

### 4.2.2 Programs to improve access and livelihoods in the uplands of Vietnam

Access and rural livelihoods in upland areas of Vietnam are affected by two national programs for poverty reduction that began implementation in 1998: Hunger Eradication and Poverty Reduction (HEPR -- Decision 133), and Poor Communes with Extreme Difficulties in Mountainous and Remote Areas (PCED - Decision 135). Together, they are commonly referred to as the national HEPR programs. The Ministry of Labour, Invalids and Social Affairs (MOLISA) is the responsible agency for Decision 133, while the Committee for Ethnic Minorities has responsibility for Decision 135. HEPR programs promote a multi-sectoral approach, aimed at improving clean water, educational enrollment, productive capacity, cultural and social knowledge, infrastructure, transportation and communications, training of leaders, and access to credit. The government has specifically named relevant ministries and institutions to support these programs, such as the Ministries of Agriculture and Rural Development, Education and Training, and Health.

Decision 133 was enacted for the period of 1998-2000, and was superseded by Decision 143 for the period of 2001-2005. The decision applies to extremely poor communes, mountainous areas, borderlands, islands, and remote and scattered communities, based on a national list of 1,715 poor communes. Components of the decision include extension services for income generation through agro-forestry and fisheries, capacity building for poverty reduction in poor communes, and support to ethnic minority groups living in extreme conditions. The goal was to reduce the proportion of households living under the national poverty line to less than 10 per cent by 2005. The estimated budget for Decision 133 (Decision No.133/1998/QD-TTg) was 10 trillion VND (approximately 700 million USD) and 22.6 trillion VND (approximately 1.7 billion USD) were allocated for Decision 143 [VNA, November 4, 2001, cited in Morris et al. 2004].

Decision 135 was enacted for the period of 1998-2005. It targets the 1,000 poorest communes in remote and mountainous areas, otherwise known as “communes in extreme difficulties” (CEDs). Its goal was to reduce the proportion of households living under the national poverty line in CEDs to 25 per cent by 2005, from their previous poverty rate of 91 per cent of households in CEDs in the Central Highlands, and 73 per cent of households in CEDs in the Northern Region (according to the 1998 Vietnam Living Standards Survey). Little information is available on the outcomes of the programs. Anecdotal successes have been hailed in the media for increasing incomes and generating improvements in food security, health, road access, forest cover, and technologies for agriculture and animal husbandry.<sup>1</sup> However, the media has also criticized the programs for slow rates of capital disbursement, lack of general awareness about the programs, overlap between projects, hiring of unqualified consultant companies and, ultimately, failing to meet the real needs of poor people.<sup>2</sup>

The ten poorest provinces in Vietnam are all in the northern uplands, and their poverty is probably related to the mountainous landscape, distance to major markets, limited infrastructure and high share of the population belonging to ethnic minorities [Minot & Baulch

<sup>1</sup> Vietnam News Agency, November 4, 2000; April 19, 2001; November 27, 2001

<sup>2</sup> Vietnam News Agency, November 4, 2000; February 3, 2001, May 12, 2001

2002]. Market access is one of the few variables that can be influenced by policy makers [IFPRI 2003]. The poor in upland zones are heavily dependent on agriculture. Agriculture accounted for 24 percent of national GDP, but 42 percent of GDP in the northern Uplands in the year 2000. Because of the bigger role of agriculture in the north of Vietnam, the government is focusing their poverty alleviation programs mainly on agriculture in this area. The government has a number of program and policies to promote new crops, particularly in poor upland regions [Minot 2005]. However, within these regions it is the least poor people who mainly diversify their agriculture by trying new crops, even though overall crop diversity among the poorest is higher in order to reduce risks [Minot 2003].

There are many programs for subsidized seeds or breeds for farmers, but most of them are regional. Rural and mountainous areas are often assigned high priority as they are found to be the poorest. National programs include animal breeding and subsidized seed import and multiplication, together with an extension program where seed prices are subsidized (60 percent in mountainous areas and 40 percent in plains areas). Many farmers have subsidized seeds, irrigation, fertilizers and electricity. Loans with preferential interest rates can also be taken by Vietnamese farmers (30 percent lower interest rates for farmers in mountainous areas, or on islands or belonging to the Khmer minorities) [Nguyen & Grote 2004].

