Farmers and Forest Land Use in Lao PDR and Vietnam

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Cover: Farm based plantation forestry in Northern Vietnam (left) and shifting cultivation in the uplands (right).
(photo: Bo Ohlsson)

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Abstract

People's use of the forest land for shifting cultivation has over the last 50 years altered the upland landscape in Laos and Vietnam. The objective of the thesis was to develop interdisciplinary approaches and methods to document, analyse and understand the use of forest land over this time. A second objective was to relate land use trends to local, national and global developments. Specific objectives were to explain and understand the observed status and changes of forest land use and the society. An interdisciplinary approach and methodology was used, including the Holling's adaptive cycle.

In different case studies the forest land use was documented and analysed, using a mix of social and natural science methods. Policy, strategy and legislation has been studied and related to the actual development. In two of those studies, a stable system evolved, to be challenged around 1990, due to the emergence of market reforms. In the third case study, in Vietnam, the transformation of natural forest and vegetation to private, farmbased plantation forestry, via shifting cultivation, over a thirty year period, was documented and analysed. In a fourth study, the development of plantation forestry in Laos was analysed in the context of globalisation.

In both countries, a substantial amount of the forest land has been used for food production. In spite of severe internal and external influences, the communities have managed to sustain themselves without any significant livelihood changes. Through the penetration of globalization, in terms of land privatization, emerging market economy and improved communications, the villages were exposed to a new situation which could not be addressed by their traditional livelihood. In the Lao study, the farmers responded in different ways, from embracing the market economy to expanding already known and tested production or by avoidance. The case study on farm based plantation forestry in an uptake area of a major forest industry in Vietnam, indicates that the reasons for this development was the emergence of a market; supportive and dynamic policies, institutions and legal framework and tenure systems, and most important, the existence of professional farmers.

Key words: forest land use; plantation forestry; uplands; Vietnam; Lao PDR; shifting cultivation;

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List of Publications

This thesis is based on the work contained in the following papers, referred to by Roman numerals in the text:
The present thesis is based upon the following papers, which will be referred to by their Roman numerals:

I. Sandewall, M., Ohlsson, B., and Sawathvong S., 2001, Assessment of historical land use changes for purposes of strategic planning – a case study in Laos. *Ambio* 30, pages 55–61

II. Ohlsson, B., Sandewall, M, Sandewall, R.K. and Phon, N.H., 2005, Government plans and farmers intentions – a study on forest land use planning in Vietnam. *Ambio* 34, Number 3, May. Pages 248–255.

III. Ohlsson, B. and Sawathvong, S., Forest Policy development in Lao PDR in the context of globalization. From: Ohlsson, B., 2001, Farmers, forest land use, government policies and globalisation – Case studies in Lao PDR and Vietnam, Report 13, Department of Forest Resources and Geomatics, Swedish, University of Agriculture.

IV. Ohlsson, B. and Burns, T., 2004, An approach, methodology and analysis – a case study on forest land use. Manuscript.

V. Sandewall, M, Ohlsson, B., Sandewall, K. and Viet, L. S., 2008, Behind the figures of expanding farm-based plantation forestry in Vietnam. Manuscript submitted.

Abbreviations

BAPACO	Bai Bang Pulp and Paper Company
CGIAR	Consultative Group on International Agricultural Research
CIFOR	Centre for International Forestry Research
5MHRP	Five Million ha Reforestation Program
FLA	Forest Land Allocation
Ntfp	Non timber forest produce
RECOFT	Regional Community Forestry Training Centre
RMA	Raw Material Area
SFE	State Forest Enterprise
Sida	Swedish International Development Cooperation Agency
SIDA	Swedish International Development Authority

1 Introduction and background

Over the last fifty years, the landscape in Southeast Asia has lost substantial amounts of its forest and has undergone dramatic changes (FAO 2006). At the local level, the direct actors are the local people, who are using official forest land for food production and are thereby changing the landscape. Other important factors are local, national and global policies, which in varying ways affect the landscape, which influence different operators. These policies could, *inter alia*, be the development of free market systems in the countries concerned the land reforms, principally privatisation of both agriculture and forest land.

UN Principles of Forestry, established 1992 at the United Nations Conference on Environment and Development, UNCED, in Rio, reflected the global, national and local concerns connected to the development and conditions of the forests and forest land (UNDP 1992). Although the participants could not agree upon a legally binding framework, the UN Forest Principles were agreed upon. It contained a number of new key points such as an agreement that the use of forest and forest land were the prerogatives of each state to address as they deemed fit. Another key point was the recognition of the forest and forestry issues as being part of the globalisation processes, and it is within this context that this research work has been carried out. Each country examines its own problems and opportunities and addresses them within their own context, albeit still considering global concerns and influences.

In the late 1950´s and 1960´s, there was an increase in logging of natural forests in the tropics. This increase was fuelled by technological development and a booming economy after the second World War and the Korean War. At this time there were very few concerns about deforestation and environmental issues. In the mid 1970´s, there was an emerging awareness of an ongoing deforestation which was linked to the lack of fuelwood in the Sahelian region and floods in Asia. In response to this growing awareness of deforestation and environmental issues, the number of environmental treaties and international associations increased from some 120 in 1970 to 300 in 1990 (Held et al. 2001). International initiatives, such as the

Stockholm Conference on Environment in 1972 and the World Conservation Strategy in 1980, were taken to address this situation. The FAO created an expert group on Forestry and Community Development (Arnold 1992). The 1978 World Forest Congress drew attention to the failure of the traditional forest industry to both provide the people with forestry related produces such as fuelwood and to protect the forests (Westoby 1979). Statistics showed an alarming rate of deforestation and caught the imagination of the public (Persson 1995, Paolo 1990). World Watch Institute in 1988 was advocating the importance of wood for energy and the need of reforestation to address this. They also pointed out the importance of trees for the economic survival of the rural poor (Brown 1988).

In the latter part of the 1970s, a number of new concepts were introduced. FAO and Swedish International Development Agency, SIDA, convened an expert group on forestry and local Community Development. Projects such as Social Forestry (India), Village Woodlots (South Korea) and Forest Villages (Tanzania and Thailand), were among the concepts introduced on the international scene. The new concepts were collective, community based and by and large ignored the existing numerous examples of successful household-based tree husbandry (Byron and Ohlsson 1989). As late as 2000, Harrison et al (2000a) note that "it is perhaps strange… that whilst agricultural is seen as a private venture, forestry is mainly seen as a concern for the public sector". In general, it can also be claimed that until mid 1980´s, the villagers or farmers were still mainly seen as consumers and their productive role was not recognised. Bi - and multilateral agencies, banks and Non Governmental Organisations (NGOs) were engaged and convened a number of conferences, developed projects and financed co-operation with national institutions. In 1985, the Tropical Forestry Action Plan, TFAP, was launched with the objectives of curbing tropical deforestation, supporting sustainable use of the forest and to increase the flow of international aid to the forestry sector (Upton & Bass 1995). However, the TFAP approach, albeit innovative in its stated objectives, failed to achieve its objectives and also did not manage to identify, understand and respond to the social dimensions of the forestry sectors (Lohman Colchester 1990). The World Bank (The World Bank 1991) and forestry policy sought to broaden the approach used to address the needs of the rural poor and at the same time pay attention to environmental considerations. However, the commercial benefits of logging featured prominently and the natural forest was seen as an important asset to be exploited (Humphreys 2006).

Eventually, the notion of the farmers as actual or potential producers emerged, albeit they were still viewed as dependent upon guidance from the professional forestry system. The view of the "village" or "community" as a socio economic homogenous unit – and thus a potential owner and manager of a village forest - was still prevailing with few exceptions (e.g. Chambers 1983). At this time another notion emerged; that the problems of deforestation were related to political, socio economic and social issues rather than to "forestry issues". This view, however, was difficult to implement, as it was not yet generally recognised by the

professional forestry community. Another problem in addressing this issue was that the forestry sector was insular with few linkages to other sectors of relevance for the issues at hand such as land tenure, agricultural policies, gender issues, demography and poverty. There are however exceptions to this, e.g. the Department of Forestry, Lao PDR who, assisted by donors, were at the forefront of these issues in the 1990's. Unfortunately however, the Department was not very well equipped or organised to carry out those tasks, which in turn led to the Department not being able to fulfil the visions of the donors (Ohlsson & Inthirath, 2001).

The United Nations Conference on Environment and Development, UNCED, in 1992, was a major international meeting and watershed. The meeting highlighted the divergence between the developed and developing countries. The developed nations viewed the forestry, environmental and development issues as of global importance and should thus be addressed in global binding frameworks and conventions. The developing countries stressed the sovereign right of countries to use the forest for national development and argued for compensation if there was to be any limitations in their use of the national forests.

The UNCED introduced some new concepts – the tropical forests and the boreal forests are to be viewed in the same environmental and societal context and the notion of socio economic conditions such as poverty being of paramount importance to the forest and environment. Other important points were the recognition of the NGO´s role and market based initiatives (Upton & Bass 1995). UNCED rejected the proposal for a legally binding forest convention, as it was viewed as unnecessary and unworkable and therefore unacceptable to the majority of the states. Instead, non-legally binding Forestry Principles were agreed upon. Various aspects of forestry are covered as part of other conventions (Ruis, 2001).

The UN system established a commission to follow up and monitor the UNCED decisions and intentions and a number of other initiatives, some political, some market driven, emerged. The UNCED emphasis was on development and environment. The UN system is driven through political processes. There are also other processes, under the mandate of NGO´s, like the Forest Stewardship Council, FSC, and institutions such as companies like IKEA, a furniture company operating globally. These systems are market driven although it appears that the driving force is the institutions rather than individual consumers.

An outcome of the environmental concerns in the developed world was the World Bank adoption of a new forest strategy in 1991, the major goal of which was to retard the exploitation of tropical moist forest and to encourage planting of trees and in general pursue a more preservationist approach (Humphreys 2006). Alarming reports of deforestation and losses of flora and fauna underscored the urgency of remedial actions. An important element of this strategy was to avoid financing commercial logging and interventions in primary tropical moist forest

(World Bank 1991). The guiding principle was a "do-no-harm" approach that focused largely on environmental issues and pure protection options. In general, this 1991 forest strategy has failed to achieve its goals (Lele 2002). The World Bank in 1998 started to review the then current policies and in October 2002, a new Forest Operational Policy (World Bank 2002) and sector strategy for the World Bank was endorsed. The policy is linked to the World Bank's Environment Strategy of 2001, referred to as "three pillars of engagement" as shown in Table 1 below.

The new policy and strategies have a number of key features such as a focus on forests (rather than forestry); including all forests; all aspects of forest activities; market orientation and a recognition of small scale activities (World Bank 2002 and 2003). The new policy and sector strategy is applied with reference to the World Bank's operational policies, which provides short statements that guide Bank staff on the procedures for implementation. Operational Procedures, OP, 4.36 refers to forest operations while the accompanying Bank procedures is BP 4.36 (WB OP 4.36 2002).

Table 1 Main objectives of the World Bank's 2001 Environment Strategy and 2002 Forest Strategy (from Humphreys, D., 2006).

World Bank Environment Strategy, 2001	**World Bank Forests Strategy, 2002**
Improving the quality of life	Harnessing the potential of forests and reduce poverty
Improve the quality of growth	Integrating forests with sustainable economic development
Protecting the quality of the regional and global commons	Promoting vital local and environmental services and values

Another development, closely connected with the World Bank's development of a new strategy, is the market driven emergence of certification systems. The Forest Stewardship Councils, FSC, system has been accepted by the World Bank and this is also reflected in the similarities in the criteria defined by the World Bank and found in the FSC guidelines.

It is very difficult to claim that the policies during the 1980´s and 1990´s have achieved their objectives (Havnevik et al 2006). In forestry, the TFAP represented a major policy and strategic initiative which generated substantial amount of aid but with dismal results – the deforestation did not stop and the forestry sector did not

manage to respond to the needs of the society (Ohlsson and Inthirath 2001; Lohman and Colchester 1990).

During the 2000´s, there seems to have been a shift, from environmental concerns towards poverty alleviation. In the Millennium Development Goals, MDG, poverty alleviation has been identified as a major objective, with environmental concerns as No 7 out of 8 spheres of concern. The focus of the MDGs is on poverty elimination, health and education. The UN General Assembly has committed the international community to halving the number of people living in extreme poverty by 2015. To some researchers, e.g. Sandersson et al (2003) this could result in either "the true beginning of sustainability or the end of biodiversity at the hands of best intentioned policies. Without reshaping poverty alleviation strategies, biodiversity will pay the price for development yet again, and the human subsidy from nature will tax biodiversity to death". The commitments to environment and development, as witnessed in the outcomes of the UNCED 1992, seem to have vanished in Johannesburg in 2002, according to the same author.

The connection between Poverty Alleviation, PA, and forestry, has during the last few years drawn the attention of the forestry sector. A number of conferences and studies have evolved, and the process is still ongoing. CIFOR, Centre for International Forestry Research, one of the members of the Consultative Group on International Agricultural Research, CGIAR, is an example of a forest research institute which has researched this topic (Sunderlin and Ba, 2005 and Angelsen and Wunder, 2003).

Deforestation, biodiversity pauperisation and land degradation are still major issues on the local and global agenda. The research community still has to develop concepts and methods to understand the complex issues and dynamics in man-land relationship and the management of natural resources.

