

Global agendas versus local realities

Implementing policy relevant research for upland development in Lao PDR

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Abstract

Lao PDR is known as a rich country in term of natural resources but poor in term of its development indicators. The process of market integration and, more widely, of globalization is providing new opportunities for development but is also threatening its natural resource base. Furthermore, global initiatives on climate change mitigation or biodiversity conservation tend to impose new environmental regulations to resource rich countries in the absence of coordination mechanisms between global agenda and local realities. Adaptive, policy relevant research is needed to accompany the necessary institutional changes towards sustainable development pathways adapted to the diversity of local situations.

In this paper, we present a transdisciplinary research framework to stimulate a policy dialogue on sustainable upland development in the Northern provinces of Lao PDR. On the one hand, we aim at understanding how policy implementation processes and the outcome of decision-making by different stakeholders shape contexts of resources valuation and management. On the other hand, we aim at bringing evidence into decision-making processes by capitalizing knowledge from a large number of case studies into a context-sensitive policy framework. Existing knowledge networks at meso-scale are harnessed to allow for decision-making that is generalized but yet spatially differentiated, informed but yet timely, inclusive of different actors' interest but yet coordinated.

From research & development projects to a broad-based impact on public policies and institutions

Development – conservation challenges in the northern uplands

Considerable socio-economic progresses have been achieved in Lao PDR since 1986, when the adoption of the New Economic Mechanism marked the country opening to the market economy (World Bank, 2004; 2008). After a period of relative economic isolation, Laos embarked in the process of globalization with the objective to sustain economic growth and to eradicate poverty. Yet, markets can lead to increased poverty and upland communities are still economically marginalized (Rigg, 2005). In this context, an important policy-related objective regarding agriculture/forestry

development is to improve household food security while accompanying the changes from subsistence agriculture to a market-driven agriculture. The market-oriented strategic vision of the agriculture and forestry sector seeks to use economic development as the engine to alleviate poverty (GoL, 2003). Contributing to this objective, and more generally, improved living standards, disparities between lowland and sloping land farming are to be reduced and sustainable forest and watershed management enforced.

Ninety percent of the poor in Lao PDR live in rural areas practicing agriculture and hence largely depend on natural resources for their survival. Protecting the environment is vital for poverty reduction and economic growth, with some 80 percent of the Gross National Product (GNP) directly depending on natural resources (World Bank, 2004). At present, the rich resource base of the Lao PDR, including forests, rivers, and wetlands are under threat. This in-turn threatens economic growth, and makes the realization of poverty reduction targets increasingly difficult. The experiences of other countries, where wealth in natural resources has turned into a curse for development, has become an issue that the Lao PDR must take seriously (Sachs and Warner, 2001). Natural resources play a vital role in the country's socio-economic development. It is therefore important that they are protected and exploited in a sustainable manner.

Under this vision, new policies have been developed for research and extension services, including emphasis on strengthening operations at provincial, district, and village levels. Specific approaches have also been developed for integrated watershed management. Programs for land allocation, participatory land use planning, and village consolidation are being implemented across the country by the Government of Laos (GoL) with the support of development agencies. Despite partial successes obtained locally during the period of project implementation, major questions remain unanswered:

- How to translate these numerous experiences into policies that can have a broader impact and which effects can be sustained beyond the life time of individual projects?
- How can negative social and environmental impacts from development be mitigated? What supportive measures and regulations need to be put in place?

Methodological challenges for policy-oriented studies

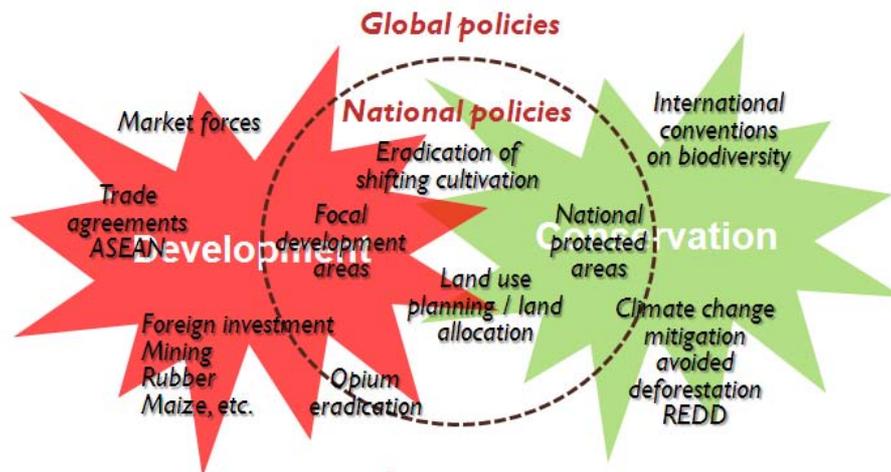
The *high diversity* of the biophysical, agro-ecological, and socio-economic environment in the northern uplands of Lao PDR constrains the generalization of local studies to higher integration levels. From one valley to the next, the history, ethnic groups, leadership, cropping practices, soils, natural resources, etc. are different. This diversity creates a very complex picture where nothing exists like a typical district, village or even household. Under these circumstances up- and out-scaling from single case studies is extremely difficult, and no single development plan can be broadly applicable. Despite the persistent preference of donor organization for blue print development solutions, no single model will prove to be successful everywhere.

In addition, the very rapid changes in the Southeast Asian development context threaten research results to be obsolete and/or useless before they can be released, if methodologies cannot adapt continuously to this very dynamic environment. Keeping pace with the rapid agro-ecological and socio-economic changes is thus a major challenge of research programs in order to maintain their relevance to development issues. Continuously monitoring changes, drawing lessons from success and failures is also essential to provide guidance to further policy interventions.

The opening of the economy and implementation of land policies profoundly modified the way people get access to and manage their natural resources. In such a period of transition, farmers and more generally rural communities are in a *situation of uncertainty*, lacking the necessary background experience to make sound decisions. Yet, farmers are perpetually innovating without the technical expertise that would insure the durability of their new production systems. It is therefore important to engage all stakeholders into a collective learning process that will make the best use of the little information available to design an original pathway towards sustainable development.

