

REVIEW OF POLICIES AND PRACTICES IN UPLAND AREAS OF THE LAO PDR

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Abstract

Under the National Poverty Eradication Programme (NPEP) overall visions for agriculture, integrated watershed management and forestry seek to coordinate sectors in facilitating a holistic transformation of upland livelihoods to reduce rural poverty and conserve natural resources. Operational policies, however, still centre on stabilising shifting cultivation, eliminating opium production, land use allocation, land use planning, and focal site development with village relocation and consolidation. Responsibility for planning, implementation and meeting targets is increasingly delegated to provincial and district offices. As a result, the overall policy environment tends to segregate lowland agriculture and upland forests, overwhelm local capacity with mandates under decentralisation, and place strong constraints on land use while new livelihood opportunities are still vague. The impacts of this are disrupting diverse household livelihood systems and bringing turbulence and uncertainty to many upland communities.

Government efforts to strengthen support for upland agriculture and forestry focus on the development of responsive, demand-driven research and extension services. Although the National Agriculture and Forestry Research Institute (NAFRI) is progressing, initial visions of improved extension services under the National Agricultural and Forestry Extension Service (NAFES) appear promising, and pilot projects are helping point the way, much more effort is needed to build capacity at increasingly important village to provincial levels.

In terms of improving livelihood component technologies, a great deal of progress has been made in lowland rice production, livestock health, and some field and tree crops. Nonetheless much important work remains to be done in horticulture, agroforestry, non-timber forest products, smallholder timber, irrigated production in small upland valleys, community-based natural resource and landscape management, as well as local processing, micro-enterprise and marketing chains. Organic and/or diverse niche products will require more effort to develop market opportunities, local identities and product lines, local entrepreneurial skills, and locally-adapted technologies.

While the challenges are many, the experienced and motivated people participating in this workshop may be able to help expand the range of promising alternatives, and further build and accelerate efforts under NPEP to improve livelihoods in upland communities.

This paper provides a brief overview of upland policies and practices. The emphasis is on policy themes and directions, implementation issues, livelihood impacts, as well as emerging institutions, technologies and approaches to commercial production.

Major upland visions and policies

Given the nature of land use patterns, practices, and livelihoods in upland zones of Laos, agriculture, forest and natural resource management are closely intertwined in the government's visions for development. The major guiding framework, strategic visions and core policies of most concern for upland development include:

Emerging National Poverty Eradication Framework

The Lao Government recently launched its new framework for rural development, known as the National Poverty Eradication Programme (NPEP) (CPC 2003). This programme is central to the Government's ambitious strategy for Laos to leave the ranks of least developed countries (LDC) by 2020. Efforts began with the articulation of criteria for operationally defining poor households, villages and districts, and a strategy to promote access to:

- ▶ Agriculture and forest technology.
- ▶ Markets through roads and information.
- ▶ Social services.
- ▶ Human development.
- ▶ Financial resources.

Emphasis is on grassroots initiatives to alleviate poverty through development in their own areas (CPC 2003).

A range of activities have assessed rural poverty, reviewed experiences in implementing policies and projects, and refined implementation approaches for NPEP. Based on experiences gained by the Participatory Poverty Assessment (ADB 2001) in classifying districts according to poverty levels, classifications were further refined for the NPEP. The 72 districts identified as poor and the 47 districts identified as very poor are shown in Figure 1. The paper in this volume on NPEP is useful to keep in mind while reading this review of upland policies and practices.



Figure 1: NPEP Poor & Very Poor Districts

Visions of Agriculture & Natural Resource Management

The direction of upland development policies and programmes reflects the Lao Government's strategic thinking and its visions of the future. Dimensions of strategic thinking linked with upland development are being articulated in a series of 'vision' documents.

Agriculture

Major elements of the government's strategic vision for agricultural development (MAF 1999) have been incorporated into all plans and programmes, including the NPEP. Key elements are:

- ▶ **Identification of two major agro-geographical zones:** (a) Mekong Corridor Flatlands, where agricultural transformation has begun; (b) Sloping lands, where subsistence agriculture and resource degradation result in poverty and negative downstream impacts. Development in the uplands is to centre on area-based conservation and livelihood systems.
- ▶ **Identification of generic types of farming systems** with different development strategies directed toward systems in each agro-geographical zone. While types of

farming systems reflect different altitudes and terrain, they all include several components in varying proportions, typically rice (paddy or rainfed), livestock, aquaculture, semi-permanent and cash cropping, which are supplemented by gardens, non-timber forest products, fishing and hunting.

- ▶ **Reorganisation of The Ministry of Agriculture and Forestry (MAF)** to enhance its capacity to respond to farmer needs in an evolving market economy. A bottom-up approach focuses on District and Provincial Agriculture and Forestry Offices (DAFO, PAFO), and central support services are consolidated into the National Agriculture and Forestry Research Institute (NAFRI) and a National Agriculture and Forestry Extension Service (NAFES).

By 2001, this strategic vision was supplemented by a Master Plan Study on Integrated Agricultural Development (JICA 2001), providing a more detailed action plan, including outlines for 110 projects classified by priority for different timeframes, areas, and sectors.

Integrated Watershed Management (IWM)

The Government's commitment to a major watershed management component in its overall land use planning approach is presented in its new strategic vision for integrated watershed management (MAF 2003a). Since it sees upland development resource allocation linked with integrated watershed management plans, the Committee for Planning and Cooperation (CPC) will need to collaborate with MAF in integrating mechanisms into national planning processes.

Under the vision, provinces develop strategies and priorities for sub-watersheds in their province, and districts develop watershed plans either by themselves or together with neighbouring districts, depending on physical watershed boundaries. Such plans are to be in place for the whole country by 2010. Within the plan for 2001-05, focus is on eight northern provinces, which include highest priority watersheds, as well as high levels of shifting cultivation and poverty. The main challenge now is to develop staff capacity in basic technical and facilitation skills (MAF 2003a).

While watershed classification places restrictions on land use according to physical characteristics, the IWM approach uses a more holistic area-based planning process that distinguishes between provincial level, where sub-watersheds and strategic options for larger watersheds should be identified, and district level where watershed zoning, 'buffer zones', conservation areas and specific development efforts are to be agreed upon by district sub-sectors through a seven-step process. As presented thus far, this is neither a simple nor an easy process, and it is not yet clear how it will interface with other programmes. Hence, a phased approach is beginning with pilot areas and priority provinces. Given its integrative framework and character, it is a potentially important policy with many implications for upland development under NPEP.

Forestry

Forestry in the Lao PDR is changing, as reflected in the 1996 Forestry Law and associated decrees and regulations. A forestry sector strategy to the year 2020 was presented in draft form, and is now being revised (MAF 2003b). The new strategy seeks balance among the multiple roles played by the forestry sector:

- ▶ One of the fastest-growing sectors of the economy, providing foreign exchange, materials, jobs and revenue for both public and private sectors.
- ▶ A safety net for rural livelihoods providing timber and non-timber forest products (NTFPs) for both home use and sale.
- ▶ Maintenance of soil and water resources and flood protection.
- ▶ Protection of biodiversity of national, regional and global significance.

The draft strategy includes considerable discussion of forest land classification processes and issues important for village land use in upland areas at multiple levels:

- ▶ **Forest Classification.** Forests are classified into five categories that total 85 percent of the land area of Laos. Three classes are delineated on large-scale maps:
 1. *Production forests* for timber and forest products for national and local needs;
 2. *Conservation forests* to conserve species, habitats and other entities;
 3. *Protection forests* to protect watersheds and areas for national security and the environment.

Two classes focusing on ‘stabilising’ shifting cultivation are identified by village land allocation processes:

5. *Regeneration forests* are fallows or other areas targeted for regeneration into permanent forest;
 6. *Degraded forests* are areas with little forest targeted for tree planting or land allocation.
- ▶ **Village Forest Lands.** Through land allocation processes, forest within village boundaries is classified using the same categories as the national system, with production forest being named Village Production Forest, and so on. Thus, village forests are being demarcated on lands located within national and provincial conservation, production and protection forests. While this double-layer classification reflects reality and appears necessary, there are no clear criteria for delineating village land-use areas, and their legal status is unclear. In 2001, village forest provisions were consolidated, and NTFP collection for sale was allowed under approved management plans; a 2002 decree allows villagers a role in managing production forest under village contracts with districts (MAF 2003b).

Potential Reforms that the draft strategy proposes for more articulation and discussion include to:

- ▶ Revise land-related laws to include overall land use planning systems.
- ▶ Clarify definitions and legal status of village forest lands.
- ▶ Increase flexibility for land allocation according to socio-economic conditions.
- ▶ Clearly define shifting cultivation types and study environmental impacts of each.
- ▶ Set targets for improved livelihoods, instead of are under shifting cultivation.
- ▶ Assist villagers with overall village land and forest management plans, with focus on common lands and forests, watershed areas, income generation, etc.

