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CANSEA a R&D Network on Agroecology Transition in South East Asia

Agrarian dynamics in Laos and Cambodia, socio-economic and environmental impacts

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Key results and lessons learned from the Action

In the northwestern upland of Cambodia and the northern mountains of Laos, the farming systems have been transitioning rapidly from subsistence (upland rice-based) to market-oriented and intensive annual crops (maize and cassava). In both sites, a process of agricultural expansion associated with deforestation characterized land use and land cover changes (LUCC).

In Cambodia three successive periods were identified: (1) from civil war to peace, (2) peak migration for land access, and (3) a recent shift to orchard and diversification of income generating activities including off-farm jobs. The political and territorial strategies to integrate Khmer Rouge population, the need for socio-economic development for the demobilized military families, and in-migration of poor families from the populated central lowlands drove the agricultural expansion and intensification.

In Laos the boom of hybrid maize has dramatically changed farmers' practices, livelihoods and aspirations within a single decade. Farmers' decision-making was studied at the successive stages of the maize boom. The study revealed how farmers manage the trade-offs between short term objectives, e.g. generating rapid cash income, and long term goals, e.g. providing a good education to children to get them out of agriculture in the next generation.

Along with the transition of farming systems from food crops to cash crops, the social differentiation and land concentration have been exacerbated along with increasing wage labor and out migration among smallholders. The analysis of farming system diversity showed that the initial capital and labor availability, social status and relationship with local authority are key factors defining farmers' capacity to accumulate resources during the maize boom. The risks management capacity for instance diversifying farm's activities to tree crops, livestock, and off-farm activities could sustain the farm income during the bust period of boom-bust cycle which is affected from decreasing productivity and increasing risks of pests, and uncertainties of market and rainfall.

Two on-line courses have been produced based on the results of the study:

http://e-learning.rua.edu.kh/courses/agrarian-transition-and-opportunity-windows-for-agroecological-innovation/

http://e-learning.rua.edu.kh/courses/land-use-and-land-cover-changes-northwestern-uplands-of-cambodia/

The simulation games revealed that the farmers were still trapped in the cycle of boom-bust with boom crops. The market opportunities and high, short-term economic return are key parameters in the process of decision-making, mostly neglecting environmental aspects. Farmers' are well aware of deforestation and decreasing soil fertility but these questions come second in their decisions when dealing with short term priorities. Shifting to tree crops and increasing cattle production is a coping strategy for severe land degradation and increasing risks of market and climate hazards. However, with current constraints, the farmers are generally willing to adopt the soil conservation practices and diversify their farm's activities. The study shows the importance of opportunity window for intervention, the involvement of farming communities in co-designing alternative cropping systems and the importance of social organization and learning to integrate all stakeholders involved in the agroecology transition.

Photo 1: Field with drying cassava chips in Rattanak Mondoul district, Battambang province (©Rada Kong).

Context of the Action

The study of agrarian changes, their socioeconomic and environmental impacts at the regional level, is of paramount importance to identify barriers (participation, information, access to production means, service provision...), windows of opportunity and intervention mechanisms and to design development interventions that encourage the spread of innovative farming systems that are resilient to economic and climate uncertainties while preserving the natural resources (i.e., soil, water and biodiversity).

The study focused on the agrarian dynamics in Laos and Cambodia harnessed the collaborative network of each country and involved the research teams who work on Agroecology and Conservation Agriculture since more than a decade. Moreover, the study is part of the regional scientific and educational network on agro-ecology, which contributes to the project Innovative Pedagogical Resources in Conservation Agriculture for South-East Asia (IPERCA) funded by Agropolis Fondation, Investissements d'Avenir.

Objectives of the Action

The main objective was to integrate case studies in Laos (Xayabury, Xieng Khouang provinces) and Cambodia (Battambang province) in a comparative analysis of agrarian dynamics and their socio-economic and environmental impacts at the regional level, and assess the capacity and potential of alternative farming and cropping system to enhance the resilience of rural communities to economic and climate uncertainties.

Partnership

The project was implemented in partnership with Research Units AIDA and TETIS of CIRAD, Joint Research Unit Prodig of AgroParis Tech in France, Ecoland research center and the project Innovative Pedagogical Resources in Conservation Agriculture for South-East Asia (IPERCA) of Royal University of Agriculture, and the Eco-Friendly Intensification and Climate resilient Agricultural Systems (EFICAS) of Department of Agricultural Land Management (DALaM), Lao PDR.

Location and description of the Action

- Methodological workshop on the study of agrarian changes and agro-ecological innovation in Laos and Cambodia
- Combination of household surveys, in-depth household interviews and thematic focus group discussions with the target farmers, local authorities and relevant stakeholders, and adoption process of CA and its impacts
- Assessment of land cover changes in selected regions in Laos and Cambodia through analysis of a chronological series of remote sensing data
- Participatory method to understand the interactions between human and natural systems: co-designing and using role-play games with farming communities.
- Cross-country comparative analysis of agro-ecological extension systems

Photo 2: Use of role-playing understanding historical drivers of changes, Rattanak Mondoul, Battambang, Cambodia (© Jean-Christophe Castella)

Photo3: Maize under Conservation Agriculture management, Bos Khnor, Kampong Cham, Cambodia (© Florent Tivet)

Expected impacts and prospects

- The research has raised awareness among researchers and extension workers on the constraints for the farmers to adopt the innovative practices techniques during the boom crop and learn to intervene in advance.

- The farmers have learnt about the consequences of the boom-bust cycle and the benefits of agroecological practices e.g. conservation agriculture and diversification of farm's activities for the improvement of farm's resiliency. Therefore, the innovative practices should be available for all crops and livestock and ready for the farmers to adopt.

- Innovative practices are co-designed and validated with and for farmers. The scaling up of the practice requires social organization contributed by all involve actors in the production chains.

- The study will result in a PhD thesis and scientific publications. E-learning modules have been developed and are available on-line. Impacts are therefore expected beyond the research sites to a larger community of researchers and students.

Useful links and contacts

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