

# VIETNAMESE UPLANDS: ENVIRONMENTAL AND SOCIO-ECONOMIC PERSPECTIVE OF FOREST LAND ALLOCATION AND DEFORESTATION PROCESS

TIZIANO GOMIERO<sup>1\*</sup>, DAVIDE PETTENELLA<sup>2</sup>, GIANG PHAN TRIEU<sup>3\*\*</sup> and MAURIZIO G. PAOLETTI<sup>4</sup>

<sup>1</sup>*Dipartimento di Biologia University di Padova, via U. Bassi, 58/b-35121-Padova, Italy (e-mail: tiziano.gomiero@libero.it);* <sup>2</sup>*Dipartimento Territorio e Sistemi Agro-forestali, University of Padova, Agripolis, I-35020 Legnaro (PD), Italy (e-mail: dpettene@agripolis.unipd.it);* <sup>3</sup>*Department of Social Forestry, Ho Chi Minh City University, Ho Chi Minh City, Vietnam (e-mail: gtphan@ucdavis.edu);*

<sup>4</sup>*Dipartimento di Biologia University di Padova, via U. Bassi, 58/b-35121-Padova, Italy (e-mail: paoletti@civ.bio.unipd.it)*

(\*PRESENT ADDRESS: Istituto Nazionale di Ricerca per gli Alimenti e la Nutrizione (INRAN), Via Ardentina 546, 00178 Roma; \*\*PRESENT ADDRESS: Graduate Group in Ecology, College of Agriculture and Environmental Sciences, University of California at Davis, Davis, CA 95616, USA)

(Received 25 January 1999; accepted 23 November 2000)

**Abstract.** Vietnam, in the ongoing transition to market economies, has to cope with high rural poverty and a dramatic process of forest loss and environment degradation, particularly in the mountainous regions. The government considers rural poverty as the main cause of environment degradation, associated with slash-and-burn cultivation and to an unclear definition of property rights on forest land. In 1993, the government launched a Forest Land Allocation programme aiming to lease forest lands to individual households and, on this basis, to solve food security problems, halt the increasing environment degradation and preserve the remaining forests.

To evaluate the results of this land reform policy, two upland pilot communes have been intensively monitored. The environmental and economic impacts of the forest land reform allocation in the two study areas are presented, after providing a background on the Vietnamese situation of mountain zones. On the basis of these findings, it is discussed as to whether the current forest land allocation process may actually promote local development and natural resources conservation, and under what conditions. Deforestation problems must be tackled also with new macroeconomic policies (e.g. credit programmes to support sustainable agriculture practices) and social policy (e.g. reduction of demographic pressure), together with the reform of the State institutions (e.g. State Forest Enterprises) involved in management of the forest areas.

**Key words:** development policy, environment management, ethnic minorities, Forest Land Allocation, slash-and-burn, uplands, Vietnam.

## 1. Introduction

Vietnam is a highly populated developing country of southeast Asia under a process of transition to market economies initiated in the late 1980s. Along with socioeconomic problems such as increased income disparity between urban and rural population, high rural poverty and internal massive migration, Vietnam also has to cope with forest loss and land degradation, particularly in the mountainous regions.



The government considers rural poverty as the main cause of environment degradation; it is frequently associated with shifting cultivation (slash-and-burn practice) and to an unclear definition of property rights on forest land. But, unlike the situation for agricultural land there are key issues constraining the reform of traditional forest land tenure systems (Vu and Desloges, 1996). Policy and market failures seem to be frequent consequences of forest land privatisation policy in mountainous areas.

In order to assess the impacts of the Forest Land Allocation (FLA) governmental programmes, two densely populated mountainous communes, severely affected by food security problems, were investigated. This paper, after providing a general background on the Vietnamese socioeconomic and environmental situation, presents the results of these investigations, focusing on whether the current process of privatisation of mountain forest land in Vietnam is promoting local development and natural resources conservation, and under which conditions. To monitor and evaluate the FLA impacts, a list of indicators is presented. A discussion follows, where field results are framed within the country context.

## **2. Vietnamese uplands: socioeconomic and environmental background**

### **2.1. SOCIOECONOMIC SITUATION**

Vietnam is a very highly populated country with a rural population density of 1,071 people per square km (average population density about 235), the highest in Asia after Bangladesh (World Bank, 2000). In 1995–2000 the average growing rate has been 1.8% annually (FAO, 1999; Boothroyd and Nam, 2000). However, in the countryside the growing rate is still around 2.3–2.4% per year (Boothroyd and Nam, 2000). Assuming that from 2000 to 2010 the growing rate will be 1.7%, the population of Vietnam (78 million at present) will reach 95 million in the year 2010, and 110 million by 2025 (FAO, 1999). For the uplands the situation is even more serious because of the higher growth rate (up to over 3.0% per year – Lindskog, 1992; Nguyen Van Thang, 1995; G-D-NGO Working Group, 1999; Fox et al., 2000) and the already, generally, poor or extremely poor living conditions (Rambo et al., 1995; G-D-NGO Working Group, 1999; FAO, 1999).

Vietnam is still very much agriculture based with 80% of its population living in the countryside where 72% of the about 32 million working force is employed (industry accounts for just 15% – World Bank, 1997; UNDP, 1998a) (Table I).

The average income per capita in 1997 reached US\$ 320 per year but it was below US\$ 200 in the countryside, where 90% of the poor live (UNDP, 1998a; G-D-NGO Working Group, 1999). Poverty, as measured by the adequacy of per capita expenditures, has declined in the last 5 years: the total poverty line from 58% in 1993 to 25% in 1998 and the food poverty line from 37% in 1993 to 15% in 1998 (G-D-NGO Working Group, 1999).

The macroeconomic and structural reforms initiated in Vietnam in the late 1980s, mainly concerning agricultural land distribution to farmers and open market regime, have stabilised the economy and yielded remarkable success in economic development. Per capita income

TABLE I. Socioeconomic indicators for Vietnam.

<i>Demographic data</i>	
Population (1998)	77 896 000 <sup>F</sup>
Growth rate	1.8
Population density	235 persons per square km
Urban population	20%
Rural population	80%
<i>Yearly average income ( 1997 US\$)</i>	
National average	300–325
Countryside	200<
People living below the poverty line (according to WB definition)	30% (90% living in the countryside)
<i>Employment</i>	
Employed in productive sector (1995)	32 268 million
Employed in agriculture and forestry	23 521 (73%)
Employed in industry	3,497 (11%)
Employed in other activities (e.g. army, commerce, administration)	5,250 (16%)
<i>GDP per economic sector</i>	
Total state	42.3%
Total non-state	57.7%
Agriculture and forestry (% on total)	28.4%
State	1.3%
Non-state	27.0%
Industry (% on total)	30.0%
State	20.3%
Non-state	9.7%
Services (% on total)	41.7%
State	21.4%
Non-state	20.3%

Sources: World Bank (1997), UNDP (1998), G-D-NGO Working Group (1999), FAO (1999).

growth has been in excess of 5% per year (World Bank, 1997). Average yearly income per capita reached approximately US\$ 325.

Although poverty has been declining (it was estimated as high as 70% in the mid-1980s when the reform process was launched – UNDP, 1998a), income disparities between urban and rural populations are widening. The average rural income in 1998 was less than US\$ 200 per year (UNDP, 1998a). The gap is much more serious between the lowlands of the two rural delta areas (Red River and Mekong deltas) and the uplands regions where the forest land and the poor are mainly concentrated (Rambo et al., 1995; World Bank, 1997; UNDP, 1998a; G-D-NGO Working Group, 1999).

## 2.2. FOREST SITUATION

Two-thirds of Vietnamese territory is mountainous with a large portion of steep slopes and easily erodible soils once covered by rich tropical forests. About 19 million ha (60% of the territorial area) is still classified by central planning authorities as forest, but only 8.5–9.5 million ha (about 25%) is covered by forests, while the remainder 10.5–11.5 million ha is, in fact, bare land (FAO, 1993; UNDP, 1998a; De Koninck, 1999 – Table II).

TABLE II. General data for the forestry sector in Vietnam.

<i>Land classified as forest</i>	<i>19 000 000 ha (57.6% of the land area)</i>
Forest cover	8 312 000 ha (25.2% of the land area)
Hill and mountainous forest	1 084 000 ha (13.0%)
Closed broad-leaved forest	4 946 000 ha (59.5%)
<i>Annual deforestation</i>	<i>137 000 ha/yr (–1.6%)–200 000 ha/yr (–2.0%)</i>
Tropical rain forest	2 894 000 ha (34.8%)
Most deciduous forest	3 382 000 ha (40.7%)
Dry deciduous forest	952 000 ha (11.5%)
<i>Other forest indicators</i>	
Country forest biomass	1 523 560 000 tons (183 t/ha)
Forest area/population	0.11 ha (with a population of 75 355 000 in 1996)
Average logging intensity	30 cubic metre/ha
Logged area 1981–1990	26 000 ha/yr
Total plantations	2 100 000 ha (6.5% of land area)
Annual plantations	70 000 ha/yr

Sources: De Kornick (1999), FAO (1993) and other FAO publications.

