C-ADAPT

Climate Resilience for Food Security

The CLEAR approach

THE CONSOLIDATED LIVELIHOODS EXERCISE FOR ANALYZING RESILIENCE

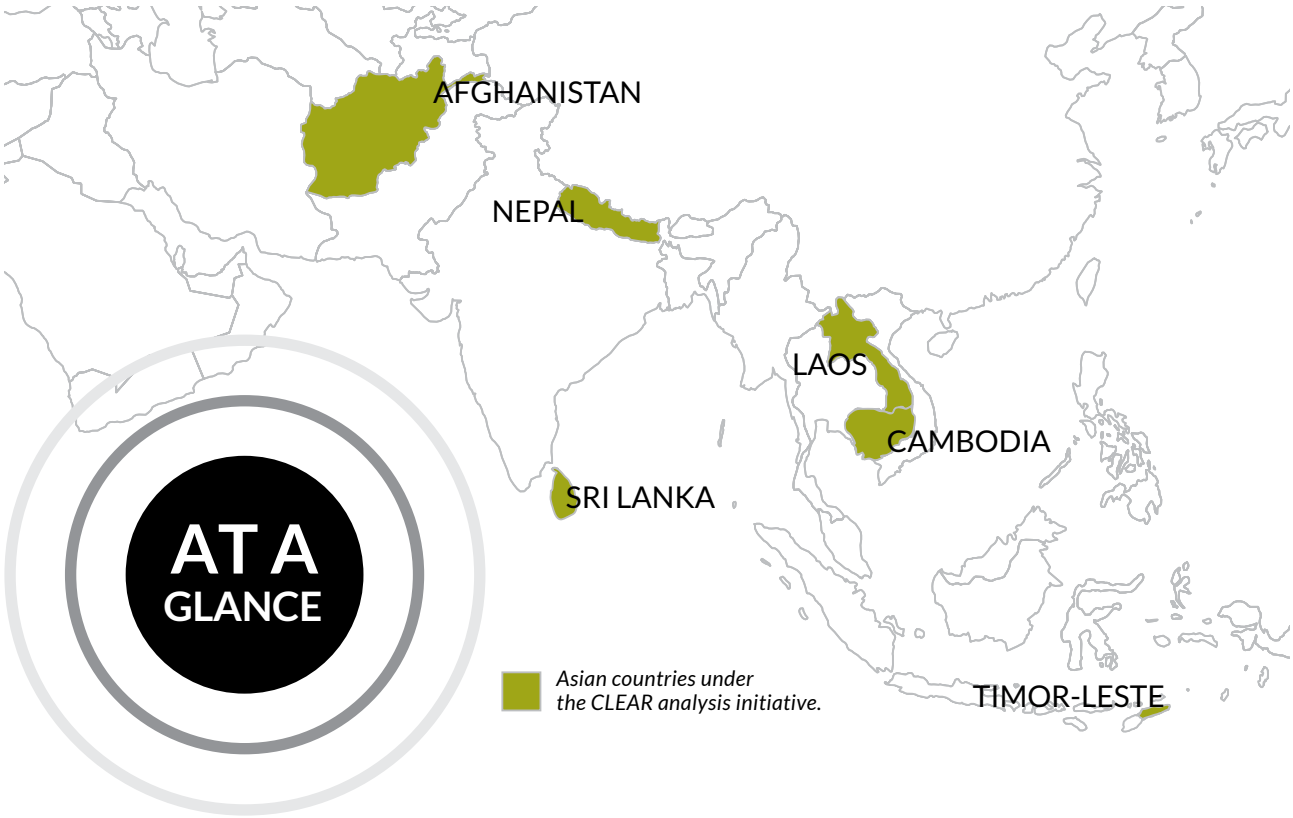
WFP World Food Programme

wfp.org

December 2016

Table of Contents

Executive Summary



The Consolidated Livelihood Exercise for Analyzing Resilience (CLEAR) is an analytical approach developed by WFP to better understand **how food security is affected by climate risks.** Such risks can include those related to **extreme events** (such as droughts, floods and cyclones), or to **long-term gradual changes** (such as shifting rainfall patterns, rising temperatures, or salinity intrusions from sea level rise).

This guide explains the CLEAR method and how CLEAR analyses have been used in various countries to inform the design of programmes or policies related to climate risk and food security. The guide starts with a general overview of the CLEAR approach, before giving a more in-depth **step-by-step explanation of the method**, and then finishes with concrete **examples of how CLEAR has been used by WFP and governments to design programme and policies.**

This guide aims to help development practitioners involved in designing, implementing or funding climate-related interventions to understand how a CLEAR analysis can support their work, and how this analysis is carried out.

Paddy field
in Cambodia

1. Introduction

Climate change and climate-related disasters are a major driver of global food insecurity. Zero Hunger cannot be achieved without concrete action to help vulnerable communities prepare for, respond to, and recover from climate shocks. To guide such action, however, it is essential that we better understand how climate risks — both current and future ones — impact food security and livelihoods.

The Consolidated Livelihood Exercise for Analyzing Resilience (CLEAR) is an analytical approach developed by WFP to better understand how food security is affected by climate risks – whether they be related to extreme events (such as droughts, floods and cyclones), or to long-term gradual changes (such as shifting rainfall patterns, rising temperatures, or salinity intrusions in coastal areas due to sea level rise).

This guide has been put together to help development practitioners involved in designing, implementing or funding climate-related interventions understand how a CLEAR analysis can support their work, and how this analysis is carried out. The guide starts with a general overview of the overall CLEAR approach, before giving a more in-depth step-by-step explanation of the method, and then finishes with concrete examples of CLEAR has been used in various countries to design adaptation programmes or policies in the food security sector.

The ultimate objective of a CLEAR analysis is to inform the design and targeting of development programmes and policies related to climate change adaptation, by shedding light on how both current and future climate risks affect the most vulnerable people.

A defining feature of the CLEAR approach is that it takes livelihoods as the starting point: livelihood zones, rather than administrative boundaries, are used as the main analytical unit. Focusing on livelihoods means the priority is placed on communities and what they do for a living. This helps understand how climate affects people, rather than geographic areas.

CLEAR analyses are carried out in countries where climate risk stands out as a major factor of food insecurity, and where development agencies or governments feel that a better understanding of the relationship between resilience, livelihoods and climate risks is needed to inform programmes.

WFP is carrying out CLEAR analyses in different countries under the C-ADAPT initiative. In Asia, CLEAR analyses have been done in Sri Lanka, Cambodia, Laos, Nepal, Timor-Leste, and Afghanistan. The method has also been tested in South Sudan.

Woman in northern Nepal winnowing millet, to separate the edible grain from the chaff

Women carrying compost to apply on potato fields in northern Nepal

2. Method: what exactly does a clear analysis entail?

Each CLEAR analysis is different. The method is adapted to government priorities in that country, data and time constraints, and, of course, the specific objective of the analysis in that country.

The specific purpose for carrying out CLEAR analyses varies from one country to the other. For WFP, some country offices decide to do it because they need help targeting specific resilience or climate change-related programmes. Others do it for advocacy purposes. Sometimes the analysis ends up serving a different or additional purpose to what was originally intended. In Cambodia for example, the analysis started out as a tool to inform WFP's strategic orientation in the country, but ended up being integrated into the country office's existing food security early warning tool, as well as generating funding for a community-based climate adaptation programme. Here are some of the ways in which CLEAR analyses have been applied so far:

- Targeting and designing resilience or climate change adaptation activities, done by WFP or by the government. This can support the design of either specific projects (e.g. Cambodia and Laos), or the overall programme in that country (e.g. Sri Lanka).