1.1 Research

Research in rural development and natural resource use and management in the developing world has undergone several different phases. Social anthropologists, working during the colonial period, focused on the exotism, and, in general, produced high quality reports and scientific documentation. Raymond Firths Malay Fisherman (Firth, R., 1948) is an example of this. Sometimes they were used by the colonial powers. The initial thrust, when aid started as a separate concept and practice, was how to facilitate the transfer of the required skills, capital, western values and know-how to the underdeveloped countries. An interesting example of this is the Rostow five stages of growth, in which the developing countries should replicate, step by step, the then developed worlds progress (Rostow 1962). The expected development did not however take place. Eventually, sociologists, socio

economists and other social scientists joined and a professional core of social science developers emerged. Maybe it was during this period that the social scientists turned into consultants. Initially, the social scientists in the forestry sector were mainly seen as an appendix to the mission. For instance, during the 1980´s, a typical mission for the Investment Centre of FAO in Rome, to a tropical country, would comprise, in terms of time allocated, some 10% of the time for social scientists whilst the foresters and technical staff would carry the balance (Ohlsson, personal experiences; today, the situation is almost reversed). Their major tool during the 1980´s were rural surveys, the activities of which eventually turned into an industry with the social scientist eventually taking a prominent part in most project preparation cycles. The dream of the perfect base line survey which would explain the why´s and also tell us how much better life was now, post project phase, failed to appear. Eventually, new approaches and methods such as Rapid Rural Appraisals and Participatory Rural Appraisals, the PRA, emerged. The latter was found to be a useful tool, albeit with some problematic aspects such as lack of understanding of the objectives of the PRA: to pick the brains of the farmers, to convince the participants, empowerment of the farmers, to inform about the interventions etc. PRA also have a patronizing component in assuming that the participants are participating. One could rather ask, who is to participate with whom or in what? It can also be very normative, as the carriers of the PRA also carry the answers and priorities (Admassie 1995 and Colfer 1996). Nevertheless, as is shown in Article I, II and IV, PRA used in combination with other methodologies, is a very useful tool for understanding issues.

Within the agricultural sector, a discipline called Farming Systems Research, FSR, has evolved. (Paper IV) This was in response to the lack of success observed in introducing improved technologies, mainly in Africa. The approach was to look at the farmer´s system in a comprehensive manner. The FSR has given a better understanding but still has a drawback in focusing on the farmers per se and ignoring the political, economic and social environment, at local and global levels, to which the farmers have to respond (Collinsson, 2000).

Within the forestry sector, in contrast to the farming sector, in particular with regard to farm based, private forestry, there has not been any development towards an institutionalised sociological and socio economic research tradition and institution similar to FSR. The reasons are complex, but might be related to the professional forestry community having been a closed and socialised community and reluctant to allow outsiders entrance into ”their” system (Roche 1997). It is only during the last decades that social scientists have been accepted at large in the forestry community. The contributions are generally case specific. Existing forest and tree production systems such as tree husbandry in Bangladesh, in Vietnam and in Java, Indonesia and the Ethiopian Eucalyptus farm plantation forestry which dates back to the beginning of the 20th century has been basically ignored. Rather, the international forestry community focused on communal approaches, rather than on the de facto existing household and local based systems (Ohlsson 2001, Zerner

2003). There appears to be a change towards and interest in private, small scale forestry (Harrison et al 2000b).

1.2 The case studies

Three case studies are part of this thesis. The first is from Northern Vietnam in the Lao Cai Province, Ban Lau Commune. The second case study is from northern Lao PDR, in the Upper Nam Nan Water Catchment Area, Luang Prabang Province. These two studies are part of a research project, aiming at the development of approaches and methods for data capture and strategic planning for forest land use. The third case study, looking at the development of private, farm based forestry in the Districts of Doan Hung and Ham Yen in Northern Vietnam, is also included in the thesis (Article V).

The countries, in which the case studies have taken place, Vietnam and Lao PDR, are both located within the tropical zone with distinct mountainous areas, often called the uplands. These upland areas are mainly populated by what is referred to as ethnic minorities. One source of income for this group is shifting cultivation. From a formal point of view, most of the land used for this shifting cultivation is forest land under the jurisdiction of the forest department in the respective country. Both countries have lost substantial amounts of their forest over the last 50 years and shifting cultivation is viewed as a major factor in this development although this view is contested (McEwe 1998, IIED 1999).

The location of the research sites are indicated with arrows.

1.3 Objectives

The general aim of this thesis was to develop interdisciplinary approaches and methods to document, analyse and understand use of forest land over a historical period, in this case varying from 30 to 50 years for the different case studies. Following this was the objective of identify and analyse the issue of forest land use, from a local, national and global perspective. Specific aims were to understand and explain the observed status and occurred changes, between nature and the local population. Another research objective was to examine the factors governing the relationship between man and land.

Other issues which were part of the objectives were to study and analyse the planning process as carried out by the government and the penetration and impact of issues which were deemed to be part of globalisation. In analysing the results from all the studies, an analytical framework was tested and developed, the

objective of which was to integrate social and technical dimension of man, and land relationship over time.

The specific objectives of the studies and Articles were:

- Article I: To develop a research approach and methodology which reflected the diversity and dynamics in forest land use over time in the uplands of Lao PDR and in this process, to document and analyse the changes in forest land use and general development.

- Article II: To study and critically analyse the land use planning in a Commune in northern Vietnam and compare this with actual and observed data and to relate this to an ongoing, nationwide effort – the 5 Million Ha Reforestation Programme, 5MHRP, - of reforestation.

- Article III: The objective was to study and analyse the plantation forestry development in the context of globalisation in Lao PDR. Globalisation and its relationship to forest land use in Lao PDR was analysed over a 15 year period in Lao PDR.

- Article IV: To apply and test an interdisciplinary[1] and holistic framework on the forest land use development over a fifty year period and analyse potential future development.

- Article V: To document and analyse the development of a private, farm-based plantation forestry system in Northern Vietnam.

In a broader sense, the objective of Article I was to develop approaches and methods for how the government can interact with the local population, the major actors vis á vis the forest land, to support the development of sustainable forest land use. Changes in forest land use, shifting cultivation, demography, village production strategies and other socio economic changes, could be observed over a 50 year period, using a combination of methods from the social and natural sciences. This approach and methodology was also used for the case studies in Ban Lau Commune and the plantation forestry in Vietnam.

Article II explored the planning system for forest land use in Vietnam. In the context of the Five Million Hectare Reforestation Program, 5MHRP, a study was made at Commune and village level in northern Vietnam to illustrate the present planning system in practice and to explore alternative approaches and methods. The 5MHRP 1998-2010 would increase forest cover by 45% (MARD 2001). It is an important undertaking, not only for Vietnam but also for the region, in attempting

[1] Interdisciplinary indicates not only several research disciplines being involved but also refers to the interaction between the different disciplines during the research process.

at national level to address the problems of deforestation, poverty, environment and the shortage of wood raw materials.

Article III looked into the development of plantation forestry in Lao PDR in the context of international policy processes and globalisation. An approach and methodology suggested by Held et al (2001) was used. Over a 15 year period, the global forest policy development and its relationship to national forest policy development, in particular with regard to plantation forests, in Lao PDR, has been described and analysed. Development of networks and vectors including technology, infrastructure and responses by the national and local communities, has been documented and analysed.

Article IV aimed at exploring the approach and methodology used in Nam Nan Watercatchment study in Lao PDR. The approach described by Hollings (Berkes 1994), Gundersson (1995) and Berkes (2000) was used and applied to the development in the Lao PDR case study. The application of the approach and methods is described and discussed, and the Holling's framework is used for analysing the development in the water catchment area of Nam Nan in Lao PDR.

Article V was a study of the development of forest land use in Northern Vietnam. The areas landcape has changed from natural forest and natural vegetation in the 1970's to a private, farm based plantation forestry, via a logged over natural forest, shifting cultivation and State plantations. The objective of this study was to document and analyse this development.

The three case studies – Ban Lau Commune and Lang Ha village in Northern Vietnam, three of the Districts supplying raw material to the Bai Bang Pulp and Paper Factory, also in Northern Vietnam; and the Nam Nan Watercatchment area in Nam Nan District of Luang Prabang Province in Lao PDR – are all part of the upland areas of respective country and have in common a process whereby the forest land has been used by local and external actors, with different outcomes. Article I and II looks at the forest land use in a Commune and village (Ban Lau and Lang Ha respectively) and in Nam Nan Watercatchment in a historical perspective. The approach and methodology is documented in Article II, which also focus on the planning process. Article IV is using the data from Nam Nan Watercatchment (Article I) to introduce the Hollings's adaptive cycle and framework as an analytical tool. In Article III, the forest land use is analysed in a particular context – globalisation and plantation forestry and national biodiversity areas – in Lao PDR. The final Article V use the same methods as used in the previous studies to document and analyse the forest land use in an area with a strong institutional user of plantation wood. Together, the three case studies and the five articles reflect the dynamics of forest land use, under different circumstances, in two different countries in Southeast Asia mainland.

2 Concepts and Methods

2.1 Concepts

Natural resource management and the interaction between man and nature is a complex matter and requires a holistic or systems approach to investigation and analysis. “It is usually the case that scientists examine either ecological systems or social systems, yet the need for an interdisciplinary approach to the problems of environmental management and sustainable development is becoming increasingly obvious” (Berkes et al 2000). In the early 1990´s, a general approach was to apply a concept based on three major considerations: biological/environmental, economic and social/socio economic. The 1992 UNCED highlighted this for the first time in a global forestry context (Upton and Bass 1995). These three major considerations were translated into location specific criteria and indicators (Asian Development Bank 1995, ibid 1998 and e.g. Berkes et al 2000, p 348). The latter authors also point out that ”...resource management problems typically tend to be systems problems, where aspects of system behaviour are complex and unpredictable, and where causes are always multiple. Characteristically, the problems are non-linear in nature, cross scale in time and space, and have an evolutionary character” (ibid p. 339). As pointed out by a number of researchers (Sayers et al, 2005 and Berkes et al, 2003), “The complexity and dynamics of man´s management of the forest land defies any simplistic answers and remedies”(Berkes et al 2000).

At the outset of this research project, a framework was created to illustrate the approach as discussed in Article IV. This contained four major spheres: the physical situation; the general economic situation; local socio economic situation and exogenous policies, strategies and legal framework. These spheres interact with each others, for example, the farmers develop strategies to deal with macro economic and other changes. Sometimes, macro economic changes are not relevant as they do not penetrate or reach the villages concerned. The framework attempts to

create links between social and ecological systems. In Berkes (2000), a framework is discussed which is very similar to the one used in this research process and it also indicates patterns of interactions and linkages. Both frameworks indicate a concern with the need for a holistic approach – interaction between man and land is influenced by a number of factors or spheres. The framework also helps the researcher to identify areas of interest.

One of the key ideas is, that the understanding of natural resource management requires an emphasis on institutions and property rights. A major feature of this interdisciplinary approach is the wider range of considerations and issues in natural resource management analysis. Berkes et al (2000) points out that there is no single, universally accepted way of formulating the linkage between social and natural systems.