Evolving operational upland policies

Policy visions for upland development seek to incorporate, and improve coordination among, existing lines of policy that have set the direction for development programmes during recent years. Five major policy themes are particularly relevant for upland development:

Shifting Cultivation

As in the wider montane mainland Southeast Asia (MMSEA) eco-region (Thomas 2003), upland agroecosystems in Laos have long included shifting cultivation practices that employ periods of forest regeneration to sustain their productivity, in systems that vary by ethnic group and location. Estimates in 2000 indicated that 39 percent of the population of the Lao PDR depended on shifting cultivation, which covered 13 percent of the total land area (JICA 2001).

Concern about negative impacts of shifting cultivation has been a consistent theme of government policy since liberation. Although implementation of early decrees prohibiting shifting cultivation was very limited, the landmark 1989 National Forestry Conference proposed forestland allocation to villagers as a policy to rationalise forest use and introduce alternatives to shifting cultivation (MAF 2003b). Subsequent land-related policies have had 'stabilisation' of shifting cultivation as a central objective and by 1998 the government acknowledged that rural development priorities up to that point had been aimed mainly at gaining national rice self-sufficiency and restricting shifting cultivation (SPC 1998).

Increasingly serious environmental impacts are attributed to 'slash-and-burn' practices of 'unsettled' families. Claims are made that for shifting cultivation to be sustainable, a cycle of 20 to 25 years is needed to give forests a chance to fully recover before being 'slashed-and-burned' again, which is not possible because of population pressure (SPC 1998). Thus, the Government sees shifting cultivation as unsustainable, and intends to stop it by:

- ▶ Making agriculture sedentary through farming system diversification and agroforestry.
- ▶ Opening market access through feeder roads and market information delivery.
- ▶ Land use zoning based on slope and land capability.
- ▶ Rural savings and credit.
- ▶ Land allocation and land use entitlements (MAF 1999).

Every major policy, programme, and project document related to agriculture, forestry or natural resource management in mountain areas includes similar arguments. The Seventh Party Congress set targets endorsed by the National Assembly to 'stabilise' pioneering shifting cultivation by 2005, with complete stabilisation (eradication) by 2010 (MAF 2003b). Five mountain provinces of the North are the main focus, and each receives an annual target for reduction. In response, during 1990 - 2001 shifting cultivation is said to have dropped in land area from 249 thousand ha to 110 thousand ha, with the number of people involved falling from 210 thousand families to 99 thousand families. There are no statistics on occupations and livelihoods of farmers who 'abandoned' shifting cultivation, but various reported successes are promoted as models (MAF 2003b).

Opium eradication

Opium production in highland zones is another feature of recent history in MMSEA, and Laos has been no exception. For highland villagers, opium has provided cash income to compensate for poor rice productivity at high elevations. Furthermore, since highland paddy sites are scarce, opium is often viewed as a special case of the 'shifting cultivation problem'. In neighbouring Thailand, income from opium actually received by mountain villagers was low enough that crop substitution programmes (combined with enforcement once viable alternatives are in place) were successful (Renard 2001). Experience with such programmes has evolved into what is now called 'alternative development' for drug control.

Systematic efforts to control opium production in Laos began in the nineties with a central commission, provincial committees, and a Comprehensive Drug Control Programme (CDCP) for 1994-2000. The 1999 Opium Elimination Strategy aims at elimination of production by 2006, while the 7th Party Congress resolved to eliminate it by 2005, with support from international agencies. A review of work during 1989-2001 (Kuhlmann 2002) indicated that progress and constraints (except for special issues like drug addiction, etc.) are similar to those generally encountered by development projects in mountainous areas of Laos. Given their focus on high elevation zones, most effort focuses on sub-tropical and temperate tree crops, as well as giving high priority to alternative income sources to replace cash obtained from opium. However, marketing experience is still quite limited and temperate fruit tree development is likely to require at least 20 years before it is fully viable.

Land and forest allocation

Consistent with the desire to stop shifting cultivation and opium production, government visions for the uplands see 'settled' communities practising permanent agriculture on defined land parcels, with access to infrastructure and social services linking them with wider economic and social systems. Key tools developed during 1989-96 to help achieve this vision include land use planning, and land and forest allocation. Their stated objectives are to:

- ▶ Promote crops to replace shifting cultivation through allocation and titling of land for production.
- ▶ Protect forest through classification and stabilisation of shifting cultivation.

Main components are:

- ▶ Allocation of degraded land to households, with a three-year land use certificate for cropping, tree planting or grazing. Satisfactory performance leads to household land title.
- ▶ Village forest land is classified (use, protection, rehabilitation, etc.) and agreements on rules governing each class are signed (MAF 2003b).

Under Ministry of Agriculture and Forestry (MAF) guidelines, the land use planning and land allocation (LUP/LA) process is to involve local communities through an eight-step Participatory Land Use Planning (PLUP) methodology.

A Central Committee for Land and Forest Allocation set and reviewed annual targets, and from 1996 to 2002, land allocation was carried out in some 6,200 villages (>50% of the national total) and more than 379 thousand households (>60% of all agriculture house-

holds), covering more than eight million hectares of land area. Thus, LUP/LA has been characterised as one of very few forest related programs with clearly defined policy objectives, detailed instruction for field implementation, and nationwide implementation (MAF 2003b).

Focal site strategy and village relocation and consolidation

The 'focal site' strategy has been a central feature of rural development strategies in Laos for nearly ten years. It is an area-based approach that begins with a strategically selected set of locations where bundles of activities implement policies in a coordinated manner. In principle, the approach aims to be both a 'pilot project' to test systematic and coordinated implementation under a wide range of conditions, and a 'demonstration area' to show the process and its results, thus facilitating its further implementation and adoption.

The strategy began in 1994 under the National Development Programme (JICA 2001). The Central Leading Committee for Rural Development and province counterparts selected clusters of villages from lists submitted by provinces, based on criteria that included a need for poverty alleviation, potential for economic development, as well as risks due to opium, unexploded ordinance, or floods (SPC 1998, JICA 2001). By 1997, a total of 62 focal sites had been identified throughout the country, with an average of 16 villages and 5,200 people per site.

Progress of the focal site approach was assessed and rearticulated in 1998 (SPC 1998), and re-assessed in 2001 (JICA 2001). Village participation did not appear convincing, and sites were biased toward poor and politically important areas, with few areas having high potential for development. Roles were unclear, monitoring and evaluation systems were absent, operational targets were not clear, and staff capacity at provincial levels was weak. Nevertheless, the approach is seen as warranting further effort because:

- ▶ It has the potential to conduct necessary integrated planning and implementation that is difficult for line agencies.
- ▶ It is the most effective way to use a limited budget and scarce local human resources.
- ▶ It has potential for bottom-up participatory planning and implementation essential for rural development.

The 1998 focal site rearticulation included rationales for village consolidation and relocation, which centred on perceived needs for efficient extension services and community development structures to bring local people into development planning and implementation. In this way, 'unsettled families' living in 'scattered, remote communities' whose 'traditional methods of slash-and-burn cultivation are no longer sustainable' are to be attracted to sites with improved access to development services. Indeed, such 'pull-effects' can already be seen as some villagers are voluntarily establishing new settlements along new road corridors.

NPEP seeks to expand core elements of the focal site approach to all of the poorest districts. Recognising close links between rural poverty and agriculture in Lao society, responsibility for planning and coordinating rural development was shifted back to MAF. The new strategy sees the 'focal development area approach' targeting both remote areas with endemic poverty and areas with growth potential. The focal development approach:

- ▶ Allows integrated development by more access to remote areas.
- ▶ Stabilises shifting cultivation.
- ▶ Facilitates increasingly market-oriented economic activities.
- ▶ Improves social services access.
- ▶ Ultimately aims to integrate all regions into a dynamic national economy.

Development is concentrated in zones where activities in agriculture, social sectors, institutional capacity building, and physical access to villages and markets are conducted in a synergistic manner to boost household income and human development in order to eradicate basic poverty (CPC 2003). Since most poor districts are in upland areas, this newest focal site strategy remains important for upland development.