- Informing existing, non climate-related livelihood support programmes, by helping understand how climate risks interact with other drivers of food insecurity – and can potentially slow down the effectiveness of these programmes if climate risks are not simultaneously addressed (e.g. Nepal, in earthquake affected areas).

- Food security monitoring and early warning systems, by identifying livelihoods and areas that are particularly vulnerable to specific climate risks (e.g. Cambodia).

- Serving as an advocacy piece on WFP's work in disaster risk reduction and climate change analysis and programming (e.g. Afghanistan).

- Serving as an emergency preparedness and response tool for El Nino events (in particular the 2015/16 event), by identifying populations most vulnerable to the impacts of El Nino, in order to guide potential emergency response priorities (e.g. Timor Leste).

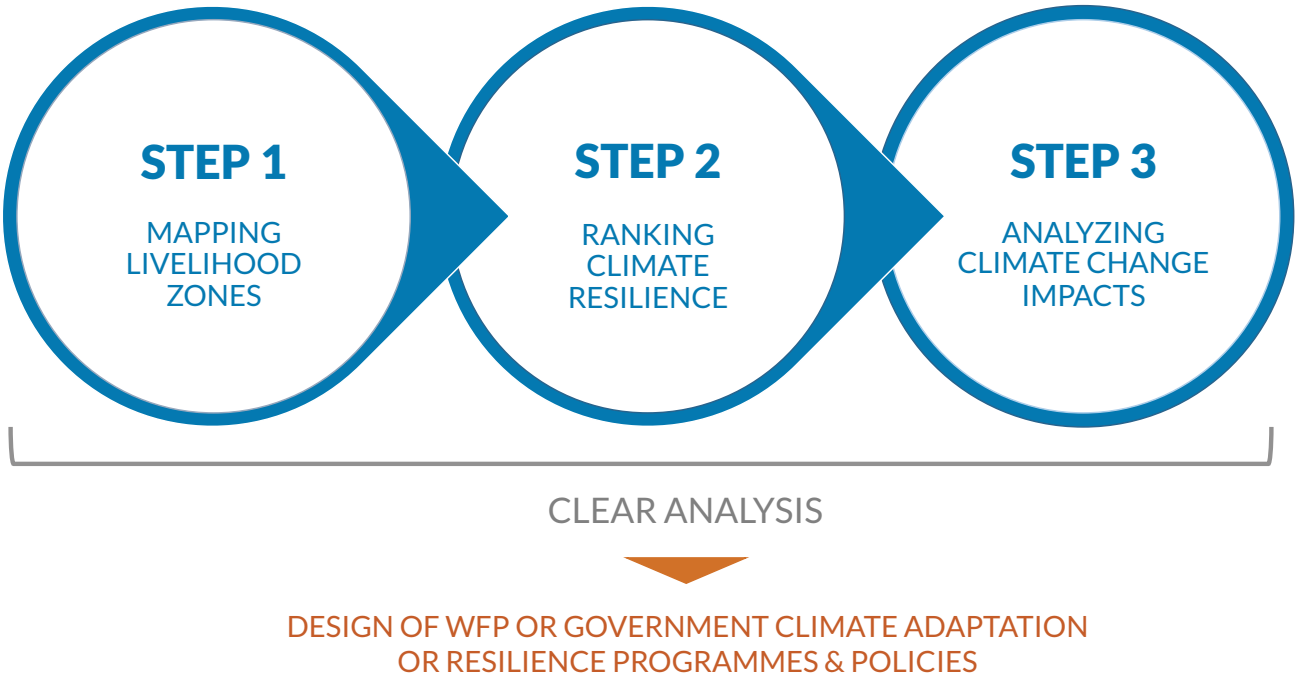
CLEAR therefore should not be considered a fixed method, but rather an approach to food security and climate risk analysis that can be modified to suit different analytical needs and socio-economic contexts, while still maintaining its core emphasis on livelihoods.

CLEAR analyses are guided by a common approach, which involves identifying and overlaying three types of information:

1. a map of livelihood zones;
2. a ranking of the resilience of different livelihoods to climate risks; and
3. an assessment of the impacts of future climate risks on livelihoods and food security.

A CLEAR analysis therefore typically involves three steps: livelihood zoning, resilience analysis, and analysis of climate change impacts. While the steps build on each other, they can also be carried out independently, depending on the aims of the analysis. The livelihood map produced in the first step is used to create the resilience map in the second step, but can also be used as a standalone product. Similarly, while the resilience map is used as a basis for the third step – which aims to understand the projected impact of climate change on food security and livelihoods – it can also be used as is, to show current resilience (without taking into account future climate change).

FIGURE 1
CLEAR analysis steps



In each of these steps, data is collected through a combination of secondary sources (topography and agro-ecological maps, poverty and food security surveys, climate information from meteorological agencies, etc.), government consultations at the national level, and community consultations at the field level.

WFP staff doing field visits during the CLEAR exercise in Cambodia. Some of the communities visited were only accessible by boat.

BOX 1

CLEAR as a tool for creating partnerships and building government capacity

One of the central pillars of the CLEAR approach is its emphasis on using the analysis process to build and strengthen **partnerships between key government stakeholders, UN agencies, NGOs and communities.** The fieldwork and consultations carried out to collect livelihood and resilience data are always done hand in hand with governments. During data collection in the field (i.e. interviewing farmers or carrying out district-level stakeholder consultations), great attention is placed on the composition of the field teams. One or two government staff (usually from different ministries) are systematically paired with a WFP staff. While WFP usually leads the process during the first day of field work, government staff often quickly take ownership, and start leading the interviews and consultations in the following days.

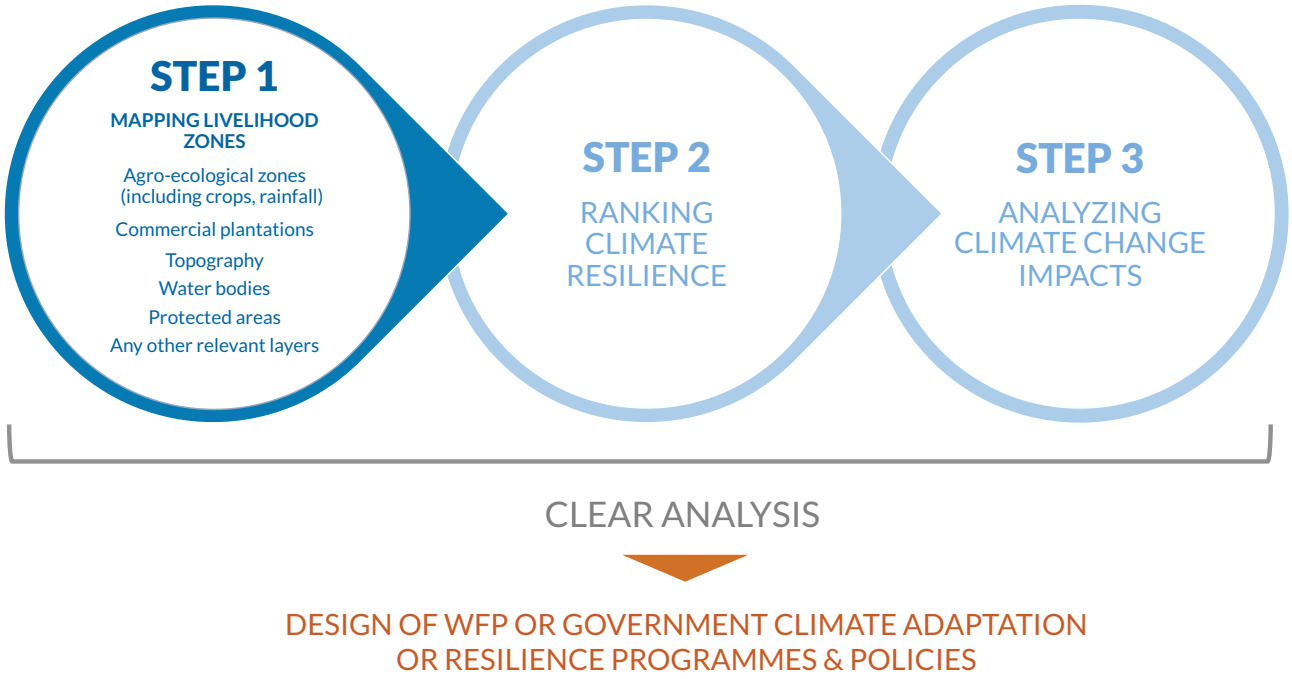
This means that relationships between partners are not just built through formal meetings in the capital, but also through practical field work. By developing an interdisciplinary team of partners, the CLEAR process has helped create new working relationships with "non-traditional" partners such as a country's ministry for the environment, climate change, economy, agriculture, social protection or planning – to name but a few. In many cases, mixing staff from different ministries in each field team has also helped generate dialogue and partnerships between various government ministries who previously did not work regularly together.

