



Food and Agriculture
Organization of the
United Nations



Livelihood zones and adaptive capacity maps of Lao People's Democratic Republic

Part of the Land Resources Information Management System (LRIMS)

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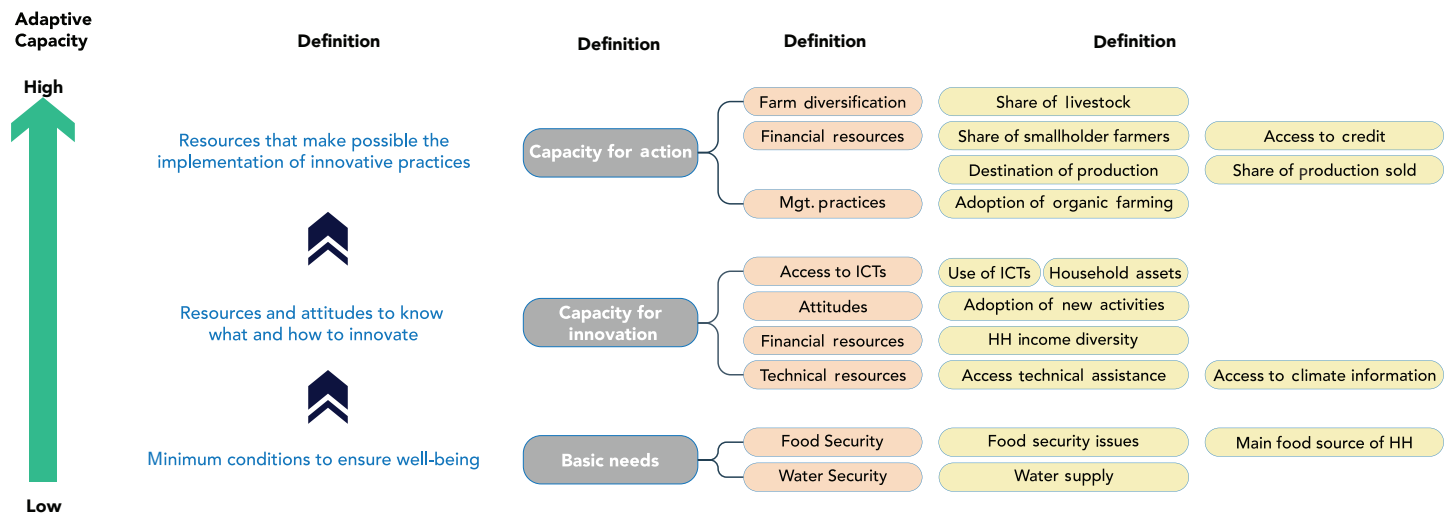
A first: Adaptive capacity mapping

The Department of Agricultural Land Management (DALaM) under the Ministry of Agriculture (MAF) and the National Agriculture and Forestry Research Institute (NAFRI) have produced the first national livelihood and adaptive capacity dataset in the country. It has been generated using an innovative method merging participatory mapping, and advanced data treatment and is, in both, technical standard and scientific innovation, state of the art. With the collaboration of more than 300 district and province officials, Lao People's Democratic Republic is thus the first country in its economic class to produce a map of this kind. NAFRI and DALaM's teams now can manage the production and further development of high-quality outputs independently.

Decision makers and planners need methodologies to define priorities and design targeted solutions to the most vulnerable populations and livelihoods based on their available resources for adaptation (adaptive capacity) and the expected impacts of climate change (Ford et al. 2010).

A livelihood zone is a geographical area where people share the same patterns of access to food and income (that is, they grow the same crops or keep the same types of livestock), and have the same access to markets. A livelihood zone can be defined as a mapping unit. For each livelihood zones, we built a database that defined the adaptive capacity

Adaptive capacity is the capacity to assess changes in the environment, identify options, plan and implement measures to reduce climate change's impact on their livelihoods. Increasing the agricultural population's adaptive capacity requires an integrated investment to achieve socio-economic development outcomes that should strengthen social, natural, financial, productive, cultural, political human assets of rural livelihoods (Flora et al. 2015).