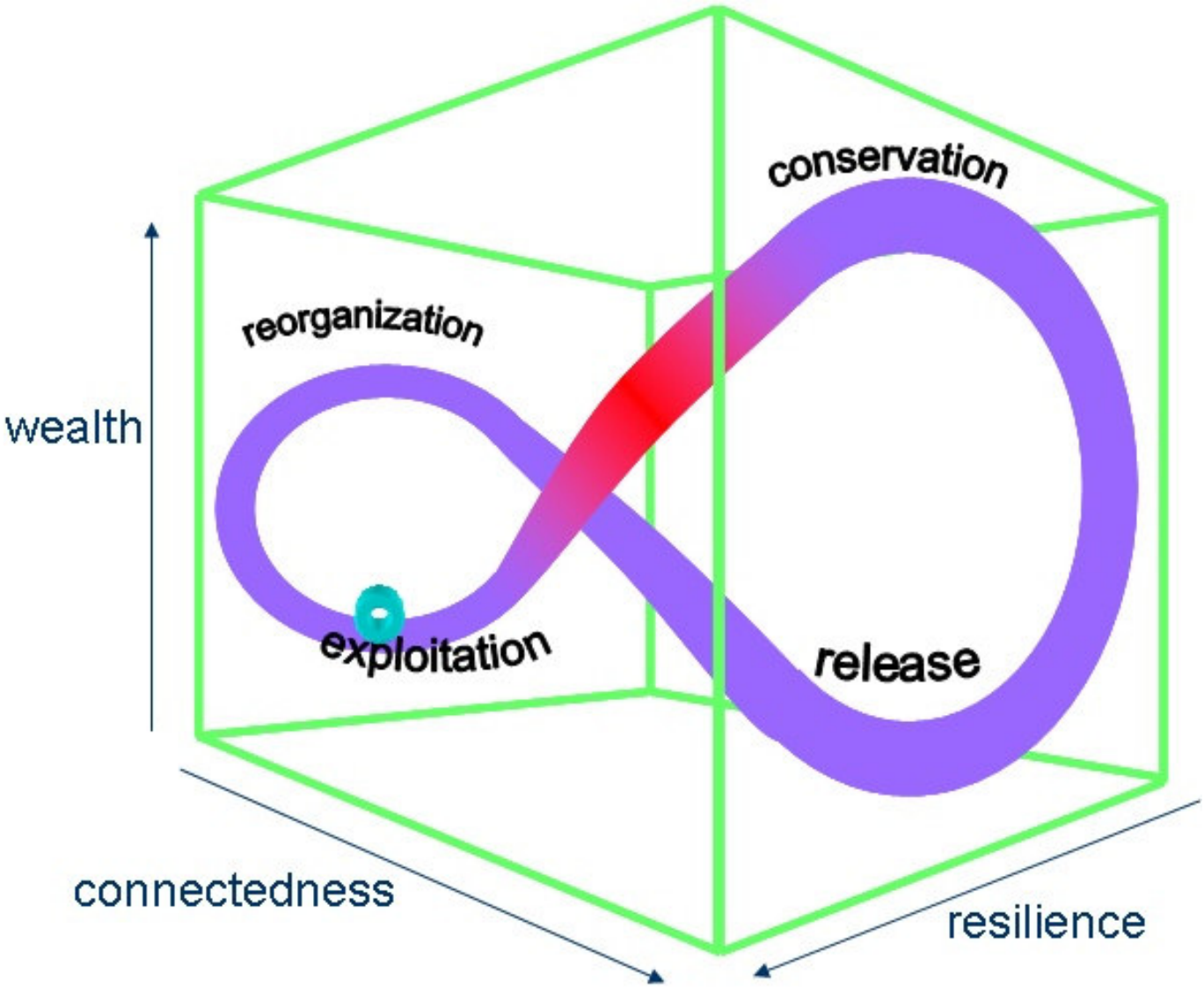
2.2 Analytical framework

An analytical framework and an adaptive renewal cycle, the "Hollings 8", have been developed by Holling et al. (Berkes 1994, Berkes 2000 and Gunderson and Holling 2002), see also Figure 1. This framework was originally adapted for ecological events and development, but has also been used for analyses where ecological and social dimensions are combined in a dynamic manner. In Article IV, the adaptive renewal cycle, developed by Holling, is discussed. The framework contains four different system stages: conservation, release, reorganisation and exploitation. For instance, a forest goes through the stages of growth and maturity and is then disturbed by a fire, which releases nutrients for a new cycle. This is a cycle of reorganisation, whereby pioneering species thrive, and possible new ones invade. Eventually, those who manage to adapt to this situation will emerge and take advantage of the conditions created by the fire. This part of the cycle is called exploitation, and will eventually be followed by a stage of maturity, i.e. conservation, which eventually leads to release and reorganisation. Likewise, social systems such as a business can go through similar cycles, from exploitation of a market and growth, followed by consolidation or maturity which eventually might lead to a collapse or release as new entrepreneurs and competition emerges. This would then be followed by reorganisation which in ecological terms might be new type of vegetation and fauna, favoured by the new situation. Similarly, a new type of business would emerge as a result of changing conditions. A forestry ecosystem in interaction with social and economic institutions could be viewed through this *adaptive renewal cycle* (Berkes et al 2003). As an illustration, we could look at a mature forest which is exposed to pioneering shifting cultivation, based upon small communities which have a traditional and professional system of shifting cultivation and basically remain in balance with the environment. This is the conservation phase of the cycle. Institutional disturbances such as population

growth or commercial logging or other externalities such as shortage of logging opportunities in surrounding countries will result in a collapse of the system and a release of energy – the logs, and intensified shifting cultivation by shortening the shifting cultivation cycles for instance. This would eventually result in a reorganisation whereby institutions, as well as the environment, respond to the new situation. Examples could be the introduction of new legislation, land allocation and new crops.

The framework developed and the Hollings adaptive renewal cycle (Berkes et al 2003) are discussed and used in analysing the development in the Nam Nan water catchment area in Lao PDR. In a resilient social and ecological system, these four stages of conservation, release, reorganisation and exploitation repeat themselves again and again. This does not mean a predeterministic collapse of the system both biologically and institution wise. The system eventually flips out and turns into something different, but even the repeated cycle contains changes, both in terms of biological and societal systems, whilst still undergoing the different cycles.

Figure 1: The Adaptive Cycle in Complex Systems
Source: L.H. Gunderson and C.S. Holling, eds. Panarchy: understanding transformations in human and natural systems, Island Press, 2002
The figure has been created by Dr. Agarwhal



Originally, the cycle was developed from ecological research, but has subsequently also been used for analysing and understanding complex systems, such as man – land relationships and dynamics. An example is an existing biotope, such as a forest, the climax of which – referred to as *conservation* in Hollings model (Article IV) – is prone to disturbances, physical and institution wise, such as forest fires, insect attacks, logging, encroachment for shifting cultivation, conversion to agriculture land e.g. When this occurs, the accumulated capital, the forest resource, is released. The new situation – biologically and socially - would result in changes in the ecosystems, with pioneering shifting cultivation emerging, for instance. Likewise, there would be societal changes. The land would for instance no longer sustain traditional collection of non timber forest produce (ntfp) and invite – or force, for sustenance - other land use, such as shifting cultivation. This phase, sometimes referred to as creative destruction, would result in a reorganisation. In biological terms, new pioneering species would appear. In social and socio economic terms, the society would have to look for new ways and means of using the land and there will be a period of reorganisation. It is during this period we would expect innovations, both in terms of societal changes such as institutions to address the new situation and in changes in the eco systems. Thus we would expect a phase of exploitation, when the land is engaged in other pursuits, such as shifting cultivation or plantation forestry or even left alone. New institutions would emerge to support this development. This might include legislation, new household livelihood strategies, and new organisations such as business enterprises, for instance harvesting of pioneering trees for poles. Eventually, through the *exploitation* phase, a new climax and *conservation* phase would emerge. This could be a forest area, left alone, reaching an undisturbed climax, or the more likely development of new institutions and land use. During the different phases, the connectedness between the variables involved differs. The conservation phase is characterised by overconnectedness between the variables and a tightly bound accumulation of biomass and nutrients. If, for instance, a mature forest is attacked by insects or social institutions like pioneering shifting cultivators or commercial logging, it is very fragile and exposed. On the other hand, during the phase of reorganisation and during the exploitation phase, the different variables have little connectedness and are still in a phase of formation and reorganisation.

From a philosophy of science perspective, the approach here is hermeneutic. Observations and conclusions are judged and based upon the theoretical framework, logic and deduction. That is, the positivistic approach, used in natural sciences are not as applicable in this kind of analysis. Both the positivistic and hermeneutic approaches are based upon empiri; it is the analytical approach which differs. For the research, forming the basis for this paper, we have used an approach

whereby hermeneutic and positivistic approaches are combined and support each other.

The adaptive renewal cycle is characterised by differentiation in spatial and temporal dimensions. The cycle occurs in some locations within an area, and it also occurs at different times. This phenomenon is referred to as Panarchy (Gundersson et al 2002). Thus, aggregate development in an area might be distorted. Development at a landscape level would involve a number of smaller units, such as households, all of which are at different phases in different locations. The relationships are not linear, but rather develop in leaps and in different processes. The cycle could also flip out, that is, take an unexpected and not foreseen development if the changes overwhelm the biological and societal systems. Often systems are resilient and will recover, for instance as in the case of the 2004 Tsunami in Thailand, where the tourism industry is recovering. The ideas and approach resembles those of Held et al (2001) in discussing globalisation. Globalisation is by them viewed as a number of different processes in different spheres and with concepts such as connectedness, speed, vectors and directions, similar to those discussed in the Holling´s adaptive cycle.

Two new dimensions will be added here: the front and back loop of development and resilience. (Berkes 2003) In Holling's adaptive renewal cycle, there is a back loop, containing the phases of *release/collapse* and *reorganisation*, and a front loop, containing *exploitation* and *conservation*. The latter represents a cycle of growth, equilibrium and stability and also predictability. This condition can be disturbed – by a forest fire or as in the Lao PDR case, the introduction of far reaching and penetrating land legislation and the introduction of a market economy. This generates uncertainty and instability, space for entrepreneurs and innovations, and development. Development thinking and perspectives are often focused on the front-loop, on equilibrium and growth whilst Berkes et al suggest that development should focus on the back-loop of collapse and reorganisation.

Another concept used here is resilience. It refers to a system's capacity. For example, the 7 villages in the Nam Nan water catchment adjusted to internal and external disturbances such as the American war when the area got involved with conflicting parties demanding food and recruitment of young men from the village as soldiers; or the population increase since 1950 which was addressed with changes in the shifting cultivation management system.

At the outset, resilience can be viewed as the buffer capacity of an ecological or social system to adapt to external, and internal, influences. Originally, it was a concept used in ecology and has been defined in two different ways in the ecological literature. The first definition assumes that ecological systems exist close to a steady state. Resilience is then described as a return time, from a disturbance, to equilibrium. An example of this would be the Ethiopian farmers in Rift Valley who administratively fenced off certain areas to be used for grazing in emergency

situations such as prolonged droughts (Sandahl and Ohlsson 1978). The second definition perceives a situation which is far from steady and where instabilities and disturbances can flip the system into another regime of behaviour or another stability domain (Berkes 2003). A H´Mong village in Nam Nan catchment area, facing the market economy, the land allocation and the increased communications and penetration of government policies and interventions, responded by developing a new system, aimed at capturing the opportunities they saw in the new situation.

Forestry and tree production forms of organisation as shown in Chart 1, are used to better understand the issues at hand. These also include shifting cultivation as this is locally the major use of the forest land and in general, in Southeast Asia, some 40 % of the formally designated forest land is used for this purpose (Ohlsson 2001, Dove 1983).

2.3 Forest land use and tree production forms

Normally, forest is defined in spatial and biological terms and e.g. refers to the amount of woody mass per ha, density or crown cover (FAO 2005). Definition of forest land varies but could be a residual – where there is no agricultural production or habitat or infrastructure. It is not necessarily stocked with forest but could rather be used for food production as has been observed in the case studies. Savannah woodlands in Africa are sometimes not viewed as forest land and in most cases not subject to any systematic management. The exceptions are so rare that the few cases receive international recognition (Wily 2000, Sjöholm and Luono 2002). In Harrison et al (2000a), the diversity in forestry systems is discussed and they conclude that a large number of permutations are possible, e.g. with regard to size, type of forest, choice, land used etc. In the literature concerning forest land use, e.g. shifting cultivation, there is a substantial number of different definitions and models. Most of these are technical and use criteria such as slope, cycle, crops, fallow periods and techniques such as fire (Ruthenberg 1980, IIED 1999, Ohlsson 2001). However, these definitions and models contribute little to explaining the development of these forest land use systems, development and/or lack of development, supporting mechanisms and sustainability in terms of biology, economics and socio economics. Rather, a framework, called Forestry and Tree Production forms of Organisation, the FTPFO, which uses a number of different criteria as indicated below can be applied. It was originally devised to be used in analysing different forestry and tree production systems but can be extended to cover all forest land uses. In the Chart below four examples are shown: State forest, commercial plantations, tree husbandry and shifting cultivation. They are defined through the different dimensions and criteria.

Chart 1
Forest land use - Forest and tree production forms of organisation

	Forest and tree production forms of organisation, FTPFO			
Dimension or criteria	**State Forest**	**Commercial Plantations**	**Tree Husbandry** (based upon Bangladesh)	**Shifting cultivation**
Objectives	Varies, singular spatially; multipurpose generally	Singular – raw material	Multipurpose and for both subsistence and market. Could also be singular, e.g. monocrop.	Both for subsistence and market
Technology	Imported, centralised. Uniform and strictly adhered to	Imported, centralised. Uniform and strictly adhered to	Varies – local technology and knowledge, exotics if suitable to objectives	Varies. Local. No or limited technological development
Research	Yes, mainly technical. Institutional	Yes, mainly technical. Institutional	Limited. Exception agroforestry research, ICRAF	Yes – mainly social anthropology, socio economic
Role of local institutions	Unimportant	Unimportant	Important, e.g. tenure based upon local institutions	Important. Supports the system
Legislation	Supportive	Supportive alt. absent but emerging	Often non existent	None or against, forbidding shifting cultivation. Negative support
Local Participation	Not relevant except labour	Not relevant except labour	A local enterprise	A local enterprise
Role of people and experts	People are the problem – (e.g. encroachment) – experts the solution	People are the problem – experts the solution	Based upon local knowledge and resources. Shortage of external knowledge	There are no experts. Maybe local people are the experts
Solutions	Uniform	Uniform	Diverse	Anti shifting cultivation campaigns, ethnical prejudice, legislation etc.
Land	Government	Government on lease arrangement, private	Private, local lease arrangements,	Government, mostly forest land
Organisation	Centralised	Centralised	Decentralised, household based	Decentralised, household and community based

Professional sphere	"forestry"	"forestry"	Integrated with other farming and land use activities	Integrated with other farming and land use activities
Structure and magnitude	Few and large units	Few and large units	Many and small units	Many and small units, large areas including the fallows
Relation to other activities	Separate. Often integrated with other non-local sectors, e.g tourism, hunting, mining	Separate	Integrated in space and time in farmers production system	Integrated in space and time in farmers production system

The above forms of organisation are based upon an implicit model which contains institutions related to the control of land and land use, possession and exercising of power, knowledge and are related to the market and social issues. The idea in the Chart originates from Diwan (1979) and it was developed by Ohlsson and Byron in Bangladesh in the early 1980's and has been used by the author in, for example, Indonesia in 1990 (Ohlsson 1990).

