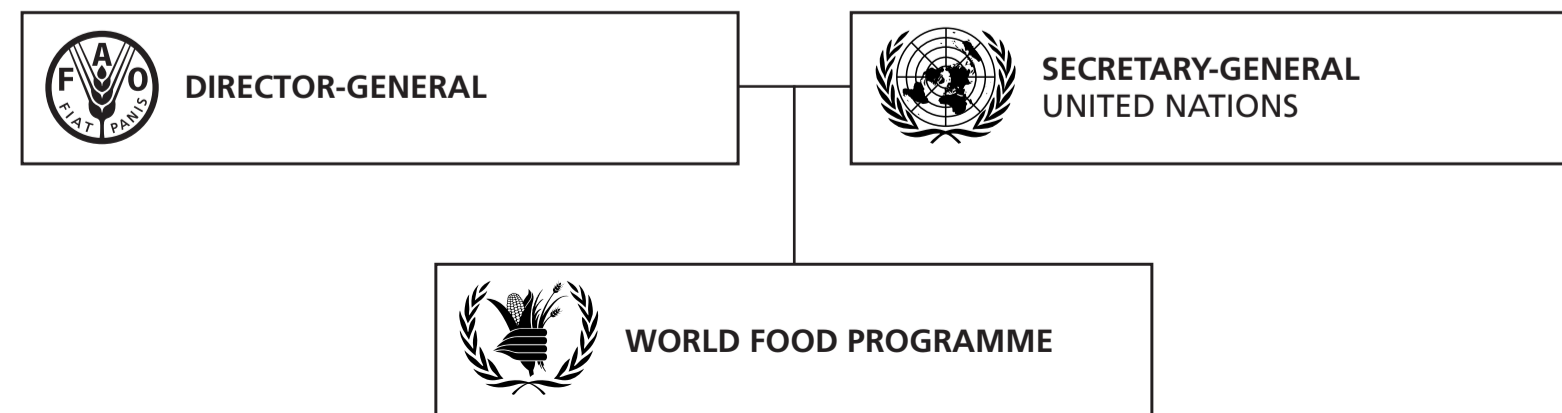
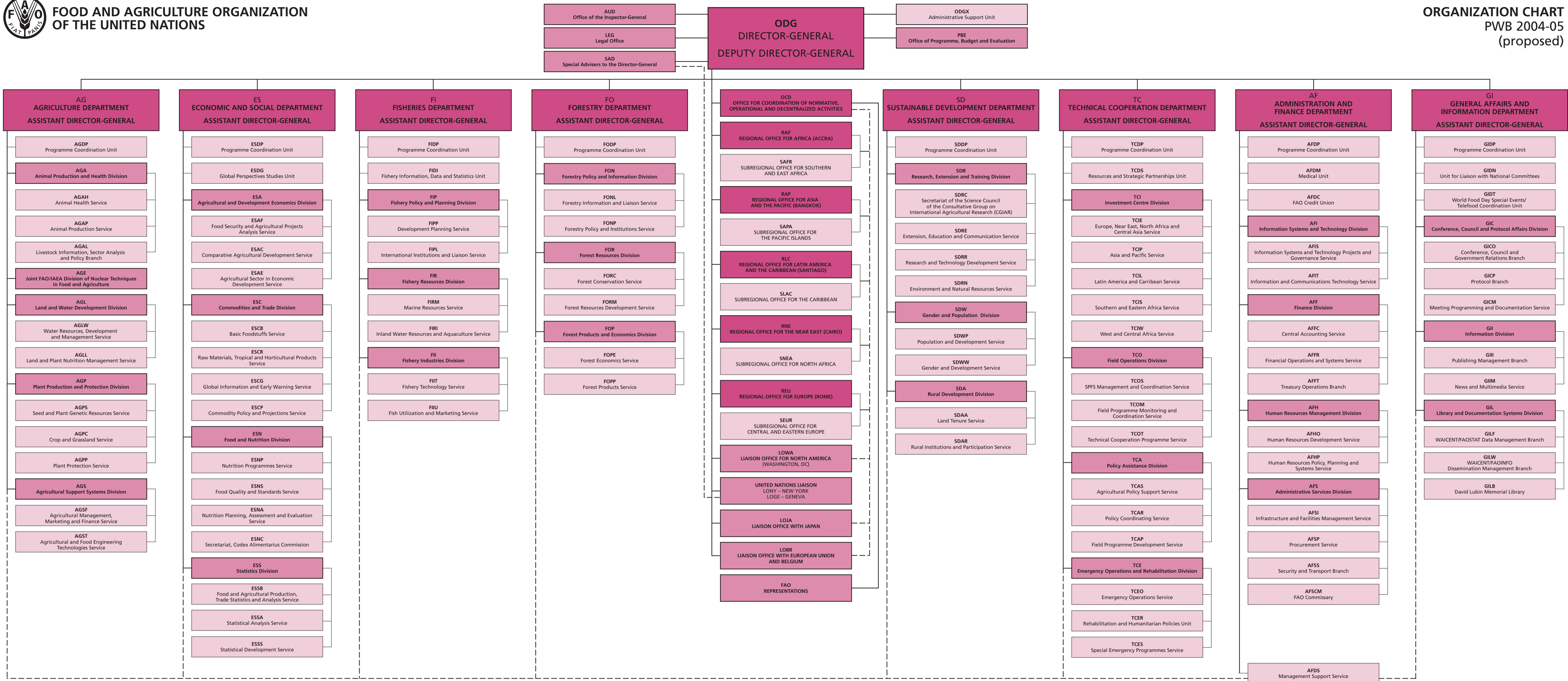
	Hazard characterization for pathogens in food and water, Microbiological Risk Assessment Series No. 3			
	WHO Guidelines for the safe use of wastewater, excreta and greywater. Volume II Wastewater use in agriculture, S. Koo-Oshima			
	Guidelines on Agriculture and Wetlands Interactions (GAWI)			
	AQUASTAT - Review of agricultural water use per country			
	Water at FAO, Information Note			
	Report of the Regional Workshop on Salt-Affected Soils from Sea Water Intrusion: Strategies for Rehabilitation and Management, RAP Publication 2005/11			
	Workshop on Environmental and Health Consequences of Irrigation with Poor-Quality Water at the International Conference on Irrigation and Drainage, Kuala Lumpur, Malaysia, September 2006.			
	Capacity Building in Food Safety, Water Safety and Nutrition, through Training and Education, Joint FAO/WHO/OIE/ICD Meeting September 2008			
	Status Report on Integrated Water Resources Management and Water Efficiency Plans, Prepared for the 16th session of the Commission on Sustainable Development - May 2008			
	Coping with water scarcity: A strategic issue and priority for system-wide action, UN-Water Thematic Initiatives			
	Articles on the Law of Transboundary Aquifers, "acknowledged" by UNGA Res. 63/124 adopted on 11 December 2008			
	Appropriate Water-Lifting Technologies in West Africa: Findings and Proposal for a Research Uptake Programme, M.Snell			
	Agricultural trade liberalization: Implications for irrigated agriculture, Issue Paper 5, G.A.Cornish, S.Fernandez			
	IPTRID Manuel: Diagnostic Participatif Rapide et Planification des Actions d'amélioration des performances des périmètres irrigués – Application à l'Afrique de l'Ouest (DPRP). French			