Note: There is no accordance among different sources of data on the forest resources, even at official level (see, for example, data from the cadastral Department and the Forest Protection Department presented in MARD-FAO, 1998).

Since the 1950s, Vietnamese forests have been significantly reduced through warfare<sup>1</sup>, uncontrolled forest clearing and State Forest Enterprises activities (logging and plantation). Forest cover declined from 43% in 1943 to less than 30% in 1989, to the actual 25% with a current deforestation trend of about 137 000 ha (1.6%) per year in the 1990s (FAO, 1993), reaching nowadays 200 000 ha (2.0%) per year (De Koninck, 1999). The quality of the forest has also declined. High and medium quality primary forests, located mostly in the uplands, make up only 8% of the forested area. The remaining are, in fact, more or less degraded secondary forests (FAO, 1993; De Koninck, 1999).

Forest degradation is a triggering process of soil erosion, threatening the same life support system of the upland inhabitants and the same natural ecosystems structure<sup>2</sup> (and the last biodiversity ‘hot spots’), and also the only source of income for most forest dwellers (Le, 1992; MAFI, 1993; Phuong and Dembner, 1994; Linh and Nguyen, 1995; Porter, 1995; Poffenberger et al., 1998; Smith, 1998; De Koninck, 1999; Fox et al., 2000).

Mountainous areas are mainly inhabited by ethnic minorities (53 in Vietnam accounting for about 15% of the Vietnamese population and 30% of the country’s poorest people – G-D-NGO Working Group, 1999). People from ethnic minorities are normally subsistence farmers who still depend directly on the use of forest resources<sup>3</sup>; about 1.2 million are stated as non-permanent residents, as assessed by the lack of ‘a permanent house’ to live in (HPP Management Team – UNDP, 1997).

### 2.3. LAND REFORMS

The 1986–1996 Vietnam agriculture reform, followed by a quick process of agricultural land allocation in the Mekong and Red River deltas, brought about a spectacular increase in land productivity, but it has only marginally involved the upland areas. It led to the dismantling of

the collective system in favour of a system based on individual families with a guaranteed tenure security; it also freed farmers to sell their products on the market and liberalised domestic rice trade in parallel with the removal of virtually all administered prices (Barker, 1994; World Bank, 1997). Under the provision of the most recent regulations, paddy land is allocated on the basis of the number of family members for a period up to 30 years.

In view of the low land allocation success and the need to alleviate rural poverty and the dramatic process of land degradation in the upland, in 1993 the government extended to the uplands the policy of land allocation through revision of the 1988 Land Law (MAFI, 1993; Ahlback, 1995; Sikor, 1995). The past success in the plains<sup>4</sup> induced the Vietnamese Government to allocate forest lands in the same manner: to individual households. With the Land Law of 1993 and the Law for the Protection and Development of Forests (19 August 1991), a new legal and organisational framework for the FLA process implementation has been defined and incentives for sustainable forest management provided (among others, Decree 327 – Sikor, 1995).

Land classified as forest (with or without a tree cover) is allocated based not on family size but on the willingness and the financial ability of the household to reforest the land (if bare) and to manage it. In case the household receives land where some forest amelioration works have already been carried out, it has an obligation to share with the former manager (normally the local State Forest Enterprise) the future profits deriving from timber exploitation (Hayami, 1994; Rambo, 1995). Allocations of both the paddy and forest land to a simple household are practically a privatisation process: land can be transferred, exchanged, leased and inherited only with the payment of a tax.

Government commitment towards a fast forest land allocation is extremely clear<sup>5</sup> (MAFI, 1993; Nguyen and Vu, 1998). Already in the Forestry Sector Review (Ministry of Forestry, 1991) and in the Tropical Forest Action Plan, forest land allocation to households has been presented as a priority issue in Vietnamese forest policy. In the official development plans forests preservation should be reached by: (i) reallocating bare and eroded forest land, as well as land till covered by forests; (ii) implementing agroforestry activities; (iii) regulating extractive activity under the local authority policy; and (iv) expanding and managing plantation in a sustainable way (MAFI, 1993; Ahlback, 1995; Linh and Nguyen, 1995; FAO, 1996; FAO/UNDP, 1996).

Up to 1997, 1.0 million ha of forest land has been allocated to 334 000 households, 4.4 million ha to 327 state enterprises, and 0.5 million ha to 1,700 cooperatives and other institutions (Doan Diem, 1997; Vu, 1997).

#### 2.4. CONSTRAINTS FOR THE UPLANDS

Unlike the situation for the deltas agricultural land, in the mountainous areas there are some controversial points which are conditioning this strategy of rearranging the traditional forest land tenure system. Because of the very poor financial situation upland farmers cannot face the cost of intensive high input agriculture (e.g. buying fertilisers, pesticides, technology adoption, transportation, etc.), which often makes credit programmes an unbearable risk to take.

Moreover, in the uplands, in particular among ethnic minorities, community-based management of forest land is quite common if not the rule, and household traditional ownership of slash-and-burn areas is recognised within the village community. The very fact that slash-and-burn agriculture needs to be an itinerant activity (the farmer is back on a precedent cultivated plot after 10–20 years or more) means that traditional property includes both fields in use and fields under forest recover. The new tenure system with its privatisation intent is going to put an end to the locally community-based forest management system and may give rise to conflicts within the community and between the community and the authorities.

FLA policy should carefully take into account the social and environmental factors that characterise the farming system in the upland to avoid possible detrimental feedbacks, the major of which may be the increasing of food security problems and in turn worsening environmental and social problems, e.g. massive migration and further expansion of forest clearing (Linh and Nguyen, 1995; Rambo et al., 1995; Lang, 1996; UNDP, 1998b; Prosterman and Hanstand, 1999; Fox et al., 2000).

### 3. The two case studies: Thuong Lo and Phong Du communes

The definition of property rights for securing the sustainable use of forest land in densely populated mountainous areas, severely affected by food security problems, is not a simple target to be addressed. Methodologies of FLA have been defined and tested with contrasting results (MARD, 1996; MARD-FAO, 1996, 1998). Some of the main questions that needed to be investigated were:

- How to conciliate the need for a participatory approach in land use planning and FLA with the need for simplification cost reduction and quality of the administrative process?
- Are the impacts of FLA always equitable?
- How to couple FLA to other interventions related to the use of agricultural resources?
- In villages or small local communities FLA is preferable to allocation to single households, individuals or to village communities? What should be the role of the State Forest Enterprises and of other institutions in land allocation?
- What are the social and technical constraints that influence the environmental impacts of FLA? Or more precisely, FLA to households and individuals is always a means for enhancing the sustainable use of land and environmental resources?

Thuong Lo (located in the central uplands) and Phong Du (located in the northeast uplands) (see Figure 1) were two of the four communes involved in a pilot exercise of FLA within the National Forest Action Programme and those in which the allocation was completed. Therefore they have been considered interesting test areas to analyse the effects of FLA policies.

#### 3.1. THUONG LO COMMUNE

Thuong Lo commune is located in the central plateau (300 m.s.l.) of Thua Thien Hue province, in Central Vietnam. It is surrounded by mountains within an altitude from 600

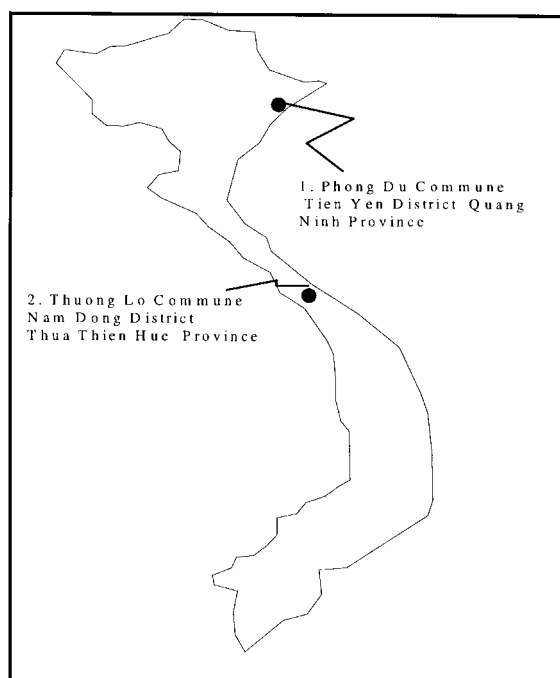


Figure 1. Communes under study.

to 1,100 m.s.l. and over 25° slope. Because of the poor forest cover, the steep slope, and the high rainfall (3,000–3,500 mm of rain per year, about 70% of which in the wet season), soils of Thuong Lo are strongly eroded and expose their lower horizons in many places.