Another dimension should be added to this in order to better understand the relationship between the different FTPFO. We could view the FTPFOs as belonging to three distinct categories: State forest, private forest and institutional forest. Each category has its own rules and characteristics. State forest is under the management responsibility of the State. As represented by the government, the State decides what to do to with the State forest – conservation, protection, production etc. and various combinations thereof. The State could very well delegate the actual management and operations of the forest, such as providing concessions, thereby allowing private or state corporations to manage the forest for its own objectives, such as profit. The actual management system could vary and even be agroforestry if the State so decides. Agroforestry is a technical application and not a management system in this context. Institutional forestry refers to forest under management of non-governmental institutions such as the church or villages. Members of the church or the community are involved in this particular forestry in their capacity as members of the institutions. The objectives of the management within institutional forestry varies, be it water catchment protection at the local level or profit. Private forestry refers to a system with private persons and institutions having the rights – ownership or tenancy – to manage the forest land for their own purpose. Risktaking, benefits, costs and responsibilities remain with the private individuals or institutions. The role of the state in the latter two typologies is to provide the policy and legal framework to make this happen. There are also a number of hybrids, such as the State leasing out or allowing the use of forest land by private individuals or institutions. As the State is omnipotent and has all embracing power through its political institutions, the conditions can change and be

reversed as shown in the case of Nepal where the Panchayat community forest, was confiscated in the 1950s by the State (Mahat et al 1987). Since the mid 1990s, this situation in Nepal is being reversed with this forest now being transferred back to the Panchayats. Another aspect concerns population. A household with half an acre of mixed trees in Bangladesh does not amount to much in terms of impact. But if there are, as there were in beginning of 1980, some 12 million households in that country with this area on average, the aggregate effect is large – small areas in large numbers. The Bangladesh system in the 1980's accounted for 70 % of the wood based raw material to the forest industry (FAO 1982, Ohlsson 1984).

2.4 Methods

In the field work in Vietnam and Lao PDR, a variety of research methods have been used. They reflect the original framework which contained four major spheres: the physical situation, reflecting, *inter alia,* actual land use; the macro economic situation and integration with the general economy; the socio economic situation which reflects the village and household situation and strategies and finally, policies, strategies and legal framework at global, national and local levels to the extent they are known and enforced in the locality. This approaches the framework suggested by Berkes et al (Berkes 2000).

The core of the research team was a forester, an agronomist and a social scientist. The set up in the field was variably supported by national researchers, local government staff such as extension staff and also local farmers. The national researchers and local government staff acted as interpreters. The procedure was to establish contact with the local authorities, explain the objectives and extent of the research and agree on procedures. Next step was to reach the villages on foot and to establish contact and accommodation. The research team stayed in the villages for an extended period, varying from a couple of nights to up to a week, including revisits. This was an important component in the research process. The methods used where:

- Participatory Rural Appraisal, comprising village transects, agricultural calendar and meetings in the evenings with the village leadership, the village in general, and with specific groups such as elders and women. Sometimes the meetings overlapped.
- In-depth interviews with households selected according to the village stratification system – well off, average and poor. These interviews took a full day for each family and also included separate interviews with the women.
- Field point sampling of forest and land use. In the Lao PDR study, points in the water catchment area were sampled and each location was visited,

together with local informants and past and present landuse was established as well as areas used for different purposes (Sandewall 2001).

- Aerial images from 1953, 1967, 1982, 1989 and 1996 were used in the Lao PDR case study in Article 1. The objective was twofold – to verify information obtained from the villages through PRA and interviews as well as to assist in discussions and analysis in the villages.
- Commune level interviews and collection of secondary data.
- Review of existing research, policies and legislation.
- The Area Production Model, APM, is a simulation model designed to be used as a decision making tool for developing land use scenarios, which were used for validating conclusions regarding historical changes.

The research team used formal questionnaires and checklists, both containing open ended questions. The research process was interactive between the researchers and between the researchers and the villagers. As the process proceeded, data and information was referred back to the village and resulted in generating new information and issues, not included in the pre-set questions. An important process was the establishment of the village history over the past 30 – 100 years. In the Lao PDR study in Article I, the history covering 100 years in the seven villages was recorded and translated back into Lao and eventually commented upon by the villagers. At the end of the research session, a seminar with representatives from the villages was held to discuss and, if possible, confirm the findings. The research process is described more in detail in Sandewall 2001.

2.4.1 Discussion of Concepts and Methods

Concepts

The emergence of new concepts such as the Ecosystem Approach (Sayer, J. 2005) and other attempts to integrate ecological and societal systems reflect the general trend of integration between different sectors and disciplines (ibid). In using the Holling's model, ecological and social and socio economic systems are included in the analysis. This also represents the use of two different scientific traditions. The natural sciences, based upon a positivistic outlook and concepts, provide exact answers such as number of hectares, number of trees etc. The social science as applied here, is based upon an hermeneutic philosophy where the analysis is undertaken using reasoning, understanding and logic. In Holling's model, this is achieved by following the general outline of the model, defining empirical data relevant for the situation which is being analysed. The positivistic approach provides answers with a high precision but with little explanatory value whilst the hermeneutic approach provides high explanatory value but with limited precision. By combining the methods in a systematic way, explanations and understanding

could be achieved, based upon statistically satisfactory data such as those derived from the field point sampling.

The renewal adaptive cycle has a number of limitations. It does not encompass all unique characteristics of the cycles or the possibilities of varying responses. Selection of data is based upon the theoretical framework used. The interpretation and understanding of the interaction between the different variables can be subjective. However, it provides an insight into the succession of events in a natural resource management situation where, for instance, deforestation is not viewed as an endpoint and climax or collapse of a system but rather as a stage which eventually will lead to the next, depending upon how the various actors respond and objects are reorganised. As mentioned before, the spatial and temporal dimensions can cause the aggregate analysis to be distorted. The changes can take place at a different pace at different times and locations.

The method has shortcomings in terms of validity and reliability as selection of data, interpretation of relationships and conclusions can be subjective and biased. However, in the approach and methodology used, by combining both a social science and natural science perspective, it is possible to use the two methods to support and complement each others. The approach can be characterised as a travel between different methods.

A problem with Holling's model is the lack of clear indications of actors or change agents. The system approach tends to forget the impact of change agents. In sociological theory, change agents are important parts of theories of change. In Holling's model, the change agents are hidden and could be described as embedded and are thus not excluded in the analysis.

When the Holling's model is applied to the case studies, it is difficult to distinguish between the reorganisation and exploitation phases. This is probably because there are several processes occurring simultaneously which are in different phases. This means that a particular phenomenon may still in the reorganisation phase whilst others have reached a more mature phase.

The concept of resilience is interesting in a development context. Development means change and thus resilience could be interpreted as resistance to change and lack of development. This is however not the case, as resilience must be interpreted also as part of a village and household livelihood strategy. Resilience is an interesting concept in a development perspective in analysing the behaviour of organisations like Forest Departments. In Webers terminology (Weber 1947, Pretzsch 2003), a bureaucratic organisation like a Forest Department is based upon notions like predictability, conformity, linear progression, set objectives, no risktaking and management of the unknown, whilst development is characterised by risktaking, flexibility, dynamics, management of the unknown and changing

objectives and adjustment to a dynamic environment. The back loop of Holling's model in this scenario represents the development perspective.

Components of Holling's model can be traced in Chart I, indicating the different forms of organisations within forest and tree production. The "state forest" organisation represents the Weberian bureaucracy whilst the "tree husbandry" organisation is more akin to the described development concept. However, this does not mean that one approach or organisation form is more relevant than the other – it depends upon the objectives and the environment.

Consideration of globalisation is important in order to analyse the development, concepts and practices such as privatisation of land and the exclusion of access to land and environmental services, through legal novelties such as Land Allocation, (a system of providing legal usufruct rights. The extent of those might vary in terms of whether they can be traded, inherited and mortgaged, and duration). The importance, variety and complexities of land tenure and man to land relationships are stressed in numerous reports and documents, ranging from e.g. Jacoby (1948) to Havnevik et al (2006). The emergence and penetration of a market economy and functioning markets are just a few of the alien concepts which very rapidly have been introduced in the villages in the case studies. The analytical approach suggested by Held (2001) emphasises the temporal and spatial processes, which occur simultaneously but with different speeds, vectors and content, which is analogue with the processes followed in the Holling's model.

Methods

The methods used are all well known and tested by other researchers with the exception of the field point sampling which evolved during the research process. The combination of methods such as Participatory Rural Appraisal, PRA, with field point sampling alleviates a major problem with the PRA. The PRA is a useful tool but has a number of shortcomings, however, in combination with statistically satisfactory methods such as the field point sampling, it becomes a very useful tool which is further reinforced by the interactions between the methods as discussed above. These methods make up an interdisciplinary research method. Interdisciplinary research differs from multidisciplinary research in that it not only utilizes the speciality of the respective discipline but also the interaction and possibilities for joint analysis between the disciplines. The methods used are described in Sandewall 2001.

Interaction during the research means that the researchers carry out the field work and analysis simultaneously with multiple disciplines as well as with the clients, the villagers. The process orientation refers to the dynamic characteristics of the research process where observations and findings in one discipline and

methodology are referred to another discipline and methodology. For example, statistically accurate findings about land area and its changes are explained through PRA and discussions. Thus, the methodologies provide mutual support, cross over inputs to different actors, cross over confirmation and in some instances verification. Scientific results from different disciplines are combined with local knowledge. Part of the process is the opportunity for the major actors, the local people, to influence the process and also to set the agenda. This approach enables an enlightened discussion about national level policies and local village and household level strategies to address the national policies.

In the Chart 2 below, different research approaches and methods are compared with respect to different characteristics. The objective is to highlight the features of interdisciplinary research and the "value" of the characteristics is less important than the characteristic itself.

Chart 2
Characteristics of different research methods and approaches
(Based upon PhD Westholm, lecture 1998, SLU, Uppsala)

Characteristic	***Ethnographic research***	***Survey research***	***PRA/RRA***	***Interdisciplinary research***
Duration	*Long*	*Long*	*Short*	*Short to medium*
Cost	*Medium*	*Medium to high*	*Low to medium*	*Medium to low*
Depth	*Exhaustive*	*Exhaustive*	*Preliminary*	*Exhaustive*
Scope	*Wide*	*Limited*	*Wide*	*Wide*
Integration	*Limited*	*Weak*	*Multidisciplinary*	*Interdisciplinary*
Structure	*Flexible, informal*	*Fixed, formal*	*Flexible, informal*	*A mix – formal/standardised to informal, ad hoc*
Direction	*Not applicable*	*Top-down*	*Bottom-up*	*A mixture*
Participation	*Medium to high*	*Low*	*High*	*High*
Methods	*Multiple methods, interaction, often over a medium to long time period*	*Standardised, use of surveyors*	*Multiple methods, interaction with the clients, villagers*	*Multiple methods including PRA/RRA, plus a research process*
Major research tools	*Participant observation*	*Formal questionnaire*	*Semi-structured interview*	*Varies*
Sampling	*None*	*Random sampling,*	*Small sample*	*Important and*

		representative	*size, based upon variation*	*used as a complimentary tool*
Statistical analysis	*Little or none*	*Major part*	*Little or none*	*Yes, in combination with qualitative methods*
Individual case	*Important, weighed*	*Not important, not weighed*	*Important, weighed*	*Important*
Formal questionnaires	*Avoided*	*Major part*	*Avoided*	*In some instances plus checklists*
Organisation	*Not applicable*	*Hierarchical*	*Non-hierarchical*	*Both hierarchical and non hierarchical*
Qualitative descriptions	*Very important*	*Not as important as "hard data"*	*Very important*	*Very important but related to statistical data*
Measurements	*Detailed, accurate*	*Detailed, accurate*	*Qualitative indicators used*	*Qualitative and quantitative indicators used*
Analysis / Learning	*In the field, on site*	*Office based*	*In the field and on site*	*Through a process in the field and interaction between researchers and local people.*

3 Results

This section will initially present some general results, followed by more specific results from the three different case studies.

Two of the case studies showed that food production has been, and still was, a major use of forest land. The technology used was shifting cultivation. The exception is the studied Districts in Northern Vietnam (Doan Hung and Ham Yen) in which private, farmbased plantation forestry has become a major use of forest land.

There was an increasing penetration of government policies and operations into the uplands and therefore into the shifting cultivation areas. In both Vietnam and Laos, a number of market economy markers such as production for the market and Land Allocation, in effect privatization of land and forest land, was found. In Vietnam, the forest land used for shifting cultivation was officially viewed as land not yet in use and therefore as potential forest.

The shifting cultivation landscape of Southeast Asia is the outcome of numerous households and villages producing food and other amenities, both for subsistence and the market.

Correct data on actual land use, in terms of areas, is virtually impossible to acquire through questioning the users. Official data at village level, obtained from the higher administrative levels, was also misleading as it reflected cultural and normative aspects rather than factual areas. This was highlighted through the actual measuring of land areas and also clarified by those concerned.

In an area in Northern Vietnam, within the raw material area, RMA, of a major forest industry, a private, mainly farm based plantation forestry system has evolved in the two Districts of Doan Hung and Ham Yen. The natural forest and bamboo areas in these two Districts were logged over during the 1960's and 70's and eventually replaced by SFE plantations. In 1976, the local bamboo species "Nua"

died, and could not be used as raw material by the mill. These areas were also engaged for SFE plantations. All plantations areas were subsequently replaced by a private, farmbased plantation forestry system. However, in the transition period, the forest land, including the bamboo land, was used for shifting cultivation. Some areas were set aside for state plantations, through the State Forest Enterprises, SFE, during the 1970s-1990s. The state forestry system is now being dismantled and in the Districts studied, all SFE forest land had been leased out to private operators. The balance of the forest land, without forest cover, was allocated according to the FLA for plantation forest purposes.

Both Vietnam and Lao PDR have since the later part of the 1980´s undergone changes in their forest policies and legislation. The changes have been in concurrence with international policy development. Effects of globalisation, such as an emerging market economy and allocation of forest land, was observed. Privatisation of forest land for plantation forestry was introduced. In Vietnam, the policy development has been dynamic and supportive of the different requirements for the development of private plantation forestry.

