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COMMITTEE ON WORLD FOOD SECURITY

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ASSESSMENT OF THE HOUSEHOLD FOOD SECURITY SITUATION, BASED ON THE AGGREGATE HOUSEHOLD FOOD SECURITY INDEX AND THE SIXTH WORLD FOOD SURVEY

CONTENTS

I. INTRODUCTION

1. At its seventeenth session, this Committee reviewed approaches to monitor access to food and household food security on the basis of document CFS: 92/3[1]. That document reviewed approaches and associated indicators for monitoring household food security based on widely available data at the international level, and recommended the combination of such indicators into a composite index.

2. The Committee broadly endorsed the Secretariat's proposal to construct the composite index whose primary role would be to monitor household food security at the international level, and not so much for its monitoring at a country level, where indicators need to be based on much more disaggregated, sub-national data.

II. THE AGGREGATE HOUSEHOLD FOOD SECURITY INDEX

3. For the eighteenth session, document CFS: 93/2 Sup.2[2] reported on the progress made until then, and included an annex, highlighting some results of the exercise. The Aggregate Household Food Security Index (AHFSI), a composite index, allowed comparison among countries with respect to the extent or prevalence of food inadequacy or undernutrition. The index was based on three variables namely: per caput dietary energy supply (DES), per caput GNP in purchasing power parity units, and the coefficient of variation in income distribution which were assumed to be proxies for the actual prevalence of undernutrition. The index was computed for 49 developing countries for which relevant data were available.

4. The methodology was subsequently revised to allow a computation of an index which included not only the extent of undernutrition as in the previous index, but also the depth of undernourishment as well as the degree of risk associated with annual shortfalls in dietary energy supplies. The form of the index became:

$$AHFSI = 100-[H(G+(1-G)I^P)+ 0.5\ \sigma\{1-H(G+(1-G)I^P)\}]100,$$

where :

H is the head count ratio, which measures the proportion of the undernourished in the total population, expressing the extent of undernourishment;

G is the food gap, which measures the proportion of shortfall of the average daily dietary energy intake of the undernourished from average national nutritional requirements, expressing the depth of undernourishment;

I^P is a measure of inequality in the distribution of the food gaps; and

σ is the coefficient of variation in dietary energy supplies, measuring the likelihood of facing temporary food insecurity.

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1 FAO: Approaches to Monitoring Access to Food and Household Food Security, CFS: 92/3, 1992.

2 FAO: Progress Report on the Development of a Household Food Security Index, CFS: 93/2 Sup.2, 1993.

5. The new AHFSI was reported to the nineteenth CFS session in documents CFS: 94/2 and CFS: 94/2 Corr.1 (93 countries)[3]. Following the CFS debate in 1994, the methodology underlying the construction of the index was disseminated through an electronic conference on indicators of sustainable agricultural and rural development. Over 100 international scientists and experts participated in the conference. Comments received led to further improvements of the computational procedures; and an update of the AHFSI was reported in document CFS:95/2 (for 61 countries)[4].

6. Household food security refers to that set of processes underlying nutritional well-being, that determine the quantity, quality and nature of food that a household has access to, and its allocation among the individuals belonging to the household. Provided the effect of this set can be differentiated from effects of other factors (namely sanitation, health, and care) that also impinge on nutritional well-being, indicators of nutritional status can provide the most direct way of assessing household food insecurity situation. The best measure of the nutritional status requires data obtained from surveys providing information on the actual dietary intake of individuals, used in conjunction with appropriate adequacy norms, or on anthropometric measurements. Unfortunately, such surveys are expensive and time-consuming to implement, and are seldom available especially in regions and countries where vulnerability is deemed to be greatest.

7. Given the severe limitations on data on direct nutritional status indicators, FAO had developed a methodology that used the per caput DES data drawn from food balance sheets combined with an estimate of the inequality in the distribution of the calories consumption derived from a variety of sources, and a cutoff point based on minimum energy requirements.

8. The FAO approach allowed computation of two measures analogous to the well-known head count and income gap measures of poverty. The first was the *prevalence* of food inadequacy (or undernutrition) and showed the proportion of and number in a given population whose food access was deemed to be inadequate; the second was the *intensity* of food inadequacy which referred to the amount of additional food that was needed to eliminate the prevalence of food inadequacy.

9. The method used in calculating the prevalence of food inadequacy or undernutrition reflected only the chronically undernourished; it did not directly take into account those people who were affected by seasonal and acute food insecurity, although the inclusion of a measure of the inequality in distribution could, to some extent, have represented the risk being faced in the country.