Infrastructure has been found to be one of the public investments that have greatest impact on income and poverty reduction in the Hong (Red River) delta area. Therefore, investment in roads in the northern uplands is predicted to provide a significant boost to agricultural production and rural incomes [Minot 2003]. However, the largest share of funds for infrastructure currently goes to improving irrigation systems, which are mainly in lowland areas [ADB 2000].

In any event, development of a well diversified rural economy will in the long term require massive investment in physical infrastructure, including irrigation systems, roads, electrification, ports and communication systems (the hardware). But most of these investments will be expensive, take a long time to implement, and risk becoming inadequate, environmentally damaging and/or unsustainable, depending on how they are carried out. Meanwhile, in the context of limited resources, it may be appropriate to shift more investment toward capacity building, research, extension and policy and project analysis (the software). These types of investments are less expensive, and have potential to identify more suitable and less expensive investment options for “hardware” implementation [ADB 2000].

Several types of social organizational assets are well developed in the uplands. The mountainous Hoang Nong commune in Dai Tu district of Thai Nguyen province is a good example. Five political organizations, including a farmers association, women’s union, veterans group, youth union, and father front; one social organization (aging association); 5 local authorities (Peoples committee, justice, land administration, banks, extension); and one project (GTZ), are mentioned as the most important institutions influencing farmer livelihoods (Table 4-3).

Table 4-3. Importance of organizations in Hoang Nong commune, Dai Tu district, Vietnam

Institutions	Livelihood activities				
	Loans	Training	Land issues	Poverty reduction & ethnic support	Environment monitoring
x = less important, xxx = most important					
<b>1. Political organizations</b>					
Farmers	xxx	xx	xx	xxx	
Women	xxx	xx	xx	xx	
Veterans	xx			x	
Youth	xx		xx		
Father front			xxx		
<b>2. Social organizations</b>					
Aging			xx		
<b>3. Local authorities</b>					
People's Comm			xxx		xxx
Justice					
Land admin.			xxx		xxx
Banks					
Extension		xxx			
<b>4. Projects, programs</b>					
134				xxx	
135				xxx	
GTZ		xxx <sup>1</sup>			

Source: PRA survey, 2007

<sup>1</sup>Support money for training in improved kitchen for tea processing, raising rabbits, bees, planting Acacia as shade tree for tea.

Land resource accessibility situations are quite complicated in upland areas. In Hoang Nong commune, land allocation programs were conducted during the 1990s, resulting in the issuing of land use certificates for different land categories as shown in Table 4-4:

Table 4-4. Land allocation situation in Hoang Nong commune, Dai Tu district, Thai Nguyen province

Different certificates	1991-1992	1997	2008
Red book for agricultural land	Completed, only for period until 2003		To be re-allocated
Green book for forest land (with and without forest)		Completed for 50 years	
Red book for residential land (home garden, housing land, water area)	Completed, permanent, with 5 rights (mortgage, selling, exchange, gift, inherit)		

Source: PRA survey 2007

Each household can have 11-12 plots of land, with a total cultivation area (tea and rice) of between 500 m<sup>2</sup> to more than one hectare. Due to large variation in land quality, it is difficult to consolidate land plots using land exchange rights. There are no landless farmers, but some households rent out their land in order to have time to work with non-farm activities.

Government programs also seek to develop human capital and improve access to financial capital for highlanders. Hoang Nong commune has been receiving support since 2005 from program 135, which is used for two purposes: (1) providing health insurance for all people in the commune, and establishing 3 schools: kindergarten, primary and secondary schools; and (2) supporting poor farmers in developing their livestock (focus on raising cattle), in improving tea processing (purchasing processing equipment), and in paying school fees for their children. The support provides about 80 percent of total costs, while farmers pay 20 percent

themselves. Local people use “red book” land use rights for collateral in mortgaging their land to obtain loans from the agri-bank. Poor households can also borrow smaller amounts of money from the ‘Social Policy’ bank at reduced interest rates.