How can these maps be of use?

This is probably one of the first time that a livelihood dataset is developed at a national level. Appropriate use might require training and information sharing with decision makers. Main uses will include:

1. Make a synthesis of existing expert knowledge to support decision-making and transparent prioritization, opening the door for collaboration between government and non-government sectors.
2. Identify climate risks that threaten farmers' food security and economic conditions and analyze adaptation priorities based on a landscape level. Also, help identify locally tailored adaptation options with better agricultural technologies and approaches adoption at scale.
3. Capture pattern across the administrative boundaries providing an opportunity to harmonize and implement inter-administrative tailored adaptation measures efficiently
4. Guide in identifying hot and bright areas for planning:
 - a. Hotspots: farmers have very low satisfaction of basic needs and require extensive and long-term interventions to help cope with climate and other types of shocks.
 - b. Bright spots: rolling out of new or improved agricultural practices is suitable because farmers have resources to innovate and have the capacity to take actions to mitigate impacts of climate risks.

Key Features

Expert's knowledge



Participatory process



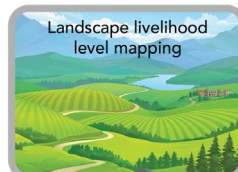
Livelihood unit of analysis



Country-wide



Key outputs



Adaptive assessment capacity



Utilization

Climate change adaptation



Agricultural planning



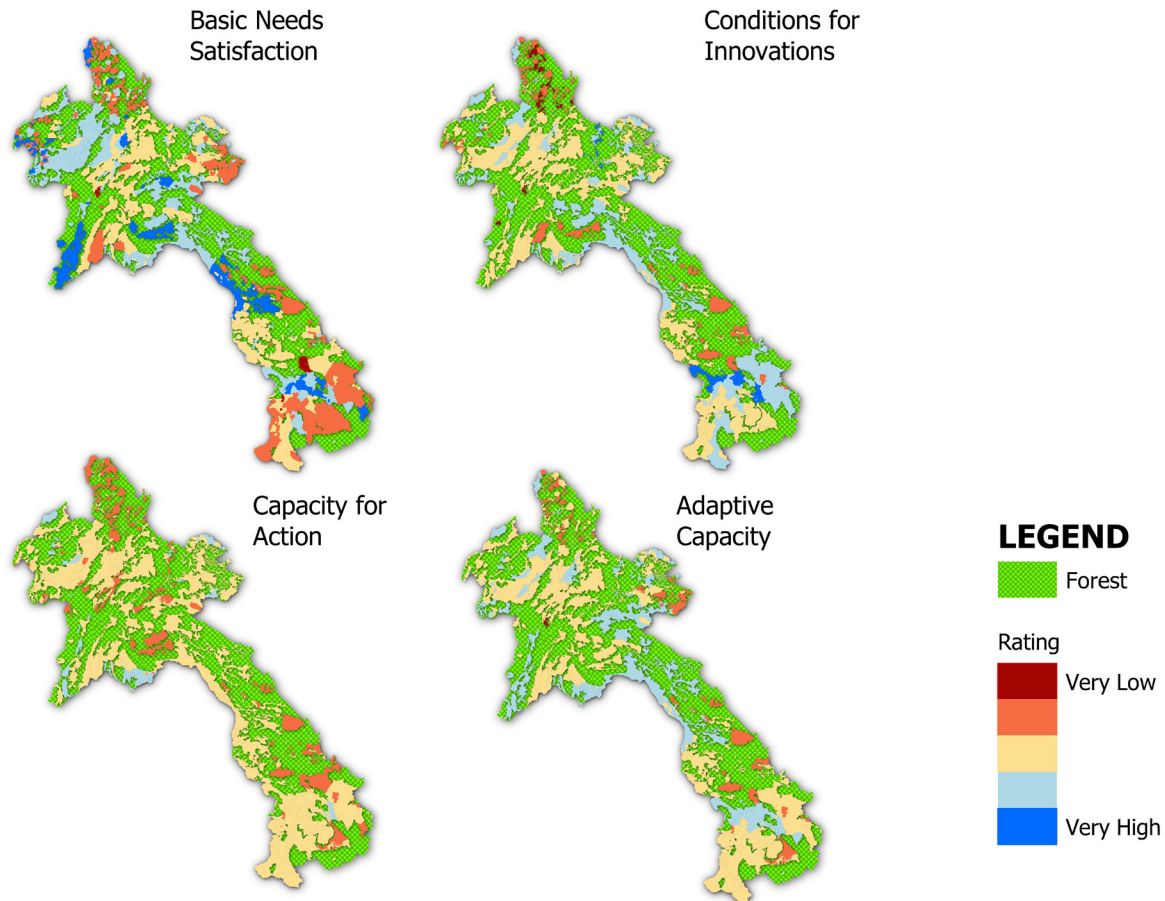
How is the livelihood dataset generated?

