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Shifting Cultivation in Thailand, Laos and Vietnam: Regional Overview and Policy Recommendations

by Stephen Bass and Elaine Morrison

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Shifting Cultivation in Thailand, Laos and Vietnam:

Regional Overview and Policy Recommendations

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Copies of this report may be obtained from the International Institute for Environment and Development. Copies of companion reports for Thailand, Laos and Vietnam are also available from IIED, and from the national research teams. National research teams also hold copies of national reports in local languages. (Contact addresses for the national research teams are given in Appendix I of this report).

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Stephen Bass and Elaine Morrison
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EXECUTIVE SUMMARY

Background

Shifting cultivation has traditionally been a dominant feature of the highland landscapes, economies and cultures of Thailand, Lao PDR and Vietnam.

There are very many forms of shifting cultivation, developed to suit local circumstances and needs. In many areas, rotational shifting cultivation has been practised continuously for several generations. In such places, local agroecosystems have come to be characterised by an ever-changing "spectrum" covering high forest, to newly-cleared land, to cropped land, to fallow land in which forest is regenerated - and often managed.

Shifting cultivation systems are largely subsistence-based. They have shaped the livelihood of the majority of the highland population, providing basic food and fibre needs from cropped, fallow and forest land, and occasionally offering sources of cash income e.g. from cultivated opium and from bamboo shoots and mushrooms gathered from the forest. They are not merely land management techniques; the cultures and economies of the many highland groups of these countries are intimately bound up with their systems of shifting cultivation. This is partly why efforts at "eradicating" shifting cultivation have proven so difficult.

Dynamics of shifting cultivation

Until very recently, the situation regarding shifting cultivation in Thailand, Lao PDR and Vietnam was relatively unchanging. Individual shifting cultivation systems had been developed by different ethnic groups, to provide reasonably stable yields of subsistence goods and services in specific ecological circumstances, and to deal with the normal vagaries of climate, pest outbreaks, etc. With population densities low, and infrastructure for trade and migration minimal, few major changes took place to disturb such systems.

However, over the last twenty years, a number of forces have been introduced to the shifting cultivation equation, or have been increased greatly. Existing shifting cultivation systems have not had the resilience to deal with these forces. Indeed, these forces seriously threaten the sustainability of shifting cultivation - sustainability both narrowly delineated within the area in which shifting cultivation is practised and more broadly defined: many systems now appear to have impacts which negatively affect whole highland regions, and even national prospects for sustainable development.

In summary, these *forces* include:

- higher *population pressure* in highland areas and the need to meet *food security* requirements
- the development of *markets* for highland products
- the opening of roads, transport and other *infrastructure*
- the introduction of *monetary* economies

- increasing opportunities for off-farm *employment* and other alternatives to agriculture
- but in some cases, a *lack of suitable conditions* for developing sustainable agricultural alternatives
- *limitations to assistance* from national governments, and in the extent to which interventions are suited to local variations
- changing *national policies on the use and rights over highland resources* (notably forests, soils, water, hydro-electric power and wildlife), *on markets and infrastructure* for highland production (notably policies on cash cropping, upland rice and opium), and *on the integration of highland people* into the nation (notably shifting cultivators in their different ethnic groups)
- forced *relocation* in the name of national security, as well as *resettlement* and spontaneous *migration*
- *international policies* including trade, narcotics control, and external *development assistance* to highland regions
- as a consequence of all the above, *growing inequities* within the nation; and
- the *break-down of community management* of lands under shifting cultivation.

These forces have led to a number of *responses* by shifting cultivators; and these responses have had significant *impacts* on the ground. To paint a general picture, typical responses and impacts have been:

- pressure for shifting cultivators to *produce higher yields*, especially of cash crops. This, together with an inability to secure land rights, technology and inputs to upgrade shifting cultivation systems, has led to:
- the *shortening of fallow periods* to less than that required to rebuild soil fertility, and to regenerate biologically and structurally diverse secondary forest cover, leading to *productivity decline*
- soil erosion and infertility, expressed as *lower yields*; and consequently
- *even greater pressure* on shifting cultivation systems to produce higher yields.

Thus poverty and environmental degradation increase, or the shifting cultivator may respond by changing to other practices, with their attendant impacts:

- a *move to "pioneer" shifting cultivation* in high forest, to appropriate the land and nutrients to be found there
- the *co-option of such pioneer "shifted" cultivators by influential patrons*, as a land clearance machine to assist patrons' land speculation
- government-enforced "*sedentarisation*", and encouragement of settled agricultural and forestry systems, resulting in *diminished land rights, products and social services*, and *indebtedness*, at least for some groups
- increasing *commercialisation of agricultural production*, but with dependence on technology and external inputs, including irrigation systems
- generally greater *integration into the national economy*, with an increase in mobility and off-farm employment.

Policy responses

Policy-makers have observed such impacts on the ground. They have also observed or assumed other environmental problems (notably deforestation, flooding, drought), economic problems (reduction of forest growing stock and sedimentation of dams) and social problems (drug production, drug use and trade, uncontrolled migration, and ethnic conflicts amongst hilltribes/ethnic minorities). In the absence both of clear information on these highland development problems, and of analysis of their association or otherwise with shifting cultivation, policy-makers have tended to assume that shifting cultivation is central to many of these problems.

Policy-makers have also generally failed to distinguish between the different types of shifting cultivation. For example, in Vietnam until the current exercise, environmentally-damaging pioneer systems were not normally distinguished from the potentially benign rotational systems. Furthermore, policy-makers tend to have ignored the fact that shifting cultivation in highland development is a highly dynamic issue: a transitional problem - in a zone of transition between agriculture and forestry, in a transitional period between subsistence, exploitative land "mining" and market-sustained continuous land management.

Partly as a result of this lack of analysis, policy responses to the set of perceived highland problems have *lacked practicality* (e.g. the Lao policy to eradicate shifting cultivation, despite it forming the livelihood for the majority of the population and the huge costs which would be incurred if eradication were attempted). They have *lacked focus* (e.g. until recently, the Vietnamese policies to sedentarise shifting cultivators did not adequately distinguish between regions, ecological situations, social groups and specific shifting cultivation practices). They have *lacked popular support* (in all countries, incentives to stop shifting cultivation were rarely developed with people's participation; and people have usually only very partially taken up the alternatives - sometimes, as in Thailand, the reaction against alternatives has been violent). Policies have *lacked coordination and consistency* (e.g. in Thailand single issues tend to have dominated policy towards the highlands - and different issues have dominated at different times - rather than a consistent and integrated approach). And, finally, they have *lacked a learning and adaptive approach*: efforts in highland development and conservation have largely neglected to take into account indigenous knowledge and the positive values of shifting cultivation systems.

In contrast, there is very little evidence of such policies having led to major gains in terms of improving rural welfare or national incomes, or in slowing forest degradation and other environmental problems. As such, these policies are unlikely to have contributed to sustainable development. The policy process is therefore in need of improvement.

Study organisation

In 1990 and 1991, the Tropical Forestry Action Programme processes of Vietnam and Lao PDR touched on the significance of shifting cultivation issues, as did the analogous

Forestry Sector Master Plan of Thailand. To examine these issues, IED set up three small national teams in Lao PDR, Thailand and Vietnam, and coordinated their work, with support from the Netherlands Ministry of Foreign Affairs.

The national teams worked both separately and together to formulate their research agendas. With slightly differing emphases for each country, the study set out to:

- define the *kinds of information* on shifting cultivation with which policy-makers concerned with highland development should be provided: notably the *relative values* of shifting cultivation and its alternatives (permanent agriculture and forestry) to highland peoples and to the nation
- paint an initial *picture of the status and dynamics* of shifting cultivation in the context of alternative land uses
- define the *criteria of sustainability* by which shifting cultivation and its alternatives can be judged in light of local and national needs, the *characteristics* which make such land uses sustainable or otherwise, and the external *conditions* under which criteria are met and characteristics exhibited
- examine the *policy responses* to shifting cultivation; their impacts on sustainability and other values; and their appropriateness in light of future needs
- suggest *guidelines* for national policy, local (project) planning and further monitoring of shifting cultivation and its alternatives, as part of the sustainable development process
- based on the information generated by the study, make *recommendations* related to existing policies
- based on the recommendations, suggest an *agenda and process for policy discussion* on shifting cultivation.

Field work was carried out using a sampling approach: study sites were chosen to represent a range of conditions, such as different shifting cultivation practices and the evolution of strategies to cope with change. All field teams employed varying degrees of consultation with, and participation of, local people. Field techniques and methodologies were chosen by national teams according to precedent: it was considered appropriate to use nationally-known techniques in order to enhance policy acceptance of results.

Study findings

In all three countries, but especially in Thailand and Vietnam, the teams' work has shown some very significant recent changes on the ground, suggesting a very fast dynamic in land use. Each team has also exposed the inappropriateness of many policy measures. In Lao PDR and Vietnam, the involvement of the teams in ongoing policy dialogue has already helped to frame more realistic and focused policy towards shifting cultivation. In Thailand, the results of the research have been made available to those planning the master plan for the highlands.

In Thailand, in areas where highland population density is relatively high, the extensive development of a road network and of a large, thriving internal market has allowed

shifting cultivators to respond positively to lively market signals encouraging fruit and vegetable production. Many groups have become integrated into the mainstream economy, spontaneously changing from shifting to settled cultivation systems in order to take advantage of the greater food and income security offered by alternatives, but also taking advantage of state benefits and working for wages. The short-term financial rewards have been adequate to compensate for some of the social goods and services lost when shifting cultivation was ceased, although in many cases medium and long-term financial security falls victim to crop failures. A wide range of highland development projects has begun to generate much information about the technical issues of settled highland land use. As a result, "pure" rotational shifting cultivation is now comparatively rare, being confined to more isolated regions of relatively low population density, with fewer competing demands for land, and little potential for market-oriented production (principally the Karen regions near the Myanmar border). However, there are numerous areas where shifting cultivation is carried on as a socially significant (although usually financially marginal) activity alongside settled systems.

The indications are that shifting cultivation will become increasingly rare in Thailand. Where present, it will more usually become an adjunct to permanent agriculture, officially tolerated for its role in farm risk reduction and for the maintenance of cultural/landscape diversity. In most areas, however, there will probably be official disincentives to shifting cultivation, as the security of water supplies in particular is becoming of increasing national importance; and here the issue will be how to compensate local people for the trade-off of shifting cultivation in favour of water. As in the highland societies of other economically relatively developed countries, the highlands of Thailand may become depopulated of younger people, and become resources for tourism, conservation, water supplies, forestry, fruit and livestock production - with the latter three acting as family savings in an otherwise urban-dominated household economy.

In contrast, the population density in *Lao PDR* is much lower; and the road network, market infrastructure and extension systems are very weakly developed in much of the country. These factors, together with the policy of the past few years to encourage each province to be self-sufficient in rice production, have ensured that shifting cultivation remains the predominant way of life of a majority of the Lao population. This is in spite of policies to encourage settled agriculture and forestry in place of shifting cultivation. Here, shifting cultivation will remain central to the livelihoods of most people. There will, however, be a great opportunity in Lao PDR to build productive and sustainable land use systems upon the principles and lessons of shifting cultivation, and to avoid the mistakes of imposed permanent agriculture and forestry.

The situation in *Vietnam* is different again, although it is fast-changing to resemble that of Thailand. Many regions have similar environmental conditions as Lao PDR, but the population density is much higher. Fifty out of the 54 ethnic groups still practise shifting cultivation, even where settled agriculture has been introduced. Population pressure, and the government policy to encourage settled communities, have led to many examples of state-aided sedentarisation, together with some movement of people into less-populated areas. The rapid development of the market system has the potential to encourage this further. Yet, in many areas at present, market signals lead only to an incentive to clear

land, but not to manage it once cleared - encouraging a wholesale return to "pioneer" shifting cultivation.

Vietnam is likely to follow similar highland development paths to Thailand, provided markets and commercial agriculture and forestry can develop in order to bring out highland comparative advantages and encourage investment in land management (as opposed only to land clearing at present). However, shifting cultivation will continue to be of at least secondary importance to many rural Vietnamese for many years to come; and a major issue will be to zone those areas where it should *not* be discouraged.

Shifting cultivation everywhere is in transition, and it will never remain the same. In many areas it will die out, but in some - under conditions detailed in the national reports - it should evolve as a legitimate land management system. The future will continue to bring further changes, and policy must anticipate these.

A number of international dimensions may become increasingly important, particularly as the economies of the region are growing so rapidly. For example, the opening of road trade with China may put the burgeoning production of vegetables and fruit in northern Thailand at a price disadvantage, since China's costs are much lower. This would disrupt the sustainability of many of the proposed alternatives to shifting cultivation. The same trade links, in contrast, may benefit highland development in Lao PDR (a nation with lower costs) through improving Lao's market access to both Thailand and China.

Conclusions

The studies have shown that, in all countries, there are circumstances where rotational shifting cultivation remains appropriate. This is where its *value* to local people - in terms of its *productivity, sustainability and equity* - is at least as high as alternative forms of land use; and, in addition, where broader societal (national) demands for alternative land uses are low. In these areas, population pressure tends to be low, markets and infrastructure are weakly developed and therefore subsistence production has a high priority, soils are relatively good, and there are few competing demands for the land for timber, watershed protection, etc.

However, there are increasing incidences where shifting cultivation provides lower net values than its alternatives - *both* for the local people concerned and for the nation as a whole. Productivity and sustainability tend to have been rapidly reduced by population pressure and reduced fallowing periods: the local people suffer food insecurity; the land becomes increasingly infertile; and the enterprise costs (labour costs in particular) of shifting cultivation become unsustainable. In addition, in these circumstances, there appear to be relatively high national externalities in terms of disturbances to the watershed and social dislocation (although each instance needs to be looked at carefully before e.g. upstream-downstream causal links can be concluded).

Moreover, it appears that inappropriate policies have both degraded shifting cultivation values still further for local people, and increased the negative impacts of shifting cultivation on other people - or have at least hastened the process.

Where it is clear that shifting cultivation is no longer productive and sustainable both for local people and for the nation, then the selection of alternatives may be appropriate. The questions are then principally:

- how to introduce sustainable new systems which replace as many as possible of the values of shifting cultivation; or
- how to augment shifting cultivation values where such values cannot be replaced, but alone are inadequate.

The first question has been the preoccupation of many recent official efforts to reduce shifting cultivation. The latter has only recently become an operational concern of government and development assistance, as settlement schemes etc have been showing limited success, with people returning to shifting cultivation to produce goods and services which they had begun to miss. In such introductions, care should be taken over equity aspects; while we have shown that shifting cultivation is now often unproductive, and unsustainable economically and environmentally speaking, it remains potentially highly equitable. Recently-introduced alternatives (with their institutional conditions) appear not to offer equal opportunities, and indeed have resulted in the removal of hitherto accepted rights of the poor and landless to fallow and forest land.