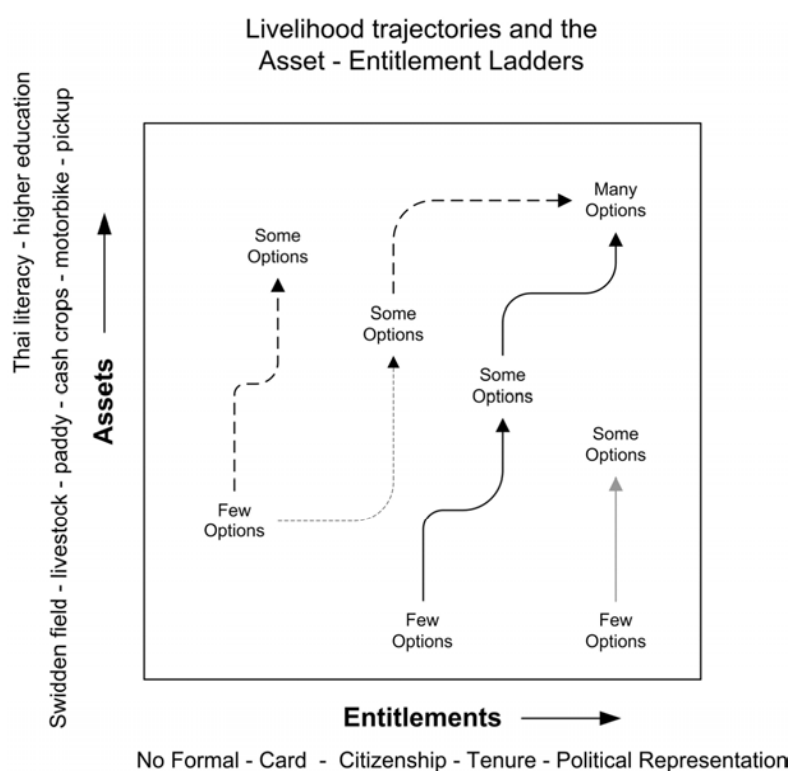
### 4.2.3 An upland asset-entitlement ladder

As part of a study on upland livelihoods, we carried out qualitative, but systematic surveys during 2002-03 in seven villages in Chiang Rai, Chiang Mai and Mae Hong Son provinces. Our aim was to get a better understanding of how different assets and entitlements, as well as circumstances, affected the range of livelihood options available to ethnic minority (Akha, Pwo Karen, Sgaw Karen) households in upland settings [Lebel et al. 2003].

The results of our study can be summarized graphically by the notion of an asset-entitlement ladder (Figure 4-7). In this figure we imagine a household can move around the space defined by ladders of assets (y-axis) and entitlements (x-axis). As you move up the asset or entitlement ladder the range of livelihood options available, and their quality, for instance in terms of returns-for-labor, go up.

The way changes in assets and entitlements affect livelihood activities suggests that there are a series of thresholds each of which opens up a new set of opportunities, especially when assets and entitlements gained so far support each other. This is an asset-entitlements ladder. For livelihoods in Northern Thailand, critical material assets are: ownership of swidden fields, livestock, paddy rice, cash cropping fields, motorbike and a pickup truck.

Figure 4-7. Assets-entitlement ladder for household livelihood strategies of upland households in northern Thailand



A motorbike, for example, is a crucial tool for the transport of non-timber products to collection points or markets, especially in difficult mountain tracks. A motor bike is also crucial for access to crop land. A farmer can go farther to find suitable fields closer to markets or with suitable soil and water conditions, for example, for paddy rice.

For increased mobility and use of market channels, however, nothing compares to the pick-up truck. First owners of a pick-up in a village or cluster of villages are immediately in tremendous demand for their services, opening up opportunities for two-way flows of products, ideas, and cash. Human capacity, in terms of education and skills, changes in parallel, especially as knowledge and language skills are important for interpreting market information and bargaining.