Even when CLEAR is done without any field work, its national-level consultations have also encouraged partnerships to form between various government stakeholders. In Sri Lanka for example, the CLEAR analysis was entirely based on a three-day national level consultation which involved thirty eight different ministries. While all of these ministries had some stake in agriculture, food security or livelihoods, many had previously had very limited interactions with each other. The CLEAR consultation brought them all together, enabled them to discuss and come to a consensus on the country's livelihood zones, climate risks affecting each zone, and how these risks affected food security and livelihoods.

Livelihood mapping exercise with Sindhupalchok district officials, Nepal. Most government buildings in the district were destroyed during the April 2015 earthquake.

2.1. STEP 1: Mapping Livelihood Zones

FIGURE 2
STEP 1: Livelihood Zone Mapping



The first step in a CLEAR analysis is to **map livelihood zones**, either for the whole country or for a specific region(s) of interest. Livelihood zones are broad geographic areas where communities engage in relatively similar livelihood activities (e.g. paddy farming, livestock rearing, or factory work). They are defined based on a combination of geographic (topography, water bodies), environmental (agro-climatic conditions, rainfall regimes), and socioeconomic (road density, market density) indicators.

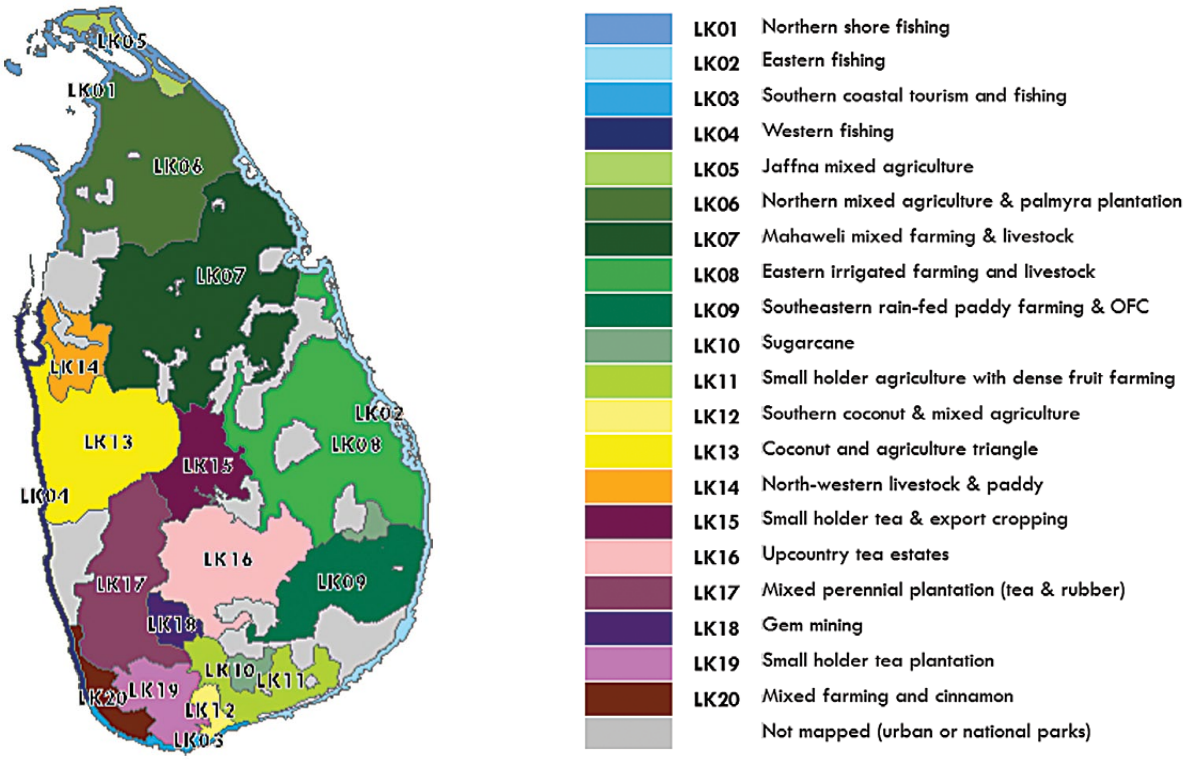
The CLEAR method builds on the approach developed by FEWSNET for using livelihood zoning and profiling for food security analysis, but with a particular focus on climate risks.

Community consultation in northern Nepal. The consultation was scheduled to coincide with a planned training on farming techniques, organized by the district agricultural extension office.

The CLEAR approach. The consolidated livelihoods exercise for analyzing resilience

FIGURE 3

The livelihood map produced for the Sri Lanka CLEAR analysis. For consistency, all map examples in this guidance are taken from the Sri Lanka CLEAR



In some countries, livelihood maps already exist (as was the case in Afghanistan). In countries where there is no existing livelihood zoning, creating a livelihood map is a major part of the CLEAR exercise. (Box 2 describes some regional differences in the availability of livelihood maps in Africa and Asia.)

The first activity in mapping livelihood zones is to create a rough livelihood map based on various secondary data sources. This may, for example, include the use of maps of topography, road density, agro-ecological or land use, vegetation, population density, rainfall, or seasonal calendars.

This map serves as a starting point, which will be corrected and refined through stakeholder consultations and field visits. In Sri Lanka, this correction process was only done through a national-level consultation, due to time constraints. In all other countries, however, consultations at the national and provincial scales were combined with field visits and village-level consultations.

A woman explains how rainfall patterns have changed in recent years, during a community consultation in northern Nepal. During the consultation, villagers were asked about the livelihood activities in their area, the main climate risks they faced, and how they were coping with/ adapting to these risks.

BOX 2

Livelihood zoning in Asia

While livelihood zoning has long been common practice in much of Africa, detailed livelihood information is much harder to find in Asia. This is in part because agro-ecological zones in this region tend to be less well defined, and rural households typically engage in a multitude of livelihoods, either shifting from one to another throughout the year, or practicing several simultaneously. This makes defining livelihood zones particularly challenging in the region, and less common than in Africa. As a result, creating livelihood maps was the first step in most of the CLEAR analysis carried out in Asia (except for Afghanistan, where livelihood zoning had already been carried out).

In some areas, the baseline map only needs to be adjusted slightly, by changing the position of specific livelihood boundaries or adding some details. In other areas, the baseline map needs to be substantially redrawn.