Decentralisation

All the above policies and visions place strong emphasis on decentralised approaches, reflecting natural resource governance trends across MMSEA (Dupar and Badenoch 2002). Decentralisation in Laos is aligned with a 2000 directive that redefined central-local relations with provinces as strategic planning units, districts as planning and budgeting units, and villages as implementation units (CPC 2003). For example, after the government recognised problems with village resettlement and consolidation, the rearticulated focal site programme saw its ‘cornerstones’ as consultation, coordination and strengthening of provincial and district institutions, with village level focus on volunteers and committees (SPC 1998); human resource development is seen as key to strengthening local capacities to implement the strategy. While policies such as reduction of shifting cultivation, land and forest allocation, and others, have set annual targets at central levels, most implementing decisions are delegated to provinces and districts, often with little apparent consideration of their capacity or the resources available.

Given its mandates related to agriculture, forestry and rural development, the Ministry of Agriculture and Forestry (MAF) was reorganised to better meet decentralisation objectives. As indicated in Figure 2, this ‘demand-driven’ approach sees villagers interacting directly with district staff, under guidance and support from provincial offices. Central support services are channelled through NAFRI and NAFES. Consolidated central adaptive research services were launched under NAFRI through reorganisation and elaboration of the existing set of research units within various departments of the old ministry structure. However, since the consolidated extension agency needed to be newly created, its establishment could not be so rapidly accomplished. Development of staff capacity at PAFO and DAFO levels has been more problematic due to constraints on human and financial resources.

Implications of the overall policy environment

Three key themes emerge from this brief review of visions and policies, each of which has substantial implications for land use and livelihoods of upland communities.

Lowland agriculture and upland forests

Although not an explicit government policy, segregation of agriculture and forestry is a common theme of policy and planning at multiple landscape levels, reflecting a general

direction in land management. At a broad level, the vision for agriculture divides the country into upland and flatland regions, as indicated in the map to the left in Figure 3, and suggests overall strategy directions for farming systems in each zone, as indicated in Figure 4.

On comparing development strategies for flatlands and sloping lands, two patterns appear evident: (1) flatland agriculture has already started to intensify and commercialise, giving rise to concerns about a growing gap between the zones; and (2) there is a much stronger emphasis on zoning, conservation and natural resource management in the sloping lands zone.

Special conservation concern for upland areas relates to the watershed and biodiversity protection services they provide for wider society, with both perceived as being linked to dense natural forest cover. The middle image in Figure 3 shows the watershed classification system and its land use restrictions, while the right image displays overall tree density in and around Laos with boundaries of internationally registered protected areas. If the economic role of the production forestry sector is added, the emphasis on forest cover in the uplands becomes clear.

What direction, then, will agricultural development take in upland areas, and how will the livelihoods of people be affected? The aim is clearly not to resettle people from uplands to farms in the Mekong corridor flatlands. Rather, emphasis is on carrying the conservation theme through to more detailed planning processes conducted at provincial and district levels. As an example of how this translates to the provincial level, Figure 5 displays images of both current land use and the desired pattern emerging from land use planning and forest zoning. The current land use image shows much land in fallow, while the zoning map shows a huge majority in protection and conservation forest.

Such change requires a major transformation of land use practices across much of the province. Agriculture is seen as becoming 'settled' and much more intensive than traditional systems using shifting cultivation. While future use of extensive fallow areas now designated 'regeneration forest' is not yet clear, aims to vastly increase permanent forest cover are very clear. How to transform land use while improving local livelihoods is a big challenge for provinces, districts, and villages.

Decentralised mandates overwhelming local capacity

Tasks associated with achieving land use and livelihood transformations are now often overwhelming local capacities to effectively conduct the programmes. In reviewing its programmes, the government recognises both the importance of effective decentralisa-

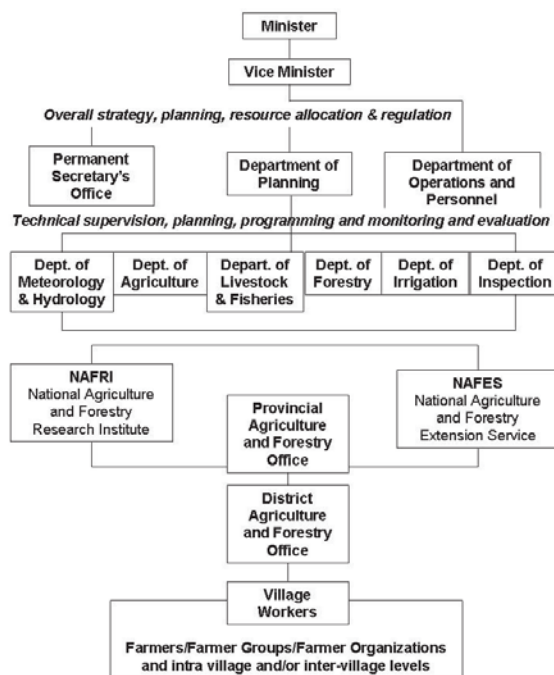


Figure 2: Overall structure of the MAF

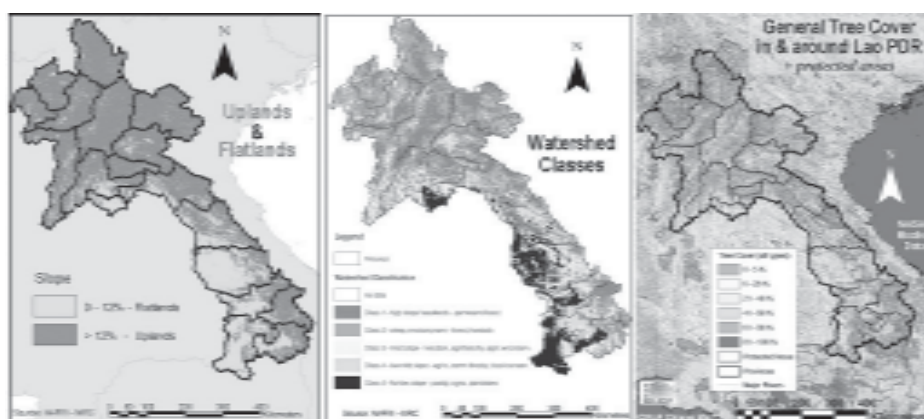


Figure 3: National Distribution of Terrain and Tree Cover Characteristics

tion, and the limitations faced by local administrations. While institutional weaknesses exist at all levels, projects have helped increase capacity at the central level. However, major institutional weaknesses continue to plague levels of government from province down to district and village. Nonetheless, as examples in Figure 6 indicate, duties under decentralising upland programmes emphasise work at these levels. Major weaknesses inhibiting effective implementation of such programmes have been identified as:

- ▶ Lack of skills.
- ▶ Lack of logistical support due to financial constraints.
- ▶ Lack of motivation, related to low salaries and inadequate incentive for field travel.

Flatlands: Emphasis on	Sloping lands: Emphasis on
<p>Intensify cash crop, livestock and fisheries production through farmer demand driven extension</p> <p>Expand value-added commodity processing for domestic consumption and exports</p> <p>Commodity market research and information delivery</p> <p>Agriculture product grades and standards development and regional marketing link promotion</p> <p>Strengthen and expand competitive credit facilities</p> <p>Strengthen agribusiness lending by banks</p> <p>Rehabilitate and expand dry season irrigation system and community management transfer</p>	<p>Landuse zoning based on physical and socio-economic features</p> <p>Participatory land allocation and land-use occupancy entitlement</p> <p>Farming system diversification and agroforestry development through on-farm adaptive research, trials and demonstrations</p> <p>Community management of natural resources</p> <p>Intensive small-scale community managed irrigation systems</p> <p>Farmer demand driven research and extension</p> <p>Soil erosion control, afforestation and conservation</p> <p>Savings mobilization and micro-credit, interest subsidy to poor</p> <p>Strengthen capacity and legal framework of banks</p> <p>Market access through road and market information delivery</p>

Figure 4: General Strategies for Flatland & Sloping Land Development



Figure 5: Policy Vision of Land Use Change in Luangprabang

As an example, the Land and Forest Allocation programme uses an eight-step participatory land use planning and land allocation process (LUP/LA), as indicated in Figure 7, to be collaboratively implemented by district staff and villagers. While LUP/LA implementation has made much progress in meeting quantitative targets, most agree there are many problems with the quality of results, and thus its impact on upland communities. Most allocated forest land is classed as conservation, protection, or regeneration forest; of some 100 thousand ha of forest allocated during 2000-2001, 91% was under protected categories, while 9% was village production forest; only 5% of all land allocated was for crop and livestock production (MAF 2003b). Moreover, people working in these areas agree that the last two steps of the process - extension and monitoring and evaluation - are rarely included. MAF acknowledges that LUP/LA has been inconsistent and ineffective because the process has been more prescriptive than participatory, and implemented by untrained staff. Problems are seen not so much in the programme *per se*, but in the way that the process is conducted.