The *external influences* on local development (agribusiness, commercial plantations, population resettlement, labor force migrations, export markets, etc.) also challenge conventional research. Increasing globalization in terms of involved actors, policies, and institutions requires enlarging the scope of the investigation to neighboring countries and global debates in order to engage multiple stakeholder groups into negotiating conservation - development trade-offs across multiple sectors and scales (Figure 1).

Figure 1: Trade-offs between global and national policies; between conservation and development goals.



The transition from subsistence to market-oriented agriculture results from the combined effect of internal and external, local and global forces of change. The main driving forces of land use changes in the mountainous areas of Lao PDR are well known; (i) the changing accessibility to market, education, health services and technical information, (ii) the rapid expansion of commercial plantations in relation with market demand for rubber, biofuels, timber, animal feed, etc. (iii) successive land policies (i.e. land use planning, land allocation, village consolidation and resettlement, land concessions, etc.), and (iv) environmental regulations aiming at preventing land degradation, deforestation, lost of biodiversity, etc. will continue transforming the upland landscapes in the coming years. However, the complex mechanisms of interaction between livelihood systems, market forces and public policies require a major change in the way policy research is done in order to mitigate their potential negative effects on poverty and on environmental degradation.

This complexity represents an epistemological trap for researchers. Ordinary strategies to avoid this trap comprise the reduction on local case studies or on sectoral analysis. Often, the levels of aggregation of the results are not compatible with the politico-administrative level of decision-making. Moreover, panaceas, or simplistic blueprint solutions, are proposed to complex problems and trade-offs resulting in fierce debates that usually lead to no conclusion and no collective action (Ostrom, 2007). There is a lack of methods for systematic comparative analyzes that would be adapted to the scientific challenges presented above. The consultancy reports succeed to each-others in the absence of an integrative methodological framework that would allow translating the results into effective, context-sensitive policies beyond the compulsory “shopping list” of recommendations that solely commit their authors.

As a consequence, policy-makers have often to admit that they do not have access to the knowledge base they would need to make informed decision: e.g. size and location of concessions, maps of village or district level land use plans, quantified status of shifting cultivation (Pholsena and Banomyong, 2006; Rigg, 2009). Massive efforts have been made to implement village land use

planning in rural areas of Lao PDR over a decade but all documents were lost because the process was not supported by a proper information system for storing and retrieving data, regular updating of datasets and sharing the databases between agencies (MAF/SWGUp, 2008). Until recently most of the documents related to the rubber boom of the 2000 decade in Laos were cross-quoting a few field studies conducted in one single village - Ban Had Niao - in Luang Namtha province. As a result, national rubber policies were relying on the quite positive experience of a very specific case study, which created several problems when extrapolated to other local realities across the country.

Towards a coordinated effort to reconcile global agendas with local realities

Despite some noteworthy efforts to store documents (LAD – www.lad.nafri.org.la, LaoFab repository - www.laofab.org), to share ideas and to stimulate debates and critical thinking about rural development in Laos (LaoFab Google Group and LaoLink - www.laolink.org) there is still a need for a methodological framework that would provide policy-relevant research outcomes and support institutional strengthening.

In developing a comprehensive strategic framework for sustainable poverty eradication, the National Growth and Poverty Eradication Strategy (NGPES) emphasized a community-driven and access-oriented rural development strategy as the base of poor-district development. The NGPES operational framework comprises four main sectors: agriculture/forestry, education, health, and infrastructure. The NGPES was the result of an extensive process involving development partners and national stakeholders that started in 1996 when the 6th Party Congress defined the long-term development objective of exiting the status Least Developed Country by 2020. Multilateral agencies provided extensive support to the government in mainstreaming the Millennium Development Goals defined at the global level in the NGPES. Since then, donor-driven projects assist the government in implementing the plan and in monitoring progress towards achieving the goals of the NGPES. In the 2003 Rome Declaration, bilateral and multilateral donors have agreed to harmonize and coordinate their development activities. This effort was further endorsed by the international community in the 2005 Paris Declaration and in the 2007 Vientiane Declaration on aid effectiveness to strengthen governance, improve development performance, and enhance development outcomes. In this context, the Government of Lao PDR and more than 20 donor partners established a working group on Uplands Development to initiate a policy dialogue and to formulate a coordinated approach to address the changes taking place in the northern provinces of the country. Policy research institutions have been actively involved in this collective process in order to provide guidance and also to institutionalize this dialogue by incorporating it into their agenda.

As an important cross-sector component of the NGPES, capacity and institutional building aim to improve processes of government policy formulation, coordination, monitoring, and evaluation. The Ministry for Planning and Investment (MPI) has major responsibilities for coordinating these processes. Within the MPI, the Department of Statistics (DOS) is strengthening national databases and management systems, including economic, social and governance indicators, and core indicators to monitor impacts and progress toward compliance with international agreements. The process of policy related institutional building led to the creation or the reorganization of a number of organizations such as the National Economic Research Institute (NERI, created in 1997 under the Committee for Planning and Cooperation) which implements economic monitoring, research and analytical support for overall policy formulation and planning processes. The Agriculture and Forestry Policy Research Center (AFPRC, created in 2007) under the National Agriculture and Forestry Research Institute (NAFRI, created in 1999) conducts sector policy research and analysis on the four goals of the Ministry of Agriculture and Forestry (MAF): (1) ensuring food security; (2) commercialization of agricultural commodities; (3) stabilizing shifting cultivation, and (4) sustainable forest management. The National Land Management Authority (NLMA, created 2007) and the Water Resource and Environment Administration (WREA, reorganized in 2007) serve as focal points for government policies related to land, water and environment.

Since these government agencies have large and important areas of overlap in their respective mandates, coordination in policy related research and analysis is extremely important. However, while

coordination and mainstreaming approaches look nice on the paper and in the discourses, they are difficult to implement in reality given: (i) the necessary phase of institutional learning of newly created organizations and capacity building of newly recruited staff, (ii) increased number of interlocutors, formal relations – collaborative agreements to establish and to maintain, and (iii) the “natural” tendency to compartment the knowledge and to divide the administrative sectors and levels to attract/capture donors support and/or develop new spheres of power. Despite the good intentions, this recent multiplication of policy related institutions may considerably increase the transaction costs in setting up and nurturing a policy dialogue.