In Laos, for example, the baseline map for the Southern provinces was quite accurate, and only needed to be tweaked slightly. For the Northern provinces, on the other hand, provincial consultations quickly revealed that the map was not representative of the situation on the ground, so they were entirely redrawn on the spot with the provincial officials, drawing over the original baseline map. The corrected maps were then digitized using GIS, to create the final maps included in the CLEAR report.

While the livelihood mapping exercise is obviously key for the CLEAR analysis itself, more important still is the fact that it fills an important information gap in many countries. An important part of any CLEAR analysis is precisely developing livelihood zoning methods in conjunction with local and national governments. Governments can then use these maps for economic and development purposes – well beyond climate and food security programming.

FIGURE 4

Corrections made to the baseline livelihood map for Xaignabouli Province (northern Laos) during a provincial consultation

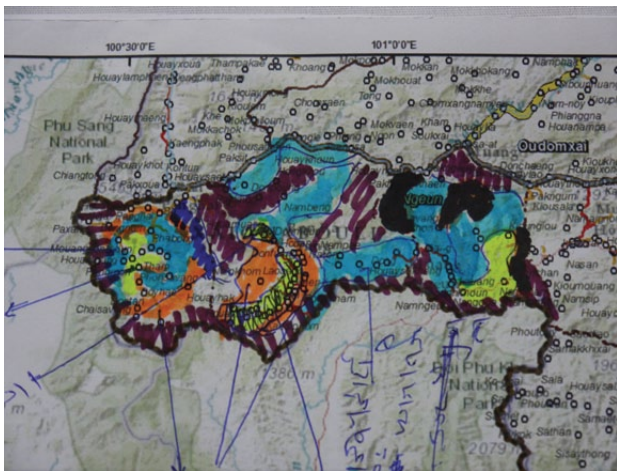
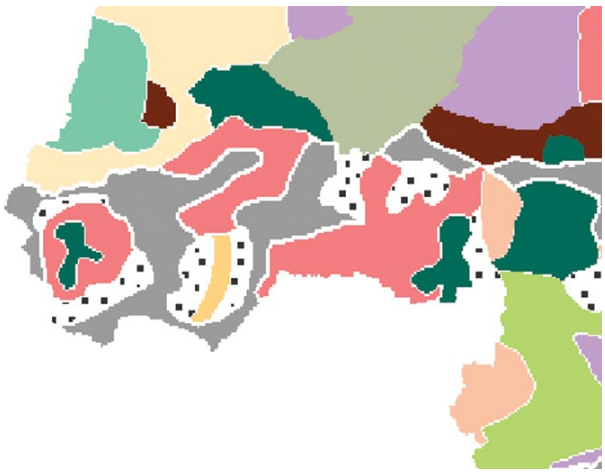


FIGURE 5

The final livelihood map for Xaignabouli Province, created by digitizing the corrected map in GIS



BOX 3

Lessons learned in livelihood mapping – dealing with oversimplification

One issue which stakeholders often bring up when CLEAR results are presented, is the fact that the analysis does not capture the diversity of livelihood activities and levels of resilience which often exist within a given livelihood zone. In this situation, it is important to stress that CLEAR is meant to provide information for broad policy and programming decisions, rather than detailed village-level targeting. It is not intended to replace a census.

It is also important to recognize that livelihood zones are inevitably oversimplifications of reality. While they do give a very useful general understanding of the predominant types of livelihoods in a given area, they cannot capture all the variations which can exist within a given zone – variations in wealth, access to natural resources, or access to markets, amongst other things.

One way this issue can be minimized during a CLEAR analysis is to focus only on the livelihoods of the poorest and most vulnerable households. While this does not entirely eliminate variations within a zone, it does significantly narrow it down. The livelihood maps produced are therefore only representative of the poorest segment of the population in a given area. Another option is to do micro-zoning (i.e. breaking down livelihood zones into smaller, more detailed units). It is worth noting, however, that this has only been done in countries where it was deemed useful for programming and planning purposes – as was the case in Cambodia, Laos and Nepal. In Laos for example – where CLEAR was designed to feed into the government's village-level information systems – the analysis ultimately included 41 livelihood micro-zones. This compares to only 20 livelihood zones for Sri Lanka, where CLEAR was meant to inform national level climate change planning.

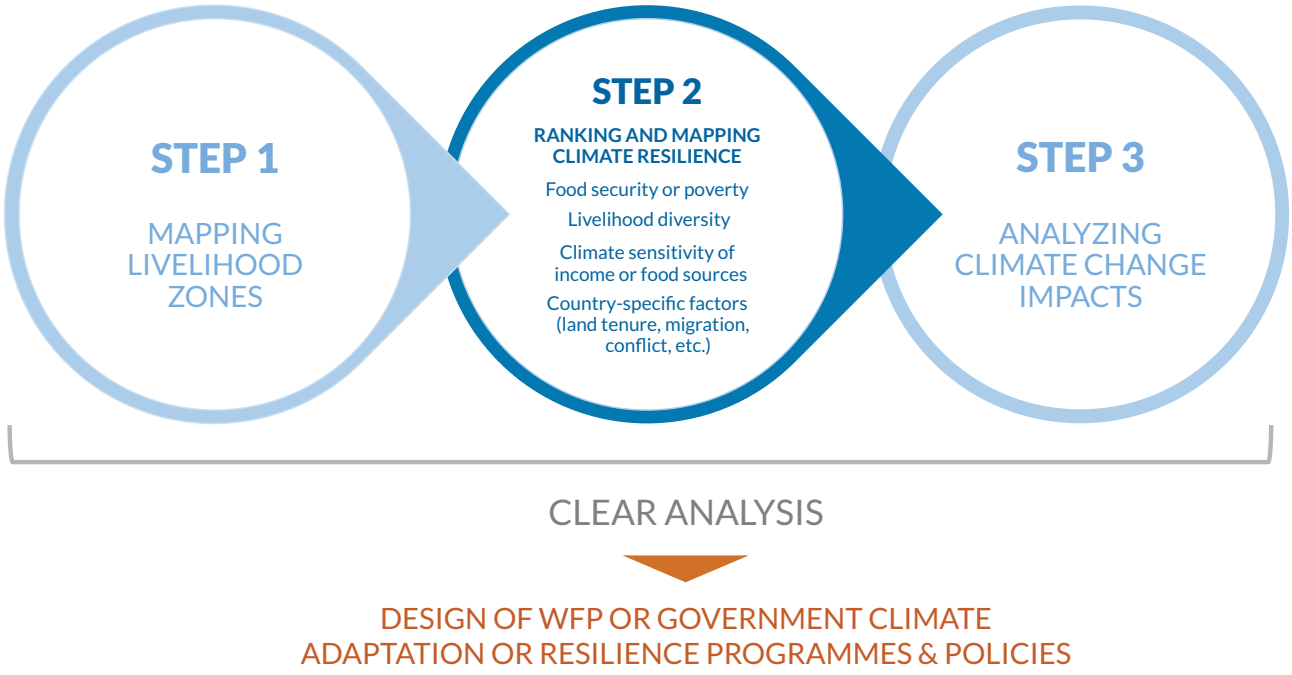
Women in Nepal carrying paddy rice stalks left over after the harvest, to use as fodder for livestock and to make compost

2.2. STEP 2: Ranking and Mapping Climate Resilience

The second step, **resilience analysis**, aims to rank the level of resilience to climate risks of the different livelihood groups identified in the previous step.