The commune has a population of 919 inhabitants, 95% represented by the Katu ethnic minority. The population growth rate (estimated during the survey) is about 3%. Most of the families face food shortage, i.e. a lack of rice, from 2 to 7 months per year, which is substituted mostly by cassava, and in part by taro (*Coloclasiam esculenta*) and sweet potato (*Ipomea batatas*).

The commune covers an area of 10 366 ha, of which however only 968 ha (8.3%) is under the administration of the commune itself, the remainder under the control of Bach Ma National Park and local State Forest Enterprise (see Table III). This means a population density of 95 inhabitants per square km. Of these 968 ha, only 80 ha is agricultural land located in the flat area of the commune (about 0.08 ha per capita), while 839 ha is ‘officially’ forested land. Of the latter, 586 ha has a real forest cover (secondary forest), while 158 ha presents shrubs, imperata grass (*Imperata cilindrica*, a graminacea present on degraded soil, bare and fallow land), and 95 ha plantation (mainly *Eucalyptus camaldulensis* and *Acacia mangium*).

The local Forest Protection Station (depending on the Ministry of Agriculture and Rural Development – MARD) was responsible for a general supervision of the three institutions. In practice, local people have a sort of traditional ‘right of access’ to the forest land that is mainly based on a priority rule: the farmer who first clears the plot of forest land has the right

TABLE III. The two selected case study areas.

General data	Thuong Lo commune	Phong Du commune
Population	919	3,409
No. of villages	4	16
No. of households (HHs)	156	537
(Average people per HH)	(5.9)	(6.3)
Total land (ha)	10 366	6,557
(Average ha per capita)	(11.3)	(1.9)
(Inhabitants per square km)	(9)	(52)
Managed by FE	6,106 (59%)	1,697 (26%)
Managed by other organisation	3,292* (32%)	–
Managed by the commune	968 (9%)	4,860 (74%)
(Average ha per capita)	(1.0)	(1.4)
(Inhabitants per square km)	(95)	(70)
Agriculture land (commune) (ha)	80	491
(ha per capita)	(0.1)	(0.1)
Forest land (commune) (ha)	839	4,369
(ha per capita)	(0.9)	(1.3)
Total allocated land (ha)	269	1,638
As % of commune land	28%	34%
Land allocated per capita (ha)	0.3	0.5

\*Area managed by the Bach Ma National Park.

to cultivate it until the end of the productive cycle. Normally the cultivation period ranges from 2 to 4 years, generally with dry rice (*Oryza sativa* var.) and then cassava (*Manihot utilissima*) or maize (*Zea mais*), and afterwards the land is left fallow to restore fertility.

Along with agriculture activity in the flat communal land, shifting agriculture is of major importance to provide food security to most of the Katu people, for which shifting agriculture is the traditional food production activity (dry rice and cassava). It is carried out in an area located outside the communal boundaries (named Chamong); nonetheless, it plays a major role in food production providing about at least 50–60% of the staple food energy supply of the community (mainly three months rice and cassava). Gathering food in the forest (plants, animals: vertebrates and invertebrates) has not been assessed; however, it may supply an important source of proteins and other nutritional elements poorly available in the staple food (Paoletti and Bukkens, 1997).

### 3.2. PHONG DU COMMUNE

Phong Du commune is located in Tien Yen district, Quang Ninh province, in northeast Vietnam, about 50 km from the Chinese border and 50 km from the East Coast. Phong Du commune lies in a basin-like area of 6,557 ha direction north–south surrounded by hills 500–600 m high.

From this main valley, cut by the Tien Yen River and the communal road, secondary paths branch off transversally, leading to the most remote hamlets. Of the 16, only 7 are located along the main road and can be reached by car. The others are located at a walking distance from the road which ranges from 15 to 20 minutes to a couple of hours, sometimes along uneasy paths.



The terrain is generally hilly, with a number of narrow valleys and streams. The average slope is from 20 to 30° on the mountainside and 10 to 15° on the hillside. Agricultural land accounts for 491 ha (7.5%) of the large valley, with rice paddy fields and terraced rice fields scattered in the hills.

Primary and secondary forests do not exist in the area. Bamboo (*Dendrocalamus* spp., *Bambusa* spp., and *Arundinaria* spp.) and exhausted secondary forest (*Castanopsis sinensis*, *Caranum album*, *Quercus platycalyx*, *Erythrofloeum fordii*, *Ixonantes cochinchinensis*, and *Engelhardtia clisolepis*) cover the top of the hills and are present also along the streams, accounting for about 594 ha (8%) of the territory. Bare land covered by imperata grass (*Imperata cylindrica*), scattered bamboo and shrub plots accounts for about 80% of the area. Where still possible, land is cultivated with cassava.

About 700 ha of fertile hilly land close to the villages and main roads is under plantation (mostly *Eucalyptus camaldulensis* and *E. tereticornis*) belonging to the local Forest Enterprise. Because of the water shortages that occur in June and July, and the poor irrigation and drainage infrastructure, most of the wetland area can give just one crop or is not suitable at all for rice production. On the other hand, most of the annual rainfall (about 2,300–2,400 mm) is concentrated at the end of July and August, causing floods and soil erosion in the paddy fields.

The commune has 3,409 inhabitants (on average 6.3 people per household) accounting for 52 inhabitants per square km (70 when considering only the land under the commune management – Table III). People are distributed among the different ethnic minorities as follows: *Tay* 34.2%, *Thanh Y* 28.4%, *Thanh Phan* 22.2%, *San Chi* 14.1%, Vietnamese (*Kinh*) less than 0.1% (only 5 households). According to the Commune Office data, the average population growth is about 4%! According to both local authorities and villagers, the improvement of the infrastructures (bridges over the rivers, repairing and upgrading of dams for field irrigation and pumping stations) is an urgent measure to deal with the dramatic socioeconomic trends.

Paddy and cropland per capita per ethnic group differ significantly, depending on the different migration history and different environment characteristics in which they are settled (Lindskog, 1992).

- (i) *Tay* people, settled in the area from many generations, live on the fertile plain along the main road. Thanks to their favourable position they have easy access to the market, as well as the opportunity to be easily reached by middlemen who come from Tien Yen town. Paddy rice (0.1 ha per capita) is the main activity. Husbandry is developed (buffaloes, cows, pigs, ducks, and chickens). Diet is well balanced with rice as the main staple food for all the year.
- (ii) *Dao Thanh Y*, the most recent newcomers (they arrived around 30 years ago in the commune crossing the Chinese border), are settled in the most remote areas and still have a strong relationship with the use of forest resources, especially in collecting Non Wood Forest Products (NWFP) such as Rattan (*Calamus* spp.), Broom grass (*Thysanolaena maxima*), bamboo (*Bambusa* spp., *Dendrocalamus* spp.), mushrooms, ferns, and small animals. Their living conditions are generally much poorer than other ethnic groups. Lack of paddy fields (0.03 ha per capita), the poor soil quality (nearly exhausted), and the lack of technical knowledge to manage plantations made shifting

cultivation, mostly done outside the commune boundaries, the main source of foods. A subsistence diet is made up mostly of cassava, taro and sweet potato.

- (iii) *Dao Thanh Phan* and *San Chi* have an intermediate, quite similar, pattern of resource use. The scarcity of rice terraced paddy fields (0.04 ha per capita for the former and 0.03 ha per capita for the latter) is compensated by a good management of cash crop plantations such as cinnamon (*Cinnamomun cassia*), litchi (*Litchi sinensis*), orange (*Citrus* and *Citrus aurantium* subspecies) etc., and husbandry (buffaloes, cows, and pigs).

#### 4. Data collection methodology

Fieldwork has been carried out for 2 months in each study site (May–June in Thuong Lo and August–September in Tien Yen), within a 7 month project carried out in Vietnam. The research team was based close to the villages, gusted in the local authorities facilities. Villages were visited daily for field survey and interviewing farmers. The team also spent short periods (2–4 days) staying in remote areas to visit slash-and-burn fields and far-away hamlets. About 50 household interviews were carried out in Thuong Lo, and about 100 in Tien Yen. Group interviews were also arranged to discuss some general issues. We also had formal meetings with the local staff responsible for the Forest Land Allocation programme, policy makers and local authorities.

We moved from the premise that in order to achieve a broad understanding of community and its farming system strategy, environment, resources, socioeconomic system and culture have to be understood as an integrated entity, and a multidisciplinary approach is required (Beets, 1990; Parker and Burch, 1994; Giampietro et al., 1997; Giampietro and Pastore, 1999; Chambers, 1997). Local inhabitants represent a valuable source of information as well as of proposals and suggestions about viable local development strategies (Chambers, 1983, 1997; Beets, 1990; Altieri and Masera, 1993).