10. The AHFSI uses FAO estimates of the prevalence of undernutrition in developing countries as its basis, and combines these with measures of the extent of the food gap of the undernourished using national average requirements for dietary energy, the inequality in distribution of food gaps (these two measures indicating the *intensity* of food inadequacy) and instability in the annual availability of dietary energy, which is a crude indicator of the risk of food deficiency at the aggregate level. The AHFSI thus attempts to incorporate directly all the three elements of food security (availability and stability of food supplies and access to food), as defined by the CFS in 1983[5].

11. The latest estimates of the AHFSI as computed for 1990-92, the most recent period for which complete data necessary for calculating the index were available, are contained in document CFS: 95/2 referred to above. The estimates show that only 26 of the 61 countries for which data were available increased (some only very marginally) their AHFSI in 1990-92 compared to 1988-90.

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3 FAO: Assessment of the Current World Food Security Situation and recent Policy Developments, CFS: 94/2, 1994; FAO: Assessment of the Current World Food Security Situation and recent Policy Developments, CFS: 94/2 Corr.1, 1994.

4 FAO: Assessment of the Current World Food Security Situation and Medium Term Review, CFS: 95/2, 1995.

5 FAO: Report of the Eighth Session of the Committee on World Food Security, CL 83/10, 1983.

Except for two countries whose AHFSI value remained the same, the rest of the countries registered declines (some heavily). Moreover, the number of countries with AHFSI value of 65 percent or below (considered low or critical food security status) remained the same (six).

12. To the extent that the AHFSI is an ordinal index, with values ranging from 0 to 100, the higher levels representing higher levels of food security, it is difficult to attach an intuitive meaning to any particular value, except its two extremes.

13. The Sixth World Food Survey exercise and the development of the measure of food inadequacy (see below) could be synergistic to further improvements in the computational procedures of the AHFSI.

III. PREVALENCE AND INTENSITY OF FOOD INADEQUACY BASED ON WORLD FOOD SURVEY METHODOLOGY

14. In its continuing efforts to make a better assessment of household food security situation, FAO has, in its assessment of food inadequacy as published in the Sixth World Food Survey,[6] incorporated the principal tenets of the AHFSI methodology, and recast it to include another important indicator. Specifically, in addition to a measure of prevalence of undernourishment, FAO has developed an intuitively more appealing indicator that measures the extent of the inadequacy in food availability at the country level. The methodology, as used in the Sixth World Food Survey is summarised below[7].

(i) Summary of methodology

15. First, based on the per caput DES derived from the FAO food balance sheets and on an estimated value of the coefficient of variation (CV), the distribution of per caput calorie availability (the pattern of which is assumed to be log-normal) is generated for each country. The CV is kept constant throughout the three periods under study (1969-71, 1979-81 and 1990-92), so the extent of inequality in the distribution is assumed to have remained unchanged. This admittedly unsatisfactory assumption being necessary because, for most of the countries under study, little is known about any change in distribution that might have occurred during the last two decades.

16. Second, based on nutritional considerations, an estimate is made of the minimum per caput dietary energy requirements (cut-off below which the average person's intake is considered to be inadequate) - the average person being defined as the weighted average of one person from each of the age-sex groups adopted for estimating energy requirements.

17. Third, the proportion of the population that consumes less than the minimum requirement is calculated, using the distribution of per caput calorie availability (obtained in the first step) and the minimum per caput energy requirement.

18. Finally, the calculated proportion is multiplied by the size of the total population to obtain an estimate of the number of people who have inadequate access to food. The estimation principles are shown graphically in the figure below.

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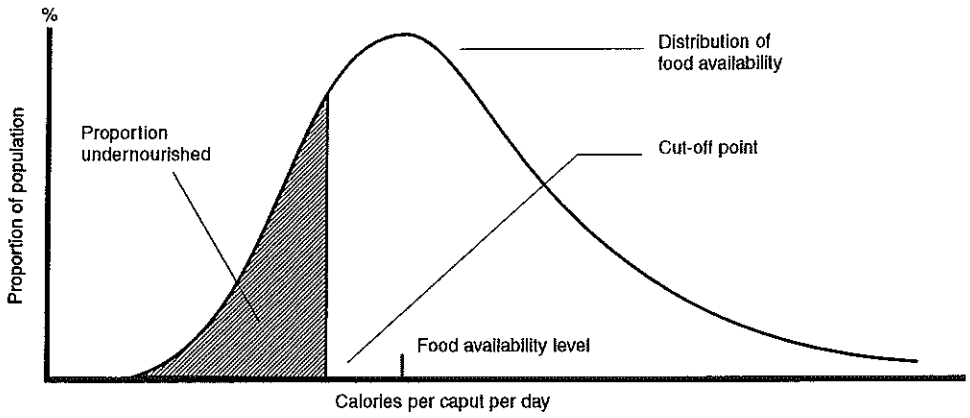
6 FAO: The Sixth World Food Survey, Rome, 1996.