In the Nam Nan watercatchment in Luang Prabang Province of Lao PDR, there were seven villages studied which are located in the vaguely defined "uplands" of Lao PDR and Vietnam (Donovan 1997). In the villages, within the 10,000 ha Nam Nan water catchment, a stable shifting cultivation system which had been in operation for more than 50 years, was found. The initial pioneering shifting cultivation was eventually replaced by rotational shifting cultivation. In 2001, around 93 % of the households were still involved in shifting cultivation. In spite of, or more likely because of, severe disturbances, such as war, diseases and forced migration, they have maintained this. Conversion of forest land to agricultural land, i.e. shifting cultivation, was the major option available for the farmers to sustain themselves from the forest land and within the capabilities of the farmers (Sunderlin and Ba 2005). The fallowing periods for shifting cultivation during the time of the study was about 5 years. This was confirmed by the villagers, but there were discrepancies regarding the development of fallow periods earlier. During the 1950s, the fallow period was about 30 years, falling to 5 years 1982-1995 with an even shorter cycle 1995-1997, probably related to government policies and forest land allocation. Results from an ongoing study indicate significant differences between the villages in adjusting to the externalities (Sandewall, K., 2004).

Forest land allocation has been carried out in the villages, resulting in some 4 plots, each around 1 ha, being allocated to each family for cultivation. It was also found that significant amount of what was described as fallow land was actually used for permanent cultivation with fallowing in time rather in space. i.e. the same plot was fallowed after a few years and not replaced by another plot.

The villages have migrated within the study area, the main reasons being external factors which explain 60 % of the movements, and the remaining cases internal reasons such as diseases, superstition and search for better soils.

In the Chart 3 below, the development in the Nam Nan water catchment area of Lao PDR is depicted. Under the section Analysis and Discussion below, the Holling's adaptive renewal cycle was used to analyze of the development in the Nam Nan catchment area.

Chart 3.
Development in the Nam Nan water catchment in Lao PDR. (from Article III, modified)

	TIME PERIOD			
SPHERE/ ASPECT	**(CONSERVATION)** Slow accumulation of energy		**(RELEASE)** Creative destruction	**(REORGANISATION)** Innovation, restructuring
	1954 – 1963	**1964 – 1973**	**1974 – 1988**	**1989 – 1998**
Unrest	Escalating war	Civil war	Relative peace	Peace
Infra Structure	Area still isolated	Main roads built Army camp at Thong Khang	No investments	New access roads Research station
Population	Steady increase	Internal migration and population increasing	Immigration Rapid increase Culmination	Slight decline Stable villages
Agriculture	Subsistence. A few paddy fields Rotational cultivation	Subsistence Restricted by war	Expanded and intensified shifting cultivation, paddy development	Still mostly subsistence Some new crops for the market. Slight reduction in fallowing periods
Forests	Extensive areas of closed forest	Still extensive forest areas	Heavy logging Deforestation	Slow recovery Some household plantations – teak, mullberry trees etc. Forest land allocation

Market	Little access	Little access	Improved access Limited market development	Emerging market economy penetration. Growing interest in producing for the market, new products tried like coffee
Policy	Little influence	Little influence	People move back Logging ban Policy process	Forest protection Land allocation Market economy
Peoples life situation	Limited contacts with the outside world.	Influenced by war. Restricted movements.	Some external contacts and new ideas on health care, schools.	More external contacts. Change in household and village livelihood strategies. Land allocation. New ideas.

The above Chart 3 is further referred to in the Analysis and Discussions section.

In Vietnam, two case studies were conducted. One study encompassed a Commune, Ban Lao, and a detailed study in one village, Lang Ha, and the other one was a study of the development of private, farm-based plantation forestry in Northern Vietnam.

The land use in the Commune and Lang Ha village since 1960 indicated a decline in the forest cover until 1990, when a slight increase was observed. The villagers since then have increased the paddy field area and there is also an increase in brushland. The village had over the years been exposed to a number of different government policy initiatives, which have affected the village.

The village had a shifting cultivation site, some 125 ha, outside the village area, which contributed some 40 % of their total production in monetary terms. This land use and production was outside the official data used in the ongoing planning process in the area. The well developed and technically advanced paddy production, with commercial inputs, was used for subsistence whilst the traditional, low technology shifting cultivation (no fertilizers or pesticides) was for the market (The author has found similar systems of commercial shifting cultivation elsewhere in Vietnam and in Bangladesh, Sri Lanka and Indonesia. Similar observations have been made by Dove (1993).

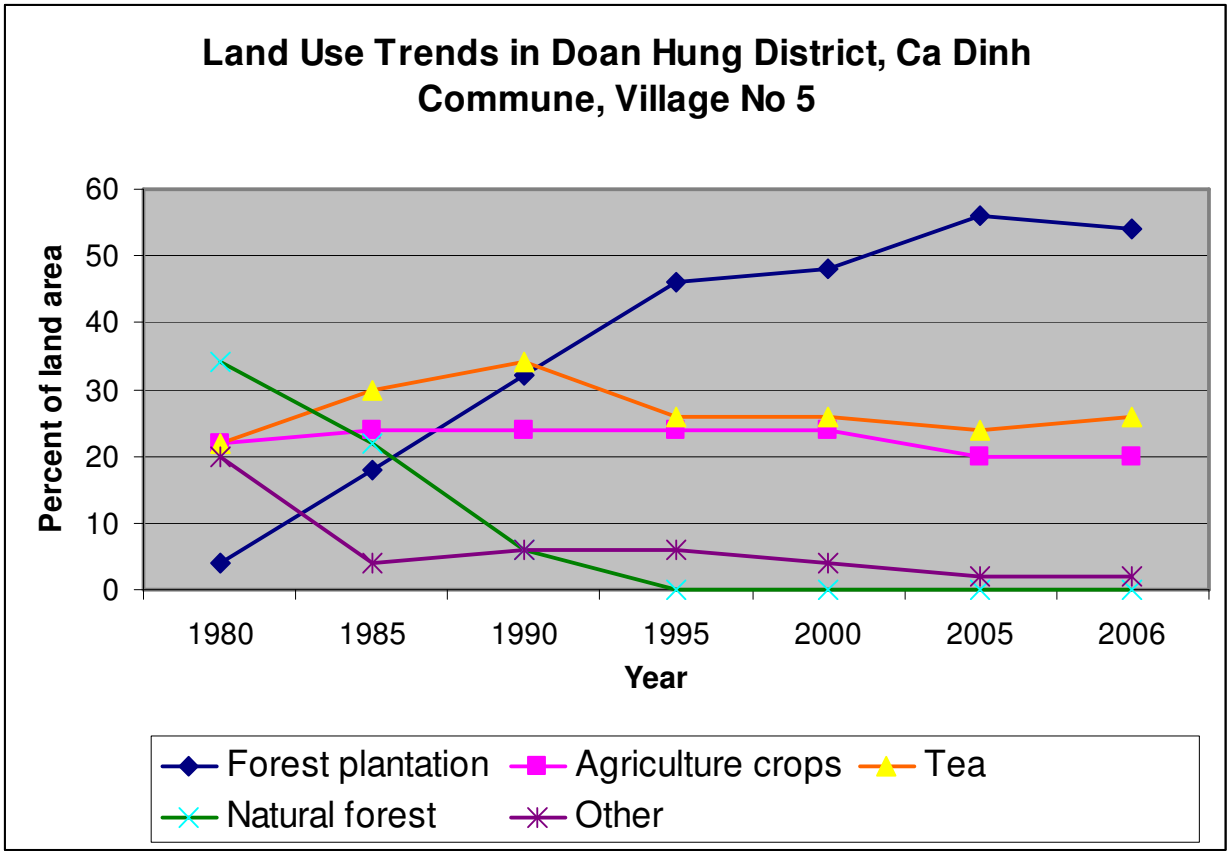
The official figure of 6 ha of paddy fields in the village (according to the villagers and official planning data), turned out to be 3 times higher when figures were checked in the field, using the field point method. The discrepancy was known to the planners but not considered. The explanation was that the "surplus" fields were outside the paddy fields operated through the previous cooperative system, and

created by individual households and thus not part of the official land allocation. Outside the planning was also the unofficial shifting cultivation area of 125 ha. Another explanation to the discrepancy in reported and actual land resources, not confirmed, but indicated by our informants, was that the data is based upon a negotiative process, where the different actors agree on for instance area of paddy fields, which in turn affect taxation and government support for investments. This was referred to as "harmonized" data. This certainly raises the issue of the reliability of official planning data, i.e. data found in the Statistical Data of Vietnam 1975-2000 (General Statistic Office, 2000), and consultancy reports on land use, based upon official data or verbal information.

In the official statistics, there is a category referred to as "not yet used land". In the Commune this category accounted for approximately 57 % of the land. The study found that virtually all this land was used for agricultural production such as shifting cultivation or grazing. This is likely to pose a problem for the Government who plan to use some of the "not yet used land" for reforestation, within the framework of the 5MHRP.

The second Vietnamese case study concerned the development of a farm based plantation forestry sector. In two of the three areas studied, in the Districts of Doan Hung and Ham Yen in Northern Vietnam, the land use has undergone drastic changes over a period of 26 years. In Chart 4, data from the period 1980-2006 from the Doan Hung District shows the general trend. The data is from the field point sampling.

Chart 4



In the Chart 4, "Other" refers to shrub and barren land (2/3) and swamp land and stream beds (1/3).

The initial cover of natural forest in the mid 1950's was encroached on a small scale and gradually converted into collective agricultural farms and livestock units. This was mainly done through implementation of government policies of migration programmes for former soldiers and others from the deltas. However, this was a slow and very gradual process. In the mid 1970's, and the following decades, there was a drastic increase in conversion of the natural forest into government and also to some extent cooperative plantations. During this period, there was also the collective death of the *nua* bamboo, comprising some 50% of the bamboo area. This land was used for plantation forestry, established through the SFE´s. In the Chart 4 above, based upon field point sampling, the development of forest land use shows the conversion from natural forests to plantation forestry. The natural forest had in 1995 disappeared and been replaced by plantations. During an interim period, the forest land was used for shifting cultivation before it was replaced by plantations.

This change was driven by the demand for wood from Bai Bang Pulp and Paper Mill, and the Districts being part of the Raw Material Area, the RMA. Bamboo was also harvested for the Mill. In the wake of the logging and the construction of forest

roads, new inmigration took place and shifting cultivation became a major forest land use in the Districts. The immigrants were mainly Kinh, the major ethnic group in Vietnam. The local residents were ethnic minorities, who practiced traditional shifting cultivation (Ohlsson 2001). A number of government policies – the introduction of a market economy, the Doi Moi; the Land Law of 1993 as well as the Forest Land Allocation, FLA (de Jong 2006), eventually penetrated the area and were implemented. The Mill, requiring more than 265,000 tonnes of wood material per annum, provided a stable market, and the new policies replaced the old system of requesting wood via a state controlled system, with a free market system, whereby the Mill purchased wood from the producers, the farmers, engaged in plantation forestry and supported by a number of government policies and legislation. The study indicates that an existing or emerging market, combined with suitable land, in this case deforested forest land, possibly also degraded, in combination with supportive policy and legal institutions, would be driving forces for engaging the land in a productive manner. Similar observations are found in a study of villagers engaged in bamboo production on former shifting cultivation land (Wood 2001).

Over the last 20 years, the forest cover in Doan Hung District has increased from 20% to 40 %. The increase is attributed to increase in plantations. The plantations, based both upon forest land allocated and leased forest land from the State Forest Enterprises, SFE, are small in size with 80% of the households having less than 5 ha, out of which about half have 0.1 – 0.5 ha. The estimated total number of operators with FLA is 7,000, having a total of 8,050 ha. Apart from farmers with allocated forest land, the District also has a number of operators who are renting land from the State Forest Enterprises, SFE, operating 3,750 ha of plantations. The number of operators is not known, but these plantations have a similar structure regarding size of operations. In Ham Yen District, the total area forest area amounts to 52,000ha and total area under plantations is 22,000 ha, out of which 15,400 ha is land leased out by the SFE's and 6,600 under FLA. In the District furthest away from Bai Bang, the total area under FLA plantations amounts to 2,750 ha, with a total of 5,650 ha of plantations, the balance presumably leased out by SFE's to private operators. It is estimated that 30 % of the actual forest area contains plantations. All data in this paragraph is from the District and the Forest Protection Stations. It is difficult to ascertain the accuracy of these official figures. Observations in the field, in combination with other sources (BAPACO), indicate that the figures correctly indicate magnitudes.

Of the rawmaterial used at the Bai Bang Pulp and Paper Mill during 2005, 45,000 tonnes were bamboo and the balance wood from private plantations (BAPACO Management 2006, figures from 2005). Some 50% of the wood comes from private, farmbased plantations, which have forest land according to the Forest Land Allocation. The balance comes from forest land leased out by the State Forest enterprises to individual farmers and households, often including former employees (ibid).

The transformation, in the two Districts studied, from mainly natural forest to the current situation has taken place during a 30 year period. The sequence of events was natural forest, logging and ensuing shifting cultivation and eventually, conversion of the government forest land to private plantations. The RMA comprises of 6 Provinces, and this study covers three Districts in three Provinces. It is suggested that in general, a similar development has taken place in most of the RMA. The production is through a system of private, farmbased forestry, with approximately 50% of the operators having individual leasehoods and the balance is leasing the land from SFEs.