**MANY THANKS AGAIN FOR YOUR CONTRIBUTION: IT IS HIGHLY APPRECIATED AND WILL CONTRIBUTE TO AN IMPROVED SERVICE DELIVERY BY FAO TO YOUR INSTITUTION**

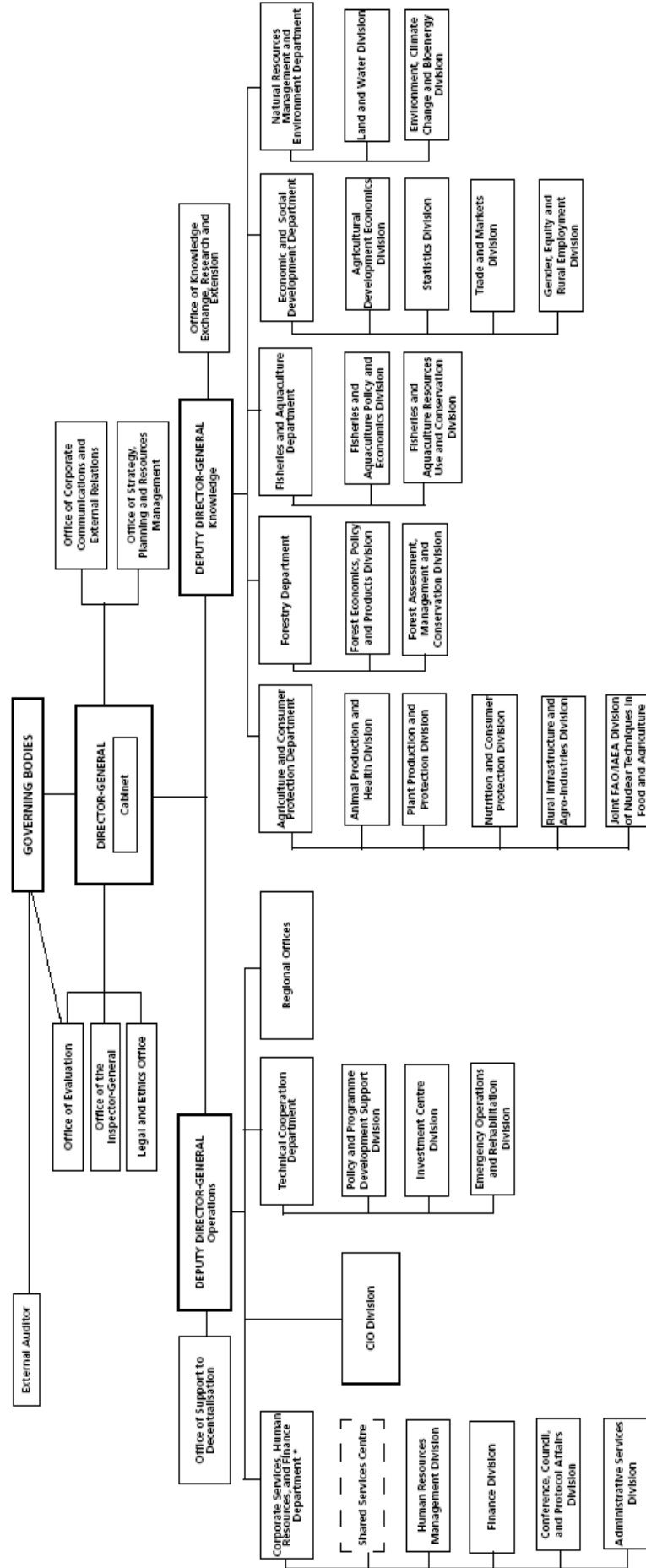
## FAO Headquarters Structure PWB 2008/09\*