FIGURE 6

STEP 2: Climate Resilience Ranking



WFP, along with FAO and IFAD, defines resilience as "the capacity to ensure stressors and shocks do not have long-lasting adverse developmental consequences."[1] There has been much effort over the past few years to develop resilience measurement tools and frameworks (see here for an ODI working paper reviewing the main frameworks developed since 2013, and here for an overview of the work being done by the FSIN Resilience Measurement Technical Working Group).

Each of these frameworks approach resilience from a different angle, and use different indicators to measure it. The CLEAR approach focuses specifically on **climate resilience** – in other words people's ability to cope with climate-related stressors and shocks (such as changes in rainfall patterns, climate disasters or glacial melt). Another specificity of CLEAR's approach to resilience measurement is the fact that it uses livelihood zones as the analytical unit, rather than administrative units (e.g. district, region) or households.

1. For more details on WFP's general approach to resilience, see WFP's Policy on Building Resilience for Food Security and Nutrition, 2015.

Farmer in his paddy field
in Cambodia

Because people's resilience to climate shocks is intimately linked with various socio-economic factors, the analysis overlays climate information with socio-economic indicators (livelihoods and diversity of income sources, poverty, food security, etc). To do this, a climate resilience index is created, using a few selected indicators.

Using an index attracts a range of opinions: on whether an index over-simplifies the measurement of climate resilience, or conversely if focus should be placed on finding a single indicator. In reality, it is unlikely that there will ever be a perfect resilience measurement framework, with a large number of challenges in finding a suitable framework that can capture the complex dynamics of climate resilience across different contexts.

The benefit of using a CLEAR index is that it offers a flexible approach to help reflect these contextual challenges, and has thus far yielded useful and well-received results in all the countries where it was carried out. The approach encourages simplicity and pragmatism, focusing on the needs of development practitioners and government staff as the primary audience. As a result, the CLEAR method focuses on a limited number of key indicators to measure climate resilience in each country:

(a) relative poverty or food security
(b) climate-sensitivity of income or food
(c) livelihood diversity
(d) additional country-specific factors, when relevant.

Some baseline information on these indicators is always available from various secondary sources (government reports, other development agencies, or existing WFP tools such as the Seasonal Livelihood Programming (SLP) or Community Based Participatory Planning (CBPP) tools). This is complemented with primary data collection through government consultations and field visits to talk to communities. Each of these indicators is described further below:

(a) **Relative poverty / food security.** Poverty and food security are widely used as indicators for resilience (usually in combination with other indicators).[2] Various poverty and food security indicators can be used for CLEAR analyses, depending on the availability and quality of data in the country. In Laos, Cambodia and Nepal, the indicator used was small area estimations of poverty using poverty incidence (also called the poverty rate or poverty headcount ratio, defined as the proportion of the population living in households whose per capita expenditure is below the poverty line). In Timor-Leste, an aggregate living standard index was used. In Sri Lanka, WFP's standard indicator for food security, the food consumption score (FCS), was used.

(b) **Climate-sensitivity of food or income**. Understanding the extent to which different livelihoods depend on climate factors can be examined by measuring how climate sensitive that group's source of food or income is. This enables the identification of those livelihood groups that are – and will be – most negatively affected by climate shocks and shifts in climate patterns. For instance, a farmer practicing rain-fed agriculture will be much worse affected by a drought, or by a gradual shift in rainfall trends, than a tradesman or handicraft worker.

To determine the climate-sensitivity of a livelihood group, the rough proportion of income or food derived from activities heavily dependent on climatic factors (typically the timing and amount of rainfall) is estimated. Each livelihood group is then categorized as having either extreme, high, moderate, or low climate sensitivity of food/ income.

Some livelihood groups, such as urban dwellers and communities dependent on mining, may not depend on climate-sensitive activities at all. Others may depend primarily on a climate-sensitive activity, but also engage in other, less climate-sensitive ones on the side. For example, a rain-fed paddy farmer may supplement the food and income obtained from rice by making and selling handicrafts and selling charcoal. This farmer will therefore be considered less climate-sensitive than a strict paddy farmer.

Within agriculture, the degree of climate sensitivity also varies between different types of farming techniques and crops. For instance, irrigated agriculture tends to be less climate-sensitive than rain-fed agriculture. Nevertheless, the degree to which irrigation contributes to resilience ultimately depends on the source of water for irrigation. For instance, irrigation provides only a minor buffer against erratic weather for locations where water is withdrawn from rain-fed ponds; if irrigation comes from groundwater, however, it significantly reduces vulnerability to climate shocks.

Farmer in northwestern Laos showing the impact of drought on his dry paddy field

2. See for example the use of poverty and food security indicators in the resilience frameworks used by FAO or USAID.

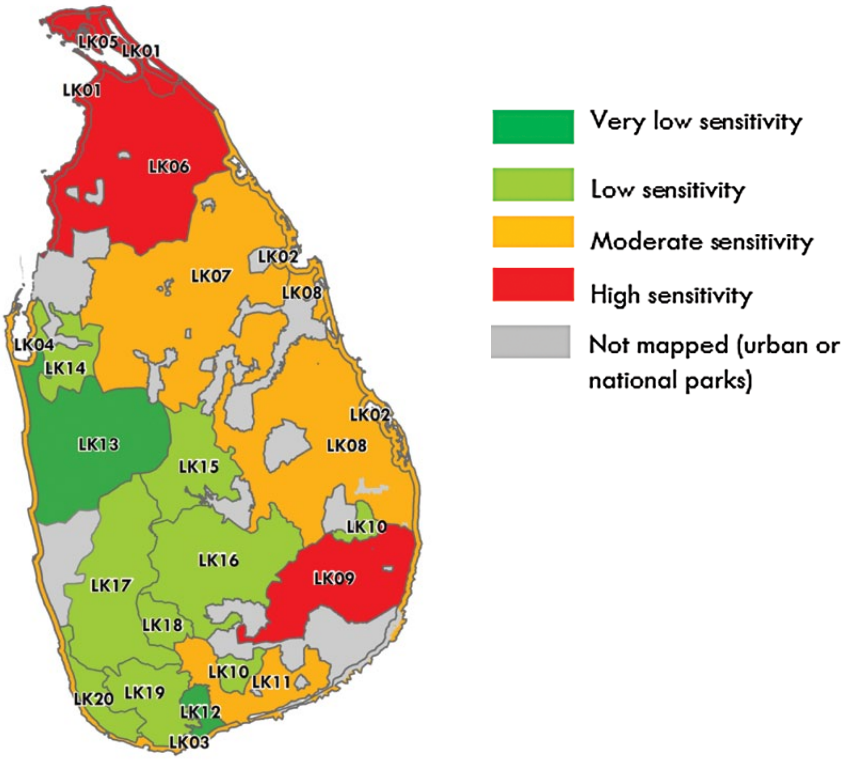
FIGURE 7

Sri Lanka CLEAR: Criteria used to rank the climate sensitivity of income of various livelihood group

	Description	Suggested classification	Examples of livelihood groups
Highly climate-sensitive	Livelihood groups that depend solely on a few climate-sensitive activities and do not engage in any other activities throughout the year.	Extremely climate-sensitive **Rank (1)**	• Rainfed upland paddy farming • Livestock rearing • Rainfed maize farming
	Livelihood groups whose main livelihood activity is climate-sensitive but who also engage in one or two other activities which provide a buffer against climate-related shocks.	Highly climate-sensitive **Rank (2)**	• Mixed paddy farming and cash crops • Mixed paddy farming and petty trade • Irrigated paddy farming
	Livelihood groups who derive around one third or up to one half of their income from climate-sensitive activities but who have access to other activities on a regular basis.	Moderately climate-sensitive **Rank (3)**	• Mixed cash crops and paddy farming (cash crops as dominant livelihood) • Peri-urban farming and garment work
Not climate-sensitive	Livelihood groups who do not derive any income from climate-sensitive activities and whose livelihoods are not directly affected by climatic shocks.	Not climate-sensitive **Rank (4)**	• Gem mining (if it is not affected by rainfall) • Timber products • Urban areas/factory workers