The problem is that the situation is rarely clear-cut. Perceived local and national needs rarely coincide. The three country studies all conclude that there is a *need for better information, and for more integrated and participatory policy and planning processes*, to deal with the complexities of local and national needs and their trade-offs.

Each team has suggested the need for highland development planning to take more explicit account of the relative value of different forms of land use. In part, the need is for effective *tools to assess productivity and sustainability in the field* across the whole spectrum from virgin forest, to managed forest, to shifting cultivation, to permanent agriculture; and to assess which land use types in this spectrum best meet specific local requirements. The need for such field-based tools is readily apparent to those many government and development agency personnel charged with implementing alternatives to shifting cultivation.

There are many local lessons of highland development projects which can be brought to bear in the preparation of such integrated sustainability assessment frameworks. More significantly, however, each team concluded that the long history of shifting cultivation in many different hill environments has resulted in a large body of *traditional knowledge* - which should be explored empirically, and tapped where appropriate for highland development in general, before it dies out with shifting cultivation. The techniques of rotational shifting cultivation, practised under favourable conditions, offer many insights for sustainable land use. They can produce multiple goods and services. They exploit the potential of diverse local resources and micro-environments, and ecological processes such as forest succession and nutrient recycling. They use few external inputs (nutrients, energy or technology) in systems which are resilient to moderate change. The soil is rarely left bare, and trees form an integral part of rotational systems. They are developed for, and through, very local circumstances, and incorporate cultural means and rules to avoid exceeding resource limits. Shifting cultivators have evolved complex decision-

making processes, capable of dealing with multi-factor trade-offs and trade-offs over time. These all suggest ways in which more permanent forms of agriculture and forest management should operate; they therefore point to systems such as agroforestry, which can exhibit similar characteristics, as possible sustainable alternatives. Indeed, some alternatives can be introduced through the gradual adaptation of shifting cultivation systems e.g. the creation of agroforestry from managed fallow.

It is stressed, however, that both the means of assessing highland development projects, and the evaluation of the components and impacts of shifting cultivation as potential models for sustainable development, are at present poorly advanced.

Sustainability can be assessed at many levels e.g. at field, farm, village, watershed, national and global levels. At each level, the issues and the possible trade-offs differ, and - because no level is a "closed" system - there are links between levels. Although our scientific knowledge of e.g. upstream-downstream links is weak, the agroecosystem analysis approach, adopted in all countries but not yet routine in Lao PDR and Vietnam, can help us to appreciate what these links may be.

What is becoming clear is that field interventions aiming at improving sustainability have only really addressed the lower levels of sustainability (e.g. soil inputs and erosion control to ensure field ecological sustainability, and local infrastructure to ensure village economic sustainability). Most development projects continue to emphasise these factors.

In contrast, the critical policy relevant issues now appear to concern the sustainability of overall highland land use and settlement patterns at the national level:

- the *poverty, environmental degradation and social dislocation* suffered in the highlands relative to the rest of the country
- the *negative impacts on the nation as a whole of shifting cultivation* and other land uses necessary to sustain *local* livelihoods in the highlands (e.g. downstream water supply problems, diminished timber reserves and reduced biodiversity)
- the *negative impacts on highland people* of the land uses, such as forest conservation and dams etc., necessary to produce *national* goods and services (e.g. restricted access to land)
- the *need for a 'holistic' approach* to land use research, which takes into account dynamic economic, social and environmental processes
- the *need to resolve conflicts of interest* between different sectors of the population, and between different policy sectors (e.g. local versus national claims to limited water resources and their respective costs and benefits)
- the *need to consider possibilities of providing "compensation"* - notably off-farm employment - that avoid the need for some land-based trade-offs, and hence avoid possible environmental degradation
- the *need to develop and maintain highland comparative advantage* (e.g. for temperate fruits and vegetables, forestry and tourism) in the face of international competition, and in a way where both local people and the nation both save costs and benefit equally

- the *need for local incentives to invest in sustainable land use management* - as opposed to the present, where (given current prices, yields and market access) it is profitable to exploit forest lands but not profitable to invest in their sustained management.

Hence field guidelines alone are not the only requirement. *Also needed are improvements to the policy cycle* of information, analysis, decision-making, detailed planning and budgeting, capacity development, field implementation, monitoring and review. The overall goal must be to increase integration between sectors and between "vertical" hierarchies, and their ability to bring about sustainable highland development.

The needs include:

- national land use policy and planning guidelines
- policy and institutional change to allow more integrated approaches at local and national levels
- greater participation from local people to add local values to a policy perspective; and to generate local community management systems to sustain the social benefits of land use.

The main report suggests some of the main responsibilities for further developing these ideas. It is expected that the policy seminars and discussions, planned to follow up this report, will address these needs in more detail. They will involve e.g. the TFAP and FSMP processes, inter-ministerial discussions, work with highland development projects and continued participation at community level.

1. BACKGROUND TO STUDY

1.1 The issues addressed by the study

There is a popular perception amongst those who set policy that shifting cultivation is a destructive and unsustainable use of forest land. They believe that it leads to environmental degradation, forest loss and soil erosion; and furthermore, that its characteristics and impacts are universally similar, if not identical. In Vietnam, for example, the project research team found that 'all policy-makers consider shifting cultivation as detrimental to the environment, particularly causing deforestation and soil erosion'. Although it is acknowledged at the policy level that there are other significant causes of deforestation, a rough estimate by the Ministry of Forestry indicates that shifting cultivation is still held responsible for 50% of forest loss in Vietnam. In contrast, some researchers in the region recognise, particularly recently, that shifting cultivation has many positive values which can contribute to sustainable highland development. Indeed, the Vietnamese researchers concede that rotational shifting cultivation is 'relatively sustainable' - but the 'countermyth' that shifting cultivation is universally a sustainable and ecologically optimal system is not necessarily true.

Until recently, it was widely assumed that shifting cultivators have a totally subsistence economy, but some researchers now contend that the system should be seen as one component of the local economy, and that parallel activities should also be considered alongside it. For the people practising shifting cultivation, it frequently represents a rational use of resources in order to provide subsistence needs, as well as some cash requirements. Many - in some areas nearly all - farmers persist with shifting cultivation, in spite of increasing opportunities to take up alternatives. This indicates that it possesses perceived higher values than alternative land use systems, where alternatives are available.

The 'problem' of shifting cultivation has been dealt with, at the national policy level, by employing various attempts to 'control' it. Criticism of shifting cultivation for its perceived role in widespread environmental degradation is compounded by the states' traditional view of shifting cultivators, who are typically 'ethnic minorities', 'hilltribes', thought to be uneducated and of primitive cultures - and generally not part of mainstream society. In some cases this has led to outright condemnation of shifting cultivation, and hasty attempts to eliminate it. Policy-makers have not felt the need to generate an adequate understanding of the practice. The 'mainstream society' itself is influenced by the perceptions of government authorities broadcast through the mass media, thus perpetuating the belief that shifting cultivation results in environmental degradation.

As international and national policy processes focus on the need for sustainable development, and attention is given to highland development in Lao Peoples' Democratic Republic (PDR), Thailand and Vietnam - all three countries experiencing high economic growth rates - it is pertinent to consider the problems and opportunities posed by shifting cultivation in relation to sustainable development. Given the different perspectives on the issue and the many assumptions and 'myths' surrounding it, IIED and its partners in the

region articulated the need for studies to objectively examine the values of shifting cultivation.

This brief overview, which addresses policy aspects, and its companion volumes on Thailand, Lao PDR and Vietnam, which include detailed descriptions and analyses based on field work, consultation and literature review, are the products of a study coordinated by IIED. They present a picture which has changed greatly in recent years. As we shall see, the ability of policy-makers to obtain the kind of information contained in this study and more information on a continuing basis, represents the next major challenge. This study is therefore only the *beginning* of a process of determining how the shifting cultivation systems can play a role in sustainable land use patterns and, where they cannot, how to bring about the alternatives of higher value to both local people and the nation.

This overview is largely based on the three national reports, but also draws on a bibliography on shifting cultivation prepared by IIED, the outputs of workshops organised under this project, and IIED's other work on relevant issues. Unless otherwise stated, references to Lao PDR, Vietnam and Thailand are drawn from the national reports.

1.2 How the study was carried out

In 1990 and 1991, the Tropical Forestry Action Programme processes of Vietnam and Lao PDR touched on the significance of shifting cultivation issues, as did the analogous Forestry Sector Master Plan of Thailand. To examine these issues, IIED set up three small national teams in Thailand, Lao PDR and Vietnam, and coordinated their work, with support from the Netherlands Ministry of Foreign Affairs. In Thailand, the team comprised mainly academics from Chiang Mai University, with assistance from highland development project personnel. In Lao PDR and Vietnam, the teams comprised mainly government officials at the policy level, with the addition of academics in Vietnam. In all cases, team members were already working directly on issues concerning shifting cultivation, and in Lao PDR and Vietnam, were responsible for contributing to policy development on land use in the mountain areas. With the exception of Vietnam, each national team and the IIED team included an equal balance of male and female professionals. The national team members and their institutional affiliations are given in Annex I.

Following the preparation of national background papers, which set out the basic facts concerning shifting cultivation known up to that date, the country teams worked both together and separately to formulate their research agendas. At a first workshop held in Chiang Mai in August 1992, when the (paucity of) facts and perceived problems were addressed, it was clear that the main need was to offer better information to tackle the blanket policy presumption against all forms of shifting cultivation.

At the workshop, the teams identified a broad range of issues concerning shifting cultivation. These were linked in a "problem tree" of cause and effect, using principles derived from the OOPP (Objective-Oriented Project Planning) technique. The central issue which appeared to explain many of these links was 'Policy believes that shifting

cultivation is unsustainable'. Analysis of the problem tree indicated that the policy belief is based upon:

- policy-makers' observations of environmental problems, and their assumption that these problems are caused principally by shifting cultivators;
- poor availability at policy level of *persuasive* data on the facts concerning the actual, complex causes of the problems; and
- lack of coordination between official agencies.

Through consideration of the issues, and particularly the cause and effect links, in the problem tree, the teams identified an initial set of research questions. These were used in defining the particular aims of the study, as given below, and were subsequently modified by each team during the course of its national-level research.

One of the most important conclusions of the workshop was that the very different circumstances in each country, and the necessity to focus at the national level if policy is to be improved, warranted a primary focus on the *national*, rather than the regional, level. The study was therefore modified to comprise three national studies, closely linked through the sharing of information, expertise and insight. The teams communicated with each other during the course of the project, meeting for an interim workshop in Hanoi in August 1993, and a final workshop in Chiang Mai in February 1994. Thus, although it was appropriate for each country team to select the issues and research questions most relevant to their country, the workshops identified a core of common issues relating to the sustainability of land use systems, and analysis of policies concerning the use of current or former areas of shifting cultivation.

1.2.1 Study aims

With slightly differing emphases for each country, the study set out to:

- a *define the kinds of information* on shifting cultivation which policy-makers concerned with highland development should use: notably the *relative values* to highland peoples and to the nation of shifting cultivation and its alternatives (the latter concentrating on permanent agriculture and forestry)
- b *paint an initial picture of the status and dynamics* of shifting cultivation in the context of alternative land uses, identifying the *forces and pressures* which have contributed to the current situation
- c *define the criteria of sustainability* by which we can judge shifting cultivation and its alternatives in light of local and national needs; the *characteristics* which make such land uses sustainable or otherwise; and the external *conditions* under which criteria are met and characteristics exhibited
- d *examine the policy responses* to shifting cultivation and upland land use in general; their impacts on sustainability and other values; and their appropriateness in light of current and future needs

- e *suggest guidelines for national policy processes*, for local (project) planning and for further monitoring of shifting cultivation and its alternatives, as part of the sustainable development process
- f based on the information generated by the study, *make generic recommendations* - related, where possible, to existing policies, policy instruments, information bases used by policy-makers, institutional responsibilities, projects and programmes
- g based on the recommendations, *suggest an agenda and process for policy discussion* on shifting cultivation.

This was an ambitious agenda. The aims were, however, all achieved, to a greater or lesser extent. Further work is indicated in key areas, as shall be noted in section 3.7.

1.2.2 Field research

Each national team undertook field research over the year October 1992 to October 1993, in order to assess shifting cultivation systems over the agricultural year. Resources for the teams were limited, covering the part-time application of research input, but in all cases team members were able to draw upon their own and others' experiences of relevant recent surveys and studies. However, shortage of field time and the difficulties of obtaining information from often very remote regions necessitated a sampling approach to field work. Sites were chosen to represent a range of conditions, according to criteria postulated as significant (for example, ethnic group, physical characteristics, proximity to roads, access to markets, and access to technology). In some cases, a reconnaissance survey of a larger number of villages was followed by detailed research in selected villages. Techniques and methodologies were chosen by national teams according to precedent: it was considered appropriate to use nationally-known techniques, rather than to standardise them across the region, in order to enhance policy acceptance of results. The field surveys all involved some degree of consultation with, and participation of, local people. However, IIED's original intention to employ participatory inquiry techniques was felt to be too ambitious by the teams, for applications which extended country-wide with limited resources.

1.2.3 Audience for this report

This regional report is addressed to *national* organisations and programmes identified as responsible for, or potentially responsible for, shifting cultivation and highland development. These include ministries of agriculture, forestry, water, etc, TFAP and Forestry Master Plan coordinators, National Conservation Strategy teams, Biodiversity Action Plan teams, the Land Use Working Group in Vietnam, etc. It is also addressed to the *regional and international* policy and academic audience, and to the development assistance community.

2. STUDY FINDINGS

2.1 Description of situation and its dynamics

2.1.1 Geographical extent

Some forms of shifting cultivation have long been practised in the highland areas of Thailand, Lao PDR and Vietnam. For the past 4000 years, the major concentration of people in SE Asia has been in the lowlands, where a long succession of technological developments has widened the gap between lowland irrigated farming systems and upland shifting cultivation systems. In recent years, shifting cultivation has been practised almost exclusively in relatively remote, highland regions.

In *Thailand*, the total population estimated to be practising some form of shifting cultivation is around 1 million (1994 estimate), comprising six major ethnic groups (Karen, Hmong, Lahu, Akha, Lisu and Yao) as well as Thai peoples. But few of these people are entirely dependent on shifting cultivation. This population represents a substantial increase from estimates made in the mid-1980s, due to a high natural growth rate and in-migration. Such in-migration occurs from lowland Thailand and is increasing rapidly (Enters, pers.comm. 1994), as well as from neighbouring countries, for example the immigration of Karen from Myanmar. The population is spread over mountainous areas covering about 5 million hectares, or half the total area of Upper Northern region (see figure 1). Shifting cultivation is practised under physical conditions which vary greatly, even over short distances. Altitudes range from about 500m. to 1200m., and one farm may span over 300m. difference in altitude.