It is very encouraging to see such problems recognised at high government levels, and that progress is being made in finding ways to increase capacity and bring more coherence to planning and implementation. Work in Huaphanh Province under an Asian Development Bank (ADB) supported shifting cultivation stabilisation project, for example, is piloting ways to use the full participatory approach with local staff in specific villages. Their work underscores the importance of a phased approach that puts very substantial effort into local capacity building and participatory zoning of village lands before any household land allocation is considered (Jones 2003).

There are also capacity gaps in the tools and technologies used at different levels. Strategic visions and policies employ notions of natural resources and land use zoning that require comprehension of broad landscapes in provinces and districts. Capacity is emerging in central government units to use tools such as Geographic Information Systems (GIS) to help provinces and districts to more clearly see local distributions of factors that lead to and follow from central policy visions for the future. For example, Figure 8 shows some map images reflecting central policy perceptions generated at NAFRI for Luangprabang Province.

Program	Central	Province	District	Village
Poverty Eradication (NPEP)	Policies & targets	5-year plans & budgets	Planning & budgeting under district 5-year plan, manage, evaluate	Development & revenue plans, collect socio-economic data, implement, monitor impact
Shifting cultivation	Policies & targets	Meet annual reduction targets	Meet annual reduction targets	Adapt land use practices
Land & Forest Allocation	Policies & targets	Plans to meet targets	Conduct 8-step participatory land use planning and land allocation processes	Participate in zoning & allocation processes, adapt land use practices
Opium Elimination	Policies & targets	Planning, coordinate with projects	Help implement	Implement, adapt livelihood where applicable
Village Consolidation, Relocation	Policies & targets	Identify sites, planning, meet targets	Help identify sites, propose plans, implement, meet targets	Relocate fields & homes as necessary
Integrated Watershed Management	Policies & targets	Strategies for larger watersheds & priorities for sub-watersheds	Conduct 7-step planning process, include zoning, development interventions, conservation, implement	Participate in all planning and zoning processes, implement
Agricultural planning & Agro-ecological zoning	Support provincial planning	Provincial agricultural plans for zones, help implement	Help identify farming system zones & plans, implement	Provide information, adapt land use as necessary
Agricultural Extension and Support	Research & extension support responding to provincial needs	Technical support responding to district needs	General farming system extension interacting regularly with villagers	Village volunteers, farmer groups, interact with extension
Production Forestry		Field surveys, plans, manage implementation, monitoring	Organize forest management units, implement plans	Village forestry organization, contract with FMU, implement

Figure 6: Examples of major duties under decentralising upland programmes

So far, images such as these are primarily used to communicate central policy visions and perceptions to provincial and district levels. However, as provincial capacity to use such tools builds, they can greatly assist multi-directional information flow among levels and sectors. A few pilot projects are beginning to build basic capacity for such work in some provinces.

Constrained land use and vague livelihood opportunities

Most policy tools used to induce transformation of land use and livelihood systems in the uplands have centred on control of access to land resources. The central focus of such efforts has been on ‘stabilising’ shifting cultivation, which is linked with forest destruction, watershed deterioration, opium production, and even ‘backwardness’. Whether one agrees with this reasoning or not, it is clear to villagers that serious efforts are underway

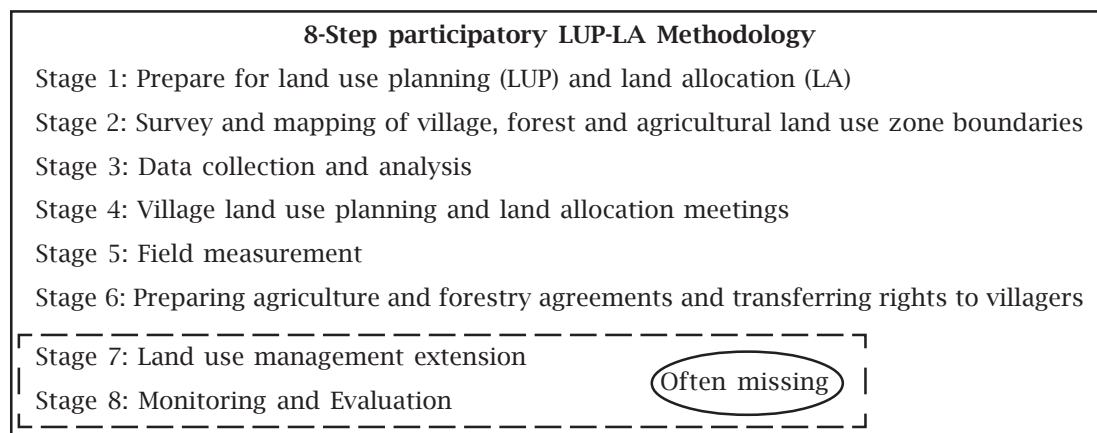


Figure 7: Land & Forest Allocation Approach

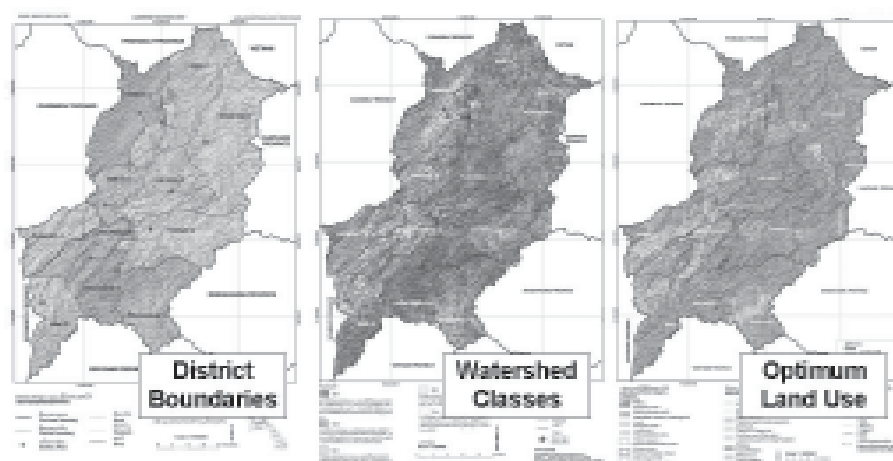


Figure 8: Policy Perceptions for Land Use Planning in Luangprabang Province

to constrain their ability to continue *hai*-based land use as in the past. Indeed, a substantial percentage of villagers appear prepared to accept such changes if it will improve their lives. Figure 9 summarises various constraints encountered by farm households in upland zones.

Several of these constraints also focus on changing settlement and land use patterns, and there appears to be increasing movement of populations down from mountain areas to roadside settlements. With very little monitoring to identify or track such movements, and few efforts to prepare receiving sites for this scale of influx, a range of issues and problems are emerging both for previous and new occupants in these areas. The land use planning and land allocation (LUP/LA) process is seen as a key tool for reducing the turbulence and uncertainty associated with new land use constraints and settlement patterns. As we have seen, however, there are still many obstacles to its effective implementation as conceived at policy levels.

While land use constraints are many and increasingly clear, and villagers are expected to make major transformations in their livelihoods within a short period of time, opportunities for new livelihood activities (often in areas to which they are newcomers) remain vague. Livelihood activities identified in the agriculture vision and master plan that would be directly aimed toward increasing (rather than constraining) production in sloping lands are centred on:

- ▶ Small-scale irrigation to improve rice stocks and diversify production.
- ▶ Agroforestry for subsistence, livestock feed, and/or marketable commodities.
- ▶ Expanded livestock production.
- ▶ Inland fisheries.
- ▶ NTFPs.

Access to commercial markets is an important component of what the government is promising villagers who stop shifting cultivation, relocate to access corridors, participate in land use zoning, and comply with land use practice constraints. The strategy for marketing and agro-processing in the Master Plan (JICA 2001) focuses on:

- ▶ Road access.
- ▶ Market information.
- ▶ Grading and standards to enhance marketability and product-unseen trading.

Access roads are progressing, and Figure 10 shows major road connections (including new roads being built under projects for the Greater Mekong Subregion (GMS)) and nearby towns in neighbouring countries. Activities under the other two components appear not to have begun yet, and reports of commercial market development are mixed. Anecdotal evidence indicates that some households are becoming assemblers and traders of agricultural or non-timber forest products, or joining trucker groups to service needs along new roads. Overall, however, markets and marketing are still seen as a limitation and 'problem' in most mountain provinces. There is a clear need for substantial action to facilitate development of commercial opportunities for upland areas if the government is to fulfil its promise to villagers whose livelihood systems they seek to transform.