Preliminary acquaintance with the study sites was carried out through a number of informal interviews (by small multidisciplinary teams) with qualified witnesses. Then a semi-structured questionnaire was tested with well-defined overall lines of questioning and carried out in the same way. Farmer comments were welcome and specific questions were thought up during the interviews itself. (Semi-structured interviewing, in fact, can elicit information of a range and depth that is not attainable through the use of a standard framed questionnaire – Freudenberg, 1994; Chambers, 1997.)

The questionnaire was organised to collect information on: (i) farming system structure (land location and quality, productivity, income, food security, labour distribution, etc.); (ii) conflicts with neighbouring and local operating enterprises (e.g. State Forest Enterprise); (iii) the outcome of previous credits and extension programmes; (iv) the impact of the allocation process on household activities; (v) feelings and ideas about possible strategies for development, as well as about indigenous knowledge.

The interviews lasted for 1–2 hours, reflecting the willingness of the farmers to talk. When possible we also cross-checked the information with that provided by local institutions (e.g. bank), as well as within the farmers themselves.

The particular political and administrative situation of Vietnam, and the situation of marginality of the ethnic minorities sometimes represented constraints to be dealt with that were hard to overcome: the former much more than the latter as it seemed that local administration was not to encourage the research activity of the team. So some data that could have been useful for the research were eventually missing.

## 5. Results

### 5.1. THUONG LO COMMUNE

A total amount of 269 ha of forest land has been allocated by the local Forest Protection Unit (FPU – the state agency in charge of the forest activities control) to 144 households: about 1.9 ha per household or 0.3 ha per capita. The average is just indicative, as some households got large plots (more than 1 ha per capita while many others as much as 0.1 ha per capita). Allocation relied on the 1993 resettlement programme, also carried out by FPU and that included extension activities for homegardens, animal raising, and bare lands reforestation, mostly with *Acacia mangium* and *Eucalyptus camaldulensis*. The resettlement programme did not recognise farmers' involvement and they had no voice in the tree species selection. Plots were allocated to farmers according to the indigenous traditional (pre-collectivisation) land ownership rights on the bare or fallow land. In the recent past, however, the traditional land rights were only partially respected because the land had to be redistributed by the local FPU according to equality criteria (every household had to receive upland, midland and foothill land), and about 50% of the farmers did not get the same plots. Where farmers did not manage to reach an agreement among themselves, the situation faced an impasse.

*Eucalyptus* and *Acacia* grew at a very slow pace, and reached a diameter of 5–8 cm since the planting. Lack of technical knowledge (no trials were carried out by the FPU to assess the species response to local conditions), pest attack (fungus affecting the leaves of most of the trees), and poor soil conditions to which plantations themselves contribute (particularly at the early stage, the soil remains unprotected and degrades quickly) resulted in poor stands. Indigenous species failed completely, according to the farmers, because of wrong planting time, bad seeds quality, and ineffective management practice planned by the FPU. Foothills close to the villages are suitable for implementing agroforestry activities. The presence of plantations on the land, due to the previous programme, prevents farmers from developing this more sustainable (both environmentally and economically) alternative.

According to the farmers, it is also not clear what the real gain from the plantation will be as they have to share benefits with the local forest enterprises for the services supplied, and no contracts have been signed to state the terms of the agreement.

Out of the 156 households of the commune, 68 (44%) have cultivated land in the slash-and-burn area named Chamong for a total 40 ha yearly in use, about 1 ha per household (for about 200–250 ha under turning). Because slash-and-burn is officially strictly banned in Vietnam, local authorities are not considering this 'marginal' area which is not considered in the FLA activities. During the fieldwork, the role of the area in the food supply production was

investigated. The production of cassava and rice, the main crops in the slash-and-burn area, was calculated to understand their role in the food production of the commune. The results were particularly interesting: Chamong supplied at least 55–60% of the food production (in kcal), and probably more, taking into proper consideration the collection of NWFPs, small animals, fish and wild plants collected in the forest, an important integration of the diet. In Chamong decreasing land productivity is forcing the shortening of the fallow period, from 10 to 20 years to the actual 4–5 years. Farmers were well aware that in the future they may have to move further into the forest to clear new land.

Failing to value the contribution of the slash-and-burn activity to the food supply poses a heavy bias in understanding the local farming system, and in turn paves the way to FLA programme failures. How and whether farmers can benefit from the FLA programme in fact depends on how they can integrate the land allocated in the context of their own farming system (including non-farming activities as well). Farmers involved in the slash-and-burn activity spend an average of 15–20 days per month in the forest. It means that these farmers have a limited amount of time to invest in managing forest land allocated, which is perceived as risky and time-consuming.

The large share of land (6,106 ha or 59.2% of the communal land – Table III) under the State Forest Enterprise administration has been considered another key factor in the FLA process. As a consequence of the prevailing role of the Forest Enterprise as land owner, the land that could be allocated to the farmer was quite limited. For FLA to be effective in enhancing the wealth of farmers, more land should be allocated to the households and proper management strategies should be worked out jointly with the farmers, along with the implementation of sound credit and extension activities. Of course, this requires a political decision both at the local and regional level.

## 5.2. PHONG DU COMMUNE

Before 1992, the State Forest Enterprise of Tien Yen managed the whole forest land of Phong Du commune. In 1992, the Phong Du commune had no remaining forest for exploitation, and only 390 ha of degraded forest remained. From 1993, land started to be allocated to some villages. Degraded lands were gradually planted (mainly with *Eucalyptus* spp.) according to the national reforestation policy and under the Forestry Enterprise guidelines. In 1997, the District People's Committee elaborated a plan to reduce the area under the management of the Tien Yen State Forest Enterprise to the actual 1,697 ha. The area passed under the responsibility of the commune is mainly bare land including hill and mountain tops, plus some area of bamboo groves that villages keep as communal forest.

The FLA process, under the management of the working group established by the District People's Committee, has been based in some cases on formalisation of the existing land arrangement (some farmers by knowing in advance the allocation procedure took advantage of it by planting scattered tree seedlings in large communal land), in others in a per capita sharing (sometimes clashing with traditional land property rights and/or previous investments on taken-away plots).

A close look at the FLA maps produced by the cadastral office, after listening to the farmers' complaints in some villages, indeed found inaccuracies in border definitions and land use description.

The contribution of plantations in enhancing livelihood conditions seemed potentially extremely relevant in hamlets where food shortages were more serious: in these areas pressure on land resources was greater and there were no alternatives to an intensive exploitation of forest products. In these hamlets there was an urgent need to provide a source for cash to cover the decreasing supply of staple food. Tree plantations (fruit trees, cinnamon, etc.) were indeed the only means to generate legal and sustainable income flows. Farmers themselves indicated tree plantations as the only way to be released from the heavy task of NWFPs collection, a task made more difficult every day because of the reduced availability of forest resources.

On the other hand, these realities presented such a limited (if any) financial availability and a lack of technical knowledge that the FLA, without a further corollary of extension activities and sound credit programmes, was losing its potential role and failed to stimulate sustainable alternatives.

The process is still in a standby situation and it is unlikely that substantial investments in plantations can take place without settling some questions. This condition is common all through the commune, but reasons differ from hamlet to hamlet according to the wealth rank of each village (thus, in some poorest hamlets conflicts did not arise because the new land is not perceived as a real source of benefits). Each village represents a composite situation, characterised by many smaller settlements with peculiar characteristics. Opportunities and activities are extremely differentiated according to ethnic group, traditional knowledge, topographical features, natural resources availability, actual and potential land use, and distance from the market. In order for the allocation process to be effective, such a fragmented differentiation has to be taken into account.

### 5.3. THE MAIN CONSTRAINTS IN THE ALLOCATION PROCESS IN THE TWO TEST AREAS

The following problems have negatively conditioned the FLA programme in the two test areas:

*Borders:* Sizes of the allocated plots and borders were not clear to most of the farmers who complained about official maps being wrong about the real land management. This situation prevented farmers from starting any profitable activity on a long-term perspective.

*Conflicts inside the hamlets:* In those hamlets located along the main road, lacking forest land, the allocation process caused the loss of a common resource, which could satisfy the need of the village only when commonly managed. On the contrary, the sharing decreased the general benefits derived from the common resource management as people lost or reduced their entitlement to the forest land and products (grazing land, fuelwood, NWFPs, timber for personal use, etc.). The lack of forest land to be shared led to the exclusion of many farmers from the allocation process but, even in case of a fair distribution, the limited dimensions of each plot would have made management not convenient or not sensibly effective in enhancing the livelihood conditions of farmers.