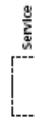
\* Including counts of budgeted posts for Departments and Offices where D = Director-level, P= Professional and G = General Service



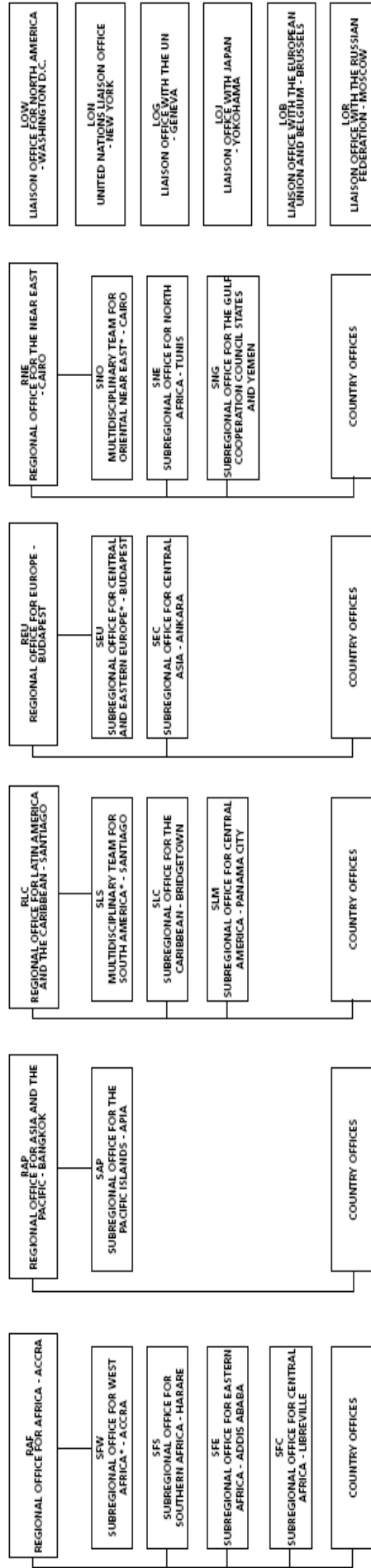
ANNEX IX - HQ ORGANIGRAMMES



\* Structure and functions of Corporate Services, Human Resources, and Finance Department subject to further adjustments.



ANNEX IX (Cont.) - DECENTRALIZED ORGANIGRAMMES



\* Co-located in Regional Office

Evaluation of FAO's role and work related to water, Annex 15 Programme Entities in MTP and PWB 2004-2009

Major Programmes and Programme Entities (PE) in PWB 2004-05, 2006-7 and 2008-09 supporting FAO's work related to water										
Programme	Programme Entities PWB 04-05	Programme Entities PWB 06-07	Programme Entities PWB 08-09	Objectives PWB 04-05	Objectives PWB 06-07	Objectives PWB 08-09	Major Outputs PWB 04-05 (from MTP 04-09)	Major Outputs PWB 06-07	Major Outputs PWB 08-09	Unit
<b>Major Programme 2.1, Agricultural production and support systems/ Chapter 2, Sustainable Food and Agricultural Systems</b>										
<b>Programme 2.1.1. Natural Resources/ Programme 2K: Sustainable natural resources management</b>	211A1 Agricultural Water Use Efficiency and Conservation	2KA01 Agricultural Water Use Efficiency, Quality and Conservation	no change	Availability of technologies for efficient use and conservation of water; participatory, equitable and effective water management; improved irrigation policy and related institutional reforms.	Enhanced capacity in increasing agricultural water use efficiency and water productivity in rainfed and irrigated conditions. Modernization of irrigation and drainage systems and related institutional reforms, including better participatory approaches of water users communities to irrigation management. Improved capacity in formulating policy frameworks for agricultural water including transboundary water resources, management. Effective strategies in dealing with water scarcity, water quality management and related environmental impact	Enhanced agricultural water use efficiency and water productivity under rainfed and irrigated conditions. Modernization of irrigation and drainage systems and related institutional reforms, including more participatory approaches to irrigation management on the part of water users and communities. Improved capacity to formulate policy frameworks for agricultural water, including transboundary water resources management. More effective strategies relating to water scarcity, water quality management and related environmental impact mitigation measures.	a) On-farm water control and management methods. b) Crop water management and supplementary irrigation techniques. c) Water resources development and irrigation technologies plus water harvesting. d) Irrigation system improvement and modernisation methods. e) Institutional restructuring of irrigation. f) Promotion of appropriate irrigation policy and river basin management.	007 - Guidelines for evaluating and improving water use efficiency and water productivity; 008 - Methodologies for modernizing irrigation and drainage systems, and advice on associated institutional reforms; 009 - Frameworks for the formulation and implementation of agricultural water policy at national level and across transboundary river-basins and aquifers; 010 - Strategies for improved water quality management and environmental-impact mitigation; 011 - International Programme for Technology and Research in Irrigation and	no change	AGL/ NRL
	211A3 Integrated Land, Water and Plant Nutrition Policies, Planning & Management	2KA06, Integrated Land, Water and Production Systems Policies, Planning and Management	no change	To promote integrated, multi-disciplinary and multi-stakeholder approaches to the development and sustainable management of land and water resources	To promote integrated, multi-disciplinary and multi-stakeholder approaches to the development and sustainable management of land and water resources.	no change	a) Technologies and methodologies for wetland development and conservation. b) Guidelines for land and water management in rural watersheds, including disaster preparedness and mitigation for drought and flood. c) Review of land, water and fertilizer use policies incorporating environmental elements. d) Revised FAO Land Evaluation Framework. e) Participation in	011 - Strategies for Integrated Natural Resources Management at Agro-ecosystem, Watershed and District Levels; 012 - Mechanisms and Policy guidelines for cross-sectoral management of natural resources for food and ecosystems; 013 - Methods for Improving Soil Moisture and run-off management in rainfed agriculture with focus on Drought Mitigation; 014 - Natural resources analysis, including land degradation assessment and mitigation		AGL/ NRL