In *Vietnam*, the total population practising shifting cultivation is almost 3 million (1991 estimate), comprising fifty ethnic groups, but particularly Hmong, Dao, Bana, Ede and Giarai. The Vietnamese team reports that in general, about 70% of the "ethnic minority" population still practise some form of shifting cultivation. It is practised in mountainous regions throughout the country, covering 26 provinces and about 3.5 million hectares (see figure 2); the highest concentrations of those practising shifting cultivation are generally at the highest altitudes, especially in the north west and in the central highlands. For example in the north west region, from 1965 to 1985, both the population and the area under shifting cultivation have shown a marked increase (population increased from 878,000 to 2,048,000; the area under shifting cultivation increased from 227,100 hectares to 381,600 hectares). Physical conditions vary greatly from one region to another, as does forest cover.

In *Lao PDR*, shifting cultivation is practised by 90% of the population, or approximately 1,638,000 people. In fact, the great majority of the upland population is dependent on subsistence farming, predominantly through some form of shifting cultivation. It is practised throughout the country, but particularly in the northern provinces, and in the south-eastern province of Xekong, whose population comprises mainly hill tribes (the exact area under shifting cultivation is not known). 80% of Lao PDR is mountainous, with altitudes generally ranging from 1000m. to 3000m. Despite the presence of a number of development assistance projects in Lao PDR working on shifting cultivation issues,

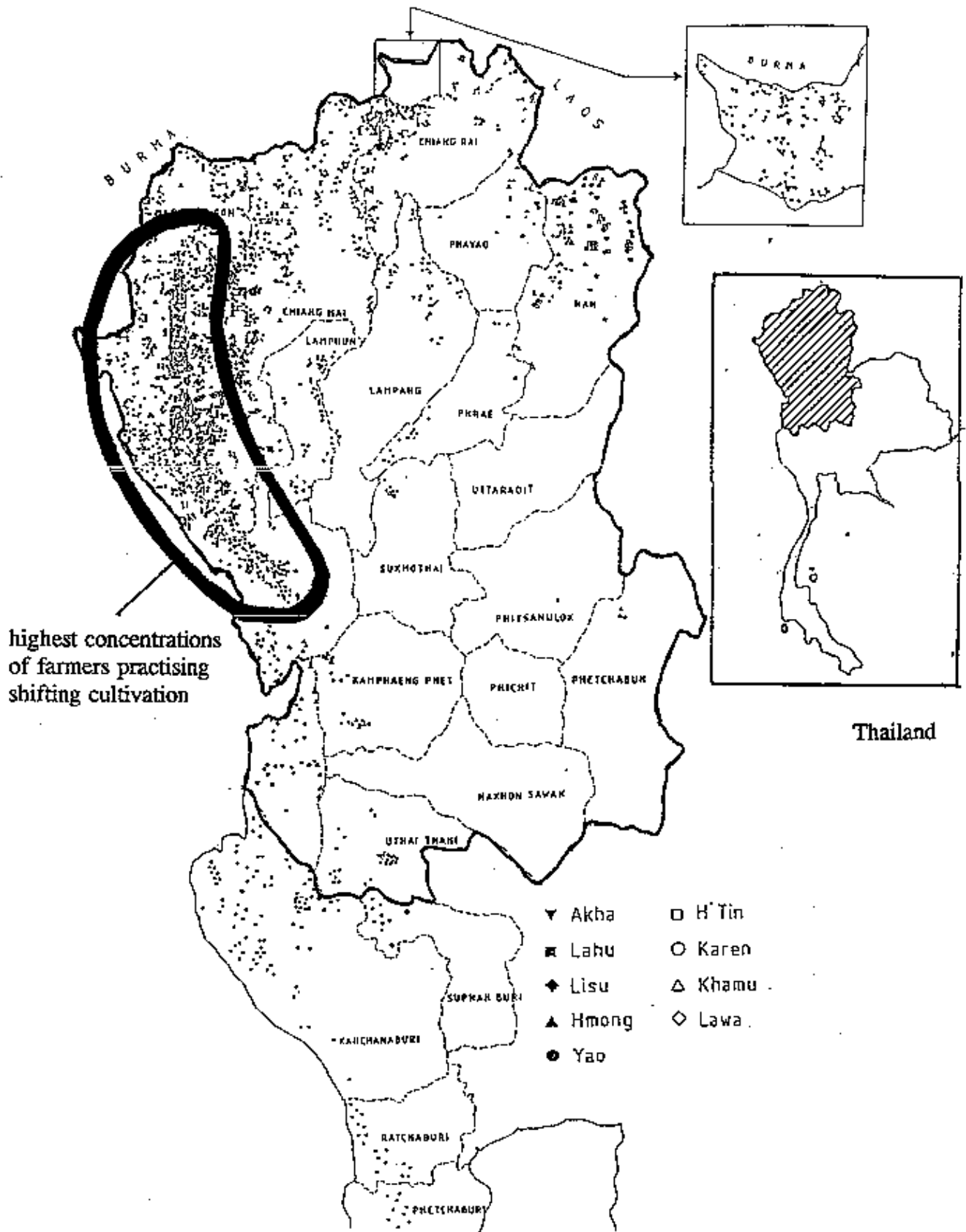


Figure 1: Existing area of rotational shifting cultivation in Thailand

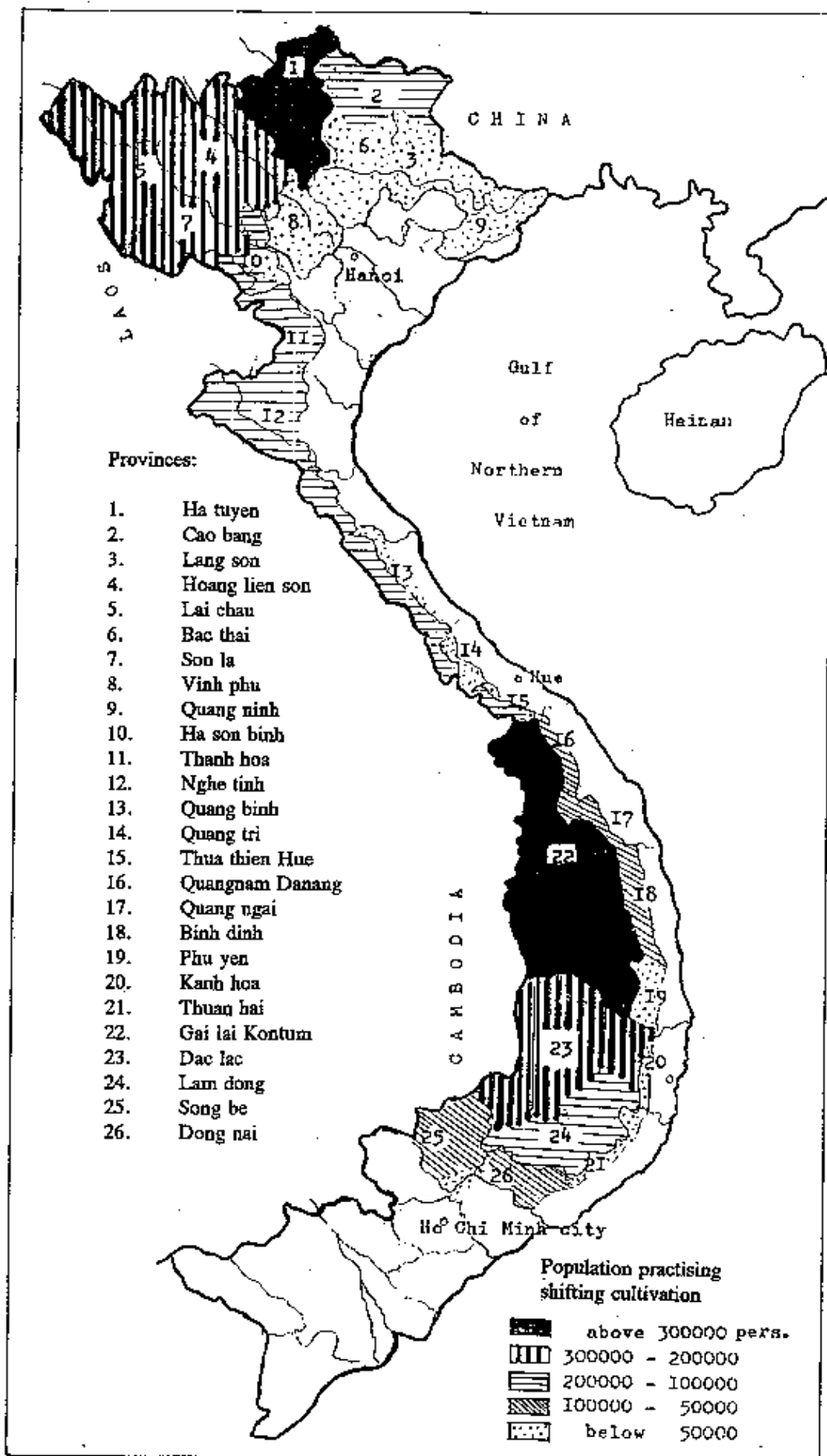


Figure 2: Shifting cultivation in Vietnam (mainland)
(compiled by Nguyen Tu Siem, 1991)

there is not yet a map of shifting cultivation's distribution. It would, however, approximate to a rural population density map.

2.1.2 *Types of shifting cultivation*

Shifting cultivation has traditionally been a dominant feature of the highland landscapes, economies and cultures of Lao PDR, Thailand and Vietnam. Some agricultural practices and ethnic groups extend across the highlands of all three countries, but differing socio-economic conditions have led to local adaptation and change, resulting in a wide variety of traditions.

The many forms of shifting cultivation developed to suit local circumstances and needs. In many areas, rotational shifting cultivation has been practised continuously for several generations. In such places, local agroecosystems have come to be characterised by an ever-changing "spectrum" covering high forest, to newly-cleared land, to cropped land, to fallow land in which forest is regenerated - and often then managed for many forest products.

Shifting cultivation systems are largely subsistence-based (although cash cropping of, for example, opium has long been an integral part of such systems). They have shaped the livelihood of the majority of the highland population, providing basic food, fibre and energy needs from cropped, fallow and forest land, and offering sources of occasional cash income e.g. from cultivated opium and from bamboo shoots and mushrooms gathered from the forest. They are not merely land management techniques; the cultures and economies of the many highland groups of these countries are intimately bound up with their systems of shifting cultivation. This is partly why efforts at "eradicating" shifting cultivation have proven so difficult.

In *Thailand*, there were two major types of shifting cultivation commonly practised prior to the 1960s: pioneer and rotational. In the *pioneer* system, fields were cleared and cropped until decreasing productivity forced abandonment of fields and relocation of villages to a new site. In 1965, about 200,000 people were practising pioneer cultivation. In the *rotational* system, fields would be cut and burned, cropped for one season, and the forest would often be managed to promote regeneration over the following 7 to 9 years. However, there have been major changes in the land use pattern of the highlands, such that voluntary village relocation is now extremely rare. Both long fallow rotational systems and pioneer shifting cultivation have now largely disappeared, and farmers commonly use very short rotations, with one or two year fallows. Virtually all shifting cultivation in Thailand is therefore now rotational, but it is a 'degraded' rotational system: fallows are short, fertility build-up is not as good as formerly, fewer species are grown, many indicator species of degraded land appear, naturally-occurring species composition has changed; and to compensate for the poor fertility, farmers burn accumulated biomass before cropping to provide additional nutrients.

In *Vietnam*, *pioneer* shifting cultivation was traditionally practised mainly at the highest altitudes, above 1000m. elevation, by a minority of ethnic groups but principally the Hmong. *Rotational* cultivation was practised by the majority of ethnic groups, and until recently, fallow periods were generally of five to ten years. Because of a range of

relatively new economic and policy forces, which shall be discussed later, currently pioneer cultivation is the predominant system even amongst ethnic groups which had traditionally practised rotational cultivation. This is leading to an overall increase in the area under shifting cultivation, despite some resettlement and "sedentarisation" of former shifting cultivators; and, it appears, to the transfer of (exhausted) land from pioneer cultivators to others, perhaps for speculative purposes.

In *Lao PDR*, shifting cultivation is the traditional system of agriculture in the uplands, which cover most of the country. Recently, however, lowland farmers have begun moving upslope and are also adopting shifting cultivation systems. Very little is recorded about the types of shifting cultivation in *Lao PDR*, although a frequently-used classification of farming systems refers to the altitude at which the farmers traditionally live. Following this classification, it is thought that mid-altitude farmers practise relatively stable forms of *rotational* cultivation, with fallow periods of 5 to 15 years. At high altitudes, *pioneer* cultivation is practised, with each field being cultivated for 5 to 6 years, and villages relocated about every 20 years. In addition, '*supplementary*' shifting cultivation is usually found on steep slopes surrounding permanently cultivated valleys, in cases where there are insufficient water-rice fields. But in these cases, people are generally inexperienced in shifting cultivation and little attention is paid to soil erosion control.

2.1.3 *Dynamics of land use*

Until recently, the situation regarding shifting cultivation in *Lao PDR*, Thailand and Vietnam was relatively unchanging. Individual shifting cultivation systems had been developed by different groups, to provide reasonably stable yields of subsistence goods and services in specific ecological circumstances, and to deal with the normal vagaries of climate, pest outbreaks, etc. With population densities low, and infrastructure for trade and migration minimal, few major changes took place to disturb such systems.

However, a number of forces have been introduced to the shifting cultivation equation over the last twenty or more years, or they have been increased greatly. Existing shifting cultivation systems have not had the resilience to deal with these forces. Indeed, they seriously threaten the sustainability of shifting cultivation - sustainability both narrowly delineated within the area in which shifting cultivation is practised, and more broadly defined: many systems now appear to have impacts which negatively affect whole highland regions, and even national prospects for sustainable development.

In all three countries, but especially in Thailand and Vietnam, the teams' work has shown some very significant recent changes on the ground, suggesting a very fast dynamic in land use. Earlier studies of the extent of shifting cultivation are now particularly out of date, especially in Thailand. For example, in Thailand and Vietnam, far fewer people are now wholly dependent on shifting cultivation. The situation is now less clear-cut along ethnic lines: all groups tend to be responding in similar ways to the policy and market conditions which now affect shifting cultivation and its alternatives. Shifting cultivation systems have either degraded, or have become part of a 'mixed' farming approach alongside permanent agriculture, or have become means to transfer ownership of land to those involved in the economic mainstream. In general, however, earlier studies were

parochial and it is difficult to give quantitative figures of the changes that have occurred nationwide.