Given the constraints to upland production, livelihoods upon which transformations need to build, and the context Laos faces vis-à-vis neighbouring countries under liberalised trade, recent informal views in MAF see no competitive advantage in large quantities of major field crops. Instead, opportunities are seen for moves into more diversified commercial production. Since Vietnam and Thailand are dominant in global rice markets, competitive advantage for Laos is seen to lie in non-rice niche markets both at regional and international levels. Products of upland livelihood systems that may enjoy competitive advantage in such markets are seen to include:

- ▶ NTFPs and agroforestry products
- ▶ Organically-farmed produce in border areas.
- ▶ Handicrafts
- ▶ Livestock.

Overall, such niche items, when properly graded, sorted, packaged and transported to regional markets, are seen to have potential for major impact on household productivity and income.

Competing Non-Agricultural Land Use

- ▶ Increase permanent forest cover
- ▶ Increase biodiversity conservation areas
- ▶ Increase protected watershed areas
- ▶ Increase production forest areas

Spatial Organisation of Land Use

- ▶ Conform to agro-ecological zoning
- ▶ Conform to land capability/optimum land use zoning
- ▶ Conform to watershed classification and management plans

Agricultural Practices

- ▶ Stop shifting cultivation, phase out fallows
- ▶ Decrease upland rice
- ▶ Stop opium cultivation
- ▶ Stop agricultural cultivation on steep slopes
- ▶ Increase trees and perennials
- ▶ Do not use chemical inputs

Settlement and Land Use Arrangements

- ▶ Relocate villages (voluntarily) by enticing them out of remote areas
- ▶ Consolidate into larger permanent settlements along access corridors
- ▶ Demarcate village boundaries
- ▶ Demarcate land use zoning in village areas
- ▶ Allocate fixed household land parcels under prescribed limits

Figure 9: Constraints in Uplands

If these are indeed the types of alternatives offered to upland households, there are important implications regarding how marketing, extension and research activities should proceed. In particular, there is an urgent need for a concerted effort to explore markets for these types of products, and to investigate how market requirements and capacity match with potential production capacities and abilities. Moreover, research and extension service systems need to develop capacity to provide meaningful and timely support appropriate for niche products from diverse ecological, locational, social and cultural contexts in the uplands.

Impacts on upland communities and their livelihoods

Recent policy and strategic vision documents embrace holistic views on transforming livelihoods of poor upland villagers. Thus, while policies seek more allocation of household resources to commercial enterprise, there are also concerns about basic food security and the need to build incrementally on what already exists. Household livelihood domains can be seen as centred on their basic resource – household labour, a shorthand term for human resources that includes knowledge, skills, health, etc. Decisions allocating other resources follow from evaluation of overall expected returns to effort.

Household livelihood strategies affect how resources are allocated among available opportunities, which can be land-based or non-land-based, based within the ‘subsistence core’, based in activities centred on commercial production (if available), or based in enterprises managed at household, group, or community levels.

Descriptions of more traditional ‘farming systems’ found in policies, strategic visions and many studies, recognise that resources are allocated across a mix of opportunities, and usually result in a combination of agricultural and forest products. Indeed, shifting cultivation uses forest regeneration to maintain productivity, resulting in much ambiguity about whether products from fallow fields are agricultural or forest in nature.

To help explore existing land-based enterprises (‘farming systems’) Figure 11 depicts major ‘portfolio options’ for core subsistence enterprises. Major options include:

- ▶ Upland fields.
- ▶ Paddy fields (if available).
- ▶ Various types of homegardens.
- ▶ Small and large livestock.
- ▶ Hunting and fishing.
- ▶ NTFPs.

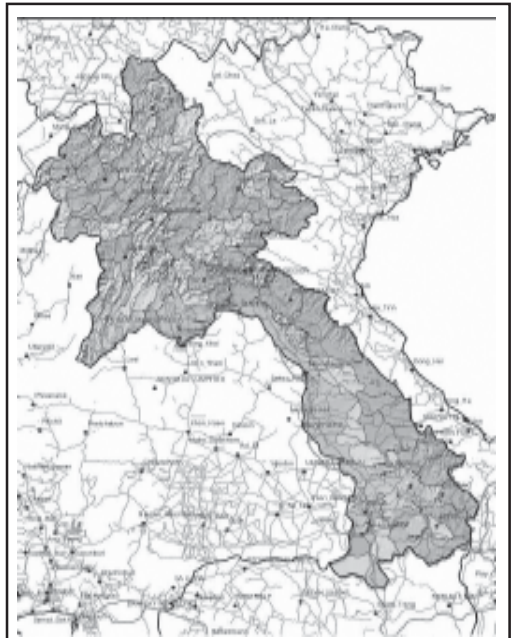


Figure 10: Connecting Roads & Towns

Households allocate their resources (labour, knowledge, land and inputs) among options, depending on access, productivity, risk or other key characteristics associated with each, as well as on their perceived needs, preferences, and opportunity costs. System outputs can meet immediate subsistence needs or go in to reserves, and any surplus can be traded or sold (if possible) to help meet subsistence, savings or capital investment needs.

As households, lineages, and communities engage in various component enterprises over the years and through generations, they build a knowledge base about the lands, crops, wild plants, and animals within their management and production domain. This continually evolving familiarity with how plants and animals prosper or suffer under the range of conditions found in local domains is an important input into agroecosystem management practices, and a major resource for further transformations. A few examples are instructive:

- ▶ Upland people depend on forests for subsistence and income generation. Benefits from forests include food, wood, fuel, NTFPs, land for crops, shifting cultivation, tree planting or regeneration, and livestock feed and fencing. Associated (often extensive) knowledge of wild species found in local fallows, forests, and waters, and how they can be used for human benefit, complements knowledge of cultivated species, providing a basis for the domestication processes that help livelihoods adapt as conditions and needs fluctuate.
- ▶ Since paddy sites are very limited, upland fields (*hai*) are often the main source of rice, along with other products. The degree to which a household can meet its subsistence rice needs is considered a main indicator of poverty. However, since upland rice cannot be grown in a field continuously without yield decline, traditional technologies use forest regeneration to maintain productivity without chemicals. The many types of such systems are viewed simply as 'shifting cultivation', and thus targeted for 'stabilisation'. The NAFRI socio-economics unit is studying impacts of policy disruption on rice self-sufficiency, and work by Dr. John Raintree and his colleagues is presented in a paper in this volume.
- ▶ Livestock provides food or draught power as well as a growing store of wealth that can be mobilised for cash, trade, dowries, etc. Since feed is usually from crop residues, scraps, and/or wild or volunteer plants, livestock crosses household-community land and domesticated-wildland boundaries according to needs, seasons, or opportunities. Barriers to livestock production are often obtaining initial stock and feed sources with reliable continuity, while risks are disease, weather and theft.
- ▶ Homegardens are often a rich repository of germplasm, knowledge and familiarity that can be easily underestimated. Homegardens can have a variety of forms and locations that can vary by season and other conditions, and are frequently diverse

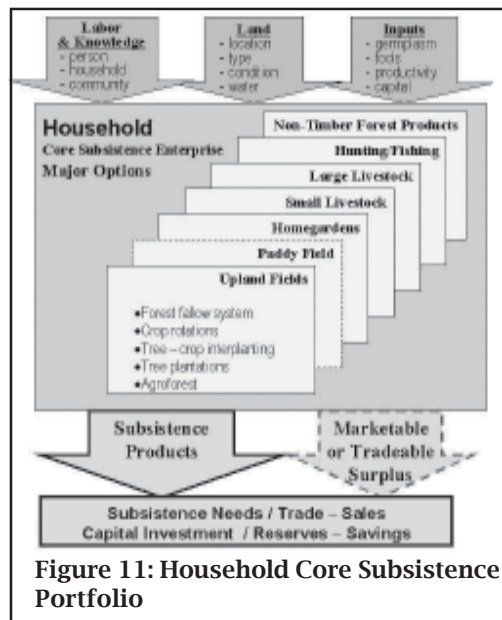


Figure 11: Household Core Subsistence Portfolio

mixes of exotic and domesticated species to meet nutritional, herbal, medicinal and even aesthetic or spiritual needs; they are also an ‘incubator’ for observing and evaluating newly acquired species. Thus, they are a pool of plants, knowledge and experience from which larger specialised commercial plantings can be built, if and when reliable marketing opportunities emerge.

The overall mix of a household enterprise portfolio reflects current livelihood strategies. Whenever there is a disturbance or stress (or new opportunity) that affects one component, the overall system seeks to compensate, adapt, or ‘cope’ by readjusting allocations among the components. Since disturbances by weather, disease and war have come and gone many times in the past, systems have developed mechanisms to make it through hard times – wild or domesticated ‘famine crops’, and social or kinship networks for emergency assistance, are two examples.