The decentralized political and administrative structure of Lao PDR also adds to the complexity of the task. Provinces are strategic planning units while districts are both planning and implementing units and villages are supposed to be implementing units. The latter are often left with a large room for maneuver for reinterpretation and local adaptation according to their distance to higher level administrative centers. More recently, village clusters have been created (kumban) as an intermediary level between district and village. However, the process of decision making and delegation of authority between hierarchical levels was not described in a systematic way in the GoL directive of 2000 that defines relations between central and local administrations. This provides flexibility to local administrations to generate the resources that cannot be provided by the central government and to adapt their policies to the local circumstances. However, it also creates a very complex governance mosaic with overlaps in jurisdictions, with contradictory demands coming from different line agencies and with potential conflicts between decision-makers and planners intervening at different levels if the policy interventions and projects are not coordinated and if the information is not shared in a timely manner among them. For example, local authorities interpreted national policies in divergent manners in the case of granting investment licenses or access to land and other resources to private companies. As a result, agricultural concessions were granted to foreign companies independently by central and provincial authorities, which led in May 2007 to a moratorium on concessions granting to take the time necessary to sort out this problem.

More recently, even bigger challenges have emerged with the planning and implementation of global environmental initiatives such as the climate change mitigation mechanism known as Reduced Emissions from Deforestation and forest Degradation (REDD). Research and debates are ongoing at multiple scales. Thanks to its rich remaining forest resources, Lao PDR has been selected by different donor agencies and multilateral organizations to test the ideas of REDD before they are incorporated in the post-Kyoto protocol. But once again, there is no blueprint. All partners are engaging into a collective learning process which outcome is highly uncertain. What is sure is that the success of such endeavor will depend to a large extent on the capacity of key stakeholders to engage a fruitful policy dialogue.

Finally, a consensus has emerged on the need for *adaptive and context-sensitive policy* intervention that would better incorporate local knowledge and would therefore have better chances of success. A more constructive *policy dialogue* is necessary that would engage multiple stakeholder groups intervening at multiple scales. Such a process requires both relevant knowledge to be generated and shared among stakeholders and a higher level of coordination among communities, decision-makers, and development partners. In this paper we introduce a combination of research initiatives that attempt to take up this challenge. We first introduce the overall principles and hypotheses that guided the approach and then, we present the methodologies in the next section. Preliminary results obtained in Luang Prabang province illustrate the approach, its opportunities and constraints. Finally, we point out the necessary institutional changes and capacity building efforts that are necessary to support the emergence of the envisioned policy dialogue across scales.

Reshaping the relations between land use science and policy

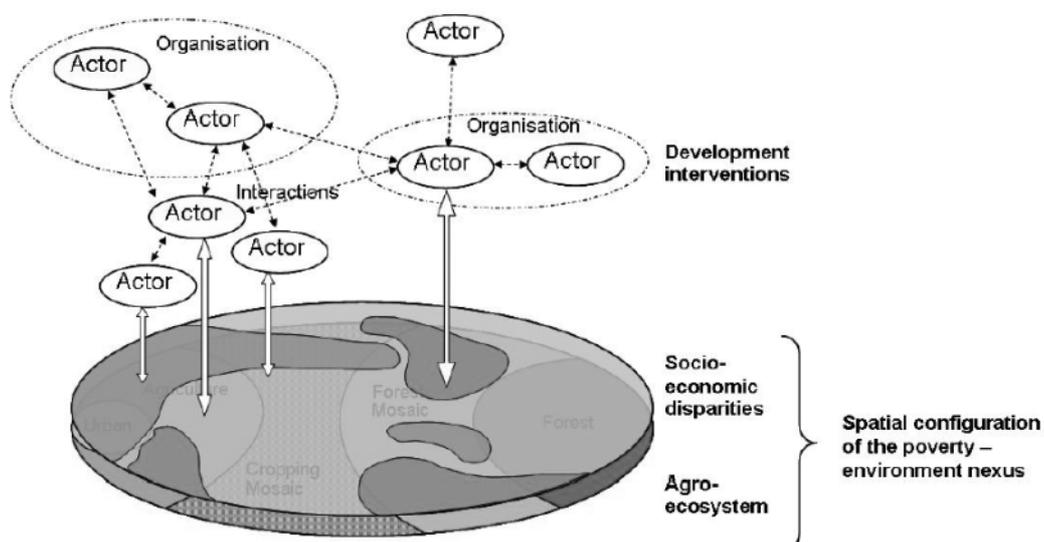
Development pathways balancing economic growth and environmental sustainability can only be conceived if knowledge production is improved in the following two directions: first, through a spatially differentiated but generalized knowledge on conservation-development problems and trade-offs; second, through innovative processes for negotiation and decision-making to engage partners proactively in planning future development. Only by combining these two domains of knowledge will it be possible to inform policies and design development interventions that are generalized but yet spatially differentiated, informed but yet timely, inclusive of different actors' interest but yet coordinated.

Methodological integration as support to knowledge capitalization

In this paper we propose to combine complementary approaches developed by three projects based in Laos, which share the common objective of developing policy relevant research at a meso-scale (i.e., province or district if delineated by administrative boundaries, sub-watershed or catchment if delineated by biophysical boundaries or the more loosely defined "landscape level").