Evaluation of FAO's role and work related to water, Annex 15 Programme Entities in MTP and PWB 2004-2009

Programme	Programme Entities PWB 04-05	Programme Entities PWB 06-07	Programme Entities PWB 08-09	Objectives PWB 04-05	Objectives PWB 06-07	Objectives PWB 08-09	Major Outputs PWB 04-05 (from MTP 04-09)	Major Outputs PWB 06-07	Major Outputs PWB 08-09	Unit
	211A5 Land and Water Quality Improvement	merged into 2KA01		Improved production systems and methods put in place to mitigate environmental effects from poor water quality and natural disasters; improved drainage systems and irrigation schemes, and enhanced quality of treated wastewater used in peri-urban irrigation			a) Water quality management techniques and attenuation of negative environmental effects. b) Waterlogging and salinity control methodologies. c) Disaster mitigation through waterlogging and salinity control and rehabilitation measures			AGLW/ NRLW
	211P7 Land and Water Informations System	2KP02, Land and Water Knowledge Management, Information Systems, Databases and Statistics	no change	Better managed land and water resources through information systems for monitoring, and increased awareness among decision makers about the global status of such resources	no change	no change	a) Land and water information systems development. b) Land databases and statistics. c) AQUASTAT and contributions to the World Water Development Report. d) State of the World Land and Water Resources.	001 - Land-Related Information Systems and Products; 003 - AQUASTAT and contributions to the World Water Development Report; 004 - State of the World Land and Water Resources and contribution to Global Perspective Studies; 005 - Knowledge Exchange, Partnership strengthening and contribution to major fora	no change	AGL/ NRL
	211P8 Knowledge Management and Partnerships	cancelled, incorporated into 2KP02		Better informed decision making at the international, national and local levels; enhanced awareness of issues and actions related to land and water management and			a) Knowledge centre for land and water management. b) Contributions to studies and inputs to major fora.			AGL/ NRL

Evaluation of FAO's role and work related to water, Annex 15 Programme Entities in MTP and PWB 2004-2009

Programme	Programme Entities PWB 04-05	Programme Entities PWB 06-07	Programme Entities PWB 08-09	Objectives PWB 04-05	Objectives PWB 06-07	Objectives PWB 08-09	Major Outputs PWB 04-05 (from MTP 04-09)	Major Outputs PWB 06-07	Major Outputs PWB 08-09	Unit
	211S1, Direct Support to Member Nations and the Field Programme	2KS01, Technical Support Services to Members and the Field Programme	no change	This entity supports the formulation and implementation of an active portfolio of projects including SPFS and emergency and relief operations, from the perspective of land and water issues.	Through the better linkages of normative works and field programme and adoption of the integrated land and water management approaches, it can provide appropriate technical support, policy and institutional advice to field programme, emergency and relief operation which contribute to the capacity building of government officers, technicians, planners and farmers. The PE contributes to the sustainable use of natural resources and food production.			001 - Policy and technical assistance to member countries; 002 - Technical support to emergency operations; 003 - Assistance in project formulation and technical backstopping; 004 - Assistance in operation of field projects	no change	AGL/ NRL
	211S2, International Programme for Technology and Research in Irrigation and Drainage	merge into 2KA01		A joint initiative of several partner institutions, IPTRID supports applied research and technology transfer of irrigation and drainage in developing countries through analytical reports, thematic networks, formulation of policies and projects, as well as information dissemination						AGLW/ NRLW
<b>Programme 2.1.3, Livestock/ Programme 2B: Livestock production systems management</b>	213A8, Technologies and Systems for Efficient Natural Resource Use in Livestock Production (end 2007)	Integrated into 2BA02, Sustainable Livestock Production	2KP09 - Livestock and Natural Resources Management	Policies are implemented to foster livestock development while protecting public health and the environment; national veterinary and livestock services and other grass-root projects promote GAPs for intensive and semi-intensive livestock	Improved livestock husbandry, animal health and on-farm animal product processing incorporated in programmes aiming at livestock dependent smallholders. Contribution of improved animal husbandry reflected in national poverty reduction strategies and rehabilitation programmes.		a) Livestock, Environment and Development (LEAD) Initiative.	003-Livestock System dynamics: Analysis of livestock sector trends and policies and their social, environmental and health impacts on livestock production.	003 - Protecting water resources in the livestock sector	AGA