*Conflicts with the State Forest Enterprise:* In some hamlets (e.g. Hop Thanh), in which the allocation was the result of an internal negotiation among farmers, troubles arose from an unclear relation with the Forest Enterprise: the latter not willing to give up its land, while villagers claimed the land belonged to them because of their long customary possession. In some cases, the communal area to be divided amongst villagers appeared to be considerably reduced by the presence of some Forest Enterprise's plantations.

*The role of the forest as the only source of income in some villages:* In very poor hamlets, illegally logged timber and NWFPs such as rattan (*Calamus* spp.), broom grass (*Thysanolaena maxima*), and wild animals (such as some reptiles – *Testudo* spp. – and snakes like cobra – *Naja naja* – and boa – *Phyton molorus*) are the only sources of income. Despite the great effort needed to collect more valued products which are sensibly disappearing in forest land areas, most of the farmers are completely dependent on these products which still have high market demand.

## 6. Discussion

Of course, it is unlikely that changes in agriculture, induced by both technical innovation and new policies, result in an absolute improvement for all the stakeholders and social actors involved. It is for this reason that the effect of a proposed technology or policy should best be based on an integrated analysis of trade-offs (according to social, economic, and environmental criteria), that reflect the various, contrasting perspectives of the different stakeholders (Wolf and Allen, 1995; Chambers, 1997; Castella et al., 1999; Giampietro and Pastore, 1999).

This is then possible only if the stakeholders are represented (and can express their own perception of the system), and there is an understanding of the nature of the actual farming system (understood within its social, economic, and environmental constraints). In the case of FLA, it means first of all that forestry (wood and non-wood production) and agriculture must be considered not only as subsistence production processes, but also as parts of complex and multifaceted livelihood systems, in which subsistence, environment, culture, and market are interconnected.

The FLA process with its subsidiary development activities then is just one of the factors which can influence the global evolution of a local community. Several non-productive and non-agricultural items are conditioning the impacts of land allocation: the role of non-agricultural revenues in the income of families (public administration, trade, part-time jobs, illegal activities, etc.), the relations among different social productive fractions (farmers/traders, middlemen, money lenders, public officers, etc.), and the role of environmental resources in the social reproduction process (the prominent paddy rice; the ambiguous cassava – both market and subsistence crop; the 'Eucalyptus politics' vs. the use of indigenous species; the NWFP vs. timber production, etc.).

For instance, in which way could FLA represent a viable alternative to slash-and-burn? As pointed out by the results of the research, slash-and-burn supplies an important amount of food production. We cannot expect farmers to give up such an activity because it is

banned by law, nor can they be forced to invest much time on long-run return activities without appropriate means of support. Were slash-and-burn to be halted, food supply, or an equivalent stable income, would have to be generated in an alternative way, be it by increasing the productivity of existing practices or/and experimenting with new models such as agroforestry or special trees plantations (e.g. cinnamon and fruit trees). On the basis of the research results, the following six key problems should always be carefully considered in trying to develop sustainable management of Vietnamese forest upland land.

#### 6.1. ENSURING AN EFFECTIVE PARTICIPATION TO THE FOREST LAND ALLOCATION PROCESS

Officially, through many forest policy statements, public authorities are committed to a participatory approach in FLA. Guiding principles in land allocation state that *“the people allocate the land themselves and make the decisions by themselves”*, *“farmers are not forced to plant trees, rather they can decide for themselves the method of cultivation”* (Nguyen and Vu, 1998, p. 79). In most of the villages visited, farmers had only been informed about the FLA but did not take part in the process of implementation<sup>6</sup>.

It is worth mentioning that tree planting guidelines (as well as species selection) supplied by the local Forest Protection Unit often led to failure or poor results. In many cases also seeds and seedlings, supplied to farmers by the Forest Protection Unit to be planted in their home-garden, were of poor quality, contributing to the failure of the relative extension programme.

Local inhabitants have to be fully involved in the FLA implementation. Many technical suggestions provided by farmers are pertinent and reasonable. Indigenous knowledge should be taken into account, paying attention to traditional knowledge and attitudes in using non-conventional resources such as wild plants, semi-domesticated crops, traditional crops, small animals and invertebrates that can be used as supplements of food. This is a very important step if empowerment and self-confidence have to be achieved.

Even in the relatively small studied areas, diversity of living conditions among the hamlets due to a different use of land resources is the most evident aspect of the social and economic organisation. This diversification is similarly observed in Phong Du commune inhabited by different ethnic minorities, as well as in Thuong Lo commune populated by the same ethnic group. Even among households of the same hamlet, diverse wealth conditions are often striking. FLA activities should therefore be more articulated to respond to different local needs and willing to listen to the large population of the weaker section.

#### 6.2. UNDERSTANDING THE PROBLEMS AND POTENTIALS OF COMMUNAL MANAGEMENT

In some areas, the newly allocated land used to be a common resource managed for grazing, fuelwood and NWFPs collection. Conflict between new individual use entitlement and traditional common access to the land may have very negative social and environmental impacts. This is another reason to justify the participatory approach in FLA as a prerequisite to promote the sustainable use of forest resources.

It is also fundamental to avoid the risk to stimulate, through the land allocation process, an unsustainable exploitation of the forests. In the context of a commonly acknowledged need of protection, land should not be allocated to single households with an exclusively productive aim, which is against community interest. Commonly managed land can still represent an option in cases where land is considered as a useful common natural asset, or in cases where it is difficult to share the land because of unequal plots quality, scarcity of land available, or in contexts in which people have the need or wish to invest collectively in plantation or agroforestry activities.

### 6.3. MINIMISING THE TRANSACTION COSTS

The complex system of official regulations behind the FLA allows problems of interpretation of the land allocation rules. The activities connected with FLA, such as the reorganisation of cadastral records, demarcation of the borders of allocated plots, land tenure certificate issuing, etc., and the associated activity of land use planning are, in absolute terms, not extremely costly<sup>7</sup>. However, considering the low value of the allocated land, the costs are, in relative terms, quite high both for the public agencies and for the beneficiaries.

To operate at 'minimum transaction costs' neglecting a proper resolution of conflict and meeting stakeholders' needs, may lead eventually to soar the bill. Negotiation would have to take place anyway between conflicting interests (State Forest Enterprises, local authorities<sup>8</sup>, households, land disputes between hamlets as well as households, with overlapping land ownership) to avoid deleterious impact on the uplands resource and people. This may lead to poor concern for the quality of the outcome and in turn give rise to conflicts within the community and between farmers and the government.

### 6.4. PROVIDING FINANCIAL SUPPORT TO LOCAL FARMERS

To make allocated land a productive resource, credit is the fundamental support, but it has to be closely monitored to secure good investments and to avoid difficulties in paying back. As a base for credit management, it could be easier and more effective to consider kinship groups. Women play a key role in the management of household resources and are highly concerned about the improvement of family living conditions. Their participation in credit management then has to be strongly encouraged.

Adopting new land management practices is necessarily related to the possibility of having some capital to invest in these new practices. In this case a proper credit programme is a key factor about the farmers' willingness to adopt something new. This is also closely related with the risk perception. If we want farmers to start some agroforestry or plantation activities, we cannot pretend a credit with a 1 year term when the land will require at least 5 years to get into production.

It is worth mentioning that farmers were not allowed to use credit to buy seeds and seedlings of their choice but had to take what was supplied by the local forestry authority. Of course, a development process should be and needs to be regulated. However, we suggest that farmers should feel free to invest according to the guidelines and also, according to their personal wishes, thus increasing trust both in the policy and in themselves.



Compensations for plantation establishment and forest amelioration are another essential complement to land allocation. Compensations for plantation establishment should be proportioned to the efforts and to the revenue loss in the alternative use of the land as well as time (note also that planting activities require different labour inputs according to the different species utilised). As has been observed in the most degraded forest areas in the Phong Du commune, the sustainable use of newly allocated land for long-term forest investments implies a reduction in time needed for alternative, more profitable activities. In Thuong Lo, farmers under food shortage simply cannot afford to invest in land rehabilitation programmes. Their effort should then be promoted through some kind of compensation as long as longer credit payback.

#### 6.5. INTEGRATING THE LAND ALLOCATION PROCESS WITH DEVELOPMENT POLICIES AND INSTITUTIONAL REFORMS

The allocated forest land should be wider. The average (0.3 ha per capita in Thuong Lo, 0.5 ha per capita in Phong Du – see Table III) is very low, considering its generally degraded condition, and because some farmers managed to get larger plots, many had to share the extremely limited remainder.

A large part of the forest land is still formally under the management of the State Forest Enterprises, which is not willing to give up its land. Farmers, instead, claim a right to the land because of past traditional use.