7 Appendix 3 of the Sixth World Food Survey document provides a detailed description and analysis of the methodology.



19. As in the computation of AHFSI as described in the documents (already mentioned above) presented to past CFS sessions, it is clear that, given the per caput DES and population figures for a country, the prevalence estimates would be determined by the consumption distribution parameter and the minimum per caput dietary energy requirement[8].

20. The relative food inadequacy indicator represents the intensity of food inadequacy. It is defined as the difference between the average per caput requirement and the average per caput intake of people with inadequate access to food, multiplied by the number of people in the inadequate category. The resulting figure, that is the caloric value of the food deficit of the undernourished population is then expressed as a percentage of the dietary energy supply of the population as a whole.

21. Like the AHFSI, relative food inadequacy takes into account not only the head count measure of undernutrition but also the food gap of the undernourished. The measure of relative food inadequacy, however, is more intuitive in the sense that it expresses in percentage terms the amount of additional calories needed to bring all the undernourished people in the population up to an adequate level, assuming perfect targeting.

(ii) Summary of results

22. Based on the methodology outlined above, results of prevalence and intensity of food inadequacy, including notes on their interpretation, are provided in the *Sixth World Food Survey* document.

23. In short, results indicate that during the two decades from 1969-71, the *prevalence of food inadequacy* declined in the developing countries as a whole, down to 20 percent of their total population in 1990-92 from 35 percent. When disaggregated at regional level, results show that the prevalence of food inadequacy increased in both relative and absolute terms in sub-Saharan Africa; the proportion and absolute numbers declined in the Near East and North Africa region. In the

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[8] The specification of both presents considerable problems owing to a lack of appropriate data as well as conceptual difficulties. These problems are discussed in depth in the Sixth World Food Survey document.

Latin America and Caribbean region, the proportion declined but the absolute numbers increased. In South Asia, the proportion remained stable in the 1970s before declining in the 1980s, but the absolute number of people with inadequate food remained slightly higher than in the base period (1969-71). Marked improvements in both the proportion and absolute number of people with inadequate access to food were registered in East and Southeast Asia.

24. When disaggregated at country level, results indicate that among the 98 developing countries covered by the study, between 1969-71 and 1990-92 the prevalence of food inadequacy increased in 39 countries (28 low-income and 11 middle-income countries) - 40 percent of the countries.

25. With respect to *intensity of food inadequacy* (based on the difference between the actual per caput intake of the underfed and the average per caput requirement of the population), it is noted that the relative food inadequacy of the 98 countries included in the study declined by almost one-half in the twenty years since 1969-71. At regional level, it increased in sub-Saharan Africa and Latin America and Caribbean, but decreased in Near East and North Africa, East and Southeast Asia and in South Asia.

26. Results of the relative food inadequacy at country level, as presented in the World Food Survey document, are reproduced in Annex I. These results show that in a majority of countries (57), relative food inadequacy was less in 1990-92 than in 1969-71. In 40 countries, more than half of them in Africa, the relative food inadequacy increased during the period. Only in one of the developing countries studies did the relative food inadequacy remain stable. The reduction in relative inadequacy can also be observed through the doubling of the number of countries with relative inadequacy of less than 3 percent, while the numbers of countries in the 3-7%, 7-10% and 10-15% categories dwindled. Against this picture, it is disappointing to observe that the number of countries (14) in the above 15% category did not change over the period. It is also disheartening that at least seven countries had a relative inadequacy of 25% or higher (three of them over 30%) in 1990-92, compared to only one such country (none above 30%) in 1969-71.

27. The measure of the relative food inadequacy is intuitive and useful in monitoring the household food security status at national level. It, however, does not address the stability (risk to food insecurity/adequacy associated with temporary annual shortfalls in DES) aspect of food security that the AHFSI does. For the future, subject to data availability, it may well be that the conceptual and methodological strengths may be combined to produce a measure which is a better tool for monitoring food security status in countries than either of the two alone.