Evaluation of FAO's role and work related to water, Annex 15 Programme Entities in MTP and PWB 2004-2009

Programme	Programme Entities PWB 04-05	Programme Entities PWB 06-07	Programme Entities PWB 08-09	Objectives PWB 04-05	Objectives PWB 06-07	Objectives PWB 08-09	Major Outputs PWB 04-05 (from MTP 04-09)	Major Outputs PWB 06-07	Major Outputs PWB 08-09	Unit
<b>Programme 2.1.5: Agricultural Applications of Isotopes and Biotechnology/ Programme 2A: Crop production systems management</b>	215A1 Sustainable Intensification of Crop Production Systems through Technologies and Capacity-Building (end 2007)	2AA05, Sustainable intensification of crop production systems through nuclear techniques and biotechnology	no change	Advanced technologies, products and practices for soil, water and nutrients analysis, crop germplasm improvement and risk assessment and management of major trade-related pests, used by National Agricultural Research Systems (NARS) and plant protection authorities, and transferred to extension services, NGOs and concerned projects.	Advanced technologies for assessing land degradation and crop water productivity, improving tolerance of crops to stresses and for managing insect pests biologically, used by National Agricultural Research Systems (NARS), CG Centres and plant protection authorities, and transferred to extension services, NGOs and farmer/grower groups.	no change	a) Improved soil, water and nutrient management practices and capacities for sustainable intensification of cropping systems and environmental protection.	no change, MO 001	no change	AGE

Evaluation of FAO's role and work related to water, Annex 15 Programme Entities in MTP and PWB 2004-2009

Programme	Programme Entities PWB 04-05	Programme Entities PWB 06-07	Programme Entities PWB 08-09	Objectives PWB 04-05	Objectives PWB 06-07	Objectives PWB 08-09	Major Outputs PWB 04-05 (from MTP 04-09)	Major Outputs PWB 06-07	Major Outputs PWB 08-09	Unit
<b>Major Programme 2.4, Forestry</b>										
<b>Programme 2.4.1, Forest Resources/ Programme 2K: Sustainable natural resources management</b>	241A7, Forests and Water (end 2009)	2KA07, Forests and water	no change	Enhanced national awareness and dialogue on, and enabling policy environment for the role of forests and trees, and related practices such as watershed management, in the conservation of water resources.	no change	no change	a) Approaches and strategies on effective watershed management, forest hydrology application and other forest related practices for the sustainable use of water resources. b) Innovative approaches for the conservation and sustainable development of critical mountain watersheds and upland resources relevant to water conservation and use. c) Development of best forestry practices for the enhancement and conservation of water resources in lowland landscapes. d) Institutional capacity building for the implementation of sustainable management strategies and programmes for mountain watersheds and upland resources. e) Policies and action programmes for effective watershed management, including fieldlevel approaches, as a follow up to the International Year of Mountains and the International Year of Fresh	006 - Advice and assistance on forest practices ,strategies and policies for effective watershed management; 007 - Capacity building for the implementation of sustainable management strategies and programmes for mountain watershed and upland resources	no change	FOMC

Evaluation of FAO's role and work related to water, Annex 15 Programme Entities in MTP and PWB 2004-2009

Programme	Programme Entities PWB 04-05	Programme Entities PWB 06-07	Programme Entities PWB 08-09	Objectives PWB 04-05	Objectives PWB 06-07	Objectives PWB 08-09	Major Outputs PWB 04-05 (from MTP 04-09)	Major Outputs PWB 06-07	Major Outputs PWB 08-09	Unit
<b>Major Programme 2.5, Contributions to Sustainable Development and Special Programme Thrusts</b>										
<b><i>Programme 2.5.6: Food Production in Support of Food Security in LIFDCs/ Programme 4C: Food security, poverty reduction and other development cooperation programmes</i></b>	256P2 and P3, SPFS Formulation and Implementation	4CP01, Management and Coordination - SPFS/NPFS/RPFS/SSC/pro-poor small projects	no change	To provide essential financial support to food security enhancement of LIFDCs, through rapid increases in productivity and food production in an economically- and environmentally sound basis; to improve people's access to food; to promote diversified food production on a self-reliant basis through better input supply services and access to village credit.	Effective coordination, monitoring and evaluation of the SPFS/NPFS/RPFS/pro-poor small projects; promotion of South-South Cooperation (SSC) initiatives; increased mobilization of funds from donors and financial institutions in support of Food Security, improvement of people's access to food and promotion of diversified food production on a self-reliant basis through better input supply services and access to village credit.	no change	a) Implementation of national SPFS programmes at Phase I level. b) Implementation of national SPFS programmes at Extension of Phase I/Phase II levels. c) Implementation of SSC activities in SPFS countries.	001 - Coordination and monitoring at Programme level at Headquarters and decentralized structures; 002 - Coordination and monitoring of the formulation of NPFS/RPFS/SSC; 003 - Coordination and monitoring of the implementation of SPFS/NPFS/RPFS/SSC;	no change	Field projects