FIGURE 8

Resulting classification for each livelihood zone



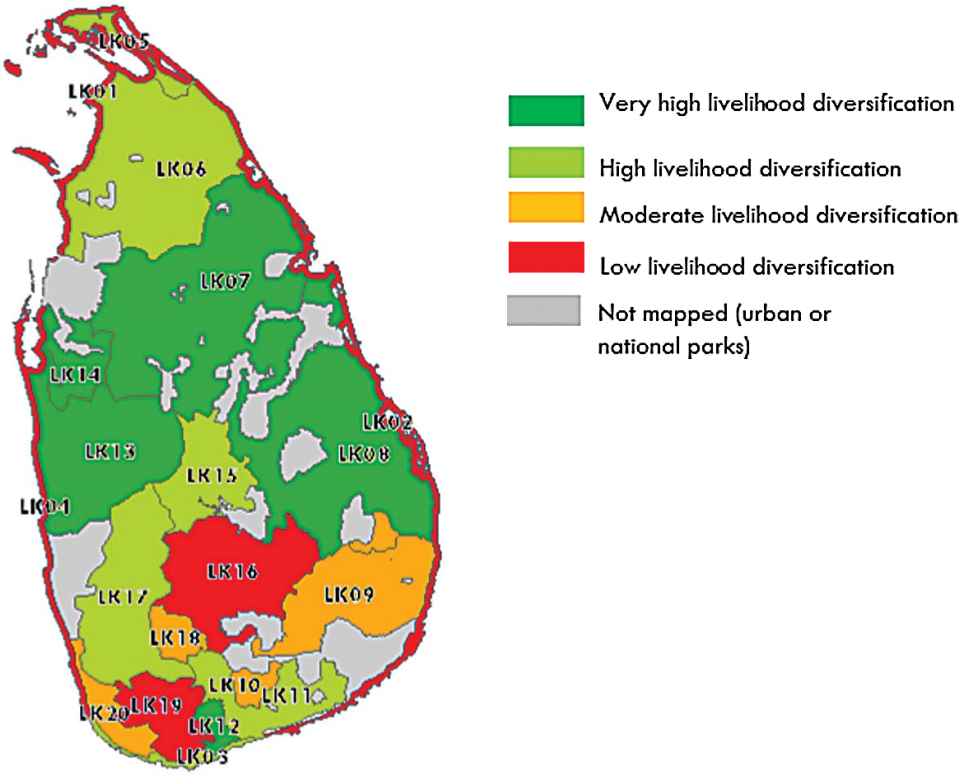
Woman weaving in northern Laos. Some livelihoods, such as handicrafts or petty trade, are less climate-sensitive than others such as rainfed agriculture.

(c) **Livelihood diversity.** The third indicator of resilience used in CLEAR is a measure of the availability of alternative activities which households can rely on when their main source of food or income is diminished or destroyed by a shock. For instance, coastal households for whom fishing is the only available source of income and food are at very high risk of becoming food insecure if a severe storm or a tsunami hit. On the other hand, fishing communities which also engage in petty trade as an additional income source will be less severely impacted by these climate shocks.

The map below shows the livelihood diversity ranking for Sri Lanka, which was completed through consultations with over 38 different national ministries, district authorities, and universities.

FIGURE 9

Livelihood diversity ranking for Sri Lanka



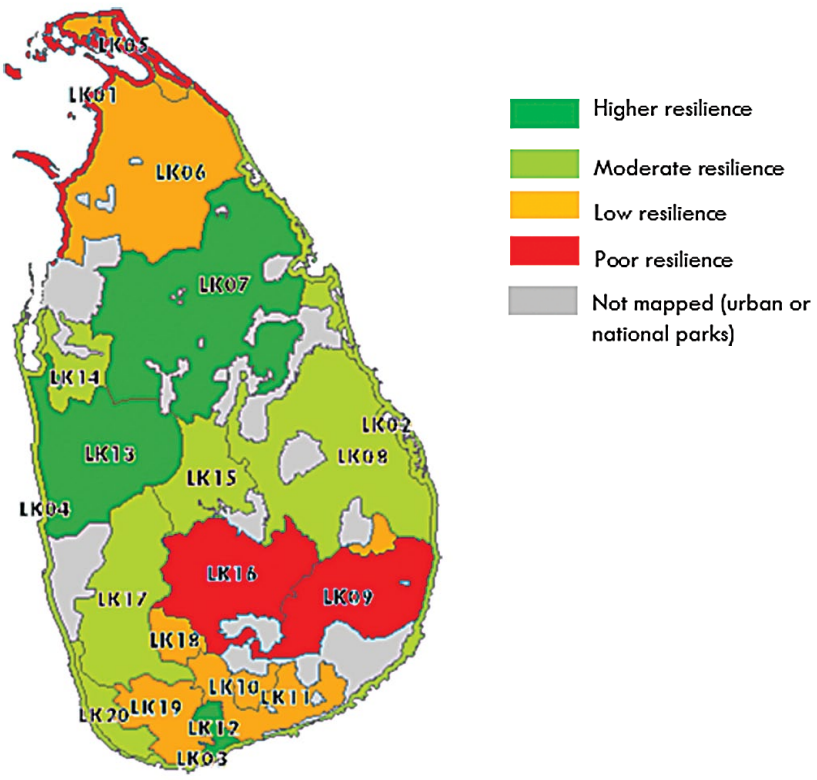
Woman in central Laos smoking fish caught in the Mekong river. In addition to fishing, her household also grows rice, raises chicken.

d) **Additional country-specific factors.** In some countries, other indicators — such as migration, remittances, and access to social protection systems — may be included in the resilience analysis, in addition to the three core indicators outlined above. The choice of these additional indicators — if any — will depend on the country context. In Cambodia for example, migration was added in the resilience index, because national and community consultations indicated remittances played an important role in allowing households to withstand or recover from shocks. In Laos, land ownership was added because field consultations showed how much this influenced households' livelihood options and income.

Overall measure of climate resilience: Finally, once each of the indicators above have been measured, we aggregate them into an index to obtain an overall measure of climate resilience. This index is created by adding up the rankings (i.e. scores) for each of the individual indicators (sometimes using weights), to come up with an overall resilience score. Below is the overall resilience map obtained for Sri Lanka.