The interdisciplinary and historical approach and methodology used was a combination of natural and social sciences, which provided both statistically satisfactory data on land use as well as an understanding of the development (Article IV). The studies highlight the deficiencies in using verbal information and Participatory Rural Appraisals, PRA, without verification by independent means and at the same time shows the usefulness of PRA if this is done. Issues relate to objective of the PRA – to get information, to convince and influence, to provide information or empowerment, e.g. Other aspects concern the adaptation to the organisation carrying out the study and potential biases – "correct" answers might result in an aid project! The PRA is further discussed in Article I.

3.1 Globalisation

All the villages studied in Lao PDR and Vietnam were affected by a number of externalities, varying from introduction of mosquitonets, radio and television (powered by minimini hydro generators) to relationships with the land, in effect privatization of land, including forest land. This prompted a study on globalisation, looking in particular at Lao PDR and the development of plantation forestry (Article III). It can be concluded that Lao PDR, in aspects relating to plantation forestry, certainly is part of a globalisation process, expressed in terms of privatisation of forest land, market based operations, commercial credits and management vested with individuals or households. The transformation is complicated as the penetration of the market economy, forest land allocation and governance varies, both geographically and administratively (Ohlsson and Inthirath 2001).

4 Analysis and discussion

The case studies have their own specific characteristics, history, present and future. Initially, each case will be discussed, followed by a discussion which focuses on common points, differences and general aspects and issues.

4.1 Lao PDR

Using the Holling's adaptive cycle (Gundersson and Holling 2002), the situation 50 years ago in the area of Nam Nan water catchment, could be described as an isolated area with very little connection between government policies and the local area, following Chart 3 on page 28. Shifting cultivation was still pioneering and there was an abundance of natural forest. Population growth was slow and existing institutions supported the existing cultivation system. The forest represented a stored capital and wealth, not yet exploited. The area was isolated and there were no access roads.

When the population slowly increased and there was a need for more food, this was achieved by intensifying the shifting cultivation, i.e. by shortening the fallow period. This resembles involution as discussed by Geertz (1963). In his analysis of the development of paddy field operations in Java, he found that, in response to the increased population, an adjustment was made by engaging more people in the paddy production, and thereby giving more people access to both the production and the distribution from the cultivation. The people engaged did not necessarily carry out essential tasks related to the production, but were given a social connectedness to the production and thus entitled to a share of the the produce. This was combined with technological developments in paddy field management. This was, however, not the case in Nam Nan catchment area and its shifting cultivation. The population, in the short to medium term, achieved an increase in the total production from the same area by a shortening of the fallowing period. This is an example of resilience. The system managed to sustain itself by an

intensification of the land use system in order to feed an increased population. This response by the villagers was probably explained by the fact that the villagers were actually successful in feeding themselves and maintaining their lifestyle and environment and the fact that there were very few other options available at that time. There were limited contacts with the outside world and those contacts they had were not actively supporting any changes or providing opportunities which were within the reach of the villages. However, the war caused temporary settlements outside the catchment. This phase, until around 1973, is what Hollings et al (Gundersson et al 1995) refer to as *conservation*.

During the civil war and up until 1974, the area was, in spite of a major road building project which connected parts of the area to the national road network and an army base, still not much affected. However, during 1974, immigration and a population increase resulted in an expanded and intensified shifting cultivation and eventually also a partial sedentarisation of shifting cultivation. That is, a change from pioneering shifting cultivation to a limited number of plots to be used by each household. Logging operations were instigated by commercial and government operators and caused a marked deforestation. New roads were built and, in general, access to the area was improved. The government encouraged people to move back to their villages and this took place. The returnees brought new ideas and concepts and subsequently new institutions such as schools and health clinics emerged.

In the late 1980´s, a limited contact with the market economy was established facilitated by new roads and also a Sida financed project in the area. Logging and ensuing deforestation accelerated. Thus, the stored energy and capital – the trees – were released and institutions and lifestyles were challenged, new roads were build, connecting the area to the national road system and at the end of the period, there was a limited but active market development. This is the *release* phase. It is also referred to as a period of constructive destruction, when existing, now non-functional systems collapse and disappear and are replaced by something else. The resilience of both the village institutions and the forest is challenged, and there is space for new ideas and new institutions to appear. One can also observe less connectedness between variables. In the conservation phase, the forest and the people in the area are closely connected and interdependent. Now, with the forest being exploited by outsiders, and the villagers relating to a greater extent themselves to factors outside their village, there are less connections between the local people and the forest.

From 1989 onwards, a number of new government policies and legislation were enacted and implemented such as the forest land allocation, forest protection measures and the market economy. All of this started to penetrate the villages to varying extent. This period is referred to as the phase of *reorganisation*, characterised by the emergence of innovations and restructuring. Old structures and institutions were challenged and disappeared or changed along with the physical/biological wealth as represented by the decreased standing forest.

This eventually caused a period of innovation and restructuring. In this case, this is probably driven by new government policies, including the emergence, albeit limited initially, of a free market and the forest land allocation. The increased communication assisted in enabling the new policies to penetrate the villages. Pioneers and innovators appeared, new ventures were undertaken, new crops were tried, mainly for commercial purposes, and initiatives such as village based road construction for connection with the main road were undertaken. New resources were built up, such as the emergence of young forest, enterprises, markets and diversification of crops. The process was slow and uneven.

All villages were not engaged in this. Rather, it was possible to distinguish between villages which very actively embraced the new situation and started up and tried a number of ventures with new crops and markets. Others chose more passive strategies, maybe limited by options available, and continued primarily with their current activities: expanding their paddyfields, using new structures which enabled them to borrow money for those investments. Other villages quite clearly felt the new situation as a threat and their strategy was understood as avoidance – they felt disadvantaged in the new system and felt that they could not handle the market economy.

During the phase of *exploitation,* as indicated in the adaptive cycle, there was a build up of new resources. Some of the ventures were not successful and were superseded by others. New legislation and institutions evolved, such as the Forest Land Allocation and market opportunities. During this phase, some ventures will eventually be able to generate new resources – coffee plantations, other new cashcrops, plantations and business enterprises. Some of the new institutions will be successful and contribute to the development of new resources. Eventually, this lead to the creation of a new system, referred to as *conservation*, where the new institutions and physical entities are established. In the Nam Nan case in Lao PDR, in 2001, the exploitation phase was still ongoing and the outcome and subsequent developments was difficult to ascertain.

In Article III, (globalisation) we showed how a number of global concepts have penetrated the Lao PDR including privatisation of land through the Land Allocation; the alienation of the State forest land from the villages access through the Forest Land Allocation, FLA; penetration of the market economy; and a general improvement in communications such as roads, television and radio and an increased effort by the government to reach to the villages. During the ongoing reorganisation phase, we can distinguish a number of new institutions appearing. The process was still underway during 2000. It is expected that the new phase – exploitation – eventually will arrive after the new institutions, market opportunities etc. have been put in place. This process is likely to lead to profound changes in the life of the seven villages; by far surpassing the impact of the French colonization, the American war and the Governments attempts to collectivize post 1975. In the Lao PDR case, globalisation in terms of privatisation of forest and agricultural land, introduction of cashcrops and a market economy, increased communications

and an increased government presence, whilst at the same time less government interventions was observed. In Holling's terminology, there is at present a period of reorganisation and reorientation and the outcome of this remains to be seen. The extent of forest land used for food production (currently 50%) is also likely to change as the processes evolves.

4.2 Vietnam

In the Ban Lau Commune in Northern Vietnam, more than half of the forest land was used for food production (One Commune comprises 3-20 villages. The Ban Lau village had 112 ha plus 125 ha of shifting cultivation land outside its own, official area). For the village studied, Ban Lau, paddy fields officially constituted some 6 ha of the village land, although the actual, measured figure, was 20 ha. The discrepancy was due to both practical praxis and definitions as explained earlier and is a good illustration of the difficulty in obtaining accurate figures through verbal communications and official data. Apart from the non-official paddy fields, this village, as well as the other villages, had locally recognised shifting cultivation areas. The total area used for shifting cultivation was 56 % of the total land area in the Commune. Over the last 50 years, the village had in various ways responded to the different government policies which had reached them. One such response was the private, technically illegal, paddy fields outside of the official data. It illustrates the interaction between government policies and the villages – policies actually reached the villages and they were considered and responded to. Sometimes the villages have to implement the policies, albeit with local variation which was not in line with official policies but necessary for the villages to maintain their lifestyle and food security.

In the Vietnamese case of the development of a farm based private plantation forestry system, it is possible to see a distinct outcome of the events over the last 30 years. Assuming an initial stage of conservation, the natural forest in the two Districts of Doan Hung and Ham Yen was by and large undisturbed some 50 years ago. Population, mainly ethnic minority groups, was small. Eventually, government policies initiated a slow inmigration to the area, which started to transform the natural forests into agricultural and livestock areas, albeit still at a small scale. In the mid 1970's, there was a new phase – *release* in Holling's terminology. Large scale logging and road construction took place in the area and substantial areas of natural forest become plantations and large scale – on a small individual scale but with a large number of operators – shifting cultivation took place as well as the use of the deforested areas for grazing. There were no legal institutions to support or regulate this. In the early 1990's, new policies – free market economy, Forest Land Allocation, FLA, emerged and also penetrated the area. The FLA was initially accepted by entrepreneurs and people with knowledge about the market opportunities for plantation forestry and the Mills requirements. The poorer strata

were initially not yet prepared to undertake this, to them, risky operation. The FLA was conditional and required certain standards of maintenance and management. Unless this was achieved, the forest land was returned to the State. As the influence of the Mill as a potential market started to penetrate the two Districts, more and more people started to rent land from the SFEs as well as take land on FLA conditions. During this period of reorganisation, not only did local institutions such as households, entrepreneurs, traders and other units take up new livelihood strategies but also new institutions such as the emerging market for wood, the FLA, including the new Land Law 1993 as well as the numerous new Decrees and policies appeared (Sam 2001).

The process generated new resources and wealth, a process which is continuing today, and we can se a phase of exploitation of these resources taking place. The original concepts of an omnipotent state managing the forest and commanding the forest land of cooperatives and SFE's to ensure production is no longer present. There has been a shift from a state controlled forest to a mixed forestry sector, where the private plantation forestry sector has emerged as an important actor. The institutional support for this has evolved gradually – the original policies and Decrees from the early 1990's on until the National Forest Development Strategy 2006-2020 (MARD 2006) have evolved on the basis of experiences gained and subsequently been modified to better reflect the opportunities (Sam 2001).

The shifting cultivation landscape in the Districts of Doan Hung and Ham Yen have disappeared and been replaced by a large number of small plantations with varying content in terms of composition of each holding. This is a reflection of local variety in terms of needs and opportunities and socio economic status. The conversion of the shifting cultivation land to a commercial private, farm based plantation forestry, is based upon a number of factors: the existing market for wood; availability of land; existence of locally and nationally recognised tenure systems; skills, knowledge and market knowledge among the farmers; and the development of policies and strategies which are supporting the above. Direct incentives and subsidies have not been involved in this development. Rather, supporting policies have been able to put all the above factors together. The findings do not concur with e.g. Enters (2003) who discussed the use of direct incentives in the form of tax reductions. The major incentives in the Vietnamese case are related to access to land, the market and suitable institutions, supporting the enterprise, rather than tax reductions and other incentives, as suggested by Enters. The role of supportive policies and strategies could, however, be limited. Studies elsewhere indicate that even with policies and strategies in place, this is not always enough, as has been observed in the Southern African Region (European Community et al 2003). In general, the policies in place in the Doan Hung and Ham Yen Districts are supportive of forestry development, including private forestry. In Vietnam, the World Food Program also found that lack of food security was an obstacle towards development of private plantations (WFP 1984).

The analysis of the sequence: conservation, release, reorganisation and exploitation, gives an aggregated overall view of the development during a specific period in a specific area. In the Vietnamese case of farm forestry development, the units have been Districts. The aggregate analysis comprises therefore both temporal and spatial aspects. That is, the total analysis contains a number of units which are at different positions on a time scale and in space and it could be described as a number of separate adaptive renewal cycles occurring simultaneously at the household, Commune and District levels. This is referred to as "Panarchy" by Gundersson (2002). On the other hand, there is a strong uniformity in the outlook of the various actors – households, villages, Communes and Districts, but the timing varies, in particular between different socio economic strata and with distance from the market. The early investors in private farm forestry are those who are financially better off, with the poorer strata joining later. The former group had market information and investment resources, which the poorer strata did not possess, placing the poorer strata at a disadvantage.

4.3 Comparison between Lao PDR and Vietnam

There are some distinct differences between the Lao PDR and Vietnamese case studies. The Vietnamese Commune and village, Lang Ha, had, over the period studied, been influenced by government policies and responded to these. By and large, policies have been implemented but also modified and complemented by the villagers, often adapted to local conditions, circumventing the policies or by subterfuge. Examples are the development of private paddy fields during the cooperative period (theoretically not approved) and the continuation of the shifting cultivation.

In the Lao PDR case, the impact of government policies has been more varied and diffuse. The American war, the civil war, the ensuing reconstruction and the introduction of a centrally planned economy, has certainly involved the villages and the villagers, but they have largely been able to maintain their lifestyle and local economy with rather modest adjustments and displayed a high degree of resilience. There has, since 1975, been a number of policies aiming at reducing shifting cultivation, but they have either not been known to the people concerned and/or not enforced or not been possible to enforce (IEED 1999). The general strategy of the villages could be described as avoidance, and changes, such as relocation of the village, was often attributed to external issues. Government policies of collectivisation were never implemented as the government penetration in the area was very low. However, at the beginning of the 1990´s, government policies on forest land use, land allocation and the market economy started to penetrate the area studied. The villages response varied, from embracing the new policies (e.g. trying new commercial crops), to doing more of what they already do (increasing paddyfield areas e.g.) to continued avoidance.