Forest Enterprise land located near populated areas and which has no soil protective functions should be allocated to farmers for production, as described in the communal land use planning. It should be ensured that each household has enough land at least for guaranteeing food security. The land under the control of the Forest Enterprise, but which is now cultivated by the farmers, should be allocated or leased to them. In some villages, conflicts about borders of the allocated plots hamper any investment and any sustainable use of the forest land is likely to be disregarded.

The Forest Enterprises reform, with a clear definition of its objectives and responsibilities, is therefore a fundamental step for the future development of the forestry sector in Vietnam. Looking at the experience in other countries, the main rationale behind this reform should be to separate the public forest administration's commercial activity from its other, non-profit activities, such as extension, provision of seedlings and afforestation in remote low-productive areas. It is advisable that forest land located near populated areas and with no predominant soil protective functions should be allocated to farmers for crop production where possible through agroforestry practices.

#### 6.6. MONITORING THE FOREST LAND ALLOCATION PROCESS

The FLA process should be kept under constant monitoring to be able to make timely evaluations of the applied strategies and to reorient them towards their targets, if missed. An increased self-monitoring is one of the needs for a progressive strengthening of the capability of local people in resource management. But the use of workable indicators of FLA activities

TABLE IV. Main indicators of FLA impacts assessment (household level).

Issue	Meaning	Indicators
Degree of participation	<ul style="list-style-type: none"> <li>– Respect of local culture and society</li> <li>– Conflicts avoidance</li> <li>– Gaining insights from indigenous traditional knowledge</li> <li>– Enhancing empowerment</li> <li>– Enhancing self-confidence</li> <li>– Willingness to invest</li> <li>– Trust through authorities</li> </ul>	<ul style="list-style-type: none"> <li>– No. of conflicts</li> <li>– Resources (time and money) invested in the allocated plots</li> <li>– Trust through authorities</li> <li>– Wealth rank of the participants</li> <li>– Women involvement</li> </ul>
Land allocated vs. land available	<ul style="list-style-type: none"> <li>– Distribution of land rights (SFE, commune, etc.)</li> <li>– Limiting factors in land availability for allocation (land area and its quality)</li> </ul>	<ul style="list-style-type: none"> <li>– Fraction of the land available allocated by FLA to household (HH)</li> </ul>
FLA implementation	<ul style="list-style-type: none"> <li>– Possibility to integrate FLA in the actual HH farming system (time allocation within the HH)</li> <li>– Willingness to invest (time and money, depending on the costs, in time and energy, of implementing activities on the FLA)</li> <li>– Level of perceived risk</li> </ul>	<p><i>Quantitative indicators</i></p> <ul style="list-style-type: none"> <li>– FLA per HH, per capita, per labour, etc.</li> <li>– FLA distribution per wealth rank (land concentration)</li> </ul> <p><i>Qualitative indicators</i></p> <ul style="list-style-type: none"> <li>– Fragmentation (No. of plots per HH)</li> <li>– Distance from HH</li> <li>– Slope, soil quality, soil cover</li> <li>– Land access</li> </ul>
FLA socioeconomic impact	<ul style="list-style-type: none"> <li>– HH wealth improvement (both as food supply and/or income generation)</li> <li>– Effectiveness in halting slash-and-burn activities (or prolonging fallow period)</li> <li>– Effectiveness in halting forest exploitation in general (or prolonging recovery period)</li> <li>– Income generation to invest in a positive productive feedback</li> <li>– Improving children scholarisation</li> <li>– Reducing demographic growth</li> </ul>	<p><i>Quantitative indicators</i></p> <ul style="list-style-type: none"> <li>– Gross return from investment</li> <li>– Net return from investment</li> <li>– Return per time (days of work)</li> <li>– Investment per HH member</li> <li>– % of yearly HH income from LA (both in the form of compensation and/or cash from selling products)</li> <li>– % HH food supply (kcal, protein)</li> </ul> <p><i>Qualitative indicators</i></p> <ul style="list-style-type: none"> <li>– % of yearly HH income (it is also a qualitative indicator)</li> <li>– % HH food supply, both as direct production and income generation (kcal, protein)</li> <li>– Distribution of labour within the HH</li> </ul>
FLA environmental impact	<ul style="list-style-type: none"> <li>– Complexification of the human managed ecosystem</li> <li>– Risk sharing strategy</li> <li>– Use of beneficial interaction among species</li> </ul>	<p><i>Qualitative indicators</i></p> <ul style="list-style-type: none"> <li>– Species planted</li> <li>– Technologies employed to halt soil degradation</li> <li>– Pest outbreak</li> </ul>

TABLE IV. (Continued.)

Issue	Meaning	Indicators
	<ul style="list-style-type: none"> <li>– Soil protection</li> <li>– Use of solar ‘free’ energy lowering dependency on external expensive inputs</li> <li>– Integration with other HH activities (e.g. husbandry)</li> </ul>	<p><i>Quantitative indicators</i></p> <ul style="list-style-type: none"> <li>– No. of intercropped species</li> <li>– Standing biomass per ha</li> <li>– Gross primary productivity</li> <li>– Net primary productivity</li> <li>– Fertiliser per ha</li> <li>– Pesticides per ha</li> </ul>
Activities to sustain an effective FLA	<ul style="list-style-type: none"> <li>– Allowing farmers the necessary steps to make the resource (FLA) productive in terms of the HH economy</li> <li>– Integrating the local IK and IT in the implementation process</li> <li>– Use of local resources</li> <li>– Helping farmers to interact with market forces and risks</li> <li>– Making the risk faced by poor farmers bearable</li> <li>– Enhancing the participation and empowerment of local people especially women (a key element in the HH economy)</li> <li>– Enhancing trust through institutions and their leaders</li> </ul>	<p><i>Proper credit</i></p> <ul style="list-style-type: none"> <li>– Length related to the kind of investment</li> <li>– Use of dynamic microcredits for urgent need (to run macrocredits)</li> <li>– Avoiding a standard emission and payback</li> <li>– Credit to women as well</li> <li>– Market analysis</li> </ul> <p><i>Proper extension</i></p> <ul style="list-style-type: none"> <li>– Adequate preparation of the technicians</li> <li>– Proper language</li> <li>– Proper selection of participants</li> <li>– Including women</li> <li>– Learning from IK and IT</li> <li>– Listening to skilful local farmers</li> <li>– Market analysis</li> <li>– Infrastructure planning</li> </ul>

at the local level is of basic importance not only for the needs of internal evaluation, but also to enable a comparison of results within the various initiatives in different social and environmental contexts.

According to some authors (McNamee, 1991; Desloges and Vu, 1997), four aspects need to be monitored to assess FLA impact:

- the FLA process itself through a comparison of the actual performance of the various activities with the officially approved workplan;
- human, financial and technical inputs used in FLA implementation (number of persons involved in the process, person-weeks, products consumed, etc.);
- the specific outputs of the FLA (allocated land, maps, number of households with allocated land, land tenure certificates issued, etc.);
- general social, economic and environmental impacts of the FLA in the local communities.

There are no serious problems in defining a set of indicators for the first three factors, while monitoring of general social, economic and environmental impacts is quite difficult. With reference to the integrative approach and experience gained in the two study areas, a list of possible indicators has been defined (Table IV). Some indicators are strictly related

to FLA activity and give immediate indications on its impacts or potential effects, but other factors, taken into consideration as defining indicators of change, could evolve under the pressure of dynamics which take place at a bigger scale compared to the dimension of FLA.

## 7. Conclusion

Even if Vietnam has achieved impressive economic results under the structural reforms implemented in the decade 1986–1996, there are many reasons for concern about the present economic trends: “*substantial inefficiencies persist and growth is inward-looking, increasingly capital-intensive and biased in favour of urban dwellers*” (World Bank, 1997, p. iv). According to this tendency, linked to short-term relevant benefits, paddy land allocation to small private farms in the Mekong and Red River deltas has received much more attention than the problems of property rights re-definition and sustainable land management in the uplands.

Up to now, however, reforms have not halted the alarming environment degradation, which is putting under severe environmental (and in turn socioeconomic) risk large Vietnamese areas particularly in the uplands, where forest clearing leads to dramatic soil degradation and loss.

Although FLA is under implementation, such a policy let alone is an extremely weak instrument for the sustainable development of the uplands. To accomplish its aim it has to be integrated with agricultural land allocation, land use planning and the provision of effective technical services. This means a reform, not only of the traditional land regime regulation, but also of public institutions responsible for the extension and credit services.

In the two key studies the nature of the local farming system has not been monitored; neglecting this key step poses a bias for implementing a sound and effective FLA. The participatory approach, considered a fundamental part of the FLA programme, seems to remain on paper. Extension activities were not able to incorporate local knowledge, failing sometimes also to properly deliver information packages because of a language gap and/or a biased selection of farmers taking part in the exercise. Conflicts arising from the allocation were not promptly solved, leaving farmers with an insecure tenure on allocated land, which does not help to promote investment.