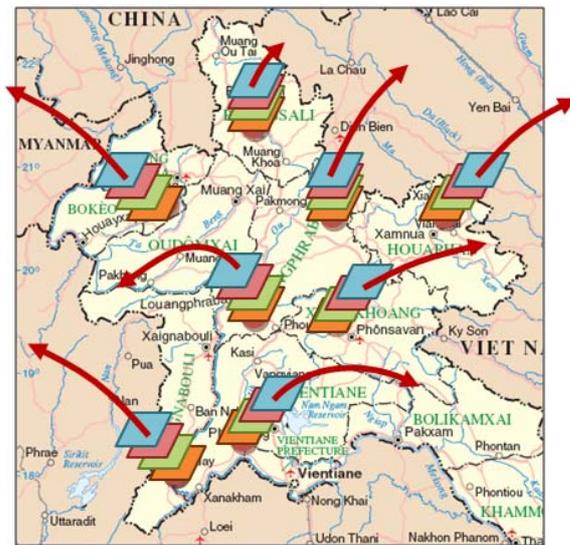
The Swiss National Centre of Competence in Research (NCCR) North-South works with WREA on understanding spatial patterns of poverty-environment interactions at the national level. Development disparities are studied in conjunction with different trade-offs between conservation and utilization of land resources (Messerli and Heinemann, 2007; Messerli, 2009). A land cover map of 2002 covering the whole country is used in combination with data from the 2005 population and housing census to identify spatial contexts which are homogeneous in terms of constraints and opportunities for future development. Then the spatial relationship between poverty and environmental conditions are examined in conjunction with their exposure to two main driving forces of rural transformation: (i) accessibility to and from markets as well as public sector development interventions. A "typology" of local contexts emerges from overlaying governance landscapes with poverty-environment landscapes (Figure 2). The "Socio-economic Atlas of Laos" (Messerli et al., 2008) and a new landscape mosaic (Messerli et al., 2009) are among the recent outcomes of this research.

Figure 2: A meso-level approach to study the impact of development intervention disparities on the poverty-environment nexus.



The Institute of Research for Development (IRD) together with the Centre for International Forestry Research (CIFOR) have developed a partnership with the Agriculture and Forestry Policy Research Centre of NAFRI to implement a “Comprehensive analysis of trajectories of change in the northern uplands” (Catch-Up Program - <http://www.asia-uplands.org/Catch-Up>). A diagnostic study on land use changes, combining household survey, landscape analysis and chronological series of land use maps is conducted on a network of representative case study sites. A typology of land use changes trajectories is developed by combining these first hand data with a meta-analysis of case studies and modeling tools designed for scenario building (Figure 3).

Figure 3: Trajectories of land use change analyzed across a network of case study sites.

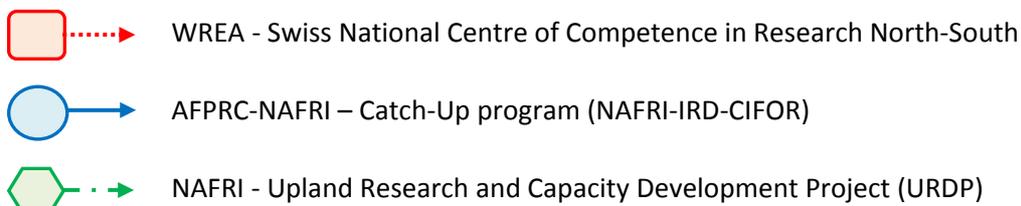
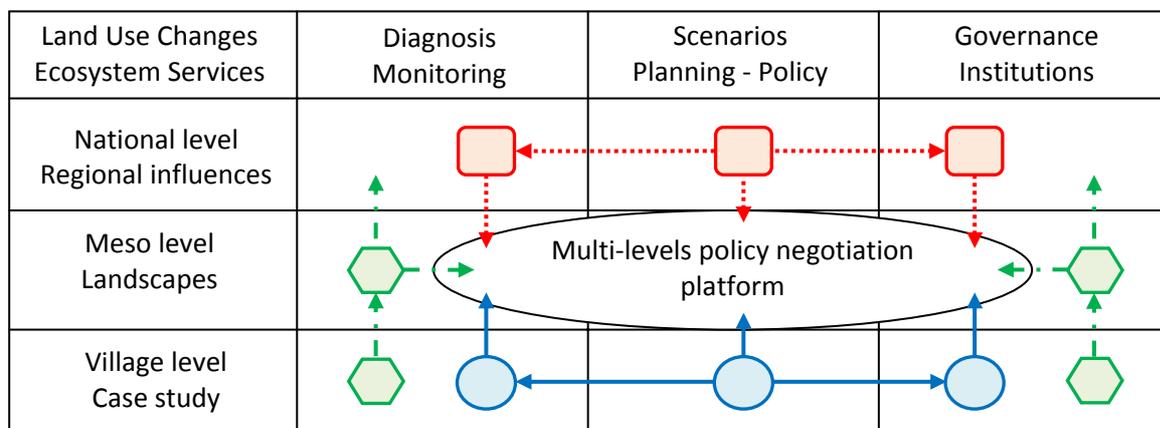


In the context of the agrarian transition in Laos, five factors are taken into account to understand the emergence of new socio-ecological systems: (1) land tenure, (2) labor management, (3) capital sources and flows, (4) knowledge (both local and scientific) and communication patterns, (5) accessibility (both physical and social) to market and to information. The combination of these factors can explain the variability in space and pace of local development patterns and the diversity of actors' responses to the same agriculture and/or forestry policies. This bottom-up approach of land use changes rely on a double assumption: it is possible to identify a limited number of trajectories of change that would allow to characterize and to locate villages that evolve along the same trajectories but at a different pace or with a time lag and therefore can learn from each other (e.g. avoid repeating the same mistakes). This is expected to facilitate decision making in times of uncertainty if the relevant institutional mechanisms are in place to support the exchanges of experiences between locations. The knowledge gained from multi-level diagnosis is then “reinvested” in (i) action-research activities at the meso-level (integrated landscape and/or watershed management) in partnership with development projects and (ii) long term participatory monitoring of landscape changes based on indicators identified during the previous stages of the research. These activities contribute to update the knowledge base and to feed the policy dialogue at higher organizational levels. They are core instruments of the policy research framework designed by the Policy Research Centre to respond to demands from MAF in a timely manner.

The Upland Research and Capacity Development Project (URDP) of NAFRI supports the development of an integrated research approach in accordance with MAF goals and development priorities. The project contributes to the development of comprehensive research through three complementary activities: (i) providing methodological support, improving research capacity and setting new research directions, (ii) on-the-job training to build partnership with local stakeholders in eight districts of northern Laos located in four provinces and to support the development of the Kumban (village clusters) as focal points for interactions, exchanges and support to local communities, and (iii) networking and collaborations to improve information and knowledge sharing processes and capacities. Priority is given to capacity building and strengthening regional research networks with a focus on exposing NAFRI staff and leadership to existing knowledge in upland research methodology. Linkages and co-operations are developed with key organizations (both public sector and private) to ensure that research is more responsive to the demands of development partners and decision-makers.