FIGURE 10

Overall measure of climate resilience for Sri Lanka



Boys in Timor-Leste selling fish to passing buses and cars on the side of the road

BOX 4

Resilience vs. climate resilience

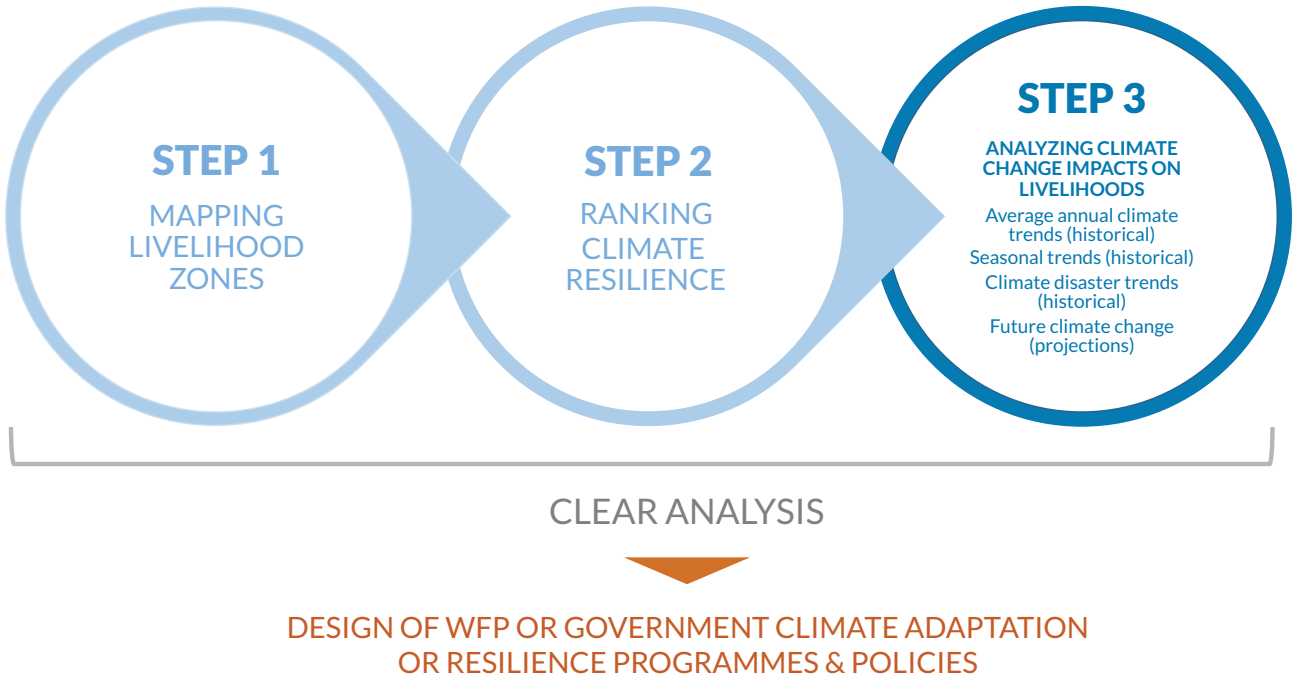
One of the issues often raised when CLEAR results are presented to stakeholders is that the resilience index is focused on resilience to climate factors specifically, without taking into account other risk drivers such as conflict, price shocks etc. It is therefore important to underline that CLEAR is specifically intended to analyze climate resilience, not overall resilience.

2.3. STEP 3: Analyzing Climate Change Impacts on Livelihoods

The analysis achieved thus far has allowed us to understand the level of climate resilience and food security for different livelihood groups in a given country or region. The third step in a CLEAR analysis aims to better understand how climate change and climate risks affect livelihoods and food security in the given country or region. To do this, climate science is translated into livelihood and food security outcomes.

FIGURE 11

STEP 3: Analysis of climate change impacts



The CLEAR approach. The consolidated livelihoods exercise for analyzing resilience

Two types of climate information are analyzed: **historical data on past** climate trends, and model-based **projections of future** climate conditions.

a) **Historical data** typically looks back approximately thirty years (depending on the length and quality of the climate record in each country) to give an idea of the trends and speed at which the climate is changing, and therefore provides an indication of what can be expected in the future. CLEAR analyses usually include three types of historical climate information: climate variability, seasonal variability, and climate disasters.

   - **Historical climate variability** gives an overview of the general climate trends in the past years and decades, expressed in terms of changes in average annual climate trends. This provides a background to understand other climate information (including the other three types of information outlined below). Indicators of past climate variability include changes in rainfall isohyets, and year-to-year changes in precipitation.

   - **Historical seasonal variability** are changes in intra-annual (i.e. seasonal) climate trends and are critical to understand how seasonal food security patterns have changed so far, and how they might continue to change in the future. Indicators include uniformity of rainfall throughout the rainy season, delay in the onset of the rainy season, and changes in duration of the rainy season.

   - **Historical record of climate disasters** shows changes in the frequency, intensity, and duration of extreme weather events, such as floods, droughts, or cyclones. It allows us to understand the types of shocks that vulnerable livelihoods are currently facing, and how this might change in the future.

High quality historical climate data is often hard to find, as many developing countries do not have good historical climate records. The first place to search for climate data is usually a country's National Adaptation Programme of Action (NAPA) or national climate change strategy. These documents were used for the Nepal and Sri Lanka analyses. Some countries may also have other country-specific data sources, coming from specific research or development projects. UNDP's open-source climate change country profiles project, for example, provides country-level climate observations for 52 developing countries.

Where possible, it is always very useful to complement scientific historical climate information with community knowledge and perceptions of how the climate has been changing. CLEAR field visits therefore always include some questions about how communities have experienced changes in climate conditions in the recent past. Examples of these questions can be found in the community or government consultation templates for Laos, Nepal, Sri Lanka, and Timor-Leste.

b) **Climate projections**, in contrast to historical data, simulate the changes that climate change could cause in **the future**. These projections give us possible scenarios of what the climate will look like in the coming decades or centuries. As projections generated by different models often disagree, expert knowledge must be used to interpret these projections and identify those which seem most plausible based on the local context and the latest science.

   Good projections of future climate are also often hard to find, as most developing countries do not have high quality climate change projections downscaled at country-level. However, many of the sources for historical climate data cited above also have information on climate projections (including NAPAs and UNDP's climate change country profiles). In Laos and Cambodia, climate information generated by the USAID-funded Mekong ARCC project was used for the CLEAR analyses. In Timor-Leste, data from WorldClim (processed by the Ministry of Agriculture and Fisheries) was used.

c) Once climate information – both historical and projected – has been collected, we need to **translate it into what it means in terms of impacts on livelihoods and food security, to inform strategic food security** decision-making and programming.

For example, if the science suggests that failures of Sri Lanka's north-east monsoon will become increasingly frequent, we can then ask ourselves:

- What does this mean for food security?
- Who will this impact most, and in what way?
- Will impacts be limited to areas directly affected by the monsoon collapse, or will it have a ripple effect on the rest of the country?
- Will all livelihood groups in the affected area be impacted?

This process of translating the climate science into food security impacts is a qualitative one, based on expert knowledge and interpretation of climate science. For example, knowing that sea level is expected to rise in Sri Lanka enables one to identify potential impacts on livelihoods, such as decreased soil quality (salinity), reduced availability of coastal land, and increased exposure to storm surges. This can in turn be expected to reduce crop production and increase disaster risk, ultimately leading to lower localized food security levels. Knowing that rainfall is projected to decrease in Sri Lanka's Mahaveli basin, which is the country's main rice producing area, suggests a potential decrease in rice availability at the national level, thus raising concerns about food security in the whole country – well beyond the Mahaveli basin itself.

Below is an example of how the potential food security impacts of these two specific climate change scenarios (sea level rise and monsoon collapse) were interpreted in Sri Lanka. The findings provide a wider insight into the impacts of climate change on loss and damage in a specific country –which is an area of focus within the global climate change negotiations.

FIGURE 12

Potential food security impacts of two specific climate change scenarios

3. How is clear used for policy and programme design?

CLEAR analyses have been used differently in each country where they have been carried out. In some countries, analysts have had very specific uses in mind before carrying out the analysis. In others, practical applications emerged iteratively as the analysis was being carried out, such as in Cambodia, where WFP's country office decided to integrate the CLEAR livelihood and resilience maps into their existing online food security monitoring platform. In others still, applications for concrete programming emerged once the analysis results had been discussed and "assimilated" within the country office's ongoing work. For example, in Sri Lanka, the analysis helped identify activities and target areas for the resilience building component of WFP's 2016-17 Country Programme.