**WE Final Report - Annex 16 - NRLW Staff and Expertise in Headquarters, Regional and Sub-regional Offices**

<b>PWB 2004-05</b>	
Chief	D-1
Senior Irrigation and Water Resources Officer	P-5
Senior Officer (Water Development and Planning)	P-5
Senior Officer (Water Quality and Environmental Impact)	P-5
Senior Officer (Irrigation Development)	P-5
Senior Water Management Officer	P-5
Senior Officer (Water Resources Management)	P-5
Senior Officer (Irrigation Management)	P-5
Senior Water Development Officer	P-5
Senior Land and Water Development Officer	P-5
Technical Officer (Water Resources Management)	P-4
Water Resources Management Officer	P-4
Technical Officer (Irrigations Systems Management)	P-4
Technical Officer (Water Resources)	P-4
Technical Officer (Water Quality, Drainage and Salinity Management)	P-4
Water Resources Officer	P-3
Water Resources Development Conservation Officer	P-3
Water Resources Officer	P-3
Technical Officer (Water Quality)	P-3
Technical Officer (Water Development)	P-3

**1 - D1 9 - P5 5 - P4 5 - P3**

<b>PWB 2006-07</b>	
Chief	D-1
Senior Irrigation and Water Resources Officer	P-5
Senior Officer (Water Development and Planning)	P-5
Senior Officer (Water Quality and Environmental Impact)	P-5
Technical Officer (Information & Communication Management)	P-5
Senior Water Management Officer	P-5
Senior Officer (Water Resources Management)	P-5
Senior Officer (Irrigation Management)	P-5
Senior Water Development Officer	P-5
Senior Land and Water Development Officer	P-5
Technical Officer (Water Resources Management)	P-4
Water Resources Management Officer	P-4
Technical Officer (Water Resources)	P-4
Technical Officer (Water Quality, Drainage and Salinity Management)	P-4
Water Resources Officer	P-3
Technical Officer (Groundwater Development Management)	P-3
Water Resources Development Conservation Officer	P-3
Technical Officer (Water Quality)	P-3
Technical Officer (Water Development)	P-3

**1 - D1 9 - P5 4 - P4 5 - P3**

<b>PWB 2006-07 rev</b>	
Chief	D-1
Senior Irrigation and Water Resources Officer	P-5
Senior Officer (Water Policy)	P-5
Senior Officer (Water Quality and Environmental Impact)	P-5
Communication and Information Management Officer	P-5
Senior Water Management Officer	P-5
Senior Officer (Water Resources Management)	P-5
Senior Officer (Irrigation Management)	P-5
Senior Water Development Officer	P-5
Senior Land and Water Development Officer	P-5
Technical Officer (Water Resources Management)	P-4
Water Resources Management Officer	P-4
Land and Water Officer	P-4
Technical Officer (Water Resources)	P-4
Technical Officer (Water Quality, Drainage and Salinity Management)	P-4
Water Resources Management Officer	P-3
Water Resources Management Officer	P-3
Water Resources Development Conservation Officer	P-3
Technical Officer (Water Quality)	P-3
Technical Officer (Water Development)	P-3

**1 - D1 9 - P5 5 - P4 5 - P3**

<b>PWB 2006-07 rev2</b>	
Chief	D-1
Senior Irrigation and Water Resources Officer	P-5
Senior Officer (Water Policy)	P-5
Senior Officer (Water Quality and Environmental Impact)	P-5
Senior Water Management Officer	P-5
Senior Officer (Water Resources Management)	P-5
Senior Officer (Irrigation Management)	P-5
Senior Water Development Officer	P-5
Senior Land and Water Development Officer	P-5
Communication and Information Management Officer	P-4
Technical Officer (Water Resources)	P-4
Technical Officer (Water Quality, Drainage and Salinity Management)	P-4
Water Resources Management Officer	P-3
Water Resources Management Officer	P-3
Water Resources Development Conservation Officer	P-3
Technical Officer (Water Quality)	P-3
Technical Officer (Water Development)	P-3

**1 - D1 8 - P5 3 - P4 5 - P3**

<b>PWB 2008-09</b>	
Chief	D-1
Senior Irrigation and Water Resources Officer	P-5
Senior Officer (Water Policy)	P-5
Senior Water Management Officer	P-5
Senior Officer (Water Resources Management)	P-5
Technical Officer (Water Resources)	P-5
Senior Officer (Irrigation Management)	P-5
Senior Land and Water Officer	P-5
Water Resources Management Officer	P-4
Water Resources Management Officer	P-4
Information Management Officer	P-4
Technical Officer (Water Quality, Drainage and Salinity Management)	P-4
Land and Water Officer	P-4
Water Resources Dev. and Manag. Officer	P-3
Technical Officer (Water Resources Development and Conservation)	P-3
Technical Officer (Water Development)	P-3
Technical Officer (Water Quality)	P-3

