

# FOOD SECURITY, CLIMATE CHANGE AND NATURAL RESOURCE MANAGEMENT IN CAMBODIA 2010-2014

## Presentation and objectives

Food security and climate change are major issues currently affecting development in Cambodia. They are closely interconnected, particularly in the context of poor communities living in rural areas and relying on land and natural resources for their livelihood.

The research program entitled “Food Security, Climate Change and Natural Resource Management in Cambodia” aims to scrutinize these issues. It is a four-year project (beginning in 2010) supported by the Canadian International Development Research Centre (IDRC) and implemented by the Learning Institute. It has three main goals:

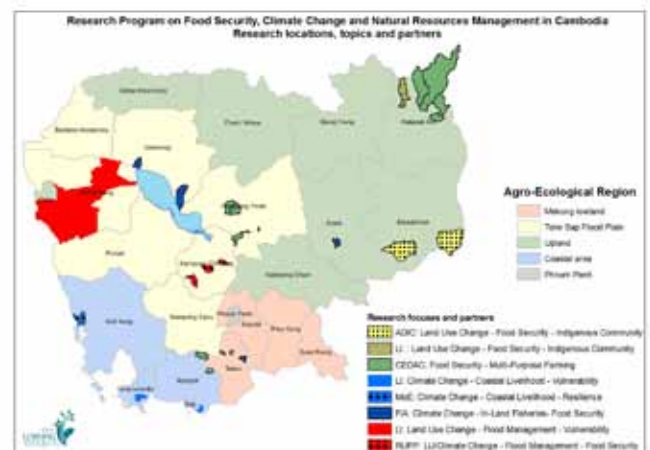
- Analyse the issues of climate change vulnerability and food security among vulnerable populations.
- Identify practices that people at local level can adopt to adapt to climate change and enhance their food security.
- Contribute to the development of the policies, procedures and mechanisms for addressing climate change and food insecurity.

In conducting this project, the Learning Institute will act as a grant-making organization for partners conducting relevant research projects. However, it will also conduct its own action research projects. In total, the project funds eight research grantees including three action research projects implemented by the Learning Institute and five other projects implemented by external grantees. These projects span across the country (see map) and address specific dimensions of the nexus “climate change-food security-natural resources management”.

## Research approach

Land use and aquatic systems that form the basis for food security and economic development in Cambodia have changed dramatically over the last decades. They are subject to change under the action of different drivers, which can be any

natural or human-induced factor acting directly on the system or indirectly through other drivers (ecology, economy, institutions, demography, technology etc.). We approach these changes as part of profound and complex transformation processes and structural changes taking place in the country, which result in repositioning the role and the place of land, natural resources and rural communities in the development of the country.



We assess changes in multi-scale (time and space) frameworks to capture the high variability in biophysical environments, socio-economic activities, and cultural contexts associated with changes. We also refer to a multi-agent framework to recognize that actors have different rationalities regarding accessing, using or controlling land and water resources. In this context, we view climate change as one driver of environmental change and we try to integrate it with other drivers to define specific pathways of change.

The changes in these resource systems primarily influence the life of local people and their communities. In order to look at the impacts on people livelihood, we embed food security in the overall concept of sustainable livelihoods. In order to analyse the effects that changes in the land use and water systems have on food security, we will refer, in one way or another to three main conceptual tools:

Research Project Name	Research Institution
Climate Change and Food Insecurity: Understanding Coastal Resilience in Peam Krasoap Wildlife Sanctuary Koh Kong, Cambodia	General Department of Administration for Nature Conservation and Protection (GDANCP), Ministry of Environment (MoE)
Pathways Of Environmental Change In The Coastal Resources System: Case Study In Kampong Trach District, Kampot Province	Learning Institute (LI)
Effective Fisheries Management Adapted to Climate Change	Fisheries Administration (FiA), (MAFF)
A Study of Climate Change Impact and Resilience: a case of irrigation, land use, rainfall changes and water governance that affect food security and livelihoods	Department of Environmental Science (DES), Royal University of Phnom Penh (RUPP)
The flood vulnerability of the Steung Sangkae river basin territories as it relates to agricultural production	Learning Institute (LI)
Evaluation of how Multi-Purpose Farming impacts the Food Security of Small Land-holding Farmers in Cambodia	Cambodian Center for Study and Development in Agriculture (CEDAC)
Food Security and Land Use Change in Two Bunong Communes of Monduliri Province	Analyzing Development Issues Centre (ADIC)
Land use change and its implication for the Food Security of Kavet ethnic minority group, Rattanakiri province	Learning Institute (LI)

### Putting production processes at the center

An important aspect of the production process is the household production system. This is a sub-system of management of the means of production: land, labor, capital, water, knowledge, interest and choices by the household. This includes an analysis of endowment and distribution [concentration] of the factors of production. This sub-system is utilized by the household in processes of production including on-farm, off-farm, non-Farm and collectively pooled resources. The analysis of these processes includes the scrutiny of their internal rationalities and coherence and the connection between them in the overall household production system (investment, transfer of labour, fertility, resources). This analysis aims to identify diversification strategies in the activities carried out by each household. It also includes the analysis of risks and uncertainty management, which is especially crucial in the context of climate change. We look at these outputs in terms of productivities (labour and land mainly), the value added through the system. We look carefully at how the added value-added is distributed: by referring to the remuneration of financial institutions (credit), remuneration of State (taxes) and remuneration of external labour (wage). We assume that these outputs help the household to strengthen its means of production. In the context of current land use and water system changes, we hypothesize that the patterns of reproduction are changing, leading to an increasing diversity of income structures within rural communities. This is because not all the households are equipped equally to address the important changes which are happening in their environment. We support the view that the analysis of food security at household level should be informed by socio-economic differentiation analysis.

### Institutions: relationships between rural communities, state, markets and other actors

In the context of land use and water system change, we look at class-based agents in networks of actors including corporations, NGOs, communities, farmers, wage workers, consumers, academics, development agencies, and others. We will be asking questions both about which actors are shaping the environmental changes about how. For example, it is important

that we analyse how and when actors such as communities, farmers, women, men, ethnic minorities and majorities, migrants and people claiming indigenous identity mobilize to become collective actors participating in shaping the agrarian transition. We propose to envisage the relations between rural Communities, State and Market in this somewhat new institutional context. All institutions governing the access, the use and control of water and natural resources will be addressed. This includes, on the one hand, the analysis of new governance institutions influential in rural areas but also institutions, which are endogenous to communities. We privilege the analysis of historical context in which the governance and institutions for land and water management have been crafted. Elements of power and the analysis of the factor triggering marginalization of special social groups will be addressed. As much as possible, conflicts will be analysed and viewed as central aspects of contemporary rural development in Cambodia.

### Vulnerability before adaptation

We use the concept of vulnerability to understand ways rural communities and households may be affected by changes in the land use and water system. We see vulnerability as an intervening set of factors, which will influence the actual impacts that land use and water systems have on food security and livelihoods of rural people.

Vulnerability analysis includes three main dimensions the exposure, the sensibility and the adaptive capacity. The exposure of a system to change in land use and water systems refers to the nature and degree to which a system is at risk. The sensitivity of the system is the degree to which a system is impacted by change. The adaptive capacity refers to the capacity of the system to adjust to the changes. It is the ability to moderate potential damages and take advantage of opportunities. We opt for a vulnerability analysis that includes a review of the underlying factors influencing vulnerability among resource users (addressed in the multi-scale framework), questioning why people are vulnerable in the first place. This analysis is associated with the analysis of socio-economic differentiation.