2.2 Forces behind the dynamics of shifting cultivation

2.2.1 National and international forces

To understand the recent and current dynamics of shifting cultivation, it is necessary to examine the forces affecting the system. The *national* pressures and conditions that cause changes in shifting cultivation systems provide both direct and 'trigger' mechanisms for change. They include the following:

- Higher *population pressure* in highland areas (due to improved medicine, immigration in some areas, etc.) This is particularly relevant in Vietnam and Thailand: in Vietnam the rate of population growth in mountainous areas is 4%, and population pressure is exacerbated by resettlement into these areas: 2.3 million people underwent resettlement in the Vietnamese highlands during the 1980s.
- Alongside population pressure, the need to meet *food security* requirements applies in all countries, and in some places this can only be done by local food production.
- The development of *markets* for highland products (e.g. sub-tropical and temperate crops) which can be sold in the (tropical) cities of the three countries; and the provision of *marketing and credit assistance*: this is currently a strong force in Thailand, increasing in Vietnam, and is potentially significant in Lao PDR.
- The opening of roads, transport and other *infrastructure* (the presence or lack of infrastructure has a great effect on the extent to which the other 'forces' are experienced).
- Changing *national policies on markets and infrastructure* for highland production (notably policies on cash cropping, upland rice and opium); and *diversification of the economy*, which is especially fast in Vietnam.
- The introduction of *monetary* economies, necessitating means to earn cash.
- Increasing opportunities for off-farm *employment* and other alternatives to agriculture (especially in Thailand; increasingly in Vietnam).
- The *lack of terrain, soil, water and other conditions suitable* for developing water-rice cultivation as an *alternative* or supplement to shifting cultivation, especially in Lao PDR and Vietnam.
- Changing *national policies on the use of, and rights over, highland resources*, notably forests, soils, water, hydro-electric power and wildlife (in Thailand, the

enforcement of forest and watershed conservation schemes, where increasing lowland demand for water both emphasises the need for watershed conservation and jeopardises the sustainability of upland irrigated agriculture). This includes *land allocation* and tenure arrangements.

- *Active assistance from national governments* has, in some cases, enabled conversion from shifting cultivation to other systems. In Vietnam, active state assistance has enabled some to abandon shifting cultivation in favour of alternative systems. In Thailand, the surveyed villages that seemed to have 'succeeded' were those that had had some assistance. However, this is limited in all countries by the capacity of the state to provide assistance, and the need for alternative systems to be adapted to local circumstances.
- Forced *relocation* in the name of national security (in Thailand in the 1960s and 1970s particularly, but currently remaining an important factor); as well as resettlement and spontaneous migration (in Vietnam, this has led to new areas of forest being cleared for shifting cultivation).
- Changing *national policies on the integration, or otherwise, of highland people* into the nation (notably shifting cultivators in their different ethnic groups). This is one of the strongest forces acting in Thailand, where citizenship and the attendant access to state services is dependent upon house registration and therefore settlement.
- As a consequence of all the above, *growing inequalities* within the nation.
- The *break-down of community management* of lands under shifting cultivation.
- In some cases, the above forces are moderated by *resistance to change* and preference for traditional cultivation techniques and lifestyles (this is particularly true in parts of Lao PDR and Vietnam, where shifting cultivators lack knowledge of lowland or permanent agricultural techniques and have turned back to shifting cultivation).

In addition, a number of *international* dimensions may become increasingly important, particularly as the economies of the region are growing so rapidly. For example:

- *International trade and the comparative advantage of producer areas*: the opening of road trade with China may put the burgeoning production of vegetables and fruit in northern Thailand at a price disadvantage, since China's costs are very much lower. This would disrupt the sustainability of many of the proposed alternatives to shifting cultivation, based on subtropical and temperate crops. This problem is already evident in Vietnam, where cheap Chinese produce is available in the market. The same trade links, in contrast, may benefit highland development in Lao PDR (a nation with low direct agricultural production costs) through improving Lao's market access to both Thailand and China.

- The recent *GATT Agreement* on agriculture is also likely to have significant impacts, as it will encourage less trade-distorting domestic support policies for highland development.
- International policies including trade, narcotics control, and external *development assistance* to highland regions (the latter was highly significant in Thailand until recently).
- Control of illicit opium production has been a significant pressure in the highlands of Thailand since the 1970s; attempts to suppress production gained momentum during the 1980s and early 1990s (Enters, 1994; pers. comm.).
- Wars and political disturbance have led to *migration* across national borders (e.g. of Lao people to Thailand in the 1970s, of Karen and Shan people from Myanmar to Thailand in the 1990s). Precise figures for such immigrants are not known, but many have adopted the receiving country as their own and claim citizenship. To a lesser extent, some migrants return to their former lands, causing changes in the local population pressure.
- International and national forest policies: the *logging ban* in Thailand has stimulated increased logging in neighbouring countries, illegal timber trading across borders, and consequent loss of regional forest resources.
- International *environmental and social/ human rights policies* appear not to be significant, but may become so in future.

2.2.2 Forces resulting from policy processes

A further set of forces results from *policy processes and their changing emphases*. These can act as 'triggers' of all the above. Yet, because they are more controllable than some of the other forces (dependent upon markets or demographics), they are potential agents of sustainable development. The 'policy belief' that shifting cultivation is unsustainable¹ became the central focus of the teams' initial analysis of issues; this led us to consider the ways in which policy surrounding shifting cultivation is formulated, and the effects of that policy.

Currently, policies are based on inadequate information about the situation and dynamics of land use in the highlands: this leads to formulation of inappropriate or badly targeted policies, which in turn apply more pressures, directly or indirectly, on land users. The lack of monitoring of the situation, and of the effects of policies, mean that bad policies continue, often for many years. This is discussed further in section 2.4.

¹ this 'policy belief' and the implicit desire to stop shifting cultivation is evidenced in the names of government departments, such as the 'Committee on Fixed Cultivation and Sedentarisation' in Vietnam, and the 'Shifting Cultivation Stabilisation Programme' in Lao PDR.

The magnitude of impacts of current policies varies according to implementation capacity, but in all cases the influence of policy processes on upland land use has been increasingly significant over recent years. The impacts are created by policies both within and outside the forest sector, necessitating a broad examination of policy development. Examples from all countries demonstrate how certain policy interventions have contributed to improving living conditions and land use, yet the indirect effects of policies, and badly formulated and targeted policy interventions, have had the reverse effect, leading to *environmental degradation and greater poverty* in the highlands.

In all three countries, there is currently some encouragement at the policy level to *integrate the upland population* into certain mainstream channels for rural development and into the national economy. All countries' policies aim to improve and extend *infrastructure* - particularly the road network - into upland areas, both to help develop the market economy and to enhance social integration with the lowland population. In the case of Thailand, development of the road network was also in response to national security concerns. The Thai nationalisation and integration policy arose partly as a response to the desire to *control opium production*, and there is a Master Plan for the Highlands to provide positive incentives to abandon opium production, managed by the National Security Council. In Vietnam, the resolution on rural socio-economic development (1993) links rural development with the process of 'industrialisation and modernisation of the country'. However, Lao PDR's infrastructural development is comparatively difficult due to its current low level, and the mountainous topography of most of the country. Thus it is likely that such development will be restricted to those areas given high priority by policy-makers. In addition, the Lao policy to tax both rice (both upland and paddy) and cash crops discourages rice production and trade.

In all three countries, *forest protection and conservation* feature prominently in recent and current policies concerning land use. This has the result that forest land, on which shifting cultivators may have lived for many years, is now viewed as a higher priority by the state for logging, biodiversity conservation, water supplies, or other purposes. In Thailand, all national forest reserve land has been classified into economic and conservation areas since 1992. Reforestation and the creation and enlargement of national parks and wildlife reserves are promoted. Watershed classification has been applied throughout the highlands, as a means of demarcating areas for protection: the supply of water to towns and irrigated lowland agriculture is a politically important issue. In Vietnam, the most recent forestry development strategy (1994) aims to protect existing forests by any means and states that all forms of deforestation must be prevented - including slash and burn cultivation - and planting of forest on bare land and denuded hills is encouraged by exemption from land tax. In Lao PDR, the forestry sector is currently regulated by decrees: a forest law will be in force in 1995 at the earliest. The most recent decree (no. 169) on 'management and use of forests and forest land' includes tenure, conversion, and management contracts. Currently, rotational cultivation is permitted by law, if it is carried out on degraded forest land, and if it is purely for subsistence production: this appears to be more lenient than preceding law. But 'slash and burn' activities are illegal: the policy is to restrict and eventually eliminate them. Lao PDR is also developing new protected areas. In both Lao PDR and Thailand, conservation policies decree that slopes above 35% should not be cultivated, but in practice, there is much cultivation on steeper slopes (eg the Thai-Australia Highland

Agricultural and Social Development Project (HASD) recognises that slopes up to 55% are cultivated, and is developing more efficient ways of doing this).

Relocation and resettlement of villagers has been a significant policy in all three countries - and still is to some extent. In Thailand, border insecurity during the 1960s and 1970s led to the policy to remove villagers forcibly away from international borders. However, the current Master Plan for the Highlands dictates that any relocation must be voluntary. The prospect of citizenship and state services has encouraged large-scale *voluntary settlement*. In Vietnam, the fixed cultivation and sedentarisation policy has been in place since 1968, and policies concerning mountainous regions continue to be directed towards finding alternatives to shifting cultivation and to "resolutely adopting fixed cultivation, eliminating shifting cultivation and non-permanent homes". Up to 1990, the fixed cultivation and sedentarisation programme had reached 4830 villages, such that 1.9 million former shifting cultivators are now settled. In Lao PDR, policy focused on resettlement during the late 1970s and 1980s, when more than 10,000 families were resettled. This programme has subsequently been scaled down, but it is not clear to what extent current policy condones resettlement. However, fixed cultivation and sedentarisation remains a major element of Lao forest policy.

Access to forests and upland is generally more strictly defined in law than in practice. In Thailand, the Land Code (1954) states that all mountain land is "out of bounds": however, this is not enforced. Thousands of highland villages have been included in the Royal Gazette, which ensures their right to permanent settlement. However, protection and conservation policies have increasingly restricted access to conservation forest land (for example, no one is allowed to live in areas of watershed class 1²) although in practice, villages have been permitted to stay in national parks. In Lao PDR also, villagers are, in practice, allowed to remain in newly-demarcated protected areas. In both cases, the lack of strict enforcement of the law is due to lack of resources to implement it, as well as "policy ascendancy", whereby the current policy emphasis determines which particular policy takes precedence.

Evolving policies on *tenure* of land and resources have been a major factor in recent land use change. In all three countries, policies have changed in recent years to allow individual ownership or leasing of land. In Thailand, policies focusing on social integration and control of opium production, particularly during the 1970s, led to increasing numbers of shifting cultivators obtaining Thai nationality and thus greater chances to lease land legally. In Vietnam, the formation of cooperatives was encouraged until 1988, when the policy on land allocation was developed (updated in 1993). This

² Watershed classification for Thailand (National Environment Board, 1985):

Class: physiography

- 1 Prime watersheds
- 1A Protected forest and headwaters area, high elevation and steep slopes
- 1B Similar to 1A but cultivated or destroyed
- 2 Similar to 1 but landforms are less erosive
- 3 Upland areas with steep slopes and less erosive landforms
- 4 Gently sloping lands (<25%)
- 5 Gentle slopes to flat (0-25%)

decrees that land may be allocated to individuals for long-term use, and may be sold, transferred or inherited. The maximum area that may be put under agriculture (per family) is 2-3 hectares, on a 20-year lease. Land under forest may be allocated for one or two rotations, or for 50 years. In Lao PDR, the policy on land allocation was enacted in 1993; formerly there was a traditional system of tenure whereby informal, frequently verbal agreements were made between families or through village chiefs. The 1993 Lao policy decrees that a contract regarding protection and management of forest land should be agreed with each allottee family. There is no limit to the area of forest land that may be allotted, and up to 5 hectares of agricultural land may be allotted. The families have the right to sell, transfer or inherit the land. Unlimited areas of degraded forest land may be converted to agriculture, forestry for livestock production, or used for rotational cultivation, provided that permanent agriculture is not feasible. It is not clear who defines which land is suitable for permanent agriculture.

There has been a general trend away from resettlement, towards promotion of voluntary settlement in the same location where shifting cultivation was formerly practised. This is enhanced and confirmed by recent land tenure policies. However, the lack of adaptation of such policies to local variation, pressures and needs has sometimes produced the opposite of the intended effect, to the extent that deforestation increases and conservation and 'integration' policies are frustrated. For example in Vietnam, there are cases of farmers selling newly-allocated land to lowland people, then practising pioneer cultivation in the forest. In Thailand, tenure has been granted to former shifting cultivators in resource-poor areas: without the necessary support services, some have had to return to, or maintain, shifting cultivation systems in order to ensure subsistence needs. Thus the *combination of policies* on tenure, access, forest protection and conservation, and sedentarisation produces conflicting incentives and pressures. Furthermore, it is not clear, either technically or legally, which areas warrant protection and resettlement, and which can support long-term access and individual tenure. This suggests that national governments have poor information on the circumstances under which each type of land use is appropriate. Regarding shifting cultivation, pioneer 'slash and burn' practices are illegal or strongly discouraged throughout the region, and although rotational cultivation is legally permitted in some cases, the conditions under which it is considered appropriate are not elaborated in the policies and regulations. Indeed, in Vietnam (for example) there are no regulations on the use of forested land for rotational shifting cultivation, implying that it is not considered to be a forest management practice.

In general, there has been little *coordination* between policies of different sectors, although initiatives such as the Thai Master Plan for the Highlands - if given adequate resources and political support over the long term - should improve cross-sectoral links. Experience internationally shows that distinct regions - such as highlands - can form appropriate units within which to tackle the difficult task of policy integration. The lack of coordination between government agencies is clearly demonstrated in the conflicts of interest apparent in Thailand: a number of Royal Gazetted villages are situated in areas recently declared a national park or wildlife sanctuary by the Royal Forestry Department, such that conservation efforts, based on the assumption that the protected areas will not include settlements, have been frustrated by the villages' official status and right to remain in place. In another example, a participatory project in which communal decisions on land use management and forest conservation are made between village representatives

and Royal Forestry Department officials, is to proceed despite its location in a class 1 watershed: this shows official recognition of settlements in conservation areas, yet the current law would allow such lenience to be overturned. In Lao PDR, a single decree encourages regeneration and development of forests, yet also offers tenure as an incentive for converting "degraded" forest to agriculture, without defining the circumstances under which each option may apply. There is little coordination between the Lao departments of agriculture and forestry at central level, even though they are part of the same ministry; however there is more integration in the work (if not policy) at district level.