Looking only to the problems of property rights definition with the allocation of forest land to the farmers, will not reduce deforestation problems. These must be tackled also with new macroeconomic policies (e.g. credit programmes to support sustainable agriculture practices), social policy (e.g. reduction of demographic pressure), together with the reform of the state institutions (e.g. State Forest Enterprises) involved in management of the forest areas. The need for the enforcement of strict requirements for logging and reforestation practices and a process of empowerment of local communities also has to be emphasised.

Although shifting financial resources in favour of mountainous forest areas may determine a reduction in short-term growth of some other sectors of the economy, the investment can guarantee in the long run a more stable, equitable and environmentally sustainable upland development.

### Acknowledgements

We gratefully acknowledge the work carried out by Barbara Vinceti and Alessandra Gribaldo, who along with T. Gomiero and G. Phan Trieu collected field data. We also acknowledge professor Paolo Palmeri and Professor Paolo Faggi from the University of Padova (Italy) for their support. A special thanks to Professor Nyuien van So and to the members of the Thu Duc University of Agriculture and Forestry (Ho Chi Minh City), the Xuan Mai Forestry College (Hanoi), and one representative of the University of Hue who shared the field activity in cooperation with the research team. Finally, a special thanks is due to the people of Thuong Lo and Phong Du communes, for their warm welcome, patience, and teaching.

### Notes

<sup>1</sup> De Koninck (1999) reports estimate 23% of the forest land and 25% country's farmland were affected as a direct result of bombing, mechanised land clearing and defoliation.

<sup>2</sup> According to Vo Quy and Le Thac Can (1994, in De Koninck, 1999), by the mid-1990s, the annual replanting rate reached 100 000–160 000 ha, against the 200 000 ha being deforested. It must be pointed out that most replanting programmes have so far relied on single-species plantings and in several cases on ill-adapted species of the *Eucalyptus* genus, an Australian species which has nothing to do with the original forest.

<sup>3</sup> Poverty studies based on data from the Vietnam Living Standard Survey, using a poverty line equivalent to 2 100 calories per day per capita, estimated the population living in poverty to be 59% in the northern mountains and 50% in the central highlands (HPP Management Team – UNDP, 1997; G-D-NGO Working Group, 1999). However in most research on forested areas, little or no attention has been paid to assessing local, non-conventional resources gathered traditionally in the wild (small animals including several invertebrates and insects, plants, fruits, nuts, roots, leaves). These, not well accounted foods in official statistics, can represent for local populations, and especially for children and women, an important hidden part of survival.

<sup>4</sup> In a few years Vietnam has developed from the position of net importer to that of the second world exporter of rice (World Bank, 1997).

<sup>5</sup> Other motivations probably may play an important role: (i) the need to stabilise (and control) an estimated population of 2 (FAO/IIRR, 1995) to 3 (Do Dinh Sam, 1994) million people living on shifting cultivation, involving nearly all of the ethnic minorities of Vietnam, with the objective also to reduce the demographic pressure on cities and on the two deltas (UNDP, 1998b); (ii) the need to solve the conflicts in land use between the traditional upland inhabitants and the 3.5 million ethnic Vietnamese (*Kinh*) resettled in the central highlands and the northern midlands especially in the 1980s under the Fixed Cultivation and Sedentarization Programme (HPP Management Team – UNDP, 1997; 1998b; De Koninck, 1999); (iii) the willingness to respond to the external pressure (and to make use of the credit programmes and available financial assistance supplied by International Monetary Fund and World Bank) by international institutions for the conservation of the residual part of the forest cover (UNDP, 1998a); (iv) finally the influential position of many representatives of ethnic minorities elected in local administrations in mountainous areas; the relevant role of support given by ethnic minorities to the northern *Kinh* community during the liberation war has also a positive effect in the way in which the central government is considering problems and needs of the mountainous population.

<sup>6</sup> An example of a non-participatory process of FLA. Quote from farmers' speech, during a village meeting in Phong Du: "... troubles arise with the Working Group (i.e. the local authorities) when they presented contract papers to the farmers. We refused to sign because we are managing just 2–3 plots but on papers even 5 resulted in our hands. The area was bigger than the real one, for every farmer. They just worked on maps without accurate measurements on the field. They didn't take into account our opinions. We have never been involved, we just agreed at the beginning on receiving 3 plots per household but now the situation on the map is different. Only the hamlet head and his brother signed the contract for the allocation. Nobody else did it. Only 600 ha are available for allocation but 2,000 ha result from papers".

<sup>7</sup> According to MARD-FAO (1996) land use planning and forest land allocation costs in Vietnam range from 11,000 to 24,000 VND/ha (0.9–1.9 US\$/ha), although in some cases it may be much higher (60,000 VND/ha or 4.9 US\$/ha) as average costs in 78 villages of Lao Cai Province – Jonsson and Nguyen, 1998.

<sup>8</sup> In upland areas, “where criteria for land allocation are less transparent, and village solidarity often less well developed, opportunities for officials to take advantage of their titling process have been much greater” (Rambo, 1995, p. 8).

## References

- Ahlback, A.J.: 1995, ‘On forestry in Vietnam, the new reforestation strategy and assistance’, UNDP/FAO Project VIE/92/022, 63 pp.
- Altieri, M.A. and Masera, O.: 1993, ‘Sustainable rural development in Latin America: building from the bottom-up’, *Ecol. Econ.* **7**, 93–121.
- Barker, R. (ed.): 1994, ‘Agricultural policy analysis for transition to a market-oriented economy in Vietnam’, Selected issues, FAO Economic and Social Development Paper, No. 123, 146 pp.
- Beets, W.C.: 1990, *Raising and Sustaining Productivity of Smallholder Farming System in the Tropics*, Alkmaar, Holland, AgBé Publishing.
- Boothroyd, P. and Nam, P.X. (eds.): 2000, *Socioeconomic Renovation in Viet Nam*, IDRC/ISEA 200 pp, available on internet at URL: <http://www.idrc.ca/acb/showdetl.cfm>
- Castella, J.C., Husson, O., Le Quoc Doanh and Ha Dinh Tuan: 1999, ‘Mise en oeuvre de l’approche ecoregionale dans les montagnes du bassin du fleuve rouge au Vietnam. Le projet systemes agraires de montagne’, L’Institut de Recherche pour le Developpement (IRD), Cahiers de la Recherche Developpement, No. 45, pp. 114–134.
- Chambers, R.: 1983, *Rural Development: Putting The Last First*, London, Intermediate Technology Publications, 256 pp.
- Chambers, R.: 1997, *Whose Reality Counts? Putting the First Last*, London, Intermediate Technology Publications, 248 pp.
- De Koninck, R.: 1999, *Deforestation in Viet Nam*, IDRC Resources Books ,110 pp.
- Desloges, C. and Vu, V.M.: 1997, ‘Methodology for participatory land-use planning and forest land allocation’, Ministry of Agriculture and Rural Development, Department of Forestry, FAO, Project GCP/VIE/020/ITA, Hanoi.
- Doan Diem: 1997, ‘Participatory land use planning and forest land allocation in Vietnam’, MARD-FAO Project ‘Country capacity strengthening for NFAP implementation in Vietnam’ (GCP/VIE/020/ITA), Hanoi, 20 pp.
- Do Dinh Sam: 1994, *Shifting Cultivation in Vietnam: Its Social, Economic and Environmental Values Relative to Alternative Land Use*, International Institute for Environment and Development, London, IIED Forestry and Land Use Series, No. 3, p. 55.
- FAO: 1993, ‘Forest resources assessment 1990’, FAO Forestry Paper 112, FAO, Rome.
- FAO: 1996, Workshop on Forestry and Agriculture on Sloping Lands of Northern Vietnam, Phu Ninh, Vinh Phu, Vietnam, 24–28 June 1996, FAO Field Document No. 8 GCP/RAS/142/JPN, 157 pp.
- FAO: 1999, ‘Nutrition country profiles – Vietnam 28/1/99’, FAO, Rome, 24 pp.
- FAO/IIRR: 1995, ‘Resource management for upland areas in Southern Asia. An information kit’, FAO, FAO Regional Office for Asia and the Pacific, Bangkok; International Institute of Rural Reconstruction, Sillang, Philippines, 207 pp.
- FAO/UNDP: 1996, ‘Smallholder Reforestation in Central Vietnam’, Experiences of the implementation of UNDP/FAO project VIE/92/022 ‘Provision of Technical Assistance to WFP Project 4304: Reforestation in Central Vietnam’, Agriculture Publishing House, 30 pp.
- Fox, J., Truong, D.M., Rambo, T.A., Tuyen, N.P., Cuc, L.T. and Leisz, S.: 2000, ‘Shifting cultivation: a new paradigm for managing tropical forests’, *BioScience* **50**(6), 521–528.
- Freudenberger, S.K.: 1994, ‘Tree and Land Tenure – Rapid Appraisal Tools’, FAO, Rome, 80 pp.
- G-D-NGO (Government-Donor-NGO Working Group): 1999, ‘Vietnam Development Report: Attacking Poverty’, Joint Report of the Government-Donor-NGO Working Group, 168 pp.
- Giampietro, M. and Pastore, G.: 1999, ‘Multidimensional reading of the dynamics of rural intensification in China: the Amoeba approach’, *Critical Review in Plant Sciences* **18**(3), 299–329.