A similar set of even more discrete steps are related to entitlements, and especially for property, credit and participation in decision-making about local development. Moreover, when people have few rights, accumulated assets can easily be lost.

While assets and entitlements often co-evolve, reinforcing each other (middle trajectory, Figure 4-7), this is not invariably the case. There may be some substitutability of assets for entitlements. Thus, for example, an Akha villager with a pick-up (key asset), but no citizenship and only a restricted “hilltribe” card (key entitlement), could ‘pay’ his way down the hill to market in order to sell bamboo shoots. Wealth doesn’t necessarily bring with it the full set of rights necessary to integrate and navigate mainstream Thai society, but it often helps “smooth channels” which might otherwise be barred.

Finally the convertibility of assets is another important factor affecting the range of livelihood options available to a poor household. Livestock, for example, have a large role in many up-land farming households with cattle and pigs representing, essentially, savings accounts.

### 4.3 Case studies of strategies for adapting to opportunities and constraints

We now turn to our case study sites for evidence of how people have actually been responding to changing market opportunities in the context of the various types of constraints they face. Rather than seeking to identify a mythical strategy of the poor or passing judgment on good and bad strategies, these examples seek to capture major dimensions of the diversity in household livelihood strategies and responses present in specific local areas. Thus, this discussion is divided into three sections: The first section provides an initial overview of household typologies that have emerged from empirical studies of households and basic components of their livelihood strategies at sites in northern Thailand and our case study site in northern Vietnam. The second section then examines in more detail the major characteristics of households who have adopted different types of household livelihood strategies, with attention to livelihood assets and associated issues. In the third section we assemble evidence from various sources about how different strategies appear to be faring and evolving over time.

#### 4.3.1 Types of households & strategies

##### *Households and strategies in North Thailand*

In Northern Thailand, several case studies have investigated different types of households and their strategies in the uplands. In one example, Charal et al. [1997] studied a highland village called Mae Salaep in Mae Chan watershed of Chiang Rai province, where change is associated with increased pressure on agricultural systems due to population pressure, scarcity of farm land, reduced fallow periods of shifting cultivation, and new opportunities in cash cropping. These changes all culminated in different farmer strategies, and transformation of agricultural systems that resulted in farmers becoming more differentiated since 1980.

Their analysis divided farmers into 3 main groups: Type A farmers having a cash crop-based, market-oriented strategy with limited capital, Type B farmers having an upland-rice based, self-sufficiency strategy, and Type C farmers having a paddy-based, investment and market-oriented strategy. Type C farmers were more capital rich than Type B and Type A, while Type B farmers had both more land and more capital than Type A farmers. Within each type of farmers, there were different attitudes toward risk, some being more risk taking than others. Those with more risk taking behavior grew high-income high-risk ginger and cabbage, while those with risk-averse behavior grew low-income-low-risk crops like maize, soybean, sesame and groundnut. Type C farmers with their higher resource base and capital endowment invested in paddy rice fields, livestock, fruit trees and non-farm occupations.

In subsequent case studies conducted in four sites of the Royal Project in Chiang Mai and Lamphun provinces, Benchaphun, Methi and Tanya [2001] compare farmers of different types similar to Charal et al. [1997], although here five types of farmers are classified accord-

ing to their orientation towards commercialization: Type *A*, *B*, *C*, *D* and *E* farmers are identified, although type names do not resemble those of Thong-ngam et al<sup>3</sup>:

- *Type A* farmers are subsistence farmers<sup>4</sup> who planted low-value-low-risk upland rice, maize, and groundnuts, with only a small proportion of cash crops;
- *Type B* are semi-subsistence<sup>5</sup> farmers, planting a combination of subsistence and cash crops, including upland rice, paddy rice, mungbean, groundnut, maize, fruit trees such as lychee, longan, local peach, coffee, or persimmon, and vegetables such as red cabbages, lettuce, Chinese cabbages, flowers, green pepper and carrots
- *Type C* are semi-commercial<sup>6</sup> farmers who planted crops similar to Type *B* farmers, but with more varieties and a greater extent of vegetables
- *Type D* are fully commercial<sup>7</sup> farmers who are highly cash crop-oriented with little upland rice or paddy rice. They grew more exotic crops such as zucchini, potato, green pepper, or plum, as well as cabbages, carrots, and lettuce. They also grow vegetables more intensively throughout the year.
- *Type E* are those having a more long-term investment strategy<sup>8</sup>, who have more areas devoted to fruit and beverage tree crops, such as persimmon, plum, lychee, local peach, avocado, coffee.