While the three projects differ by their perspectives and methods in addressing land use changes (top-down and bottom-up adaptive research, capacity building and institutional strengthening), they aim at identifying (i) locations that share the same opportunities and constraints for their development and (ii) development pathways that are negotiated among stakeholders. Through a location-specific understanding of the processes at work and their main driving forces, policy interventions and targeted introductions of technical and organizational innovations are expected to achieve a greater impact at meso-level (Figure 4).

Figure 4: Policy- research framework across scales: integration of existing projects towards a land use policy negotiation platform.



NB. For the sake of simplification, spatial and time dimensions of the human-environment interactions under study do not appear on the graph.

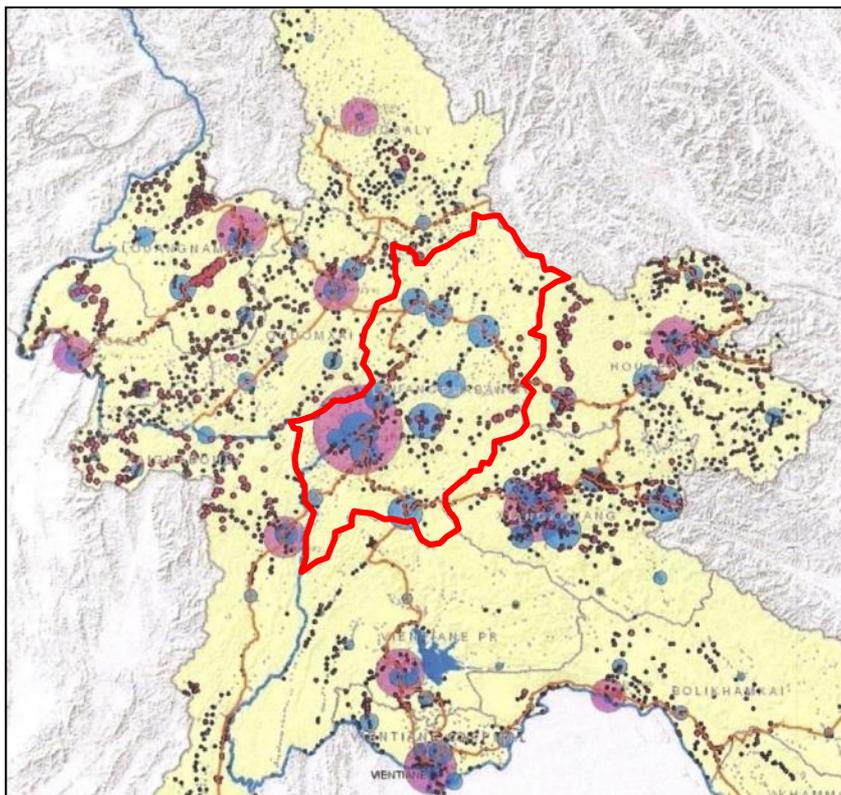
Firstly, a diagnostic study aims at identifying and representing land use systems and related conservation-development issues in a spatially explicit manner. Secondly, hypotheses are developed about the driving forces of changes and their potential effect on poverty and ecosystem services. Models are developed to test these hypotheses and define their geographic domain and/or time horizon of validity. Thirdly, leverage points or scopes for intervention are explored (i) by studying stakeholder interactions (social networks). The combination of these three activities, represented as columns in Figure 4, can feed a negotiation platform and support a multi-level policy dialogue. Such collective learning process should be intimately linked with action-research activities conducted at meso-scale in order to feed the policy dialogue in an endless adaptive process.

The sphere at the centre of Figure 4 represents the negotiation platform for multi-level policy dialogue towards an integrated natural resources management. It benefits from the lessons drawn from case studies conducted at the local level. On the other hand, mechanisms are developed to upscale the results from these experiences in order to feed the policy dialogue at the national level.

Towards an observatory of changes in landscapes and livelihoods

Luang Prabang Province was selected to illustrate our integrated policy framework as this province has been the most intensively researched in the past decade as compared to other upland areas in Lao PDR. In Luang Prabang, many projects have succeeded each others since the early 1990s, covering a large range of topics and providing a good geographic coverage of the whole province (Figure 5).

Figure 5: Inventory of all research-development projects past and on-going in northern Lao PDR, including Luang Prabang (red boundary).



One reason for this concentration of research-development activities is its good accessibility by plane at the beginning of the 1990s as compared to other regions. Traveling by car from Vientiane to Luang Prabang was still risky until the beginning of the 2000s and other northern upland provinces were not well served either by air or by road. Despite remarkable successes, most of these projects did not translate into policies and it is very difficult to retrieve basic information, reports and results of the projects only a few years after completion.

Therefore knowledge capitalization efforts reported in this paper aimed at:

- (i) Identifying the drivers and the extent of land use changes across scales, from local to meso levels (i.e. village to district and provincial levels). It is assumed that disparate knowledge and experiences can be incorporated into a coherent research framework;
- (ii) Analyzing the impact of these changes on key ecosystem services: e.g. food production, biodiversity conservation, carbon sequestration. The provision of these ecosystem services provided by complex landscape mosaics is influenced for example by agricultural expansion and intensification, deforestation and forest degradation, etc.;
- (iii) Exploring the socio-technical innovations and policy instruments that would influence the development pathways towards a desirable direction and help managing the trade-off between competing objectives. Landscapes are governed by a complex system of institutions and organizations. Coherence among policies within and across the scales and organizations is a necessary condition if intervention strategies are to be successful.