- Giampietro, M., Bukkens, S.G.F. and Pimentel, D.: 1997, 'Linking technology, natural resources, and the socio-economic structure of human society: examples and applications', *Advances in Human Ecology* **6**, 131–200.
- Hayami, Y.: 1994, 'Strategies for the reform of land policy relations', in R. Barker (ed.), *Agricultural Policy Analysis for Transition to a Market-Oriented Economy* in Viet Nam, Selected issues, FAO Economic and Social Development Paper, No. 123, pp. 9–59.
- HPP Management Team – UNDP: 1997, 'Highland Peoples Programme – Regional Workshop Country comparisons on Highland Peoples development issues – Vietnam', March 1997. A background document. Inter-Ministerial Committee for Highland Peoples development in the North-East of Cambodia. Phnom Penh, 8–10 April 1997, Bangkok.
- Johnson, J. and Nguyen Hai Nam: 1998, 'Land Management Component in Vietnam–Sweden Mountain Rural Development Program (1996–2000)', *Proceedings of the National Workshop on 'Participatory Land Use Planning and Forest Land Allocation'*, MARD-FAO, Hanoi, 4–6 December 1997, Hanoi, Agriculture Publishing House, pp. 97–106.
- Lang, C.R.: 1996, 'Problems in the making. A critique of Vietnam's tropical forestry action plan', in M.J.G. Parnwell and R.L. Bryant (eds.), *Environmental Change in South-East Asia*, London, Routledge, pp. 225–234.
- Le, V.L.: 1992, 'Recipes for restoration: mixed methods help rescue the midland of Vinh Phu', *Ceres*, No. 134, 17–22.
- Lindskog, E.: 1992, 'Participatory Rural Appraisal for TFAP project formulation', People's participation in the design of a small-scale rural development project in Tien Yen district', Quang Ninh province, Vietnam, Hanoi, 61 pp.
- Linh, V.B. and Nguyen, N.B.: 1995, *Agroforestry Systems in Vietnam*, Hanoi, Agriculture Publishing House, 160 pp.
- McNamee, J.P.: 1991, 'Design of Environmental Monitoring System for Forest Development area, Vietnam', Plantation and Soil Conservation Project, Interforest, 65 pp.
- MAFI (Ministry of Agriculture and Forest Industry): 1993, 'Bare lands in Vietnam: the existing situation and the improving and using orientation up to the year 2000', Hanoi, MAFI.
- MARD (Ministry of Agriculture and Rural Development): 1996, 'Approaches to Social Forestry in Viet Nam', Proceedings of the Seminar Workshop held in Hanoi, 28–29 September 1995, 85 pp.
- MARD-FAO (Ministry of Agriculture and Rural Development/FAO): 1996, 'Land use planning and forest land allocation and other project activities', Proceedings of the Review Workshop held in Hue, 15–19 October 1996, MARD-FAO Project 'Country capacity strengthening for NFAP implementation in Vietnam' (GCP/VIE/020/ITA), Hanoi.
- MARD-FAO (Ministry of Agriculture and Rural Development/FAO): 1998, 'Participatory land use planning and forest land allocation', Proceedings of the National Workshop in Hanoi, 4–6 December 1997, Hanoi, Agriculture Publishing House, 199 pp.
- Ministry of Forestry: 1991, 'Vietnam. Forestry sector review', Tropical Forestry Action Programme, Main Report, Hanoi, 201 pp.
- Nguyen, Van Thang: 1995, 'The Hmong and Dzaio people in Vietnam: impact of traditional socioeconomic and cultural factors on the protection and development of forest resources', in T.A. Rambo, R.R. Reed, C.C. Le and M.R. DiGregorio (eds.), *The Challenges of Highland Development in Vietnam*, Honolulu, USA, East-West Center, pp. 101–119.
- Nguyen, C.G. and Vu, V.M.: 1998, 'Guiding principles for forest land allocation as a tool to implement the Government's top priority on land use policy', *Proceedings of the National Workshop on 'Participatory Land Use Planning and Forest Land Allocation'*, MARD-FAO, Hanoi, 4–6 December 1997, Hanoi, Agriculture Publishing House, pp. 78–83.
- Paoletti, G.M. and Bukkens, S.: 1997, 'Minilivestock: sustainable use of biodiversity for human food', *Ecology of Food and Nutrition* **36**(2–4), 95–346.
- Parker, K.J. and Burch, W.R. Jr.: 1994, 'Towards a social ecology in Asia', pp. 59–84, in W.R. Burch Jr. and K.J. Parker (eds.), *Social Science Application in Asian Agroforestry*, USA, Winrock International and USA, South Asia Books, 180 pp.
- Phuong, N.N. and Dembner, S.A.: 1994, 'Improving the lifestyle of people in protected areas of Viet Nam', *Unasyuva* **176**(45), 15–21.
- Poffenberger, M., Vo Tri Chung, Crystal, E., Nguyen Huy Dzung, Vu Van Dzung, Nguyen Huy Phon, Sikor, T., Sowerwine, J. and Walpole, P.: 1998, 'Stewards of Vietnam's forests: a collaborative study by the Asia

- Forest Network and the Forest Inventory and Planning Institute', Research Network Report, Center for Southeast Asia, University of California, Berkeley, No. 10, 104 pp.
- Porter, G.: 1995, 'Managing renewable resources in Southern Asia: the problem of deforestation', in Y.C. Kim (ed.), *South East Asia's Economic Miracle*, New Brunswick, Transaction Publisher.
- Prosterman, R. and Hanstand, T.: 1999, 'Legal impediments to effective rural land relations in Eastern Europe and Central Asia', A comparative perspective. World Bank Technical Paper, No. 436, 325 pp.
- Rambo, T.A.: 1995, 'Privatization of communal land in northern Vietnam', *Common Property Resource Digest*, April, pp. 7–9.
- Rambo, T.A., Reed, R.R., Le, C.C. and DiGregorio, M.R. (eds.): 1995, *The Challenges of Highland Development in Vietnam*, Honolulu, USA, East-West Center.
- Sikor, T.: 1995, 'Decree 327 and the restoration of barren land in the Vietnamese highlands', in A.T. Rambo, R.R. Reed, Le Trong Cuc and M.R. Di Gregorio (eds.), *The Challenges of Highland Development in Vietnam*, East-West Center, Hawaii; Center for Natural Resources and Environmental Studies, Hanoi University; Center for Southeast Asia Studies, University of California, pp. 143–156.
- Smith, W.: 1998, 'Land and the Poor. A Survey of Land Use Rights in Ha Tinh and Son La Provinces', *Proceedings of the National Workshop on Participatory Land Use Planning and Forest Land Allocation*, Ministry of Agriculture and Rural Development-FAO; Hanoi, 4–6 December 1997, Hanoi, Agriculture Publishing House, pp. 158–177.
- UNDP: 1995, 'Incorporating Environmental Consideration into Investment Decision-Making in Vietnam', A special Report for the Government of the Socialist Republic of Viet Nam, United Nations Development Programme, Hanoi, VietNam, 85 pp.
- UNDP: 1998a, 'Viet Nam Annual Report', UNDP Ha Noi, <http://www.undp.org.vn/efault.htm>
- UNDP: 1998b, 'The Dynamics of Internal Migration in Viet Nam', UNDP, Hanoi.
- Vu Van Me: 1997, Proposal for the establishment of a working group for forest land allocation in aid projects, Workshop on technical assistance for effective use of external support to integrated agricultural and rural development, Ministry of Agriculture and Rural Development, 10–11 January 1997.
- Vu Van Me and Desloges, C.: 1996, 'Methodology for Participatory Land Use Planning and Forest Land Allocation', Ministry of Agriculture and Rural Development-FAO, Hanoi.
- Wolf, S.A. and Allen, T.F.H.: 1995, 'Recasting alternative agriculture as a management model: the values of adept scaling', *Ecological Economics* **12**, 5–12.
- World Bank: 1997, 'Vietnam. Deepening reform for growth', An economic report, Poverty Reduction and Economic Management Unit, East Asia and Pacific Region, 66 pp.
- World Bank: 2000, 'World development indicators 2000', available on internet at URL: <http://www.worldbank.org/data/countrydata/littledata/htm>