Most government policies seek to induce transformation of household portfolios by constraining some components (especially *hai* cultivation), and opening new opportunities for others (especially road access and government services). This results in major sustained changes in the operating environment, and can challenge the capacity of households and communities to make major adjustments in short periods of time. One study even proposes that such sustained pressures for rapid change be viewed as an ‘ongoing disaster’ for livelihood systems (Brahmi and Poupphone 2002).

Current constraints are affecting household livelihoods through impacts on specific components of their core subsistence enterprise portfolio:

- ▶ **Shifting Cultivation Stabilisation.** These policies eliminate the forest fallow option from the upland field component, as in Figure 12, thereby limiting that option to other types of technologies. Fallows are seen as degraded or destroyed forest, rather than as a phase in an agricultural cycle, and since lands ‘abandoned’ for more than three years are reclassified as regeneration forest, there is pressure to not allow forest to regenerate for more than three years. This is cited as evidence of system deterioration, making calls to convert to permanent fields a bit of a self-fulfilling prophecy. While recent policies show more flexibility, it is too late for many.

- ▶ **Zoning and allocation.** Land use zoning within village boundaries can affect several components, either positively or negatively. The key determinant of the nature and degree of impact is the way in which the zoning is conducted. Since the participatory poverty assessment indicated upland people associated land allocation with increasing hardship (ADB 2001), these issues are being studied. Early results are that village

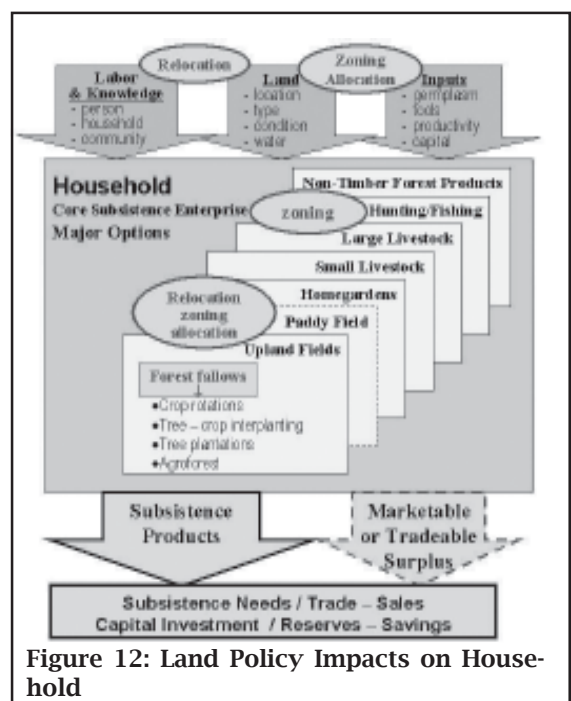


Figure 12: Land Policy Impacts on Household

zoning should set the context for identifying why, where and how any household allocation should be done.

- ▶ **Relocation.** This changes the whole land context of household enterprise, which could be for better or worse, but will certainly be different. Where new conditions are substantially different from the old, there can also be an impact on the relevance of local knowledge related to land resources, as well as the likely viability of plant and production system options. Major change in social capital is likely, including relationships among households and villages at the new site. New opportunities may also emerge, so there could be a net gain in household well-being, which is, of course, what the government hopes will happen.

Government strategies for opening new opportunities and addressing major issues of land use transformation centre on access to government support services, new production technologies, and commercial markets. The remaining sections briefly review these three areas.

Building support services for agriculture and forestry

Access to agricultural support services is another component of promises to people who transform their livelihoods according to government policies. Officers at provincial, and especially district levels, are key in this process. Policies recognise the urgent need to build staff capacity to properly implement programmes, as well as the need for responsive and timely inputs or assistance from central institutions. This section briefly reviews the development of institutions for agricultural technology generation and extension services. Services such as micro-finance, education, health and others, are also important, but beyond the scope of this paper.

Problem-solving adaptive research

There is a modern myth in many development organisations that somewhere there is a repository of ‘proven’ (and often ‘simple’) agricultural technologies that can just be taken ‘off the shelf’ for implementation. This is at best a partial-truth, and in most cases simply not true, especially for livelihoods in ecologically and ethnically diverse upland areas. Ad hoc projects promote production of one crop or another using lowland or imported technology, and may see ‘success’ with project support, but few results can survive beyond the end of a project. As John Raintree notes (paper in this volume), complex problems require integrated solutions.

Recognising these issues in its strategic vision for agriculture, the Lao government reorganised the Ministry of Agriculture and Forestry (Figure 2) to ‘harmonise’ efforts to develop and adapt agricultural research and extension systems to better support the livelihood transformations it seeks to induce in rural, and especially upland areas. As a result, the National Agriculture and Forestry Research Institute (NAFRI) was established in 1999 to consolidate, systematise, and coordinate a more coherent and problem-solving approach to adaptive research within MAF. While it is still a very young institution, composed largely of research centres formerly under sub-sector oriented line agencies (Figure 13), it is the largest single unit within the Ministry, and it is making strong efforts to achieve its mandates.

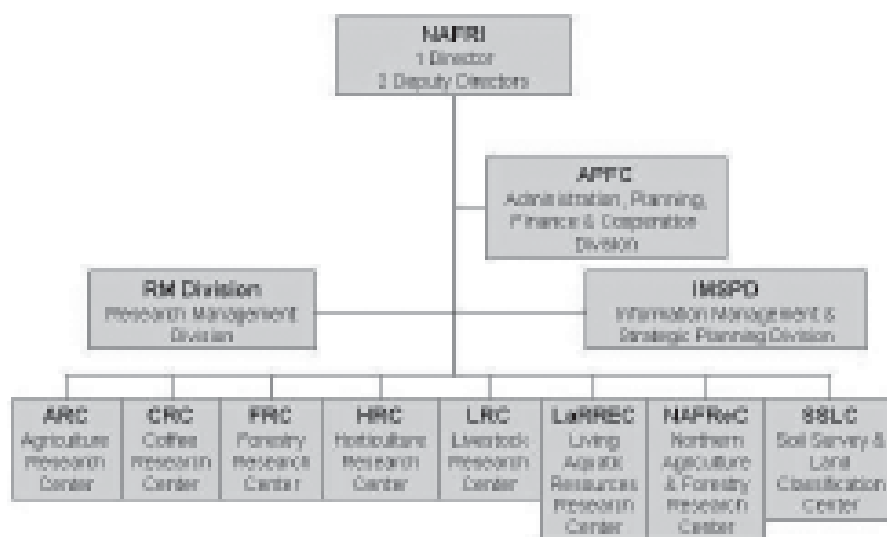


Figure 13: NAFRI Organisational Structure

Building on the agriculture vision (MAF 1999), NAFRI articulated its research strategy for 2001-2005 and vision to 2010 (NAFRI 2001), with emphasis on problems limiting production and causing resource degradation in agro-ecological zones. A farming systems research (FSR) approach is to coordinate activities of its research centres, integrated at the conceptual level with a watershed perspective in the physical landscape, and a livelihood focus in human dimensions. NAFRI seeks to develop leadership and capacity to provide responsive support to DAFO and PAFO needs through five programme areas that strengthen and support work by its constituent research centres:

1. Farming systems research/extension (Gibbon 2002; NAFRI 2003c) to develop an approach to integrate complementary lines of technology to improve rural livelihoods, including links with the extension system.
2. Socio-economic analysis of key issues related to livelihood change, increased income, agricultural intensification in agro-ecological zones, commercial market opportunities and constraints, village group learning and collective action, etc. (NAFRI 2002).
3. Forestry, and especially agroforestry, NTFPs, joint forest management, forest regeneration in protected areas, and other key emerging issues (MAF 2003b).
4. Land management, with focus on land classification and zoning, including procedures, methods and tools for participatory land use planning and land allocation.
5. Information, focused on increased quality and quantity of information flow related to adaptation and dissemination of agricultural and forestry technologies (NAFRI 2003b).

NAFRI collaborates with the Consultative Group on International Agricultural Research (CGIAR) and other international research centres and advanced research institutes. The Lao-Swedish Upland Agriculture and Forestry Research Project (LSUAFRP) is assisting NAFRI to implement its strategy (LSUAFRP 2001).

NAFRI, MAF, and the Lao government generally recognise that, except for lowland rice and livestock health, there has not yet been a large flow of practical information on agricultural technology from central institutions to provinces, districts, and villages. How-

ever, they are building capacity (NAFRI 2003a), and anticipate future increased flow and quality.