ANNEX I

RELATIVE INADEQUACY OF FOOD SUPPLY IN DEVELOPING COUNTRIES: 1969-71, 1979-81 and 1990-92

	Relative Inadequacy of Food Supply		
	1969-71	1979-81	1990-92
	(..... Percentage .....)		
AFRICA	10.5	10.0	10.
Algeria	17.8	2.9	1.6
Angola	11.7	10.1	19.6
Benin	10.3	9.3	4.3
Botswana	9.1	9.6	7.3
Burkina Faso	28.9	32.0	12.4
Burundi	13.2	15.2	17.6
Cameroon	7.4	6.7	13.3
Central African Rep.	6.9	8.0	25.5
Chad	12.1	32.9	25.0
Congo	12.9	9.0	9.2
Côte d'Ivoire	5.6	2.2	5.0
Egypt	5.7	1.5	0.9
Ethiopia, PDR	23.9	19.0	28.0
Gabon	11.8	7.3	5.7
Gambia	10.2	14.5	7.5
Ghana	9.4	17.8	12.0
Guinea	9.9	8.1	5.8
Kenya	8.8	9.3	15.1
Lesotho	16.6	9.7	10.0
Liberia	9.2	6.2	23.0
Libyan Arab Jam.	4.4	0.3	0.5
Madagascar	4.2	4.3	8.0
Malawi	6.4	7.5	16.4
Mali	14.5	23.9	9.5
Mauritania	19.0	13.2	4.4
Mauritius	8.3	4.4	4.0
Morocco	5.3	3.0	1.8
Mozambique	20.1	20.8	29.2
Namibia	10.0	9.4	9.6
Niger	16.5	9.4	10.4
Nigeria	6.1	15.6	11.1
Rwanda	9.5	8.3	14.5
Senegal	5.6	5.6	7.9
Sierra Leone	9.3	10.3	19.9
Somalia	23.2	20.4	35.1
Sudan	10.1	8.5	10.9
Swaziland	6.2	3.9	2.5
Togo	7.9	9.0	7.8
Tunisia	5.2	1.3	0.4
Uganda	7.4	10.6	8.5
United Rep. of Tanzania	24.1	7.7	11.1
Zaire	10.2	12.0	11.2
Zambia	9.3	9.4	13.3
Zimbabwe	9.6	8.6	12.4

	Relative Inadequacy of Food Supply		
	1969-71	1979-81	1990-92
	(..... Percentage .....)		
NORTH AND CENTRAL AMERICA	5.1	2.9	3.2
Costa Rica	5.9	3.9	2.2
Cuba	3.1	1.9	1.7
Dominican Rep.	13.3	8.3	8.6
El Salvador	17.1	6.1	4.1
Guatemala	9.8	6.9	6.3
Haiti	21.3	17.1	32.4
Honduras	6.5	7.8	4.6
Jamaica	4.7	4.3	5.6
Mexico	3.0	1.3	1.4
Nicaragua	5.0	5.8	5.9
Panama	2.3	3.0	4.1
Trinidad and Tobago	2.9	0.7	2.1
SOUTH AMERICA	3.8	2.7	3.0
Argentina	0.7	0.8	1.6
Bolivia	13.5	10.7	11.9
Brazil	2.8	1.4	1.1
Chile	3.4	3.9	5.1
Colombia	10.9	5.3	3.9
Ecuador	8.5	6.1	4.1
Guyana	4.8	3.0	5.6
Paraguay	2.2	2.3	2.9
Peru	4.2	8.1	15.9
Suriname	7.7	5.7	4.9
Uruguay	0.5	0.9	1.5
Venezuela	6.1	3.1	4.6
ASIA	10.7	7.2	3.9
Afghanistan	10.6	10.7	34.2
Bangladesh	5.0	9.9	8.8
Cambodia	2.4	17.6	7.1
China	14.4	7.9	3.5
Hong Kong	2.5	2.1	0.8
India	9.8	9.3	4.9
Indonesia	9.3	3.6	2.2
Iran, Islamic Rep.	8.3	1.7	1.2
Iraq	4.5	1.0	4.8
Jordan	2.1	0.9	0.5
Korea, Dem. People's Rep.	4.2	1.1	1.6
Korea, Rep	0.3	0.1	0.1
Kuwait	1.3	0.4	4.1
Laos	7.2	4.0	5.6
Lebanon	6.7	3.0	0.8
Malaysia	2.8	1.7	1.1
Mongolia	5.2	3.6	8.4
Myanmar	9.0	4.6	2.3
Nepal	13.8	15.4	7.3
Pakistan	5.3	6.3	3.5
Philippines	17.7	5.6	4.5
Saudi Arabia	17.1	1.6	2.4
Sri Lanka	4.7	4.7	6.4

	Relative Inadequacy of Food Supply		
	1969-71	1979-81	1990-92
	(..... Percentage .....)		
ASIA (cont.)			
Syrian Arab Rep.	4.3	0.8	0.4
Thailand	7.0	7.8	6.5
Turkey	1.5	0.8	0.5
United Arab Emirates	0.8	0.7	0.6
Viet Nam	5.4	7.1	6.0
Yemen	16.9	9.7	5.6
OCEANIA			
Papua New Guinea	6.7	3.5	1.9
DEVELOPING REGIONS	9.8	7.0	4.7