Fish pond built by one of the women farmers enrolled in the climate adaptation project implemented by WFP in Cambodia, based on the findings of the CLEAR analysis. As part of the integrated farming approach promoted by the project, this farmer planted edible water lilies in the pond and other green leafy vegetables around it, and also created a compost pit next to the pond – using some of the fish excrements as fertilizer. From this small plot, this farmer now gets plenty of green vegetables, enough fish for both household consumption and selling, and compost for her paddy field. The integrated farming model implemented in this project is very low tech and low cost – its success really comes from the quality of the training provided and the farmer support system created.

Community members, local government and WFP staff visit one of the community reservoirs (or micro-tanks) which will be restored through the project, to enable farmers to irrigate their paddy fields during the dry season during normal years, and to irrigate their fields all year round during drought years (when rains fail during the wet seasons). Decades of neglect have left many of Sri Lanka's centuries old irrigation network of micro tanks unusable. Silt deposits have made this tank shallower and smaller, and as a result it dries up every year during the dry season. During drought years, the tank is dry all year round.

Below is an overview of how each CLEAR analysis was used for concrete decision making or programme design, in various Country Offices:

In **Afghanistan**, the CLEAR analysis was done jointly with the United Nations Environment Programme (UNEP) and the National Environmental Protection Agency (NEPA), to inform national-level policy and planning around climate change adaptation, as well as practical project implementation on the ground. At the policy level, the report was launched by NEPA at the United Nations Framework Convention on Climate Change (UNFCCC) COP22 in Marrakesh (November 2016), as part of the Government of Afghanistan's overall strategy to address the negative impacts of climate change on food security and livelihoods. At the project implementation level, the report builds the scientific evidence base needed to prioritize areas and livelihood groups for adaptation programmes, and will specifically inform the joint UNEP/ WFP watershed management projects which are being implemented in four provinces across Afghanistan.

In **Cambodia**, the CLEAR results were used for two purposes by the WFP country office: food security monitoring, and designing community-level livelihood projects. In terms of monitoring, the CLEAR livelihood and climate risk maps were integrated into the existing online *MangoMaps* food security monitoring platform. This information is particularly useful for drought early warning purposes. For example, when Cambodia was going through a dry spell during the 2015 summer rainy season, the office used it to understand which areas were most at risk of becoming food insecure if the dry spell turned into a extensive drought. By overlaying the CLEAR's baseline information on drought-sensitive livelihoods (particularly paddy rice) with the latest rainfall monitoring data, WFP was able to estimate how many people would be highly impacted by a potential drought. These maps and estimates were regularly updated using the latest rainfall monitoring data.

CLEAR was also used in Cambodia to target priority areas for climate change adaptation projects, and identify the particular activities best suited to the livelihood needs in those areas. Community adaptation plans were done in six villages in one of the most vulnerable districts identified by the CLEAR analysis. This was done in partnership with the USAID-funded Mekong ARCC project, and fed into the Mekong ARCC lessons learned report on integrating scientific and community knowledge of climate change to develop adaptation plans in the lower Mekong basin. WFP itself used these plans to target and design community-level programmes in those villages. Activities are currently being implemented, and include training in climate smart agricultural techniques (including system of rice intensification (SRI) and integrated farming system (IFS)), as well as building/ rehabilitating small-scale water management infrastructure (such as ponds, canals or dikes) through WFP Food Assistance for Assets (FFA) activities.

In **Sri Lanka**, CLEAR started out as a sub-section for a broader Food Security Atlas. However, it quickly became apparent that climate risks and livelihoods were such key determinants of food security in the country, that a more in-depth, stand-alone analysis focusing specifically on these issues would be very useful.

Similar to Cambodia, the CLEAR analysis was then used to design and target community adaptation programmes. The WFP office selected two livelihood zones that had been identified by the CLEAR analysis as particularly food insecure and sensitive to climate risks - both now and in the future under climate change projections. These two zones offer good testing grounds for how to implement food security adaptation interventions in different contexts. The two zones, one located on the northern coast and the other in the south-east, rely on different livelihoods (fishing on the northern coast, and rainfed paddy cultivation in the southeast), and face different climate risk (storms and sea level rise; and drought and shifts in rainfall patterns, respectively).

Farmers transplanting paddy shoots in northern Laos

In each area, government and community consultations were carried out to determine the specific adaptation activities to be carried out. In the northern coast, activities focus on mangrove replanting and protection in combination with promoting home gardens and skills training for livelihood diversification. In the southeast they focus on trainings on climate smart agriculture, organic farming, and rehabilitation of community reservoirs for irrigation (known locally as micro-tanks). The experience gathered from these two pilot projects directly helped target and design the activities for the overall resilience pillar of WFP Sri Lanka's new Country Programme.

The CLEAR analysis was also used to inform the food security section of Sri Lanka's National Adaptation Plan (NAP), released (in draft form) in late 2015. Indeed, several of the government and WFP staff involved in the CLEAR also contributed directly to drafting or reviewing the NAP.

In **Laos**, similar to Cambodia and Sri Lanka, CLEAR helped WFP design a community-level adaptation programme. Activities include introducing improved farming techniques and diversifying income sources, disaster risk reduction through slope stabilization, forest restoration to ensure the sustainability of natural resources supporting agricultural productivity (water, soil, biodiversity), and finally reduction of greenhouse gas emissions and carbon sequestration through improved agricultural practices. The analysis was also used to inform the resilience component of WFP Laos' new Country Strategy.

In **Timor-Leste**, the CLEAR approach was used to better understand how the unusually low rainfall of 2015/2016, associated with El Niño conditions, was affecting different livelihoods, focusing on the most vulnerable households. In the immediate term, the results of the analysis were used to guide appropriate El Nino interventions, while in the longer term, they are being used to inform disaster risk reduction efforts of the Government and other development partners.

Fields affected by the 2015/16 El-Nino-induced drought in Timor-Leste

Photo credits

Front and back cover: WFP/Ruangdech Poungprom
Page 6: WFP/Krishna Krishnamurthy
Page 7: WFP/Ruangdech Poungprom
Page 8: WFP/Ruangdech Poungprom
Page 10: WFP/Krishna Krishnamurthy
Page 11: WFP/Ruangdech Poungprom
Page 12: WFP/Ruangdech Poungprom
Page 13: WFP/Ruangdech Poungprom
Page 15: WFP/Ruangdech Poungprom
Page 17: WFP/Krishna Krishnamurthy
Page 18: WFP/Amy Chong
Page 20: WFP/Ruangdech Poungprom
Page 21: WFP/Amy Chong
Page 22: WFP/Amy Chong
Page 25: WFP/Anna Law
Page 26: WFP/Anna Law
Page 27 : WFP/Ruangdech Poungprom
Page 28: WFP/Amy Chong
Page 30: WFP/Ruangdech Poungprom

Woman in northern Nepal winnowing millet, to separate the edible grain from the chaff

December 2016

The CLEAR approach

THE CONSOLIDATED LIVELIHOODS EXERCISE FOR ANALYZING RESILIENCE

C-ADAPT Climate Resilience for Food Security: ANALYSES, INNOVATIONS & STANDARDS

The Climate Adaptation Management and Innovation Initiative (C-ADAPT) is an initiative funded by the Government of Sweden's fast-track climate finance that allows WFP and partners to explore innovative climate-induced food insecurity analyses, programmes and best practices, with the goal to help individuals, communities and governments meet their food and nutrition needs under a changing climate.

Made possible through the generous contribution of:

SWEDEN

WFP World Food Programme wfp.org

World Food Programme - Via C.G. Viola, 68/70
00148 Rome, Italy - Tel: +39 06 65131
www.wfp.org/cadapt - climatechange@wfp.org