The main steps of the livelihood dataset generation include:

1. Preparatory works (baseline maps, workshop material, participatory assessment questionnaire).
2. Local participatory mapping was carried out through workshops gathering more than 300 participants at the District and Provincial Agriculture and Forestry Office (PAFO/DAFO). During the workshops, livelihood zones were mapped, and the questionnaire was replied.
3. Database preparation included livelihood zoning digitalization. Also, the completion of an attribute database was finalized.
4. The main map preparation included adaptive capacity mapping as a function of satisfaction of basic needs; resources for innovation, and capacity to translate innovation into action. An additional 34 maps were mapped and made available in LRMIS. The management of the dataset allows for additional maps to be produced.



The main result: adaptive capacity assessment



Source: GIS unit, DALaM of MAF, 2020.

Livelihood units that score very low in terms of basic needs satisfaction are located in Laos' southern provinces. Upland rice and grassland are as have the largest area with very low basic needs satisfaction. Livestock livelihood in the borders of Savannakhet and Khammuane has also scored very low, as well as the rainfed lowland rice paddy in Vientiane. Areas that scored high in terms of adaptation conditions are in Bolikhamxay, portions of Savannakhet and Saravan, some patches in Luang Prabang, Oudomxai, and Luang Namtha. Areas that scored very high in capacity for action are in Vientiane Capital and Laos's northern portion. High adaptive capacity is also patterned with areas with high conditions for innovations. These are mostly dominated by rice-based livelihoods (rainfed and irrigated) with mixed maize, vegetables, and livestock. In general, areas with very low satisfaction of basic needs also have very low conditions for innovation and capacity for actions.

Who is this map for?

At a national and international level, the dataset will act as in-depth vulnerability maps and prioritise investments. In that sense, the maps will be necessary for donors, development partners, and to establish priorities for the National Socio-Economic Development Plan implementation.

At the national level, the Department of Planning and Finance of MAF could use these maps to address urgent needs for high impact climate resilience intervention or address areas that are more suitable for high rentable investments. Generally, these maps will be mostly used by experts of the Ministry of Agriculture and Forestry (MAF) including the Departments of Agriculture, Forestry, Irrigation, Planning and Finance, Livestock and Fisheries, Policy and Legal Affairs, Technical Extension and Agro-Processing and the National Agriculture and Forestry Research Institute, as well as the Land Department under the Ministry of Natural Resources and Environment (MONRE).

Provincial and District Offices of the MAF and MONRE and other entities engaging with planning agricultural activities as well as universities and colleges are expected to benefit from the innovative information displayed for both analytical and educational purposes. However, it is recognised that this dataset will require some training before they can be used at the local level.