Demand-Driven Agricultural Extension

Government and NGO experience indicates that participatory approaches are needed to seek localised agricultural solutions appropriate for environmentally and ethnically complex upland conditions. Under decentralisation policies, villages, districts and provinces urgently need support to meet goals with the quality envisioned in policies. A “demand-driven” extension system is seen as an essential core component of these efforts.

The National Agriculture and Forestry Extension Service (NAFES) was established in 2001 as the extension counterpart to NAFRI. DAFES and PAFES staff in DAFOs and PAFOs are to be upgraded, and NAFRI, NAFES and farmers will jointly develop options consistent with local opportunities and market signals. Two projects will help develop the system:

- ▶ The **Laos Extension for Agriculture Project (LEAP)**, based at the Central Extension and Training Development Unit (CETDU) and funded by the Swiss agency for Development and Cooperation (SDC), is developing extension methods, delivery systems and training and coaching activities, with pilot sites in Luangprabang, Champasack and Saravane provinces.
- ▶ The **Lao-Swedish Upland Development and Poverty Alleviation Programme (UDPAP)** was designed as a pilot project for two districts in each of two northern provinces (Luangprabang and Oudomxay), to refine the full set of processes from village to national level for further application around the country.

Although approval by the Swedish Development Agency (Sida) of UDPAP has been delayed, its proposed structure (NAFES 2002) helps clarify efforts to build a demand-driven extension system. Key components are:

- ▶ ***Village development*** based on an annual village development cycle, using participatory methods to identify, implement, and monitor development activities with farmers.
- ▶ ***District response*** to support village plans, with DAFES coordinating with other district agencies, and seeking provincial and central support and assistance as needed.
- ▶ ***Provincial support*** based in PAFES to provide technical support using subject matter specialists from PAFO sections, and facilitate central assistance as needed.
- ▶ ***Central Support*** from NAFES using methods, processes, and procedures developed in cooperation with key sectors. NAFES works with NAFRI to screen indigenous and exogenous technologies as well as to produce extension materials for farmers and all staff.
- ▶ ***Market support*** will include a market information service, inclusion of marketing in all extension programmes, assistance for periodic markets, and training for villagers and staff.

LEAP is seeking consensus and direction for the system by assessing existing methods used in Laos by NGOs and projects (LEAP 2002a, 2002b, 2002c); and through workshops to help clarify current status and future directions of the system, as well as where projects can go to obtain assistance that is currently available (Gerner 2003). Extension process development under LEAP so far includes:

- ▶ Development and testing of a training needs assessment tool for district extension agents to use with villagers in their area (LEAP 2003).
- ▶ Three rounds of training for 'master trainers' and provincial and district staff in pilot areas.
- ▶ Application of a coaching tool to help identify successes, gaps, failures, and where to go next (Gerner 2003).

Financing of agricultural extension is also under study (LEAP 2002d).

Potential improved livelihood component technologies

Recent informal views in MAF indicate agricultural technology development should target components of upland livelihoods, and that first priority should be on rice intensification, followed by livestock, agroforestry and cash crops, NTFPs and community natural resource management. This paper will now take a brief look at technologies for each of these priority areas.

Rice intensification for household safety nets

From a villager's or the national point of view, rice production is the most important aspect of food security. The Lao-IRRI Rice Research and Training Project (LIRRTP) has supported development of the Lao National Rice Research Program (NRRP) since 1991, with funding from the Swiss SDC. NRRP has become the most advanced agricultural research and development programme in the country, and has helped Laos achieve national level rice self-sufficiency. It has developed considerable research and training capacity, made extensive collection of rice genetic material including a major contribution to global rice gene banks (Rao *et.al.* 2001), and developed a number of new cultivars both in and for Laos (Schiller, Rao *et.al.* 2001). A resource book on soil fertility management in lowland rice is available for work with lowland farmers (Linguist and Sengxua 2001). The NRRP has advanced to the point where a new phase of LIRRTP will phase out IRRI resident international staff in Laos (LIRRTP 2003). The emphasis of this work has been on lowland paddy rice, for which cultivars, methods, trainers, and training materials are now available. Production and distribution of improved paddy rice seed is now seen as being an available technology with potential for high return, quick yielding development activities (JICA 2001).

Although it has received a much lower priority, there has also been research on upland rice in mountain areas, particularly in Luangprabang (Schiller, Linguist *et.al.* 2001). Early work by Walter Roder (2001) and Lao colleagues made major contributions to understanding traditional and transitional upland rice shifting cultivation systems in MMSEA. Roder and Keith Fahrney made observations regarding upland rice research (Roder 2001) that include:

- ▶ As long as rice production for home consumption remains the main objective, slash-and-burn farmers in Laos will have only limited options for changing their land-use practices.
- ▶ Widespread problems include access to resources and markets, challenges in changing from slash-and-burn to mulching and integrating livestock and fallow/fodder species.
- ▶ Improvements to rice-based systems such as increased rice yield and labour productivity will accrue by incorporating other components (especially forage/livestock rotations).

Nevertheless, IRRI is seeking support for a project to identify improvements in rice production in both small pockets of paddy and upland rice systems in Laos and Vietnam.

Livestock

Another area of relative strength in the Lao research and development system is in livestock health programmes, making this the second area with potential for high return-quick yielding development activities (JICA 2001). A European Union (EU) funded project is helping establish an animal health information system and a diagnostic laboratory as well as improving vaccine production and extension services. Livestock nutrition and selection/breeding programmes are complementary lines of work that are also mandated for research under NAFRI.

Livestock have long been important in upland agroecosystems, and much analysis has explored their role and potential pathways for development. The Australian Centre for International Agricultural Research (ACIAR) published a collection of useful materials from a major workshop in Vientiane shortly before NAFRI was established (Chapman *et.al.* 1998). All strategy documents place high priority on livestock and forages in the uplands, especially integrated livestock-agroforestry systems (NAFRI 2001). The Forages for Smallholders Project (FSP) managed by CIAT focuses on improved fallows (Fahrney *et.al.* 1998) and other niches (Horne 1998) for forages in upland landscapes of northern Laos. They are developing forage technologies in partnership with farmers in upland areas as well as building on a network of farmers, researchers and development workers across Southeast Asia. Two booklets have been published in Lao language (Horne and Stur 1999, 2003).

Agroforestry and cash crops

Recent-era collaborative research on upland agroecosystems involving MAF and international researchers emerged and grew during the nineties (SUAN 1991, Chazee 1991, Fujisaka 1991, Ireson 1991, Roder 2001, LSFP 2001). Based on such research and growing international contacts, interest grew in how agroforestry might be useful in upland areas of Laos. Trials were built into various projects, mostly 'alley-cropping' inter-plantings of crops and trees, and often oriented along contours as a form of 'conservation farming'.

Agroforestry concepts continued to evolve (Thomas 2001), recognising traditional and new forms of 'sequential agroforestry', 'complex agroforests', and 'landscape agroforestry', with impacts on both livelihoods and environmental services at larger spatial scales. A shift from multi-purpose tree species to tree domestication is bringing more and new challenges. Related scientific tools are emerging to help explore local knowledge, simulate complex ecological processes, and analyse landscape interactions using Geographical Information Systems (GIS), as well as to understand how policy, economic, institutional and social conditions can support, restrict, or influence directions of system development. The conceptual 'arena' of agroforestry is expanding rapidly, and associated training materials are emerging (ICRAF 2004). While notions of 'improved fallows' in shifting cultivation systems are now of considerable interest, concepts of agroforests and landscape agroforestry are just beginning in Laos (although many examples exist). These categories may help encourage work on livelihood-oriented agroforestry:

1) **Improved Fallows and live fences.** This type of agroforestry focuses on the use of perennials to:

- ♦ intensify fallow fields in order to improve upland rice production still necessary in some areas;
- ♦ provide fodder for livestock.

Projects have experimented with various plants that provide marketable products, livestock fodder, or live fences. It can be argued that once a farmer begins to make such investments, these are really no longer 'fallow' fields'. Thus, it would probably be more appropriate (and accurate) to call them crop rotations, which might help reduce the negative views of fallow fields due to their links with shifting cultivation.

2) **Conservation Farming.** Conservation farming agroforestry focuses on planting perennials or natural vegetative strips along contours in fields on steeply sloping lands where crops are grown. They help control soil erosion, and hedgerows can be sources of livestock feed. Natural vegetative strips can be a low-cost way to help form small terraces, and trees yielding various types of crops, fodder or other products can later be planted into the strips.