Drivers of land use changes

A first activity consists in referencing documents available over the Luang Prabang Province, from scientific papers and books to grey literature and field reports. This collection of village profiles and case studies is then incorporated into a spatially-explicit meta-analysis (Rudel, 2008). The comparison of drivers of land use change between case studies allows to draw a number of conclusions about the endogenous patterns of development and how they are influenced by government policies (e.g. land use planning, focal area development, village resettlement, rural investment in roads, electricity and communications) and agribusiness investments (e.g. rubber or maize booms in the recent years). Many land use trajectories emerge from these external factors of change. They can be classified into a limited number of development patterns that help simplifying the huge diversity of local trajectories. For each development pattern we make the hypothesis that (i) it is possible to identify villages evolving along the same trajectory using simple indicators, (ii) the villages that evolve along the same type of trajectories, but with a time lag caused by different levels of accessibility or access, can learn from each others, and (iii) solutions can be found that are adapted to the specific problems associated with each development pattern (e.g. improved fallow management, intensification of lowland systems, participatory land use planning, etc.).

The knowledge gained from a limited number of study sites is then generalized by using three complementary methods: (i) the meta-analysis incorporates the case study sites for which we have a high level of first hand information (e.g. household surveys, chronological series on land use change maps) with other case studies from the literature in order to test the validity of the proposed indicators (e.g. ratio population / paddy areas, common access or private management of fallows, etc.), (ii) the socio-economic and agricultural census data covering all villages can be used to identify villages that are expected to evolve along the same trajectories and then (iii) a combination of field check / rapid appraisal and modeling of land use trajectories to validate the hypotheses about village membership to one of the several development trajectories identified.

The interfaces between local and meso-levels are explored through a combination of:

- A top-down approach, i.e. identification exposure of villages to market accessibility and public sector policy in a regional GIS, and
- A bottom-up approach on a representative sample of case study sites where drivers of changes are investigated and where indicators are elaborated through a participatory process to make sure they are meaningful for both local people, decision makers and researchers involved.

Impact of land use changes on ecosystem services

Along the same methods as described above, we investigate the relations between land use systems and three types of ecosystem services: land potentialities for agricultural production functions, biodiversity and carbon sequestration. Ecosystem services are defined as the conditions and processes through which natural ecosystems, and the species that make them up, sustain and fulfill human life (Daily 1997). The NCCR-WREA team combines the data related to landscape mosaics 2002, accessibility and socio-economic census 2005 with secondary or proxy data on biodiversity and above ground biomass to generate maps of ecosystem services covering the whole country. The combination of agro-ecological and socio-economic data at the national level with a village resolution is used to test hypotheses about the relations between land use systems and ecosystem services in a spatially-explicit manner. For further confirmation, a meta-analysis of the same relation incorporates references from tropical areas worldwide as the number of available case studies is still limited in Laos. The idea is to create maps for gradients of suitability for each service e.g. regions suitable or unsuitable for carbon sequestration or biodiversity conservation. The development patterns mentioned above can be overlaid with these gradients and help define meaningful regions for case study areas to investigate the three ecosystem services in more detail.

On the other hand, the ecosystem services and their trade-offs are examined in detail within a limited number of the case study sites. First hand data on ecosystems services provided by different landscape configurations are collected, e.g. biodiversity assessment associated with different land use/cover types in a range of landscapes. The results of these field studies are combined with the analysis of high resolution satellite imagery and aerial photographs to investigate the potentials for the ecosystem services at higher levels.

Exploring the socio-technical innovations and policy instruments

From our diagnosis of the current policy context for uplands development in Lao PDR, it is obvious that different rules, procedures and costs apply to different people, places and periods of time. The already high diversity of human and natural environments in the uplands is increased by the local and/or multi-level arrangements for natural resources management that involve multiple groups of stakeholders: i.e. the stakeholders and institutions that influence landscape changes, but also policy instruments (e.g. land use planning), alternative practices (e.g. agroforestry, conservation agriculture), and implementing institutions (e.g. multi-stakeholders negotiation platforms, village clusters, district authorities). The success or failure of resulting interventions depends very much on the willingness to play the rules of the game of local actors and consequently on their contribution to “governance landscape” and decision processes at landscape level.

A first step towards understanding the negotiation process is to describe the social networks, the groups of stakeholders involved, their relative influence and power, their connections with other actors from within and outside the local governance system, and also the levels at which the negotiation takes place (national, provincial, district, village). It is also important to identify the leverage points (e.g. local champions) and also the real obstacles to policy implementation (e.g. hidden agendas, corruption).

From “governance landscapes” to “landscape governance”

The shift from understanding existing local institutions to influencing the negotiation that give rise to the new local institutions can be considered as a new stage in policy research. Building upon a good understanding of *governance landscapes* it becomes possible to engage into an action-research promoting new modes of *landscape governance* (Görg 2007). In this context, policies should provide

guidance, and regulation when necessary, to the local negotiations that lead to the emergence of new socioecological systems.

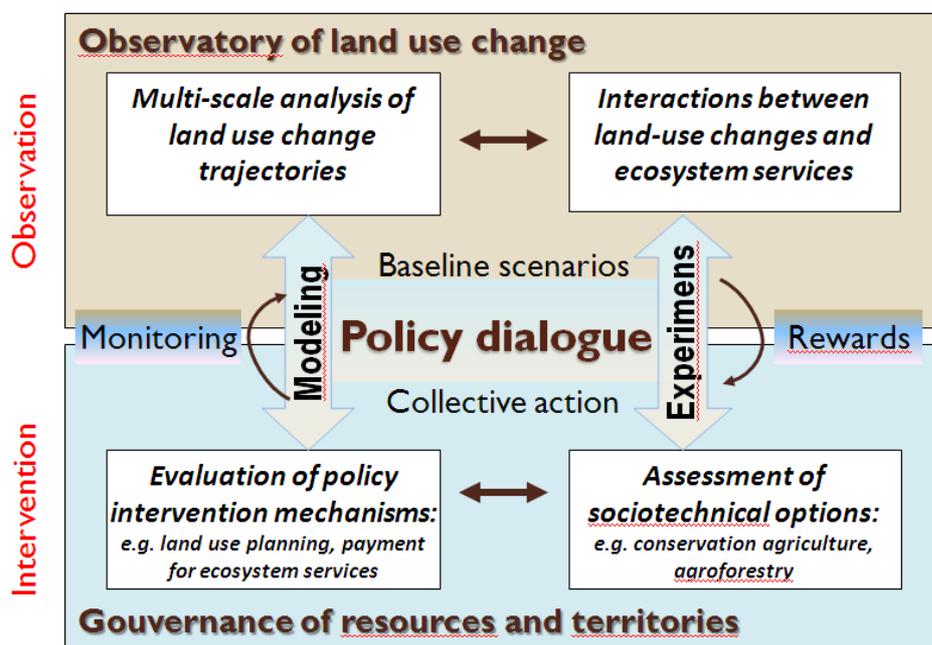
Reconciling theoretical principles and practical approaches to policy research