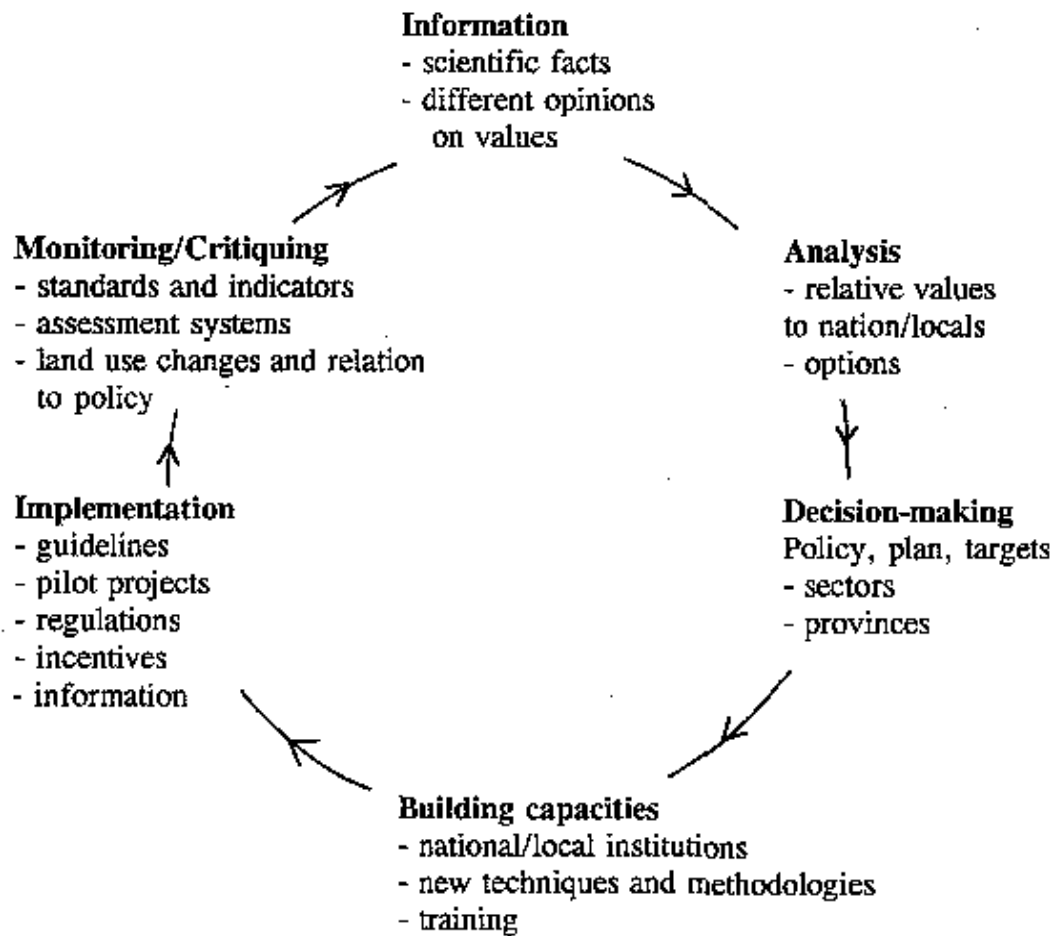
National policy processes

In Thailand, the National Security Council, chaired by the Prime Minister, is the main body responsible for highland development policy. Concern about socio-economic development and social integration of the hilltribes led to the establishment of the Department of Hilltribe Public Welfare in 1959, and later the passing of the Nationality Act of 1965, which granted Thai citizenship to hilltribes. With the development of opium eradication as a major objective, the Office of Narcotic Control Board (ONCB) was established under the Office of the Prime Minister as an implementing agency, with international support mobilised by the UN Fund for Drug Abuse Control (UNFDAC) and other bilateral assistance. The ONCB also contributes to policy formulation, and was instrumental in developing official policy relating to the highland areas. In this case, economic and social development policy is implemented through projects, integrating the work of four major ministries: education, health, agriculture and the interior. Monitoring is carried out by each project and reported to the ONCB and NSC; various government departments also carry out monitoring. National policy concerning forests is implemented by the Royal Forest Department.

In Vietnam, specialists in the relevant field assist the state to put forward suitable policies, taking into account local experience, successes and failures. However, the approach is largely science-based, and involves little local consultation. The process of policy formulation also allows for comment on the draft by professionals from outside the relevant ministry, before it is ratified by the government, and there is provision for policy to be amended during the implementation stage. Implementation is carried out by cadres of the provincial, district and village levels, particularly the cadres of the Committee on Fixed Cultivation and Sedentarisation, which exists in most provinces.

In Lao PDR, the relevant government department drafts new policy, consults with provincial officers, then submits the draft to the Ministry (which holds a national consultation meeting) and the Prime Ministers' office. Following the recent decentralisation of the Forestry Department, there is potential for future policies to be based on more comprehensive field information. Currently, district and provincial forest officers must report to the central office regularly, and analysis of the information thus provided could enable future policies to be directed more closely towards current needs. Implementation involves work plans being drawn up at district level and edited by the Ministry.

Figure 3: The policy cycle in outline



1. Effective policies tend to be *cyclical*, or iterative, so that policies are updated in light of changing conditions. The basic cycle is illustrated above. Note that this is only a "sketch" of the major steps - in reality, tasks are not always confined to discrete stages, but are more or less continuous.
2. Different types, and different degrees, of *participation* - government, private sector, professionals, communities, NGOs etc. - are needed for each strategy task, and for each cycle.

Figure 3 outlines, in an idealised fashion, the kind of 'policy cycle' which global experience is demonstrating as necessary for sustainable development, particularly in circumstances of rapid change such as in Thailand, Lao PDR and Vietnam (Carew-Reid et al, 1994). This indicates how policy may be developed: to summarise briefly, information is obtained and analysed, then used as a basis for decision-making at various levels. Building capacities is necessary in order to implement decisions; monitoring the results of implementation provides updated information to refine policy in light of changing needs. Participation of interest groups, different government sectors, and different levels from centralised to highly localised, is key to the tasks in the policy cycle.

We can compare the policy processes of Thailand, Lao PDR and Vietnam with such a cycle. In all three countries, but particularly in Lao PDR and Vietnam as a result of recent economic changes, policies regarding land use have developed rapidly over recent years. The speed at which they have developed has meant that key stages in the development of policy have been compromised: for example, there is generally a lack of *information* on which to base policy, such that the true pressures on, and needs of, upland cultivators are assumed or misunderstood. There is a clear need for *building capacity* for development of policy, particularly at the local level, and for developing new techniques and methodologies for field use (assessment of physical, economic and environmental conditions; *participation* of local groups) - as well as *implementation* capacity. *Monitoring* the effects of policy is broadly lacking, although there is potential for this to improve, given the increasingly decentralised structures in Lao PDR and Vietnam. Some monitoring has taken place in Vietnam - the implementation of the fixed cultivation and sedentarisation policy over 22 years was recently reviewed - but the mechanism for feeding the results of such monitoring into the policy process is not clear. Until such monitoring is in place, there will always be substantial time lags between changing conditions and balanced policy responses - or alternatively policy changes will be hasty and not based on adequate information.

The *instruments* used to implement policies on shifting cultivation are less forceful than in the 1970s and 1980s, when compulsory resettlement was undertaken on a large scale in the region, and all shifting cultivation was condemned. However, in Vietnam and Lao PDR particularly, policies are aimed at direct government 'command and control', rather than provision of incentives. But as the market plays an increasing role, this approach will have to change to allow the population to be responsive to the market. In addition, the 'command and control' approach is difficult to implement in areas where shifting cultivation is practised. Shifting cultivation responds to many more influences - and many dynamic ones - than direct government plans and interventions. Implementation of government plans is currently hampered by lack of land use management skills at local and district levels - or skills which cannot match the local technical knowledge of shifting cultivators in terms of making the best of local resources. Where institutional roles and extension services are weak, the interpretation and use of laws by local government officials may not be in line with national intentions (in Thailand for example, policy generally recognises people's rights, but local conservation laws may be invoked at any time to reclaim shifting cultivation land for reforestation, and 'illegal' use of forest land may be subject to heavy penalties).

In all three countries, projects based on *alternatives* to shifting cultivation have attracted significant investment from both national governments and development assistance agencies. In many cases these have been expensive - both financially and in terms of technical assistance required - but pursued in the belief that shifting cultivation is the root of perceived problems and that its replacement will make the problem go away, and in the hope that the 'model' or 'demonstration' will eventually be replicated at lower cost. However, in Vietnam for example, expansion of paddy rice has been limited partly by the need for more start-up funds.

In Vietnam, implementation of alternatives to shifting cultivation takes various forms:

- participation and employment of villagers by forest, agriculture and industry unions;
- signing of contracts between villagers and state organisations;
- allocation of land to villagers for forest planting and protection by state forest enterprises, the village authority, or unions.

In addition, the state funds a number of 'model' projects in many provinces, such as the projects on cultivation of sloping land being carried out in Bac Thai province.

In Lao PDR, alternatives to shifting cultivation are being promoted by the Ministry, but there is no information regarding how this promotion is to be implemented on a broad scale. It is not clear whether the current (limited number of expensive) microprojects will form the basis of the wider approach. If so, a thorough evaluation of them and their policy implications is urgently required. However, recently there has been large-scale decentralisation of Forestry Department staff, such that the central office has retained only a small core of staff for coordination and links with the policy process. This decentralisation, together with the appointment of 'village foresters', should facilitate improvement and implementation of policy, given sufficient training of staff. Village foresters are currently instructed to monitor shifting cultivation and to prohibit burning of the forest. If this monitoring function is further developed to one which plans, with villages, a locally-appropriate *balance* of shifting cultivation with alternatives, the results may be very promising.

2.3 Responses to, and impacts of, these forces: how they alter the values of shifting cultivation and its alternatives

These forces have led to a number of *responses* by shifting cultivators; and these responses have had significant *impacts* on the ground. To paint a general picture, typical responses and impacts have been:

- a Pressure for shifting cultivators to *produce higher yields*, especially of cash crops (often new to the locality). This, together with an inability to secure land rights, technology and inputs to upgrade shifting cultivation systems, has led to:
- b The *shortening of fallow periods* to less than that required to rebuild soil fertility and to regenerate biologically and structurally diverse secondary forest cover - leading to *productivity decline*
- c *Loss of nutritional diversity and security*, as a result of decreasing productivity and reduced diversity of subsistence crops in favour of cash crops
- d *Soil erosion and infertility*, expressed as lower yields; and consequently
- e *Even greater pressure* on shifting cultivation systems to produce higher yields.

Hence the downwards spiral a to e starts again, and the shifting cultivator suffers increasing poverty and environmental degradation. However, the shifting cultivator may find a way out of this cycle by changing from rotational shifting cultivation to other approaches - pioneer shifting cultivation, or settlement, or off-farm employment. These can bring their own problems.

Either:

f A move to "pioneer" shifting cultivation in high forest, to appropriate the land and nutrients to be found there; and often

- The *co-option* of such pioneer "shifted" cultivators by influential patrons, as a land clearance machine to assist patrons' land speculation.

Or:

g *Government-enforced "sedentarisation"*, and encouragement of settled agricultural and forestry systems, resulting in *diminished land rights, products and social services, and indebtedness*, at least for some groups (however for other groups this has resulted in access to citizenship and state services)

- Increasing introduction of cash crops and *commercialisation of agricultural production* (in Thailand particularly)

- *Greater dependence on technology and external inputs* to ensure the higher productivity which is required from intensive commercial production

- Development of *irrigation* schemes as a response to commercial needs

- Where these 'settled' alternatives are perceived to be unreliable, *shifting cultivation is continued* in tandem to spread risk and ensure subsistence requirements, and *elements of the cycle a to e may be re-entered*

h *Generally greater integration into the national economy*; in Thailand particularly, as increase in *mobility and off-farm employment*, provided citizenship has been granted.

The impacts of the various forces influence many aspects of a shifting cultivation system: their relative importance will naturally vary according to local circumstances. But the overall combined effect of the forces is that those who are still practising shifting cultivation tend to become poorer, and environmental degradation tends to occur. The inherent resilience of shifting cultivation systems is stretched beyond the level at which it can accommodate the impacts of such forces. Where the forces are weak, however, rotational shifting cultivation can often still be sustainable.

2.3.1 *The relative values of shifting cultivation and its alternatives*

The three teams' field research led to identification of positive and negative values of shifting cultivation. The composition of the set of values is as variable as the types of shifting cultivation, but an overall picture may be described: in general, these values are particularly relevant to rotational systems. The values are changing rapidly in many areas, as a result of the impacts of the forces and responses described above.

Negative values of shifting cultivation systems include perceived environmental problems (notably deforestation, flooding, drought, for which shifting cultivation is partially held responsible in Thailand, although there is still a need for rigorous examination of whether such 'blame' is justified), economic problems (reduction of forest growing stock and sedimentation of dams) and social problems (drug production, use and trade, uncontrolled migration, and conflicts amongst hilltribes/ethnic minorities). Many of these problems are associated with increasing pressures on the system, resulting in progressively unfavourable conditions.

But numerous *positive values* of shifting cultivation were also identified. The techniques of rotational shifting cultivation, practised under favourable conditions, offer many insights for sustainable land use. They can produce multiple goods and services: services such as biodiversity and control of forest fire which, though rarely acknowledged, may be compromised with the introduction of unsuitable alternatives. They exploit the potential of diverse local resources and micro-environments, and ecological processes such as forest succession and nutrient recycling. They use few external inputs (nutrients, energy or technology), in systems which are resilient to moderate change. The soil is rarely left bare, and trees form an integral part of rotational systems (in areas of rotational cultivation in the Central Highlands of Vietnam, the proportion of land under natural forest cover remains the highest in the country, demonstrating that shifting cultivation cannot be simply equated with forest loss). Shifting cultivation systems are developed for, and through, very local circumstances, and incorporate cultural means and rules to avoid exceeding resource limits. For example, in the Mo Nong ethnic group in Vietnam, a traditional system of land allocation for shifting cultivation is regulated by the elders of the village. Shifting cultivators have evolved complex decision-making processes, capable of dealing with multi-factor trade-offs, and trade-offs over time. Flexibility and adaptation of techniques allow the system to respond to emerging problems and opportunities - as long as the forces are not excessive.

These positive values all suggest ways in which alternatives to shifting cultivation, established under similar conditions and in similar cultural environments (i.e. more permanent forms of agriculture and forest management) should operate. They therefore point to systems such as agroforestry, which can exhibit similar characteristics. Indeed, some alternatives can be introduced through the gradual adaptation of shifting cultivation systems e.g. the creation of agroforestry from managed fallow.

An advantage of shifting cultivation over some alternatives is that, while it is now often unproductive, and unsustainable economically and environmentally speaking, it remains potentially highly equitable. Recently-introduced alternatives (with their institutional

conditions) appear not to offer equal opportunities, and indeed have resulted in the removal of hitherto accepted rights of the poor and landless to fallow and forest land.

2.3.2 *Matrix for comparing values of different land use systems: measures of sustainability, productivity and equity*

The creation of a framework of these values and their relation to sustainability was considered a priority need by all teams for the study itself and for future policy work. There was an initial preoccupation by the teams with the assessment of sustainability, in light of questions which were emerging through the initial strategy meeting and early national research work:

- How can the sustainability of different land use options be examined and compared?
- What common criteria exist for examining sustainability of shifting cultivation and alternatives?
- How can these criteria be measured in the field?
- What are Thai, Lao and Vietnamese concepts of sustainability?
- What are shifting cultivators' concepts of sustainability?
- What values are there, other than sustainability, which must be compared in the field in order to examine the relative values of shifting cultivation?
- How do the values differ between local farmers' ideas, scientists' ideas, and policy-makers' ideas?
- What components of shifting cultivation and its alternatives contribute to sustainable development?
- Where, and under what conditions, is each type of system sustainable?
- Which forces (notably policies) make for high values and sustainability, and which for low values?