**1 - D1 7 - P5 5 - P4 4 - P3**

# Evaluation of FAO's role and work related to water

## Final report

### Annex 17

#### South-South Cooperation in the water sector

##### *SSC experts and technicians in the water sector, between 2004 and mid-2009*

Country of origin	Country of destination	Experts (number)	Total person/year Experts	Technicians (number)	Total person/year Technicians
<i>China Peoples' Republic</i>	<i>Bahamas</i>			1	1
	<i>Bangladesh</i>	1	2	2	4
	<i>Ethiopia</i>	1	2	3	1.7
	<i>Fiji</i>			1	1
	<i>Gabon</i>	1	2	7	14
	<i>Ghana</i>	2	4	6	6
	<i>Jamaica</i>			1	0.8
	<i>Mali</i>	1			
	<i>Mauritania</i>	1	2	1	2
	<i>Nauru</i>			1	0.7
	<i>Nigeria</i>	3	4	167	162
	<i>Samoa</i>	1	1	1	1.5
	<i>Sierra Leone</i>	1	2	1	4
	<i>Tonga</i>			1	1.8
<i>Cuba</i>	<i>Antigua and Barbuda</i>			1	1
	<i>Belize</i>			1	1.5
	<i>Cape Verde</i>			6	16.2
	<i>Dominican Republic</i>			1	1.4
	<i>Guinea Bissau</i>	1	2	1	2
	<i>Haiti</i>	1	1.9	5	10.7
	<i>Venezuela</i>	1	1	7	7
<i>Egypt</i>	<i>Cameroon</i>	1	0.8		
	<i>Tanzania</i>	1	1	4	2.3
<i>India</i>	<i>Eritrea</i>	1	4.3	4	12.7
	<i>Lesotho</i>	3	4.9		
<i>Morocco</i>	<i>Burkina Faso</i>			6	9.5
	<i>Djibouti</i>			3	4.04
	<i>Niger</i>	1	3		
<i>Myanmar</i>	<i>Malawi</i>	2	1	10	18.2
<i>Niue Island</i>	<i>Niue Island</i>			2	3
<i>Pakistan</i>	<i>Swaziland</i>	1	0.6		
<i>Papua New Guinea</i>	<i>Papua New Guinea</i>			2	4
<i>Philippines</i>	<i>Kiribati</i>			1	1.8
	<i>Papua New Guinea</i>	1	1.8	1	1.5
	<i>Solomon Islands</i>			1	1.4
	<i>Tuvalu</i>			1	1.3
<i>Viet Nam</i>	<i>Congo (Republic of)</i>			3	5.4
	<i>Mali</i>	1	2		
<b>Total</b>			43.3		305.44

Source: data provided by TCOS/FPMIS, elaborated by PBEE

<b>Strategic Objectives and Organizational Results in FAO Medium term Plan 2010-2013</b>		
<b>Code</b>	<b>Title</b>	<b>Lead Unit</b>
<b>A</b>	<b>Sustainable intensification of crop production</b>	AG
<b>A01</b>	Policies and strategies on sustainable crop production intensification and diversification at national and regional levels	AGP
<b>A02</b>	Risks from outbreaks of transboundary plant pests and diseases are sustainably reduced at national, regional and global levels	AGP
<b>A03</b>	Risks from pesticides are sustainably reduced at national, regional and global levels	AGP
<b>A04</b>	Effective policies and enabled capacities for a better management of plant genetic resources for food and agriculture (PGRFA) including seed systems at the national and regional levels	AGP
<b>B</b>	<b>Increased sustainable livestock production</b>	AG
<b>B01</b>	The livestock sector effectively and efficiently contributes to food security, poverty alleviation and economic development	AGA
<b>B02</b>	Reduced animal disease and associated human health risks	AGA
<b>B03</b>	Better management of natural resources, including animal genetic resources, in livestock production	AGA
<b>B04</b>	Policy and practice for guiding the livestock sector are based on timely and reliable information	AGA
<b>C</b>	<b>Sustainable management and use of fisheries and aquaculture resources</b>	FI
<b>C01</b>	Members and other stakeholders have improved formulation of policies and standards that facilitate the implementation of the Code of Conduct for Responsible Fisheries (CCRF) and other international instruments, as	FI
<b>C02</b>	Governance of fisheries and aquaculture has improved through the establishment or strengthening of national and regional institutions, including RFBs	FIE
<b>C03</b>	More effective management of marine and inland capture fisheries by FAO Members and other stakeholders has contributed to the improved state of fisheries resources, ecosystems and their sustainable use	FIM
<b>C04</b>	Members and other stakeholders have benefited from increased production of fish and fish products from sustainable expansion and intensification of aquaculture	FIM
<b>C05</b>	Operation of fisheries, including the use of vessels and fishing gear, is made safer, more technically and socio-economically efficient, environmentally-friendly and compliant with rules at all levels	FII
<b>C06</b>	Members and other stakeholders have achieved more responsible post-harvest utilization and trade of fisheries and aquaculture products, including more predictable and harmonized market access requirements	FII
<b>D</b>	<b>Improved quality and safety of food at all stages of the food chain</b>	AG
<b>D01</b>	New and revised internationally agreed standards and recommendations for food safety and quality that serve as the reference for international harmonization	AGN
<b>D02</b>	Institutional, policy and legal frameworks for food safety/quality management that support an integrated food chain approach	AGN
<b>D03</b>	National/regional authorities are effectively designing and implementing programmes of food safety and quality management and control, according to international norms	AGN
<b>D04</b>	Countries establish effective programmes to promote improved adherence of food producers/businesses to international recommendations on good practices in food safety and quality at all stages of the food chain, and	AGN