Development in general focused on the exploitation and conservation phase which is characterised by a slow, incremental phase of growth and accumulation. It is usually also a predictable development, with limited flexibility. In the Lao PDR case, this is the period until sometime during middle or late 1970´s. The period is slow moving and reasonably predictable and fits well into bureaucratic based development thinking (Weber 1947; Pretzsch 2003). The backloop stage (Gunderson and Holling 2002) on the other hand emphasises the rather rapid phase of release and reorganisation, leading to renewal and development, and also risktaking. It is a dynamic phase and the outcome is difficult to predict. It is further complicated by the concepts of sustainable development which contains both forces to prevent change and at the same time is looking for change. Although the study only covers 50 years, it has been possible capture glimpses of village life and development over some 100 years, and it has been a period of slow development with very few changes, until the effects of globalisation penetrated the villages. The consequences of the new situation in which the villagers now find themselves and how they respond is difficult to predict, but one conclusion is that the villages are by now under a very strong pressure to change, to adapt and to respond to the external influences.

Other aspects of the ongoing changes are the potential for internal migration. In Lao PDR as well as in Vietnam, there appears to be an ongoing process of migration. Upland people move to areas with road communications, usually in the lowlands. This is a gradual movement, with the population sometimes still using the established shifting cultivation fields but during periods moving to the lowland areas. The reasons for this are probably the increased communications and changed expectations among the new generations for a different lifestyle, as well as government policies. The new generation is not prepared to continue living in the mountainous and shifting cultivation areas with no access to the national road network. In a more general terminology, it seems as if either the uplands have to go to the road networks or the road networks have to extend to the uplands, as observed by the author during this study. This development remains to be documented, but there are a number of indications of a general and gradual movement from the uplands to the lowlands, in particular to the “roadside” (personal observations and communications with officers in various northern Provinces in Lao PDR).

4.4 Forest land use

Below will be indicated a number of instances where forest land and forest and tree production systems have been created by farmers in different parts of the world. It forms a mini narrative, where the traditional focus on forest departments is replaced by focus on the farmers and their achievements. This is to some extent in contrast

to the development in Vietnam, where a dynamic policy den legal development has enabled and supported the farmers in the development of the farm based private plantation forestry. Chart 1 (p. 29) illustrates components in an analysis of forest land use and management. An example of the tree husbandry model can be found in the Deltas of Vietnam, in Java in Indonesia and in Bangladesh (Rahman 2003 re Bangladesh). The latter case was the subject of an inventory by FAO in the early 1980's. The outcome was published in 1982 (FAO 1982) but never really related to other forestry and land use statistics in Bangladesh. Doing this, one can see that tree husbandry in Bangladesh accounts for 70 – 80 % of all wood production for both energy and industrial purposes on an area which is approximately 20 % of the total forest area in Bangladesh. Consultancy reports indicate a system with homestead of on average 0.2-0.8 ha with 75 trees of 25 different species (Ohlsson 1983). In the deltas of Mekong and Red River in Vietnam, similar production systems existed as well as in Java, Indonesia. In Ethiopia, in en entirely different context, farm based plantations have been a common occurrence since beginning 20th century, when Eucalyptus species were successfully introduced (Haile 1961). Around the Tiro Juniper forest in western Ethiopia, a study indicated that 50% of the farms had their own Eucalyptus plantations (Sandhal and Ohlsson 1978). This was done in spite of the villages being located in the immediate vicinity of a wellstocked forest.

Another forestry and tree production system, operated by small farmers, is the rubber production through the Hevea braziliensis. The rubber tree was found in Brazil where it was collected by local people. During the late 1880´s, the species was transplanted to Southeast Asia. In Malaysia, large industrial rubber estates were created and the local farmers established small, homestead based plantations, the size of which was less than five ha. The natural rubber was a commercial success, e.g. in supplying the growing car industry with rubber tires. The small homestead plantations were successful in spite of government policies favouring the big estates (Lim 1967, Grilli 1980 and Drabble 2000). The small farms, to which the rubber plantations were only part of their economy, showed a high degree of resilience. When rubber prices went down, they just reduced the amount of tapping of the trees. This is not an optimal way of managing the rubber trees but it worked well. There are also jungle rubber plantations in Indonesia, in Sumatra, where rubber trees in agroforestry systems are replacing shifting cultivation (Gouyon 1993).

Malaysia, in cooperation with the World Bank, is one of few instances found where a resettlement scheme on a large scale, based upon plantations, has been successful. The objective was to generate income and land use opportunities for landless ethnic Malays. Since the late 1960´s, 112,635 families, comprising some 600,000 people, have been resettled in schemes established through the FELDA, Federal Land Development Authority. The economic base has been rubber and oilpalm plantations, comprising some 900,000 ha, out of which 80 % is for oilpalm. The schemes are self financing with the settlers eventually paying off the investments. By 1995, 75 % of the settlers had paid back the loans (FELDA website 2007).

There are a variety of models for the management of forest land. An interesting example is the SOLEDO forest in Tanzania. It is a Miombo forest, comprising 300,000 ha of gross area. It is managed by a committee, representing the seven villages. It was previously a state forest but under the effective use and control of the local communities. In conjunction with the upcoming change of forest policy and legislation changes, the forest was transferred to the villages. It is now supported by national policy and legislation and local bye-laws and managed according to locally developed techniques (Sjöholm 2002, Wiley 2000, Havnevik et al 2006).

Ownership of land and tenure rights are very complex issues (see for instance Havnevik et al 2006) and not addressed in detail in this study. The government could very well lease out government land to small farmers for e.g. agroforestry or for commercial plantations. The common terminology used is confusing with terms such as village forestry, community forestry, social forestry, agroforestry and farm forestry. Commercial plantations could be established by individuals, small farm households as well as by large private entrepreneurs on a large scale, in large units. The "social" and "community" usually denotes small farmers and implies non-commercial activities and communal good. This is not necessarily correct and often outright misleading. Small farmers also pursue economic gains. It also appears that the term "Community Forest" connotes individual, household based as well as real community based forestry. However, the Regional Community Forest Training Centre, RECOFT, website defines community forestry as the "governance and management of forest resources by communities for commercial and non-commercial purposes, including subsistence, timber production …." and private, household and individual forestry appears according to this definition be excluded. However, the author has come across reports regarding individual, private small scale forestry in connection with RECOFT activities, but this does not concur with the definition.

Forest land use involves more than forestry. It is an important component in rural livelihood strategies, including food security (Sawathvong 2003, Byron 1999). Likewise, property rights and tenure systems vary considerably. Outright ownership rights do not necessarily constitute favourable conditions for sustainability, but rather is a very complex issue (Unruh 2002). Informal systems which are accepted and supported by local communities and at least accepted by central authorities appear to be able to sustain a productive land use, as observed by the author in many countries such as Vietnam, Bangladesh and Ethiopia.

The role of forest and forest land in poverty alleviation has recently come to the attention of the international community (Angelsen and Wunder 2003). In the study of the private plantation forestry in Vietnam, it was observed, but not ascertained, that the poorer strata had smaller plantations and that the land they had received through the FLA usually was located further away than for the wealthier strata. The reasons for this were that the wealthier strata had better access to market

information, saw the potential in plantations and also could afford the initial risktaking, whilst the poorer strata did not have the resources to engage in this initially. Another observation is that the poorer strata more commonly have an agroforestry type of plantation, with a mix of short, medium and long term, whilst the wealthy strata had more monoculture plantations. Other studies indicate that the FLA process is exacerbating poverty of the poor in the village (Phuc 2003).

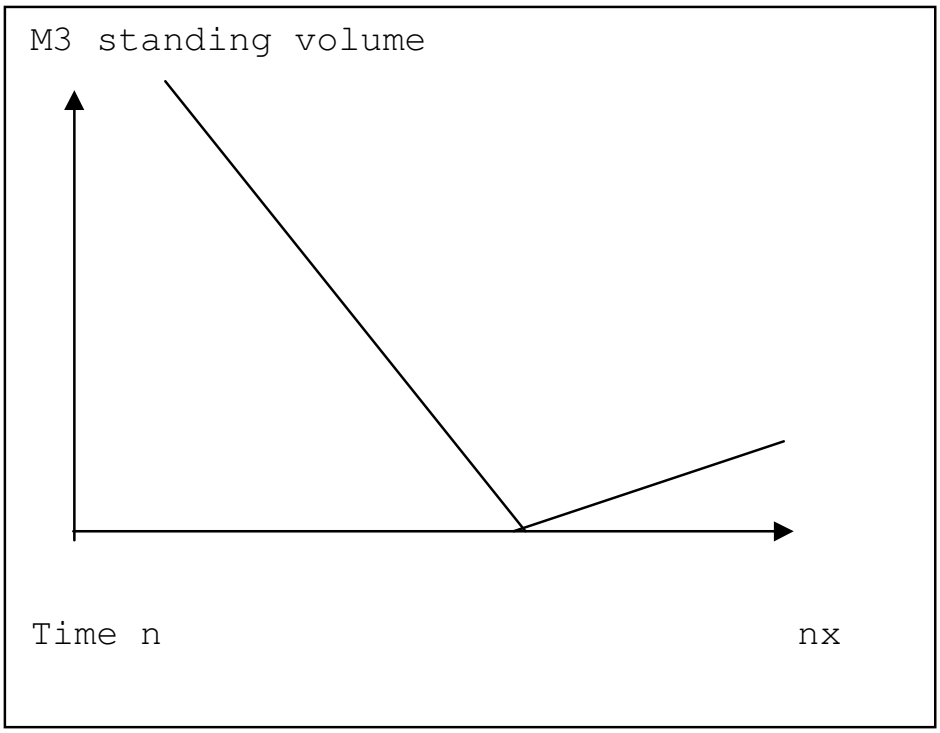
Most people live outside the forests and are therefore making use of trees outside the forests. This aspect of forestry is still not well recognised by the professional forestry community, with a few exceptions such as the Trees outside the Forest programme in India. Rather, the farmers have responded with indigenous systems such as tree husbandry. Forestry and forest land use is also part of a varied and complex land use rights systems with individual, household, common, traditional and modern, absolute ownership rights and usufruct rights. There are also formal and informal institutions, which upheld ownership rights on individual trees like the Tree Patta system in India (Chambers 1989) or the eight individuals who all have different usufruct rights to one Mango tree in Bangladesh (Ohlsson 1983; Harrison and Herbohn 2000 a).

The farmers response to shortages of wood for energy, fruits, construction materials etc. should be a primary concern but as indicated above this was, in the 1970´s and 1980´s, by and large ignored by the donor community and the forestry professionals, with a few exceptions (FAO 1989). Rather, new concepts such as Community Forestry, Social Forestry, Forestry for Local Community Development etc. were introduced and implemented through donor assistance. The outcome of these projects was not very successful (Lohman 1990, Arnold 1992 and Cossalter 2003). An interesting issue in this context is why virtually all donor support went to collective forestry projects, based upon the assumption that the villages were socially homogenous units with similar interests, whilst existing and functioning household and individual based existing systems where by and large ignored. In contrast, support to farming activities were virtually entirely based upon supporting individual farmers.

How do we explain the occurrence of these, apparently successful systems which have evolved? Another issue, which is beyond the scope of this study, is why the professional forestry and donor community to a large extent ignored these findings and experiences of farmers and rather went for concepts and practices like community forestry and social forestry? Donors ambitions, based very much upon their constituencies, were probably a driving force. The then Swedish International Development Agency, SIDA, promoted different varieties of collective forest such as community forestry and Social Forestry, directly in bilateral projects. The FAO received support for the development of communal forestry through the Forest for Local Community Development, FLCD, and eventually the Forest, Trees People Program, FTP. This collective bias is surprising, considering the structure of Swedish forests. More than 50 % is privately owned, mainly by farmers and in comparatively small units, and the system is competitive and generally successful.

Why therefore did SIDA choose to consider only collective forms of forestry – which hardly exists in Sweden[2] - as appropriate is an interesting issue, which the author leaves to other researchers. It is not unlikely that it is related to then existing and dominant political paradigms. Many of the recipient countries had been selected also according to the then prevailing paradigm.

The first question, relating to the driving forces for development of indigenous forest and tree production systems, is probably related to needs and resources. When available goods such as forest and tree related products, biomass for energy, construction materials, fruits, medicines and herbs and soil protection disappear or does not appear, the farmers respond by producing these goods by themselves. A major precondition for this is control of land, not necessarily ownership but control, supported by local and national institutions. The chart below illustrates a possible scenario:



When available volume or goods decline, the response is to produce them by self intervention. The lack or shortage of access to forest could be physical, e.g because of deforestation or it could be institutional. That is, the forest is still there but is not available to the local population because of legislation and a functioning protection

[2] The ”Häradsallmänningar” could be viewed as similar to community forests. Their ancestry goes back to the middleages. Ownership rights goes with the different properties.

system or because of the local population's own bye laws and customs. The SOLEDO forest in Tanzania is an example of this: the forest is under management of seven villages who restricts the villagers from unplanned use of the forest. In Lao PDR, the government is, through the Land Allocation, trying to alienate the farmers from the natural forest and support the introduction of plantations to supply fuel wood, construction materials and also to generate supplementary income opportunities for the farmers. The Vietnamese case is interesting as we can observe a similar situation on a nationwide scale. Through the Forest Land Allocation program and also other activities, an institutional shortage of land has been generated – land, including forest land, has been distributed to different operators, including farmers. The conditions vary from contracts to manage forest land to outright ownership. This seems to have provoked a private farm plantation forestry sector, notably in the vicinity of the Bai Bang Pulp and Paper Mill in northern Vietnam. There has been an overall change from an annual deforestation towards an increase in the national afforestation and reforestation of some 300,000 ha per annum (Minh 2002). In Boserup's (1962) terminology, a relative population increase or lack of a resource provokes a response and an innovation in land use. In West Africa, it has been noted that a number of myths, based on a Malthusian perspective of overpopulation causing forest destruction, were just that, myths. Persistent research showed that on the contrary, when the area was densely populated, there was more forest than is found today when there is no one to manage and use the forest in a sustainable manner (Fairhead 1995). This supports an interesting idea that where there are people, there are trees/forest, and where there are no people, there are less or no trees!