The challenge of achieving sustainability may be summarised as follows: *Environmental sustainability* entails an ecosystem being able to support healthy organisms, whilst maintaining its productivity, adaptability and capability for renewal. *Social sustainability* reflects the relationship between development and social norms: an activity is socially sustainable if it conforms with social norms or does not stretch them beyond the community's tolerance for change. *Economic sustainability* requires that benefits to the society in question exceed the costs incurred, and that some form of equivalent capital is handed down from one generation to the next.

How these goals are articulated locally, and what indicators are used to measure them, will be very different locally. Much will depend upon the field assessment systems which are available, as well as upon what is locally considered important. For example, the Vietnam team used forest regeneration and soil fertility change as indicators of environmental sustainability; retained traditional cultivation characteristics and spiritual values as indicators of social sustainability; and food security (rice equivalent per capita) and timber volume losses as indicators of economic sustainability.

At the teams' final meeting in Chiang Mai, in order to bring together the identified values of shifting cultivation and alternative systems, and the concept of sustainability, a 'values

matrix' was developed. The illustrative matrix, shown in figure 4, is a framework for bringing together information on the values of specific land use systems including shifting cultivation, and the conditions under which these values are expressed. The goals of land use should be the same for all land use systems being compared. Using this matrix, *each land use system* (eg a type of shifting cultivation, permanent agriculture or forestry) may be 'valued' from very positive to very negative, or from 1 to 10, according to each value's standards/ measures. The values can be assessed at many levels e.g. at field, farm, village, watershed, national and global levels. Hence the framework could be used for *villagers' assessment* of their individual land use systems, or for a *national assessment*. At each level, the issues and the possible trade-offs differ, and - because no level is a "closed" system - there are links between levels. Values can also be assessed by different actors/ sectors e.g. by agriculturalists, conservationists and loggers. Values are affected by various conditions, such as policy. These may increase or decrease the values. Where significant, these can be noted, as shown in the right-hand column.

2.4 Assessment of policies affecting shifting cultivation values

Assessment of, and reaction to, the 'problem' of shifting cultivation has been beset with *policy presumptions*. Policy-makers have observed environmental problems on the ground (notably deforestation, flooding, drought), economic problems (reduction of forest growing stock and sedimentation of dams) and social problems (drug production, drug use and trade, uncontrolled migration, and ethnic conflicts amongst hilltribes/ ethnic minorities). In the absence both of clear information on these highland development problems, and of analysis of their association or otherwise with shifting cultivation, policy-makers have tended to assume that shifting cultivation is central to many of these problems.

Policy-makers have also generally failed to distinguish between the different types of shifting cultivation. (Conversely, researchers have tended to distinguish shifting cultivators by ethnic group, a distinction which is no longer a universal determinant of land use, at least in Thailand). For example, in Vietnam until the current exercise, environmentally damaging pioneer systems were not normally distinguished from the potentially benign rotational systems. Yet in part of the Central Highlands of Vietnam, forest cover is high despite rotational cultivation having been practised over a long period of time, which does not justify blanket condemnation of all shifting cultivation systems. In Thailand, the research has shown that forest loss is correlated more strongly with the increase in population of lowland Thais than with the presence of those practising shifting cultivation. Furthermore, policy-makers tend to have ignored the fact that shifting cultivation in highland development is a highly dynamic issue: a transitional problem - in a zone of transition between agriculture and forestry, in a transitional period between subsistence, exploitative land "mining" and market-sustained continuous land management. Research undertaken by this project demonstrates that significant change is occurring in many areas of shifting cultivation, and that increasing pressures and forces on the system increase vulnerability to change.

Figure 4: Matrix for comparing values of alternative land uses (based on group discussion at Chiang Mai workshop, February 1994)

Goals of land use	Component values	Standards/ measures of values ⁽¹⁾	Conditions affecting values ⁽²⁾
Productivity	<ul style="list-style-type: none"> * good yields for site * many products/ services - food, fibre, water, energy, landscape 	<ul style="list-style-type: none"> * input/ output efficiency * nutritional diversity * numbers of products * tonnes per hectare * gross margins 	<ul style="list-style-type: none"> * policies and their integration * policy instruments * market incentives * tenure * infrastructure (roads, irrigation, electricity) * supportive institutions * access to capital * skills and professional attitudes * technology * information availability * physical factors - topography, soils, etc. * population pressure
Sustainability and stability	<ul style="list-style-type: none"> * productivity non-declining * ecological processes maintained * biodiversity maintained * cultural knowledge maintained/ improved * economic viability maintained/ improved * cultural norms/ tolerance not exceeded * local self-dependence increased 	<ul style="list-style-type: none"> * food security * fallow length * minimum erosion/ fertility level * minimised impact of (eg) drought/ flood * extent of regeneration vs. extent of forest culling * watershed stability * use of ecological 'loops' * genetic spread of wild and domesticated species * cultural means to manage/ regulate system * extent of local involvement * project replicates with little support * adaptiveness * use of 'internal' inputs; appropriate use of external inputs like chemicals, oil * yield non-declining * prices non-declining 	
Equity	<ul style="list-style-type: none"> * even distribution of costs and benefits * social desirability maintained/ improving 	<ul style="list-style-type: none"> * reduce obligation to migrate from area * reduced landlessness * median incomes rise * community structures cope with problems and opportunities * community/ group federation 	

Notes on matrix:

(1) Each land use system (eg a type of shifting cultivation, permanent agriculture, or forestry) may be 'valued' from very positive to very negative, or from 1 to 10, according to each value's standards/ measures. The values can be assessed at many levels, eg. at field, farm, village, watershed, national and global levels. Hence the framework could be used for *villagers' assessment* of their individual land use systems, or for a *national assessment*. At each level, the issues and the possible trade-offs differ, and - because no level is a "closed" system - there are links between levels. Values can also be assessed by different actors/ sectors, eg. by agriculturalists, conservationists and loggers.

(2) Values are affected by various conditions, such as policy. These may increase or decrease the values. Where significant, these can be noted, as shown in the right-hand column.

Partly as a result of the general lack of analysis, *policy responses* to the set of perceived highland problems have been inadequate:

- *Policies have lacked practicality and realism.* Policies have tended to be too ambitious, given the lack of capacity to implement them, and they attempt to reach the 'goal' in an unrealistic time span. The Lao policy of the 1980s to resettle 277,000 shifting cultivators was clearly beyond the capacity of the implementers, and, given the topographical and resource constraints, did not represent a realistic response to the issue. And there are no regulations on the use of forested land for slash-and-burn cultivation in the Vietnamese laws on land and forest protection and development, despite it remaining a widespread practice.
- *Policies have lacked focus.* For example, until recently, the Vietnamese policies to sedentarise shifting cultivators did not adequately distinguish between regions, ecological situations, social groups and specific shifting cultivation practices. In some cases, sedentarisation policies using land allocation as an incentive backfired when new landowners used their right to sell their land and returned to pioneer cultivation, thus actually increasing the area under shifting cultivation.
- *Policies have lacked popular support.* In all countries, incentives to stop shifting cultivation were rarely developed with people's participation; and people have usually only very partially taken up the alternatives. Sometimes, as in Thailand, the reaction against alternatives has been violent. Even well-meaning efforts in Thailand led to confrontation between neighbouring villages, largely because of lack of outsiders' understanding of local conflicts, in turn due to lack of true participation by the community.
- *Policies have lacked coordination.* For example, in Thailand single issues have tended to dominate policy towards the highlands - and different issues have dominated at different times - rather than a consistent and integrated approach. Currently, policies designed to enhance social integration and develop the market economy allow improved access to remote regions, whilst reforestation and conservation policies increasingly restrict access to some of the same areas. There are also conflicts between agricultural activities and conservation requirements: some cash crops, especially trees, are considered to be environmentally friendly; others (eg cabbages) are blamed for soil erosion and pollution of rivers with pesticides.
- *Policies have lacked a learning and adaptive approach.* The values of shifting cultivation have been largely ignored in policy development. There is widespread evidence in traditional shifting cultivation systems of indigenous knowledge and communal decision-making that allow response and adaptation to emerging problems and opportunities: yet past efforts in highland development and conservation have largely neglected to take them into account. The policy process needs to develop mechanisms to learn from the variety of traditional systems, as well as to draw lessons from existing initiatives. As has been shown above, the forces acting on upland agricultural systems produce a complex set of responses, and these need to be taken into account in developing new alternative systems. For

example, commercial agriculture in upland Thailand is partly dependent on irrigation, yet a water shortage indicates that the priorities for water use will become a major policy issue in the near future. It is significant that irrigation is the reason behind the 'successful' villages in the highlands, yet there is the prospect of the former shifting cultivators being 'blamed' for depleting lowland water supplies. Where commercialisation of agriculture has failed - or may in the future fail due to limited water resources - farmers are left vulnerable to strict enforcement of laws on shifting cultivation. No alternative provisions are made for when the introduction of alternatives fails.

- *Policies have lacked long-term consistency:* where alternatives to shifting cultivation have been introduced, long term security and sustainability is not necessarily ensured for the farmers. In Thailand, policy emphases have kept changing - responding to changing perceived needs and pressures, but also losing continuity. Currently, cash crops such as temperate fruit and vegetables are promoted as the most effective ways of increasing productivity, yet pressure on water resources and market competition from China is already jeopardising long-term production. The current tolerance of settlements in watersheds and conservation areas may change as policy addresses the critical need for water conservation, such that apparently assured tenure may not be guaranteed. Participatory, multiple use schemes need to be developed to allow for both water conservation and agriculture. In Lao PDR and Vietnam, farmers spread the risk of adopting new practices by maintaining some shifting cultivation. Even where conditions are thought to be favourable for the development of 'alternatives', some farmers continue pioneer cultivation.

The policy picture is not all negative, however. There are many examples of *improvements in rural welfare*. In Vietnam, a review of the implementation of the fixed cultivation and sedentarisation programme over 22 years showed that 30% of people under the programme enjoyed a 'fairly good' stable living. (However, the conditions that particularly benefitted this 30%, and not the other 70%, were not described). In Thailand, some 'hilltribes' who were formerly practising shifting cultivation are now engaged in large-scale commercial production and are relatively wealthy. Ironically, in some cases their wealth was amassed as a result of opium production (although profitability of today's cash crops is thought to compare favourably with opium), which allowed farmers to take risks in developing commercial agriculture. In Lao PDR, various alternatives to shifting cultivation have been tried on a small scale, with some degree of success. But these programmes are currently limited by the need for high financial and technical inputs, constraining replicability on a large scale.

In general, however, there is little evidence of such policies having led to major and region-wide improvements in rural welfare or national incomes, or in slowing forest degradation and other environmental problems. As such, these policies are unlikely to have contributed to sustainable development. The policy process may well be in need of improvement.

Neither is there evidence of comprehensive monitoring of policies. In Thailand, there is currently no definitive data on the impact of highland agriculture on the environment

(such as the effects on erosion and sedimentation, or pesticide pollution of streams). But there is some direct measurement of land use eg the ONCB regularly monitors the area under opium cultivation. Economic and social development policy in the highlands is implemented on the basis of individual projects, each with its own monitoring system, which reports to the ONCB and National Security Council. In Vietnam and Lao PDR, there is increasing dialogue at provincial and national levels, but no monitoring of the impact of policies as such.

3. CONCLUSIONS AND RECOMMENDATIONS

The individual conclusions and recommendations *specific* to Lao PDR, Thailand and Vietnam are given in the individual country reports. Here, we address the common issues and policy recommendations that apply to all countries. The conclusions and recommendations of this overview report should also be considered in the national policy debates following this study.

Shifting cultivation is in rapid transition in all three countries, and it will never remain the same. In many areas, which are subject to increasing demands from local people, higher population pressure, special demands for protecting irreplaceable national environmental assets, and where shifting cultivation can be shown to have led to severe environmental degradation, it should be replaced by more settled systems. The more sustainable of these alternatives will exhibit values similar to shifting cultivation, e.g. multiple products and services, low external inputs. Where all the positive values of shifting cultivation cannot be replaced, consideration should be given to mixed permanent/shifting systems. In any case, the gradual transformation from shifting to permanent cultivation is preferable to sudden 'sedentarisation'. In a few areas, remote from the mainstream economy and with few competing claims on land, shifting cultivation should continue to evolve as a legitimate land management system. The future will continue to bring further changes, and policy must be able to anticipate these.

In *Thailand*, the indications are that shifting cultivation will become increasingly rare. Where present, it will more usually become an adjunct to permanent agriculture, officially tolerated for its role in farm risk reduction and for the maintenance of cultural/landscape diversity. In most areas, however, there will probably be official disincentives to shifting cultivation, as the security of water supplies in particular is becoming of increasing national importance; and here the issue will be how to compensate local people for the trade-off of shifting cultivation in favour of water. As in the highland societies of other economically relatively developed countries, the highlands of Thailand may become depopulated of younger people, and become resources for tourism, conservation, water supplies, forestry, fruit and livestock production - with the latter three acting as family savings in an otherwise urban-dominated household economy.

In *Lao PDR*, shifting cultivation will remain central to the livelihoods of most people. There will, however, be a great opportunity to build productive and sustainable land use systems upon the principles and lessons of shifting cultivation, and to avoid the mistakes of imposed permanent agriculture and forestry.

The situation in *Vietnam* is different again, although it is fast-changing to resemble that of Thailand. Indeed, Vietnam is likely to follow similar highland development paths to Thailand, provided markets and commercial agriculture and forestry can develop in order to bring out highland comparative advantages and encourage investment in land management (as opposed only to land clearing at present). However, shifting cultivation will continue to be of at least secondary importance to many rural Vietnamese for many years to come; and a major issue will be to zone those areas where it should *not* be discouraged.

It is this national and sub-national policy level which is particularly addressed by the current overview report.

3.1 The policy process

What is becoming clear is that field interventions aiming at improving sustainability have only really addressed the farm to village levels (e.g. soil inputs and erosion control to ensure field ecological sustainability, and local infrastructure to ensure village economic sustainability). Most development projects continue to emphasise these factors.