A number of principles and methodological guidelines were drawn from previous experiences in Laos and also from other countries through literature review. Systems approach is a common ground that facilitates the interactions within interdisciplinary research teams and between teams working in different study sites towards the integration of the different aspects of a complex reality. Beyond this common ground, we would like to stress what makes this approach original as compared to other initiatives.

Valorizing diversity. Associated with the inherent complexity of socioecological systems under scrutiny, diversity and uncertainty are two key factors that need to be taken into account to cope with the rapid changes as presented above. They cannot be ignored nor can they be artificially reduced. However, diversity can be turned into an asset while it is often considered as a constraint to development. The viability of socioecological systems depends on their diversity, especially in time of rapid changes and transition, as demonstrated by many research. Diversity can be managed in different ways depending on the scales that are considered, e.g. field, farm, landscape, region, and the disciplinary perspective, e.g. biodiversity, diversity of agricultural practices or social groups. Diversity is a key to resilience. Very diverse from one region to the other, the “local trajectories of change” are determined by the strategies of local actors, themselves determined by diverse factors such as the local history, geography, culture, demography, social and economic organization, agricultural practices, land regulations and development policies. The thorough selection of research sites is essential to generalize the empirical results acquired locally on the basis of comparative analyses. The analysis of village agro-ecosystems helps understanding the regional diversity in natural resources management practices, but also to collect information about their evolution and environmental impact. Remote sensing and geographic information systems technologies are used at multiple scales to study the spatial extension, and the dynamics of regional socioecological systems. Instead of ready-made solutions, spatially-explicit, context sensitive policy frameworks will provide a range of options for each meso-level spatial entity (e.g. landscape, watershed, district) that are compatible with the policies defined at the higher level (e.g. provincial, national).

Scale integration. The methodological framework introduced here combines top-down and bottom up approaches of land use changes that meet at a meso-level of spatial scale. This sub-national level can be loosely defined as *landscape* as proposed in the recent literature on landscape studies. This helps overcoming the constraints of strict biophysical delineation of *sub-basins* considered as operational units for integrated watershed management or *districts* as administrative units in charge of both planning and implementation of national policies, which boundaries do not usually overlap. Whatever terminology is used, this entity is considered as an interface, a domain of frictions between ascending and descending injunctions in a planning process. This level of analysis and decision making has been historically relatively neglected by the scientific communities but it has been given a lot of emphasis in the recent approaches to integrated conservation-development. Land use researches have traditionally concentrated on qualitative approaches based on case studies and attempted to incorporate them into comparative analyses, and on the other hand, on quantitative approaches based on national level statistics and maps. While the former faced many problems of generalization, the latter suffered from the poor quality of the data and the absence of regular update. The idea here is to combine the two approaches to overcome their respective shortcomings (Figure 6). Modeling and simulation are important tools to develop scenarios across scales (Castella et al, 2007). While keeping in mind the inherent uncertainty about future changes it is very useful (i) to explore with different groups of stakeholders possible land use trajectories, (ii) to assess the potential impact of policy interventions of technological innovations, and (iii) to define problem solving pathways.

Figure 6. Integrating knowledge and tools for a policy dialogue



Knowledge integration. Coherence among policies within and across the scales and organizations is a necessary condition if intervention strategies are to be successful. Vertical coherence calls for the development of intervention strategies that integrate policy instruments, institutions and organizations across scales. Horizontal coherence refers to coherence among policies within each scale. At each organizational level the plans must be complementary to each other and trade-offs between the implementation strategies must be highlighted, discussed and agreed upon before actions are implemented. Different types of policy research tools and methods need to be combined and balanced in complementary ways as the projects build information, experience and skills into a common knowledge base. The information synthesized from numerous local or sectoral studies can be incorporated into a knowledge base that can (i) store and retrieve data formatted in a way that is relevant to policy research, (ii) provide the information necessary for an interdisciplinary team to do different readings of the same data set, and (iii) assess the conditions of replication and extrapolation of research results. The knowledge base represents what is essentially the overall store of intellectual capital that supports a constructive policy dialogue.

The knowledge base should include products of completed research projects and analyses, as well as the raw and processed data from both primary and secondary sources used in those analyses. But it also includes such things as information, insight, ideas and experience gained from policy dialogues and work with research partners, knowledge of and experience with a range of research methods and analytical tools, and library collections and knowledge of where and how to gain access to various sources of information and data. As the knowledge base grows, the integrative platform increases its capacity to produce a growing range of synthesis products tailored to meet needs of different types of audiences. Major types of products are likely to include: (i) government agency products with appropriate content and circulation; (ii) products for regional to local stakeholders; (iii) reports and public policy briefs for general informed audiences at domestic and international levels; and (iv) products tailored for development partner organizations.

Donor agencies and decision makers often see such a knowledge base as an information storage facility. However, its functions as described above require much more than arranging books on a library shelves or files in a computer directory. Beyond the political will to better coordinate development efforts and to shift from a central planning to a facilitation mode of governance, it is essential to define the kind of knowledge that is needed to respond to which strategic questions and to design the relevant processes of knowledge acquisition and capitalization. This kind of work requires specific integrative skills that are still very rare in the policy research community in Laos. As a consequence, while individual pieces of research are often interesting and instructive, their accumulation does not allow to meet the expectations of policy makers. The reality of the research-development practice tends to differ significantly from the integrative, policy-oriented discourses.