4.5 Forest land allocation

In Vietnam and Lao PDR, the Boserup concept and ideas about population development and technological development in land use appears to be an underlying rationale for the land use policy. Population increase in relation to available land will drive a technological development. Forest land is being redistributed in such a way that there will be restrictions and in effect, a physical as well as an institutional shortage of forest land. This is supposed to force or incite the owners and operators to invest in the land they have at their disposal as there is presumably no other land available. However, this is not sufficient to explain the development in Vietnam and Lao PDR case studies. In the Vietnam case, there is still an extensive shifting cultivation system in operation. However, the forest land allocation in combination with the development of markets for produce from that land has in other locations resulted in a vigorous development of farm based plantation forestry according to the findings from the study in Doan Hung and Ham Yen Districts. In the Lao PDR case study, at the time of the study, the forest land allocation had been carried out but the outcome could not yet be ascertained.

The major factors affecting the forest land use in both Vietnam and Lao PDR could be summarised as globalisation. That is, if privatization of forest land, penetration of the market economy, alienation of land as well as allocation of land, increased access to information and in general increased communications are to be viewed as part of the globalisation process. This development has taken place during some 30 years. In Vietnam, it is possible to see traces of this process in the landscape of the two Districts studied – the previously barren hills are now covered with a large number of mainly small, privately owned plantations and at a national scale, the deforestation trend has been reversed, albeit modestly. In the Lao PDR study, the development with regard to forest land use is still in its infancy. What has been established is that the villagers in the Nam Nan catchment are starting to address a, to them, new situation, and the outcome remains to be seen.

The consequences of globalisations likely to affect people differently. For example, in the case of private plantation forestry that poor households were late to engage themselves in the venture, as they had no access to market information and little resources to take risks with. The findings confirm the statement that ..."it is increasingly difficult to find anything in the world untouched by globalization" (Dasgupta 2004). For the local communities, the consequences of this vary. In Vietnam, on a national scale, a substantial reduction in poverty has taken place which partly can be attributed to globalisation, in particular to the economic reforms (The Socialist Republic of Vietnam 2004). In the area providing Bai Bang Pulp and Papermill with raw material, the outcome has, at a District level, been successful in generating resources, employment, use of previously not productively used land and providing incomes to farmers. The outcome in the Nam Nan water catchment remains to be seen. What can be concluded from the studies is that the outcome will drastically change the life of the population of 10,000. The prerequisites for their traditional lifestyle, as observed over the last 50 years, have been altered through changes in policies such as land allocation and alienation of forest land and the increasing dependency on the market economy. The previous access to the natural forest is now restricted and this is will affect the poorest strata. Women are also especially affected as they, by tradition, possess the knowledge and also have the responsibility for the of collection nontimber forest produce, both for subsistence and for the market. The access to those environmental benefits will be restricted and this is likely to cause a reduction in income and in available nutrient intake (Sjaastad et al. 2005; Fisher 2005). The other side of this process is the Forest Land Allocation, whereby farmers get four plots, each of which is around one ha of forest land. Considering the experiences of agriculture in the area, it is very difficult to see how this land would suffice for sustenance. This is another part of the expected future – the outcome of the ongoing processes is very difficult to predict, and the studies only indicates that the present process of globalisation in the area will have very far reaching consequences for the villages, at least seen in the study's fifty year perspective.

Recent observed trends in forestry protection and deforestation indicates that the previous notion of forestry being threatened by poverty is replaced by and driven

by the industry, carrying out commercial logging and clearing for agricultural purposes (Butler et al 2008). It is possible that the introduction of the market economy and privatization – and at the same time alienation - of forest, as part of a globalisation process, has reduced the pressure on forest and forest land from poor farmers. The case studies presented here support this. The general reasons might be improved agricultural output, land allocation as well as the movement from the uplands to "roadside" discussed above. The possibly reduced pressure from poor farmers, however, seems to have been replaced by commercial transformation of forest land for oilpalm, sugercane and other commercial crops. This provides new opportunities for stopping deforestation, as the larger scale industrial operators are more easily identified and targeted by, for example, NGO's (ibid).

4.6 Generalisation

Using case studies to generalise is problematic. The thesis is attempting to relate the development in the villages in terms of forest land use in relation to national and global policy development. This is not an exact science but a process in which a framework has been used for observing the process and for the analysis. The case studies could be viewed as representative for what is called the uplands of Vietnam and Lao PDR. The Districts of Duan Hong and Ham Yen are exceptional, as they belong to a category of uplands, located within the wood uptake area of a major forest industry, and thus being in the position in having access to a market.

5 Conclusions

Some half of the officially designated forest land in the areas studied in Laos and Vietnam has been, and was, used for shifting cultivation, that is food production, over the periods studied, encompassing some fifty years since around 1960.

Increased population and food requirements have been addressed by intensifying the shifting cultivation through decreased fallowing periods. In both countries, restrictions in use of forest land as well as secure access to forest land, through forest land allocation, has been introduced, starting beginning 1990's. This is an example of the globalization processes, penetrating the countries. Other aspects of this, affecting the forest land use, are the introduction of the market economy, privatization of forest land and alienation of the previous open access forest, as well as increased communications and expectations.
Plantation forestry, for the farmers involved, is a much wider concept than the one used by the forestry profession. Depending upon their own livelihood strategies and socio economic situation and the market, the farmers adjusted the composition and structure of their plantations, e.g. in terms of short, medium and longterm requirements. Plantation forestry was shown to be a very complex and varying phenomena, ranging from agroforestry to monocrop plantations, apparently related to the socio economic status of the operators.

The interdisciplinary and historical approach and methodology used is a combination of natural and social sciences, has provided both statistically satisfactory data on land use as well as an understanding of the development. The studies highlight the deficiencies in using narrative, verbal information and Participatory Rural Appraisals, PRA, without verification by independent means and at the same time shows the usefulness of PRA if this is done.

In the analysis, the Holling's adaptive cycle has been useful in capturing both crucial events, but also in analysis of future development. In the private farm based plantation forestry case in Vietnam, there is a build up towards a complete cycle, whilst in the Lao PDR case, the new institutions, entrepreneurs and practices still

have to evolve. Holling's adaptive cycle, as used here, provides an analytical tool and indications of were to look for decisive factors and also provides a tool for understanding the dynamics between man and land. The shortfall of the cycle, however, is that it is subjective, considering the complexities of the relations between man, the dynamics of institutions and culture and the natural resources. However, it provides a challenging, comprehensive and useful approach towards capturing complicated and dynamic processes.

Lao PDR

In spite of severe external and internal disturbances, very little has changed over the period of 50 years studied, except for the last few years. Increased population and needs of food has been addressed by intensifying shifting cultivation, that is by shortening the fallowing cycle. The major strategy for the villagers, in response to external disturbances, has been to persist in doing basically the same as before.

The penetration of globalization in terms of market economy, privatization of forest land and land allocation, and improved communications, is expected to profoundly affect the villagers. At present, this development cannot be ascertained
The villages are facing an entirely new situation to which they cannot respond by traditional methods but rather have to embark upon new approaches and lifestyles, the consequences of which are likely to be far beyond what they previously have experienced. A scenario is likely where new institutions and initiatives will emerge and some people will certainly benefit, whilst others will face a problematic situation.

In spite of severe external disturbances such as colonization, the American war, domestic war, and a socialist economy with collectivization, the lifestyle and livelihood strategies and mode of production did not change over a 50 year period. By intensifying their land use, they have addressed the problem of feeding an increased population. At present, the villages are facing a new situation with privatization of forest land, the introduction of the market economy and an increased interaction with the surrounding institutions.

The villagers are now, through what here is referred to as globalization, exposed to externalities to which their existing system is not able to respond without system changes. From subsistence to cash economy and from community used land to privatization of forest and other land. Different strategies are used to address the new situation – embracing the market economy; doing more of what they already are doing and avoidance. In Vietnam, the villagers have developed systems which enable them to be part of both a subsistence and cash economy, and when the opportunities arise, engage in private plantation forestry on a commercial basis. The Vietnamese plantation forestry case is an example of a reorientation carried out, whilst the Nam Nan valley of Lao PDR is still trying to cope with the new situation, the outcome of which is difficult to ascertain at present.

Vietnam

In two of the Districts studied in Northern Vietnam, the forest land use has over short period of some 30 years gone from natural forest and vegetation to private, farmbased plantation forestry, via shifting cultivation. The shifting cultivation landscape has disappeared and been replaced by a large number of small plantations with very varying content, providing almost all the raw material required for the forest industry, as well as for other consumers, including some exports.

All woody rawmaterial for the major forest industry, the Bai Bang Pulp and Paper Company, comes from plantations operated by private entities. Some 50 % is from land leased out according to Forest Land Allocation instruments and the balance is State Forest Enterprise land leased out to private entities. In effect, all operators are running a private plantation forestry enterprise.
The major reasons for the apparent success of the farm based plantation forestry is the existence of a market; a supportive and dynamic policy, institution and legal framework; availability of land and instruments for secure access to this land by the operators and the existence of professional farmers who could join these ventures.

The policy and legal development in Vietnam has been very dynamic and responsive to the need for the different forestry and tree production forms. There are indications that Vietnam has increased its forest coverage, partly related to the increase in plantation forestry, mainly private, and implemented on small scale by large numbers of operators.

In Vietnam, new forest policies have evolved and are today supporting different forestry and tree production forms. In Northern Vietnam, a private farm based plantation forestry system has evolved, which has transformed the landscape – the natural forest and the natural vegetation logged over and shifting cultivation became a major forest land use, this was subsequently replaced by farm based private plantation forestry. The variation in plantation composition is a reflection of local variety in terms of needs and opportunities and socio economic status. The conversion from the shifting cultivation land to a commercial private, farm based plantation forestry, is based upon the following major factors: the existing market for wood; availability of land; existence of locally and nationally recognised tenure systems; skills and knowledge among the farmers and market knowledge and the development of policies and strategies which are supporting the above. Subsidies or direct incentives have not been a major part of this development. Rather, supporting policies have been able to put all the above factors together. Another important factor is the interaction between policy development and practice – policies and legal provisions have emerged and evolved as experiences have been gained. The aggregate outcome of the Vietnamese plantations has an impact at a national level, both in terms of production and at the landscape level. It is also an

important experience in a regional context, indicating prerequisites and conditions for a productive use of former shifting cultivation land.

The poorest strata is handicapped and cannot take advantage of the opportunities. Factors explaining this appear to be lack of resources for risktaking, lack of food security, lack of market knowledge and being the last to engage in the private forestry, resulting in getting land far away the markets and of inferior quality. There are also indications that the privatization of forest and forest land and alienation of the forest estate deprives the poorest strata from access to a, to them, important resource.

Shifting cultivation is still a very important ingredient in the livelihood of upland Vietnam. Some half of the official forest land was used for this purpose, and the land was officially registered as "not yet used land" and potentially available for e.g. reforestation.

Shifting cultivation was found to be commercial venture, whilst irrigated paddy was for subsistence. At the same time, paddy received commercial, high tech inputs, whilst shifting cultivation was traditional with no commercial inputs.

For strategic planning purposes, the approach and methodology used indicates the futility of central planning without appropriate consultations with the major actors involved, the farmers. laws of the centralized approach include inaccurate and misleading data for planning and underestimation of farmer's knowledge and capabilities and lack of understanding of the villagers own livelihood strategies.

The farmers, and other members of the villages encountered, constitute a major resource – they are the ones forming the landscape. For some 50 to 30 years, in both Vietnam and Lao PDR, the forest has gradually and partly been converted into a shifting cultivation landscape. The strategies applied by the villagers, in response to externalities such as war, collectivization, diseases and population increase, have been successful in the sense that they have been able to sustain themselves and continue their lifestyle. This has in the present situation a number of limitations, one of which is that the new situation – penetration of the market economy and globalization – really is new and will force the villagers to develop new strategies for their livelihood. –The villagers have proven their case – they have managed to sustain themselves in spite of adverse circumstances. Their strategies have been based upon their knowledge and understanding of their own situation, and if known to them, interpretations of government policies. A key question is how to provide support for further development in the private, farm based forestry sector. An example is shown in the case of the development of private, farm based plantation forestry in Vietnam. In general terms, what is suggested is a professionally based interaction between policy makers and the major actors, the farmers and the potential operators. The approach and methodology used – interdisciplinary with intensive interaction between the researchers and the villagers and a combination of

natural and social sciences– can be accommodated and applied to government systems for strategic planning.

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An important aspect of the research work has been to interact with the major actors vis á vis the forest land – the local farmers. It has resulted in stays in villages, visits to shifting cultivation and other fields, discussion with families and with key informants and public meetings. The local farmers have been very helpful and generous with their time and other resources and have shown a large interest in our work and the issues at hand.

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