In contrast, the *critical policy-relevant issues* now appear to concern the sustainability of overall highland land use and settlement patterns at the national level:

- the *poverty, environmental degradation and social dislocation* suffered in the highlands relative to the rest of the country (exacerbated by a range of forces, including many from outside the highlands)
- the *negative impacts on the nation as a whole* of shifting cultivation and other land uses necessary to sustain *local* livelihoods in the highlands (e.g. downstream water supply problems, pesticide pollution of streams, diminished timber reserves and reduced biodiversity)
- the *negative impacts on highland people* of the land uses, such as forest conservation and dams etc., necessary to produce *national* goods and services (e.g. restricted access to land)
- the *need for a 'holistic' approach* to land use research, which takes into account economic, social and environmental processes: such an approach needs to be flexible and adaptive and should recognise the dynamic nature of mountain agroecosystems
- the *need to resolve conflicts of interest* between different sectors of the population, and between different policy sectors (e.g. local versus national claims to limited water resources and their respective costs and benefits)
- the *need to consider possibilities of providing "compensation"* - notably off-farm employment - that avoid the need for some land-based trade-offs, and hence avoid possible environmental degradation
- the *need to develop and maintain highland comparative advantage* (e.g. for temperate fruits and vegetables, forestry and tourism) in the face of international competition, and in a way where both local people and the nation save costs, and benefit equally
- the *need for local incentives to invest in sustainable land use management* - as opposed to the present, where (given current prices, yields and market access) it is profitable to exploit forest lands but not profitable to invest in their sustained management
- the *need for incentives for the (re-)building of community management approaches*
- the *need to address the lack of legal basis for land ownership.*

These issues together constitute an agenda for developing a highland sustainable development strategy. Many are already being taken up. In Lao PDR and Vietnam, the

involvement of the teams in ongoing policy dialogue has helped to frame more realistic and focused policy towards shifting cultivation (the 1993 Decree on Highland Socioeconomic Development in Vietnam, and the November 1993 Decree on the Management and Use of Forests and Forest Land in Lao PDR). In addition, in all three countries, these issues are being presented at seminars attended by senior policy-makers. In Thailand, for example, results of the study have been made available to those planning a master plan for highland development, and to ongoing discussions on drug control in the highlands.

It is therefore clear that effective policy for shifting cultivation must be formulated in the context of broader highland development and environmental concerns. This will entail three fundamental approaches to the sustainable development of the highlands being introduced to the current piecemeal attempts to deal with these issues:

- A *A step-by-step approach* to change should be adopted, allowing the policy process to monitor and incorporate lessons of each step into the following stage of policy development and implementation. The following steps (B and C) are necessary but ambitious: they cannot be introduced overnight. *The ultimate goal is for different national policy cycles concerning shifting cultivation and its alternatives for highland development to be focused on sustainable development, and to become increasingly better integrated.* It is acknowledged that it would not be necessary for them to be integrated in one attempt; it will and should take time.
- B *The economic, social, cultural and environmental values* of different types of shifting cultivation and its alternatives must be distinguished, both by different actors (e.g. local people/ national authorities) and by different levels (e.g. farm/ watershed/ national/ global). This should occur throughout the policy cycle, and not just in the 'information assembly' stage as tends to happen at present (if at all). The 'values matrix' given in figure 4 shows how there are multiple feedback loops from conditions (many of which are determined or affected by policy) to the values themselves. This matrix could be considered by planning and monitoring bodies, and adapted for local use.
- C *A coordinated, participatory and multidisciplinary approach, are needed throughout the policy cycle*, requiring action in all segments of the cycle, by relevant actors. In effect, several cycles need to come together - TFAP/FSMP, ministry planning, corporate planning, project cycle planning, etc. During the final meeting in Chiang Mai, participants constructed a matrix bringing together recommendations for each stage of the policy cycle (figure 5). For each set of recommended actions, certain 'actors' were suggested. The list of actors is still tentative and incomplete, and requires refining at national level. None the less, it illustrates the degree of participation required. This matrix should be examined, reduced and expanded where necessary, in the subsequent national policy debates.

A, B and C will ensure that the information is available, and the interested actors are brought together, to seek integration of land use values where possible, and trade-offs between them where necessary. This should ensure sustainable highland development, and

a limited but appropriate role for shifting cultivation within it. However, to make these changes suggested at A, B and C will take considerable commitment at policy level.

3.2 Information and analysis

Within each country, there is great variation in shifting cultivation. More detailed local studies need to be made in order to generate information about the values of specific shifting cultivation systems and their alternatives.

In part, the need is for effective *"tools" to assess productivity and sustainability of specific land use systems in the field* across the whole land use spectrum from virgin forest, to managed forest, to shifting cultivation, to permanent agriculture. (Productivity will be relatively easier to assess in the field than sustainability). The tools are needed to assess which land use types in this spectrum best meet specific local requirements.

The agroecosystem analysis approach is one such tool, which helps to show the links between values, forces, impacts and alternative land uses. It has been adopted in all countries but is not yet routine in Lao PDR and Vietnam. Participatory Inquiry techniques should be introduced in order to obtain more detailed assessments of local situations, including local perception of values, opportunities and problems (box 1). Both agroecosystems analysis and participatory inquiry should be considered by forestry, agriculture, land use and highland development authorities.

3.3 Decision-making at different levels

National policy guidelines, and land use planning guidelines are needed for helping decision-makers address the emerging land use pattern in the highlands, and ensuring its sustainability. These would be based on the following conclusions of the current study, but also deal with the specific case at hand. The guidelines would show what sort of detailed information is required to judge each type of case.

- The studies have shown that, in all countries, *there are circumstances where rotational shifting cultivation remains appropriate*. This is where its *value* to local people - in terms of its *productivity, sustainability and equity* - is at least as high as alternative forms of land use; and, in addition, where broader (national) demands for alternative land uses are low. In these areas, population pressure tends to be low, markets and infrastructure are weakly developed and therefore subsistence production has a high priority, soils are relatively good, and there are few competing demands for the land for timber, watershed protection, etc.
- However, there are *increasing incidences where shifting cultivation is not appropriate*, providing lower net values than its alternatives - *both* for the local people concerned and for the nation as a whole. Productivity and sustainability have been rapidly reduced by population pressure and reduced fallowing periods: the local people suffer food insecurity; the land becomes increasingly infertile; and the enterprise costs (labour costs in particular) of shifting cultivation become

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Box 1: Participatory Inquiry

In recent years, there has been a blossoming of participatory approaches for research, extension, planning and monitoring. Some focus more on problem diagnosis. Others are more oriented to community empowerment. Some concentrate more on facilitating on-farm or farmer-led research. Others are approaches designed to get professionals in the field listening to farmers. Some have been developed in the health context; some for watershed development; and some for food security assessment. Some have been developed in government extension institutions and others in NGOs. This diversity of names, applications and "owners" is a sign of strength. It implies that each variant is to some extent dependent on location-specific contexts and problems.

These new approaches and methods imply shifts of initiative, responsibility and action downwards in hierarchies, and especially to farmers and rural people themselves. Earlier investigations, where researchers collected data and took it away for processing, are superseded by investigation and analysis more by local people, who share their knowledge and insights with outsiders. Methods such as participatory mapping, analysis of aerial photographs, matrix scoring and ranking, flow and linkage diagramming, seasonal analysis, and trend diagramming are not just means for farmers to inform outsiders, but methods for farmers' own analysis.

Even though there is great difference between these approaches, a series of common principles underpin most of them:

- *A Defined Methodology and Systematic Learning Process* - in each case this focuses on cumulative learning.
- *Multiple Perspectives* - the objective is to seek diversity, rather than characterise complexity in terms of average values.
- *Group Inquiry Process* - this implies three types of mix, namely multidisciplinary; multisectoral; and mixes of outsiders (professionals) and insiders (local people).
- *Context-Specific* - the methodology is flexible enough to be adapted and changed to suit each new set of conditions and actors.
- *Facilitating Experts* - the role of the "expert" is best thought of as helping the people in their situation carry out their own study.
- *Leading to Action* - the inquiry process leads to debate about change, and debate changes the perceptions of the actors and their readiness to contemplate action. Action is agreed, and implementable changes will therefore represent an accommodation between the different conflicting views.

Participatory inquiry is the methodology that overarches these approaches and their methods. In the project context, inquiry occurs during appraisal, planning, implementation, monitoring and evaluation. It is also used in the context of research, extension and education. Participatory inquiry can be defined in the following way:

Participatory Inquiry is a structured methodology based on principles of multiple perspectives, group inquiry, context specificity and flexibility that uses systematic methods to bring about changes in problem situations that the people in that situation see as improvements.

Together, the techniques of "Participatory Inquiry" cover:

1. Group and Team Dynamics and Methods

Team contracts
Team reviews and discussions
Interview checklists
Rapid report writing
Energisers
Role Reversals/Work-Sharing
Villager and Shared Presentations
Process Notes and Personal Diaries

2. Sampling Methods

Transect Walks
Wealth Ranking and Well-Being Analysis
Social Maps
Interview Maps

3. Interviewing and Dialogue

Semi-Structured Interviewing
Direct Observation
Focus Groups
Key Informants
Ethnohistories and Biographies
Local Stories, Portraits and Case Studies

4. Visualisation and Diagramming Methods

Mapping and Modelling
Mobility Maps
Seasonal Calendars
Daily Routines and Activity Profiles
Historical Profiles
Trend Analyses and Time Lines
Matrix Scoring
Preference or Pairwise Ranking
Venn Diagrams
Network Diagrams
Flow Diagrams
Pie Diagrams



unsustainable. In addition, there appear to be relatively high disturbances to the watershed and social dislocation (although each instance needs to be looked at carefully before upstream-downstream causal links can be concluded).

- Moreover, it appears that inappropriate policies have both degraded shifting cultivation values still further for local people, and have increased the negative impacts of shifting cultivation on other people - or have at least hastened the process.

Where it is clear that shifting cultivation is not productive and sustainable both for local people and for the nation, then the selection of alternatives may be appropriate. The questions are then principally:

- *how to introduce sustainable new systems to replace shifting cultivation*, where its values are not unique; or
- *how to add to shifting cultivation systems* where some of their values cannot be replaced, but on their own are inadequate.

Hence policies for national needs for watershed and biodiversity conservation, or narcotics control, etc., will not only have to become based on better information about the specific case in hand, but also deal more explicitly with the trade-offs with other sectoral and local needs. That is, the various options for land (wildlife vs. water vs. export crop, etc.) have to be assessed, integrated where possible, and traded-off where integration is not possible. Trade-offs between the interest groups (the nation, the province, local leaders, households and marginalised groups) also need to be more explicit. Compensation should be made where necessary, based on values lost. This calls for a more coordinated, participatory process of highland development.

The general trend is that highlands will be needed for forestry, water, biodiversity and tourism, i.e. national purposes that cannot be provided elsewhere in the country. But activities such as food production generally have a comparative advantage in the lowlands, indicating that the compensation made available to highlanders should include non-land based opportunities.

3.4 Building capacities

The needs include *greater participation* by local people, to add local values to a policy perspective which has been overly-scientific on the one hand and apparently anti-ethnic on the other; and to generate local community management systems to sustain the social benefits of land use. This requires policy and institutional change to allow more integrated approaches at local and national levels. It will necessitate the training of *extension* staff at the district and local level, and training of provincial staff responsible for implementing policy. The development of *monitoring* capacity (both training of staff and design of mechanisms) is important, such that monitoring becomes an automatic part of all pilot projects and models, as well as policy initiatives. The development of *guidelines* should assist in the application of policies: for example on land allocation, guidelines on selection of areas and appropriate land uses are required. Finally, the task should not be seen as entirely a governmental one: the strengthening of local *non-governmental institutions*, which can undertake some of the tasks currently carried out by government services, is required to give a mixed support structure to highland villages. The teams have also learned that the institutional separation of agricultural and forest concerns has not helped to address shifting cultivation, which spans the concerns.

3.5 Implementing policy

The traditional method of implementing policy through government 'command and control' is not always successful in current economic and social conditions. Policy objectives have not been achieved easily, if at all. Policy implementation through the provision of *incentives* and *local empowerment* is necessary, entailing the strengthening of participatory approaches, the development of community management of resources, and incorporation of local and traditional laws and rights into the policy. Local institutions can enhance the involvement of local people in implementation.

3.6 Monitoring

Monitoring of policy was found to be greatly lacking, yet it is a vital element in the refinement and development of policy under rapidly-changing conditions. It enables lessons to be learnt - both successes and failures - from past and current initiatives. Review and monitoring of all models and pilot projects, as well as the overall effects of policy initiatives, will provide a rapid feedback to the 'information and analysis' stage of the policy cycle.

3.7 Future research

The following topics can be identified for future research:

- An accurate assessment is required of the *relative contribution which shifting cultivation makes to deforestation*: there is a need for research into the correlations between the various types of shifting cultivation, other forest uses, and forest loss and environmental degradation. This is critically lacking, particularly on the nature of upstream-downstream links and respective impacts, about which opinion is divided.
- Further investigation into the *'forces' acting on shifting cultivation and the extent to which coping strategies and responses of farmers are viable* (eg. the effects of rapid population increase in Chiang Mai province in Thailand; and the impacts of movement of lowlanders to uplands in Vietnam).
- An assessment of those *elements of shifting cultivation systems which have enabled successful adaptation* to recent pressures.
- Further investigation into the *lessons of communal management of forest resources* eg. the conditions under which sustained yield of minor forest products might be produced.
- There are many *local lessons of highland development projects* which can be drawn out, monitored and incorporated into the planning of future projects.
- There is a need to develop *technological innovations which take into account the huge range in environmental conditions* within even small areas in the highlands; local microenvironments are important, and are often most successfully exploited by shifting cultivation.
- There is a need to examine *systems that might offer viable alternatives* to shifting cultivation eg. those that combine managed rotational cultivation with permanent agriculture.
- *Integrated sustainability assessment frameworks* should be developed, using the local lessons and experience from projects, as well as study of traditional land use systems.

- Each team concluded that the long history of shifting cultivation in many different hill environments has resulted in a *large body of traditional knowledge - which should be explored empirically, and tapped* where appropriate for highland development in general, before it "dies out" with shifting cultivation.
- A *regional perspective* will be required for any future development, taking into account impacts of upland land use on downstream areas and neighbouring countries, developing trade links, illegal immigration across borders, etc.

Figure 5: Matrix of recommendations (from Chiang Mai workshop, February 1994)

Policy cycle tasks	Recommendations of workshop the following are needed:	Illustrative actors to implement recommendations		
		Thailand	Vietnam	Lao PDR
Information and analysis	criteria for sustainability for land uses socio-economic data on specific situations identify use of forest products/ dependency constraints	Universities & implementing agencies; Public Welfare; Community Devt Dept.	Universities & implementing agencies; Forest Science Institute; National Statistics Office; Ministries of Forestry & Agric.; Ethnic Minorities Committee	Projects; Statistical centre
Policy decisions: - sectors - provinces	take a step-by-step approach to changes integration	National Security Council; National Economic and Social Development Board; TDRI	Ministry of Forestry; Ministry of Agriculture	Dept. of Agriculture (upland agric.); Dept. of Forestry (shifting cultivation division)
Building capacities	training extensionists:- local, province, ministry build local institutions monitoring capacity guidelines for land use sustainability/ training guidelines for land allocation (Lao), especially minorities (Vietnam)	RECOFIC outreach programme? Provinces? Dept. Land Development; Royal Forestry Dept. Public Welfare Dept.	Silviculture Dept (MOF) (responsible for training : national, provincial); Forest Science Institute, Ethnic Minorities Committee, Min. of Agric; Forestry College, projects	Dept. of Forestry training office; provinces and districts
Implementation	pilot projects (especially Vietnam) regulations local laws (indigenous) community management/ integration of conservation and development strengthen participatory approaches	Public Welfare Dept; Royal Forestry Dept; Public Welfare Dept? TDRI	Provinces, MOF Planning dept; Forest Science Institute; Forestry College, Land Use Working Group	Shifting cultivation division of Dept. of Forestry
Monitoring → information and analysis	land use changes resource changes guidelines correlate deforestation with shifting cultivation and other land uses broaden forest inventory to include fallow, non-timber forest products, etc. review all pilot projects together to pull out successes, and criteria of success	Public Welfare Dept; Community Development Dept.	Min. of Forestry; Ethnic Minorities Committee; (National Statistics Office)	Monitoring team for pilot projects: Min. of Agric. and Forestry; Provinces, Districts. Village forester?