Results

-78 livelihoods were identified

-900 livelihood units were assessed in terms of cropping pattern, climate risk and responses

Additional maps uploaded in LRMIS:

Paddy rice and others livelihood map of Lao People's Democratic Republic

Adaptive capacity index

Farmers' level of access to and use of climate information

Farmers' level of access to credit

Orientation of the farmers' production to markets

Level of access to an electric engine

Amount of farmers that use fertilizer

Level of food security in the farmers' households

Food source diversity in the household

Level of access to household assets

Level of continuous water availability for the domestic use

Amount of farmers that use improved varieties

Amount of farmers that use improved seeds

Household income diversity

Level of access to production infrastructure

Level of access to and use of internet

Level of adoption of different management practices for livestock and pasture

Level of adoption of new activities in agriculture, livestock and fishery

Level of adoption of organic farming

Share of the farm products sold by the farmer

Level of adoption of livestock in the farms

Share of small farm holders

Soil fertility and slope

Level of access to and use of technical assistance for agriculture

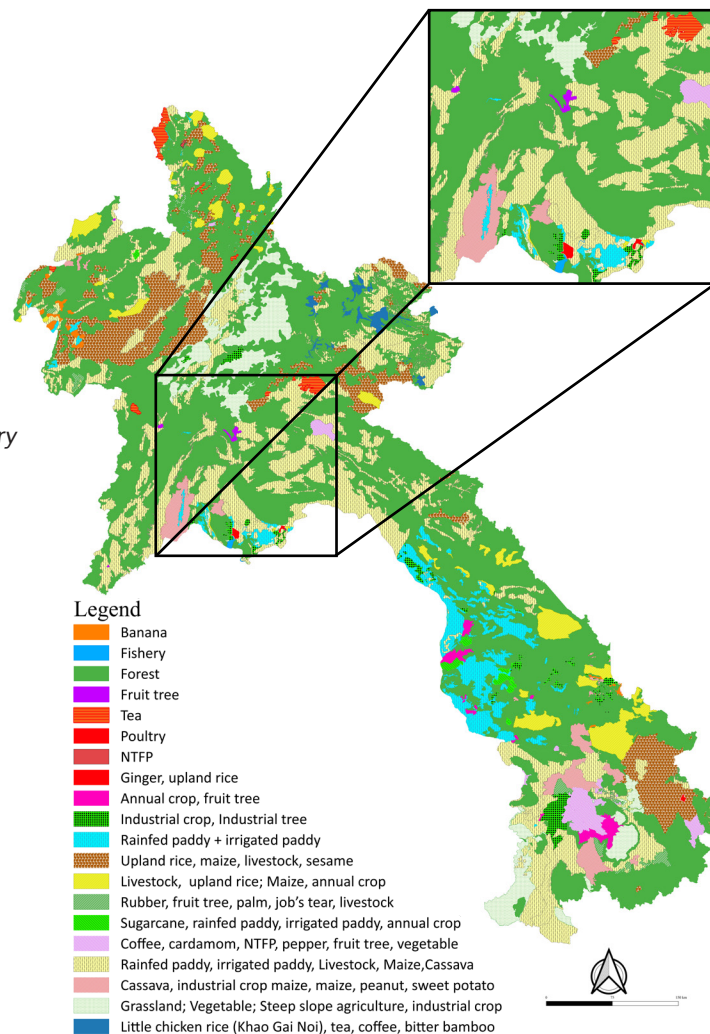
Level of access to veterinary and/or technical assistance for livestock

Level of access to vehicles for production and business

Level of access to vehicles for daily travel

Water availability for the farm

Level of community organization for water provision



The team

- Overall management and implementation: NAFRI and DALAM
- Participant list: District and Province Offices for Agriculture and Forestry (DAFO and PAFO)
- Coordination and financial support: SAMIS, FAO Laos and CIAT De-Risk
- Technical and scientific expertise: CIAT De-Risk

Source: GIS unit, DALaM of MAF, 2020.



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FURTHER INFORMATION

Further information on the generated land cover maps and the SAMIS project under which they were developed can be found on the respective FAO page:

<http://www.fao.org/in-action/samis/en/>
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Also information can be found at the CIAT page:

<https://alliancebioversity.org/>

Funding proposals and concrete inquiries can be directed at :

- The Department of Agricultural Land Management (DALaM, www.dalam.org.la) under the Ministry of Agriculture and Forestry (MAF), which can be reached by telephone under +865 21 770201.
- The National Agricultural and Forestry Research Institute (NAFRI, www.nafri.org.la) under the Ministry of Agriculture and Forestry (MAF), which can be reached by telephone under +865 21 770097.

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