Code	Title	Lead Unit
<b>E</b>	<b>Sustainable management of forests and trees</b>	FO
<b>E01</b>	Policy and practice affecting forests and forestry are based on timely and reliable information	FOM
<b>E02</b>	Policy and practice affecting forests and forestry are reinforced by international cooperation and debate	FOE
<b>E03</b>	Institutions governing forests are strengthened and decision-making improved, including involvement of forest stakeholders in the development of forest policies and legislation, thereby enhancing an enabling environment for	FOE
<b>E04</b>	Sustainable management of forests and trees is more broadly adopted, leading to reductions in deforestation and forest degradation and increased contributions of forests and trees to improve livelihoods and to contribute to	FOM
<b>E05</b>	Social and economic values and livelihood benefits of forests and trees are enhanced, and markets for forest products and services contribute to making forestry a more economically-viable land-use option	FOE
<b>E06</b>	Environmental values of forests, trees outside forests and forestry are better realized; strategies for conservation of forest biodiversity and genetic resources, climate change mitigation and adaptation, rehabilitation of degraded	FOM
<b>F</b>	<b>Sustainable management of land, water and genetic resources and improved responses to global environmental challenges affecting food and agriculture</b>	NR
<b>F01</b>	Countries promoting and developing sustainable land management	NRL
<b>F02</b>	Countries address water scarcity in agriculture and strengthen their capacities to improve water productivity of agricultural systems at national and river-basin levels including transboundary water systems	NRL
<b>F03</b>	Policies and programmes are strengthened at national, regional and international levels to ensure the conservation and sustainable use of biological diversity for food and agriculture and the equitable sharing of benefits arising	NRD
<b>F04</b>	An international framework is developed and countries' capacities are reinforced for responsible governance of access to, and secure and equitable tenure of land and its interface with other natural resources, with particular	NRC
<b>F05</b>	Countries have strengthened capacities to address emerging environmental challenges, such as climate change and bioenergy	NRC
<b>F06</b>	Improved access to and sharing of knowledge for natural resource management	OEK
<b>G</b>	<b>Enabling environment for markets to improve livelihoods and rural development</b>	ES
<b>G01</b>	Appropriate analysis, policies and services enable small producers to improve competitiveness, diversify into new enterprises, increase value addition and meet market requirements	
<b>G02</b>	Rural employment creation, access to land and income diversification are integrated into agricultural and rural development policies, programmes and partnerships	ESW
<b>G03</b>	National and regional policies, regulations and institutions enhance the developmental and poverty reduction impacts of agribusiness and agro-industries	
<b>G04</b>	Countries have increased awareness of and capacity to analyse developments in international agricultural markets, trade policies and trade rules to identify trade opportunities and to formulate appropriate and effective	EST

Code	Title	Lead Unit
<b>H</b>	<b>Improved food security and better nutrition</b>	ES
<b>H01</b>	Countries and other stakeholders have strengthened capacity to formulate and implement coherent policies and programmes that address the root causes of hunger, food insecurity and malnutrition	ESA
<b>H02</b>	Member countries and other stakeholders strengthen food security governance through the triple-track approach and the implementation of the Voluntary Guidelines to Support the Progressive Realization of the Right to	ESA
<b>H03</b>	Strengthened capacity of member countries and other stakeholders to address specific nutrition concerns in food and agriculture	AGN
<b>H04</b>	Strengthened capacity of member countries and other stakeholders to generate, manage, analyse and access data and statistics for improved food security and better nutrition	ESS
<b>H05</b>	Member countries and other stakeholders have better access to FAO analysis and information products and services on food security, agriculture and nutrition, and strengthened own capacity to exchange knowledge	ESA
<b>I</b>	<b>Improved preparedness for, and effective response to, food and agricultural threats and emergencies</b>	TC
<b>I01</b>	Countries' vulnerability to crisis, threats and emergencies is reduced through better preparedness and integration of risk prevention and mitigation into policies, programmes and interventions	TCE
<b>I02</b>	Countries and partners respond more effectively to crises and emergencies with food and agriculture-related interventions	TCE
<b>I03</b>	Countries and partners have improved transition and linkages between emergency, rehabilitation and development	TCE
<b>K</b>	<b>Gender equity in access to resources, goods, services and decision-making in the rural areas</b>	ES
<b>K01</b>	Rural gender equality is incorporated into UN policies and joint programmes for food security, agriculture and rural development	ESW
<b>K02</b>	Governments develop enhanced capacities to incorporate gender and social equality issues in agriculture, food security and rural development programmes, projects and policies using sex-disaggregated statistics, other	ESW
<b>K03</b>	Governments are formulating gender-sensitive, inclusive and participatory policies in agriculture and rural development	ESW
<b>K04</b>	FAO management and staff have demonstrated commitment and capacity to address gender dimensions in their work	ESW
<b>L</b>	<b>Increased and more effective public and private investment in agriculture and rural development</b>	TC
<b>L01</b>	Greater inclusion of food and sustainable agriculture and rural development investment strategies and policies into national and regional development plans and frameworks	TCI
<b>L02</b>	Improved public and private sector organisations' capacity to plan, implement and enhance the sustainability of food and agriculture and rural development investment operations	TCI
<b>L03</b>	Quality assured public/private sector investment programmes, in line with national priorities and requirements, developed and financed	TCI