* The list of actors is not complete. It includes only those which were most apparent at the workshop.



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ACRONYMS

FSMP	Forest Sector Master Plan
GATT	General Agreement on Tariffs and Trade
GDP	Gross domestic product
GNP	Gross national product
MOF	Ministry of Forestry
NRC	National Research Council
NSO	National Statistical Office
ONCB	Office of Narcotic Control Board
RECOFTC	Regional Community Forestry Training Centre
TDRI	Thailand Development Research Institute
TFAP	Tropical Forestry Action Programme
UNFDAC	United Nations Fund for Drug Abuse Control



**ANNEX I: NATIONAL TEAM MEMBERS
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* Institutional affiliations at time of input to the project. Both Noukone Symmavong and Kham Keosacksith were transferred to the National Forest Plantation Division of the Department of Forestry in 1993.

ANNEX II: Country summary description: THAILAND

COUNTRY BASIC STATISTICS:

population (1989) = 55.6 million; population growth rate (1987-2000) = 1.5%;
population per km² (1989) = 108.6; land area = 511,770km²; main economic activities
agriculture (17% GDP); industry (35%); services (48%); GDP per caput(1987) = US\$850

COUNTRY FOREST STATISTICS:

forest area: natural forest 127,350 km², plantations 7,560 km² (1990); land under forest
(1990) = 26.4%; rate of deforestation of natural forests = 3.3% per annum (1981-1990);
rate of plantation = 8.5% per annum (1981-1990)

MAIN AREAS WHERE SHIFTING CULTIVATION IS PRACTISED:

shifting cultivation is practised mainly in Chiang Mai, Mae Hong Son and Tak provinces
in northwestern Thailand, and to a lesser extent in neighbouring provinces such as Chiang
Rai and Lamphun. Many farmers practising shifting cultivation live in areas designated
for conservation; some other live in areas designed for economic development. There is
little evidence that legal rights to land will be granted to villagers in the mountains.

EXTENT OF SHIFTING CULTIVATION:

about 5 million hectares, or half of the upper Northern Region. This represents almost
10% of the total land area.

MAIN SHIFTING CULTIVATION SYSTEM TYPES:

Virtually all rotational cultivation, but of a degraded form, commonly with very short
fallows of only 1 to 2 years. Main crops: upland rice, maize and opium, with up to 30
intercrops (eg chillies, sesame) in one field.

MAIN PRACTITIONERS OF SHIFTING CULTIVATION:

around 1 million people are estimated (1994) to be practising some form of shifting
cultivation, but few are entirely dependent on it. The major ethnic groups practising it are
Karen, Hmong, Lahu, Akha, Lisu and Yao.

GOVERNMENT INSTITUTIONS RESPONSIBLE FOR SHIFTING CULTIVATION:

Office of the Prime Minister:

Office of Narcotic Control Board - established as an implementing agency with
funding from UN Fund for Drug Abuse Control and other bilateral assistance;
coordinates with the UN on the funding and management of development projects;
instrumental in developing official policy in the highland areas;

Office of the National Primary Education Commission

National Security Council - responsible for national security issues, from issuance of
citizenship to law enforcement on opium; the major body responsible for highland
development policy;

National Environment Board - responsible for watershed classification;

Ministry of Education:

Department of Non-formal Education

Department of General Education

Ministry of the Interior

Department of Public Welfare - coordinates all services to the highland population and collaborates in assisted projects; but the Ministry is also empowered through the **Land Act** to declare that all land under shifting cultivation is illegal and the Royal Forestry Department is entitled to take land away from farmers at any time;

Department of Local Administration - responsible for censuses, issuance of citizenship and official recognition of villages;

Border Patrol Police - provide education and are responsible for law enforcement;

Ministry of Agriculture and Cooperatives

Royal Forestry Department - responsible for national policy concerning forests, including afforestation, conservation; land use control; the **Forest Act** sets penalties for damage done to forests;

Department of Agricultural Extension - extension of agricultural technology;

Department of Land Development - responsible for land development, land evaluation, soil/ water conservation research;

Ministry of Defence

Joint Operation Centre Supreme Command and Third Army - responsible for security matters and destruction of farmers' opium crop.

SUMMARY OF DYNAMICS, POLICIES AND PROBLEMS OF SHIFTING CULTIVATION:

In Thailand, in areas where highland population density is relatively high, the extensive development of a road network and of a large, thriving internal market has allowed shifting cultivators to respond positively to lively market signals encouraging fruit and vegetable production. Many groups have become integrated into the mainstream economy, spontaneously changing from shifting to settled cultivation systems in order to take advantage of the greater food and income security offered by alternatives, but also taking advantage of state benefits and working for wages. The financial rewards have been adequate to compensate for some of the social goods and services lost when shifting cultivation was ceased. A wide range of highland development projects has begun to generate much information about the technical issues of settled highland land use. As a result, "pure" rotational shifting cultivation is now comparatively rare, being confined to more isolated regions of relatively low population density, with fewer competing demands for land, and little potential for market-oriented production (principally the Karen regions near the Myanmar border). However, there are numerous areas where shifting cultivation is carried on as a socially significant (although usually financially marginal) activity alongside settled systems.

The indications are that shifting cultivation will become increasingly rare in Thailand. Where present, it will more usually become an adjunct to permanent agriculture, officially tolerated for its role in farm risk reduction and for the maintenance of cultural/landscape diversity. In most areas, however, there will be official disincentives to shifting cultivation, as the security of water supplies in particular is becoming of increasing national importance; and here the issue will be how to compensate local people for the trade-off of shifting cultivation in favour of water. As in the highland societies of other economically relatively developed countries, the highlands of Thailand may become relatively depopulated of younger people, and become resources for tourism, conservation, water supplies, forestry, fruit and livestock production - with the latter three acting as family savings in an otherwise urban-dominated household economy.

ANNEX III: Country summary description: LAO PDR

COUNTRY BASIC STATISTICS:

population (1992) = 4.36 million; population growth rate (1987 - 2000) = 2.6%;
population per km² = 16.9; land area = 230,800 km²; main economic activities:
agriculture (65% GDP), forestry (10-15% GDP); GNP per caput (1989) = US\$170

COUNTRY FOREST STATISTICS:

forest area: natural forest = 131,730 km² (1990); plantation = 60 km² (1990)
land under forest (1990) = 57.1%; rate of deforestation of natural forests = 0.9% per
annum (1981-1990); rate of plantation = 4.1% per annum (1981-1990)

MAIN AREAS WHERE SHIFTING CULTIVATION IS PRACTISED:

shifting cultivation is practised throughout Lao PDR, but particularly in the northern
provinces, and in the south eastern province of Xekong. Most of the land is mountainous.
Until 1993, all upland was subject to traditional tenure systems, but a system of land
allocation is currently being implemented

EXTENT OF SHIFTING CULTIVATION:

the current extent of shifting cultivation is not known, although it is thought to extend
throughout the mountainous areas (which constitute most of the country)

MAIN SHIFTING CULTIVATION SYSTEM TYPES:

*there is little current data but it is thought that pioneer cultivation is practised mainly on
the upper slopes and rotational cultivation on the mid-slopes. Main crops: upland rice,
maize*

MAIN PRACTITIONERS OF SHIFTING CULTIVATION:

shifting cultivation is the main activity of 90% of the population. Whilst there are 68
ethnic groups in Lao PDR, they are commonly categorised into three altitudinal belts.
Those living on upper slopes are thought to practise mainly pioneer cultivation; those
living at mid-altitudes are thought to practise rotational cultivation; and those on lower
slopes and in valleys commonly practise settled agriculture, but are increasingly moving
upslope and starting shifting cultivation.

GOVERNMENT INSTITUTIONS RESPONSIBLE FOR SHIFTING CULTIVATION:

The Council of the Prime Minister

Ministry of Agriculture and Forestry:

Department of Forestry - is responsible for implementing

Shifting cultivation stabilisation programme - responsible for implementing
Decree 169 on the management and use of forests and forest land (1993)

Training programme

Inventory programme

Conservation programme

Protection and management programme

Land and forest distribution committee - responsible for allocating land

Department of Agriculture
Department of Planning and Cooperation
Department of Livestock
Department of Irrigation
Upland Agriculture Development Project

Other relevant legislation includes:

- Decree 99 on land allocation
- Land law (1991)

SUMMARY OF DYNAMICS, POLICIES AND PROBLEMS OF SHIFTING CULTIVATION:

The population density in Lao PDR is much lower than in the neighbouring countries; and the road network, market infrastructure and extension systems are very weakly developed. These factors, together with the policy of the past few years to ensure each province is self-sufficient in rice production, have ensured that shifting cultivation remains the predominant way of life of nearly 60 per cent of the Lao population. This is in spite of policies to encourage settled agriculture and forestry in place of shifting cultivation. Here, shifting cultivation will remain central to the livelihoods of most people; indeed, there is no feasible alternative for the majority of people. There will be a great opportunity in Lao PDR to build productive and sustainable land use systems upon the principles and lessons of shifting cultivation, and to avoid the mistakes of imposed permanent agriculture and forestry.

ANNEX IV: Country summary description: VIETNAM

COUNTRY BASIC STATISTICS:

population (1991) = 67.7 million; population growth rate (1987-2000) = 2.4%; population growth rate in mountainous regions = 3 to 3.5%; population per km² = 205.3; land area = 325,360 km²; main economic activities (as % GDP); GDP per caput (1992) = US\$ 416; GDP growth rate = 7.2% per annum over 1991-1993

COUNTRY FOREST STATISTICS:

forest area: natural forest = 86,309 km²; plantation = 5,533 km² (1993); unforested 'forest land' = 114,204 km². Forest area categorised as: protection forests = 28,000 km², special use forests = 7,000 km², production forests = 58,000 km². forest cover = 27.7% (1993); rate of deforestation of natural forests = 1.5% per annum (1981-1990); rate of plantation = 4.1% per annum (1981-1990)

MAIN AREAS WHERE SHIFTING CULTIVATION IS PRACTISED:

shifting cultivation is practised in mountainous regions throughout Vietnam, but particularly at the highest altitudes in the north west and in the central highlands. The principle provinces in which it practised by different ethnic minority groups are: (Hmong group) Ha Giang, Tuyen Quang, Lao Cai, Yen Bai, Lai Chau, Hoa Binh, Cao Bang, Lang Son; (Gia Rai, Ba Na, Ede groups) Dac Lac, Gia Lai, Kon Tum; (Thai group) Lai Chau, Son Lam, Thanh Hoa, Hoa Binh. A system of land allocation is currently being implemented.

EXTENT OF SHIFTING CULTIVATION:

about 3.5 million ha (1989), in 33 provinces. The greatest concentrations of people practising shifting cultivation are in the north and in the central highlands.

MAIN SHIFTING CULTIVATION SYSTEM TYPES:

Pioneer cultivation is increasingly the predominant system, although rotational cultivation was traditionally practised by the majority of ethnic groups. The fallow period under rotational cultivation is now much shortened, and in many places is around 4 to 5 years; in others it is 8 - 10 years. Main crops: hill rice, maize, cassava.

MAIN PRACTITIONERS OF SHIFTING CULTIVATION:

Almost 3 million people are estimated to practise shifting cultivation, comprising 50 out of 54 ethnic groups, particularly the Hmong Dao, Bana, Ede and Giarai. The total ethnic minority population is estimated to be 9 million.

GOVERNMENT INSTITUTIONS RESPONSIBLE FOR SHIFTING CULTIVATION:

Council of Ministers:

Committee on Ethnic Minorities and Mountainous Regions: this includes the **Committee on fixed cultivation and sedentarisation** which is responsible for implementing the **Policy on fixed cultivation and sedentarisation (1968)**
Ministry of Agriculture and Food Industries

Ministry of Forestry: responsible for implementing legislation on **Allocation of forest land (1993)**, and also has some responsibility for implementing the policy of fixed cultivation and sedentarisation

Ministry of Aquatic Products: responsible for use of water bodies, especially for fish rearing

Ministry of Science, Technology and Environment: Department of Technology Development is responsible for proposing and funding projects for the application of technical advances in socio-economic development in mountainous regions, especially concerning land use

The Central Committee on Economics is responsible for the formulation of economic development strategies in general and for mountainous regions in particular

General Department of Land Management and Cadastre: responsible for allocation of land, forests and agricultural land in the uplands (in principle)

Provincial and district forestry or agriculture-forestry departments are responsible for implementing fixed cultivation and sedentarisation policies at the local level. Other relevant legislation includes:

- Land Law (1993), which affirms the right to long term and stable land use, the right to transfer land, and the right of land users to benefit from the results of their investment on their allocated land;
- Law on forest development and protection (1991) establishes which forests are State owned, and which are available for allocation to individuals; it also provides for categorisation of forest by utilisation type
- Agricultural and forest extension policy
- Decree on highland socioeconomic development.

SUMMARY OF DYNAMICS, POLICIES AND PROBLEMS OF SHIFTING CULTIVATION:

The situation in Vietnam is fast-changing, and may come to resemble that of Thailand. Many regions have similar environmental conditions as Lao PDR, but the population density is much higher. Fifty out of the 54 ethnic groups still practise shifting cultivation, even where settled agriculture has been introduced. Population pressure, and the government policy to encourage settled communities, have led to many examples of state-aided sedentarisation, together with some movement of people into less populated areas. The rapid development of the market system has the potential to encourage this further. Yet, in many areas at present, market signals lead only to an incentive to clear land, but not to manage it once cleared - encouraging a wholesale return to "pioneer" shifting cultivation.

Vietnam is likely to follow similar highland development paths to Thailand, provided markets and commercial agriculture and forestry can develop in order to bring out highland comparative advantages and encourage investment in land management (as opposed only to land clearing at present). However, shifting cultivation will continue to be of at least secondary importance to many rural Vietnamese for many years to come; and a major issue will be to zone those areas where it should not be discouraged.

IIED's Forestry and Land Use Programme

The Programme addresses needs for productivity, sustainability and equity in forestry and land use. Its research and capacity-strengthening work focuses at the national level in developing countries. It involves:

- **policy processes:** supporting participation of multiple interests in policy analysis, formulation and monitoring
- **sustainability assessment** of forest management and use
- **capacity development** of governments, NGOs and communities for sustainable forest management
- **the development and monitoring of incentives** for sustainable forest management

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