Engaging local communities in negotiating their own pathway towards conservation-oriented agricultural practices

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Introduction

Since the opening of the country to the market economy in 1986, the Government of Laos (GoL) has invested considerable efforts into modernizing its agriculture. Village land use planning and land registration are being used by the GoL to promote an intensification of agriculture - from extensive subsistence-oriented shifting cultivation, deemed unproductive and poverty-creating, to more intensive and market-oriented cropping systems. Lao agriculture is changing from extensive chemical-free slash and burn to conventional intensive practices with high reliance on chemical inputs. This shift from traditional subsistence to a market-oriented agriculture is expected to lift upland populations out of poverty while reducing their dependence on forests, and is therefore contributing to the conservation of the natural resource base. Such a transition entails significant risks, i.e. in the case of an adverse climatic event, price fluctuations or market crisis, which would potentially trap smallholders in a treadmill of indebtedness. For poor upland farmers, a convincing alternative would consist of moving directly from extensive to agro-ecological practices supported by a national decree on conservation agriculture (CA) promulgated in 2007. Agro-ecological techniques that increase the land use intensity by mobilizing relevant ecological knowledge have been successfully designed and tested in Laos (Bouahom et al. 2005). However their diffusion and adoption are not straightforward (Lestrelin et al. 2011). Lestrelin and Castella (2011) have identified two windows of opportunity for dissemination of CA in Lao PDR that correspond to distinct stages in an agricultural intensification pathway. A high proportion of CA adoption is observed during the initial intensification phase when farming households shift from traditional subsistence farming to more intensive market-oriented agriculture, and during the last stage of intensification when intensive mono-cropping systems lead to high levels of land degradation (i.e. soil erosion and nutrient depletion) that impose a change in agricultural practices. In this paper, we address the conversion from shifting cultivation to conventional and/or conservation agriculture. A learning platform combines participatory land use planning and promotion of conservation agriculture in village action plans. A case study in Viengkham District, Luang Prabang Province, illustrates an innovative method that engages marginal upland communities into multi-stakeholder negotiations about land use planning within a context of transition towards agro-ecological practices.

Material and Methods

While substantial external support through food security programs is provided to target upland villages of the study site, participatory land-use planning (PLUP) is used as a policy instrument to reorganise the rural space and to convert cropping practices and patterns. Past and current experiences with LUP have shown many drawbacks, often caused by methodological deficiencies. Bourgoin et al. (2011) demonstrated that improvements were possible through the establishment of clear participatory principles and the usage of appropriate tools to shift from individual processes of adoption to collective negotiations of landscape level changes.

Described in Bourgoin et al. (2011), the land use planning activities undertaken in early 2011 in three villages of Viengkham District - Houay Kou, Had Houng and Nam Xoy - were combined with dissemination of agro-ecological practices (e.g. vigna cover crop in association with maize, improved pastures using a combination of *Bracharia* and *Stylosanthes*, and domestication of Non Timber Forest Products to reduce pressure on natural resources). During 5 days, twelve villagers selected as members of the land management committee of their village (i.e. a balanced sample of social classes, gender, ethnicity in the village), are involved in a series of learning and planning activities. After the elicitation of information related to the village's spatial organisation of land-use and economic returns, a role-play called 'PLUP Fiction' involves the villagers in a learning experiment of land use planning based on a virtual landscape. Under pressure from external forces, the players have to negotiate development scenarios and to reach a consensus amongst different household types (Bourgoin and Castella 2011). Participatory 3D modelling is then used to facilitate the negotiation and the visualisation of landscape issues during village boundaries delineation and land zoning activities (Figure 1). A Geographic Information System is coupled with a simple cost/benefit analysis model parameterized by the villagers themselves. Facilitators can capture real-time information on the different areas of the land use plan under discussion, and present corresponding socio-economic and environmental returns. Using this iterative system, the villagers gradually refine their land-use plan and test the introduction of alternative cropping and animal husbandry systems by changing the parameters of the simulation. Using this 'boundary object', different stakeholder groups are invited to explore several scenarios of transition towards agro-ecological systems, and to compare them with a shift towards market-based agriculture, while visualizing short - and long - term economic and ecological effects on their village landscape.

Figure 1. 'Boundary objects' facilitating the participation of local communities in landscape planning and management. From left to right, landscape simulation with 'PLUP Fiction'; negotiating village zoning and agroecological innovations on a participatory 3D model; villager presenting land use plan and land management rules during a village meeting.

Results and Discussion

The environmental impact and socio-economic returns were computed at landscape level under different management scenarios. For example, the delineation of livestock areas with living fences was combined with a strategy to develop plantations of marketable castor bean (*Ricinus communis*) under cover crop. An action plan was developed to put into practice land use options including agro-ecological alternatives that had been negotiated virtually.

An international NGO is now working in these villages with district extension agents to transform the plans into reality. By empowering poor communities in participating in decision-making, the proposed participatory approach provides a negotiation platform that facilitates the emergence of a local demand, which would not be feasible with a 'quick and dirty' participatory rural appraisal (PRA). As expressed by the Governor of Viengkham District, "this approach puts the keys development in the hands of local communities and avoids making people dependent on foreign projects by engaging them into endless assistance programs".

Enhancing the effectiveness of industry-farmer-science-policymaker consultative platforms has direct impacts on traditional extension systems with three major shifts:

- From technology transfer to learning and discovery approaches to innovation,
- From monitoring plot-level adoption rate of CA systems to assessment of landscape-level agro-ecological system,
- From individual decision making to collective management of CA adoption.

When extension programs deal with individual beneficiaries, village consensus is usually poor, limiting the innovation uptake. Our proposed landscape planning perspective allows defining management strategies and rules at the village level (Bourgoin et al., 2011).
While extension services are the natural follow-up of land-use planning, PLUP also delivers a robust village diagnosis that legitimizes and rationalizes further village action plans. Impact is achieved by linking individual decision making with higher level institutional changes through more effective consultation, participation and knowledge sharing.

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