Designing supportive institutional networks

Combining the complementary approaches presented above (Figures 4 and 6) means articulating in a flexible manner both their methods and their supporting institutions. In this paper, we have focused so far on the integrative methodological framework, keeping in mind that not much is possible on the long term without a strong commitment of all stakeholders along the research-development-policy continuum. As the interactions within socio-ecological systems and between stakeholders are dynamic, solutions will not be permanent. They need to be constantly renegotiated on the basis of evolving knowledge of the situation on the ground and turnover of the people involved in the collective learning. Finally, this process relies to a large extent on a regularly updated knowledge base supported by a complex, multi-level monitoring system.

Pilot experiments versus of large schemes for integrated watershed management

Such collective process needs to be tested in real conditions in order to assess its capacity to tackle the issues presented in the first section of this paper, i.e. designing spatially-explicit policies anchored in a refined knowledge of the trajectories of change. As a reflexive, adaptive process, it requires to be anchored in real contexts of conservation-development and not in imaginary situations created by researchers to test their own hypotheses. The tools for knowledge integration, scenario development, policy dialogue and landscape monitoring that are being developed and tested in different sites are incorporated into a negotiation platform that supports an integrated natural resource management process.

Making research results widely known to policy makers require knowing first who the intended recipients of the research are and how to effectively reach them (Shanley 2008). Often the people researchers and developers have dealt with in Laos are 'filters' to the real policy makers. The example in Luang Prabang is instructive where the results of several generations of projects which were supposed to flow up never reached any decision-making level. There is a need to engage with high level policy makers while developing a bottom-up participatory process. This imposes specific constraints on knowledge management and information flows. Beyond the methods and tools presented above, facilitation skills are also very important to develop in order to set up a fruitful policy dialogue. Trust is built gradually as the people involved learn and become more confident through direct observation of the quality of the collective process.

Therefore, we pledge for small integrative projects that can grow up at the learning pace of its participants instead of very big projects that the donor agencies tend to prefer because of their own internal constraints over management of small projects. Landscape level project are also better adapted to the capacity of partner institutions in Laos. Project assessments have shown that big projects relying heavily on consultancy work do not contribute much to institutional building despite the discourses developed before and during the project implementation. This often leads to a discontinuation of the activities at the end of the projects. The question of implementation mechanisms and institutional settings is crucial to the success of this kind of project. Structural problems are usually related to the influx of abundant external resources and sudden withdrawal at the end of the project, to the low level

of interactions between projects. Therefore, we suggest to build upon the existing projects through an integrative framework at landscape level.

Institutionalization of integrated watershed management: centralization versus decentralization movements

The methodological framework introduced here is expected to reconcile bureaucratic centralization with more locally adaptive modes of landscape governance. In Lao PDR, moves to “decentralize” resource management to landscape level should be seen in the context of an already decentralized political and economical system. Despite government initiatives to promote a central planning framework, Lao PDR has remained quite decentralized, both in a politico-administrative and in an economic sense. Historically this is due to the physical fragmentation of the country, with limited infrastructure development linking provinces with the centre. More recently it has been exacerbated by the relative provincial autonomy to generate its own budgets based on exploitation of its natural resource base. Moreover, in a subsistence-based livelihood system, the decentralized administration is compounded by the very small revenue base and limited number of central government personnel, imposing effective limits on the reach of centralized state authority. For this reason and in conjunction with Paris declaration, there is a close marriage between public ODA and state, mutually conditioning each other.

Technocratic, top-down approaches have failed to take account of diversity of social, economic and cultural conditions of the resource users. Alternative approaches address watershed management as a process rather than an optimal model or a blue print. Under this new paradigm, the government agencies have to shift their role to focus on facilitating rather than planning the development process. They should better coordinate their efforts thematically and geographically to provide more flexibility and sustainability to the whole knowledge management and communication network. This requires profound changes in the current governance modes, and places policy researchers at the forefront of the reforms. For example, turning from a project-based to a programmatic implementation of land management policies is very challenging. Land information systems for decision-making and monitoring purposes should be given adequate attention. System to evaluate, compare and contrast the potential impact of development programs and policies should be developed as well as monitoring and evaluation system to track project implementation and measure their outcomes. The Policy Research Centre of NAFRI should play a focal role in convening the necessary institutional changes; i.e. changing the boundaries and practices of the institutions to adapt to this new mode of information management and knowledge integration across hierarchical levels.

Conclusions

National policies and foreign investments have had a far greater impact on landscapes and livelihoods in rural areas of Lao PDR than any research-development project. Does this mean that projects were not useful or are not necessary anymore? Certainly not! While ODA should seriously reflect on their ignorance of the private sector which is a driver of 10 fold force in terms of investment, pilot project activities and experiments support the design and implementation of policies and regulatory frameworks that have a great impact on rural development. The main problem is to set up the methods and develop the institutional mechanisms that support the required shift from knowledge accumulation to knowledge capitalization at multiple scales. Research needs to be more coordinated, integrated and policy relevant. Empirical evidences as to what works, when, where and why are needed to design relevant policies and institutional mechanisms supportive to the replication and/or generalization of success stories. Integration of biophysical and socio-economic data originated from different sources, available at different scales and level of accuracy, can support the participatory development of scenarios towards improved livelihood systems and better governance of natural resources.

Faced with complex and highly dynamic institutional settings, the relations between science and policy need to be constantly reshaped. Many projects have dedicated efforts to generate knowledge that would be of real use to policy makers, but only few have reached their target audience. One reason is that they had not initially identified the policy makers they wanted to address their message to, nor tailored their message to their potential target. A well designed impact pathways should involve a better adaptation to the capacity of recipient individuals and/or institutions, while building up this capacity. Another reason is that new local institutions are emerging constantly in a complete uncertainty about their potential consequences on the natural resource base. As we have seen, the emergence of new institutions is crystallized in negotiations that happen constantly and independently at all levels. Instead of targeting an imaginary decision-maker in need of information, policy relevant research should therefore design and inform negotiation platforms to facilitate a collective learning process at landscape level. Finally, once a consensus is reached about the need for a dynamic and flexible policy process that accommodates diversity and uncertainty, capacity building and institutional strengthening efforts should accompany the necessary changes in research practices.

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