3) **Tree Gardens.** Tree gardens are areas where perennial plants are grown on a long-term basis. They may be simple or complex in species diversity, stand structure or age class, and may yield one, a few, or many types of products. Horticultural research in Laos is limited (except for coffee) and NAFRI's new Horticultural Research centre needs time to produce practical new information. Research on forest species falls under the Forest Research Centre (FRC). For the near term, small farmer-operated tree nurseries linked with demonstration plantings are a useful approach for stimulating innovation in developing tree garden options:

- ♦ **Fruit trees.** Homegardens can be good examples of diverse plantings of fruit trees that help household nutrition and can generate surplus for trade or sale. Improvements can build on local knowledge and have a rapid (for trees) impact on household food supply. Experience with more extensive and less diverse commercial orchards is building in highland opium crop substitution projects. Commercial ventures need technical inputs, care, quality control and time to develop into mature, profitable operations.
 - ♦ **Plantation crop trees.** Examples in Laos include para rubber near the border with China as well as coffee and tea in the south. While research on plantation crops is planned, strategic visions indicate large plantation crop areas are not a priority for upland programs.
 - ♦ **Domesticated NTFPs.** Examples now include paper mulberry, rattan, and cardamom, but there is obvious scope for great expansion of this menu. NTFPs can have production options under domesticated, semi-domesticated or managed natural forest conditions.
 - ♦ **Timber trees.** Small-scale teak plantings in northern provinces are one example of a 'forestry' timber farming system component seen as having prospects for producing wood for processing into products for domestic and international markets. This may be an area for expansion, if market and processing chains emerge (MAF 2003b).
- 4) **Organic Produce Gardens.** These are specialised plantings of annual and/or tree crops grown for sale to chemical-free produce markets. Promising examples are seen with vegetables, dried bananas, peanuts, sesame and animal feed in border areas. Major questions include:

- ♦ Where are the 'green' markets for organic produce, and what are their prices, capacities and quality requirements? While urban consumers are willing to pay 'a bit' more, they expect no blemishes or imperfections, which can be difficult to achieve without chemicals.
 - ♦ Professional organic farming needs technologies for plant protection and producing large amounts of high-quality compost or mulch, etc. suitable for use in Laos.
 - ♦ Consumers (or retailers) must believe they get what they are paying for. How can quality assurance or certification mechanisms be developed and effectively implemented?
- 5) **Other crops.** While NAFRI sees the need for improving field crops (especially maize, legumes, cassava, tubers) and industrial crops (cotton, sugarcane, tobacco) (NAFRI 2001), MAF appears to prefer diversified production targeting 'niche markets'. There is still a role for upland maize for animal feed, legumes in improved fallows and conservation farming, as well as perhaps tubers or other crops in suitable niches of markets and agroforestry landscape niches.

Non-timber Forest Products (NTFPs)

Policies mandate land use zoning processes within village boundaries. This is an exercise in 'landscape agroforestry' that seeks spatial patterns of agricultural, agroforestry and forestry landscape components that both improve livelihoods and maintain environmental services. Uplands are zoned for protection or regeneration forest to stop shifting cultivation in order to maintain watershed services for downstream society. How can these areas also yield sufficient livelihood benefits to provide incentives for the local people responsible for their maintenance?

NTFPs are seen as a key means for addressing this issue. While some interesting work has been conducted, systematic efforts need to address questions such as:

- ▶ Where are the markets for products suitable for the production zones in question?
- ▶ What NTFPs do villagers believe are most productive and/or profitable?
- ▶ Are there ways to group or 'bundle' NTFPs for development?
- ▶ Are there bottlenecks in NTFP production that could be addressed by 'generic' research facilities (such as propagation)?
- ▶ Might particular forest types or niches be managed in a way to provide a 'suite' of NTFPs?

The draft forestry strategy (MAF 2003b) notes that promising trends are:

- ▶ Increasing interest in NTFP development through domestication in agroforests and home gardens.
- ▶ More effective community NTFP management.
- ▶ Supportive new policies.
- ▶ Private investment in small-scale processing.

Threats to NTFP production include:

- ▶ Deforestation, logging, fire and other disturbances.
- ▶ Increased market access and demand without clear rules for allocation, tenure and management.
- ▶ Local knowledge lost through relocation and changing lifestyles.
- ▶ Knowledge on domestication, management technology, and market requirements is limited.

Community-based natural resource management

Policy strategies emphasise upland land use planning based on farming systems and agro-ecological zones. Provinces are to take the lead, based on policies and research findings. The question arises of how do we know whether land use zoning and agroforestry landscape management are achieving their stated goals? For impacts on local livelihoods, the NAFRI socio-economics unit is developing diagnostic methods to assess local conditions and the impact of policy on local livelihoods (LSUAFRP 2003a, 2003b). For impacts on environmental services, methods are being developed in neighbouring countries for community-based monitoring of stream flow and water quality to clarify agroforestry landscape performance. Analytical tools and modelling can help 'fine tune' zoning and land use restrictions within each zone. At some point, such tools may be useful for improving watershed management in Laos.

The need to maintain environmental services places many constraints on land use by upland communities. Many benefits of these services go to lowland areas that are also benefiting more quickly from development. The need for more equity in lowland-upland relations is recognised. NPEP is helping compensate with investments in infrastructure and services. Might there also be longer-term mechanisms that could help improve equity by rewarding upland households' and communities' efforts to maintain these services?

A Southeast Asia project on 'Rewarding the Upland Poor for Environmental Services they Provide' (RUPES) is conducted through a regional consortium coordinated by the International Centre for Research in Agroforestry (ICRAF). The project seeks to explore and test approaches through which upland communities, who are asked to bear many costs of providing environmental services (water, biodiversity, carbon stocks) that benefit larger societies (downstream, national, global), can receive a more equitable share in the benefits provided. Might the Lao PDR be interested in participating?

Agro-processing and micro-enterprise

Micro-enterprise, especially if based on processing materials from local land use systems, is seen to have great potential for improving incomes in upland areas. Simple forms are household assembly, trading and/or transport of local agricultural and forest products (already beginning in some areas) or use of specialised skills to provide local services such as local plant nurseries. With more skill and investment, processing of agricultural or forestry products can help local people expand to new markets, capture added value, and transform products into forms more easily stored and transported. Micro-enterprise can expand beyond the household level in various ways, thus providing jobs and markets for local agricultural and forest products.

Production for commercial markets

Policies view commercial enterprise as an essential element of upland development, and livelihood options are expected to flourish following road improvements. Current visions place particular emphasis on production of 'niche products' derived from various components of ecologically and ethnically diverse upland landscapes. However, if there is to be serious development of commercial production, agro-processing, micro-enterprise, and production and marketing chains, various issues need further thought and consideration, such as:

- ▶ Survey and analysis of potential marketing opportunities is needed early in the process of considering commercial production or micro-enterprise. While nearby and national markets are important, their currently limited capacity and value for many products may make at least regional markets worth consideration. Indeed, it may be useful to couple exploration of markets for agricultural commodities with markets for processed products.
- ▶ Product identity is important for capturing added value and competing in higher value markets. If a range of 'niche products' is desired, it may be useful to formulate product lines marketable under a single identity. In developing product identities in Laos, one might survey local and nearby areas for sources of widespread notoriety; some areas may already have reputations for traditional products that may serve as a base. Places of historical significance, such as the Luangprabang World Heritage site, could also help shape integrated tourism and product lines with complementary images and markets.
- ▶ If areas aspire to produce a diverse line of such 'niche' products, there may be marketing chain infrastructure and technologies that can be developed in a 'generic' manner capable of producing, processing and marketing a range of products, rather than a single commodity or product. The Royal Project Foundation in Thailand provides an example.
- ▶ Quality control standards and processes are essential, especially in premium markets, and even in more general markets where competition is substantial and consumers have rising incomes and expectations. A market identity can backfire if it becomes associated with poor quality. Some related national projects are being proposed to donors.
- ▶ Investment costs for developing commercial production, processing, or other micro-enterprises are a recognised bottleneck. While it may be too early to assess their viability, projects are developing and testing financial mechanisms and institutions (BOL 2002).
- ▶ Although research and development of technologies and management systems is still in the early stages in Laos, relevant experiences, technologies and equipment are available in China, Thailand and Vietnam. These can be used as a source of ideas for adaptation to conditions in Laos. The question of how to help develop local entrepreneurial skills is an urgent and important challenge.

Challenge for the Workshop

While the challenges are many, a broad range of experienced and motivated people participated in this workshop. The author of this paper sincerely hopes that the range of promising alternative upland livelihood opportunities can be expanded, and that further

efforts under NPEP for development in upland communities can be improved and accelerated as a result of discussions at this workshop, and the subsequent actions they can inspire and help organise.

Acknowledgement

This paper summarises major findings from an ICRAF report to the International Fund for Agricultural Development (IFAD) (Thomas *et.al.* 2003). More details and references can be found in that report

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