Many of these crops were contracted and marketed by the Royal Project. Livelihood strategies are associated with farmers' entitlements in relation to natural, physical, financial, social, and human capital. Access to markets and information facilitated by the Royal Project are seen as key in determining how farmers would opt to adopt certain strategies. Facilitated transportation and communication, together with their years of experience with cash cropping, also influence how commercialized they would like to be.

The Karen ethnic minority group is often considered to be more subsistence-oriented, while the Hmong are generally seen as being more commercialized through their past experience in opium production and trade. Recently, however, this distinction is becoming less obvious as the Karen are becoming more commercialized than the past, and the Hmong acquire paddy fields for cultivation.

Household wealth endowments also help determine their strategies, since some strategies are more capital intensive than others. For example, the Karen reported that they lacked their

---

<sup>3</sup> Charal's type C resembles Ekasingh's type E. Charal's type B resembles Ekasingh's type A and B1. Charal's type A resembles Ekasingh's type C. To differentiate these studies, Ekasingh et al type will be denoted in italics.

<sup>4</sup> Defined as farmers who have more than 75 per cent of their production for household consumption

<sup>5</sup> Defined as farmers who have between >50-75 per cent of their production for household consumption, the rest are for sale

<sup>6</sup> Defined as farmers who have between 25-50 per cent of their production for household consumption, or 50-75 per cent for sale

<sup>7</sup> Defined as farmers who have less than 25 per cent of their production for household consumption, or more than 75 per cent for sale

<sup>8</sup> Defined as farmers who have more than 50 per cent of their production come from fruit trees and not being in Type A-D.

own means for transporting their products to market, whereas the Hmong would generally acquire their own pick-up trucks and ship their products to city markets themselves. Many Hmong are now turning to be local assemblers. Karen, on the other hand, tend to rely on merchants to come to buy their products in the village, and in some cases are dependent on Royal Project personnel for access to markets. More often than not, they would not be able to obtain satisfactory prices for their products.

Nutcha [2003] studied different farmers' livelihood strategies according to ethnic groups and household economic status in the Mae Hae Royal Project development village in Mae Chaem District of Chiang Mai province. In this area, she found that, despite the fact that agriculture remained dominant in all income classes, off-farm wage employment was the main source of supplementary cash income for poor farmers, and was especially more prevalent among the ethnic Karen. Trading was more common among well-off households. Renting more farm land and borrowing for farming investment (*e.g.* fruit tree farming) was more prominent among poor ethnic Hmong than among poor Karen. The poor Hmong were seen to have more active responses to commercialization of agricultural systems, and as more active in seeking access to markets for their products than the Karen – often bringing products to the city for sale. Most Hmong households were classified as semi-commercial or commercial households, and no households in the Hmong village were subsistence households producing mainly for themselves and not the market. Poor Karen households engaged in commercial agriculture—many of them by necessity, while one-fourth of them were still mainly subsistence households. Compared to the Hmong, a relatively smaller proportion of Karen households were semi-commercial and commercial households. Karen were generally more passive in their response to the market, and were often vulnerable to market fluctuations. Karen were also more ready than the Hmong to employ birth control as a long-term strategy for helping to fight poverty. In her study areas, poor farmers would borrow from merchants more than from friends, relatives, village agricultural cooperatives or village funds. Village fund committees usually would lend less to the poor, in line with their capacity to pay back their loan. Both the poor Hmong and poor Karen sought to reduce their consumption expenditures by relying on wild food and on products from their home gardens.

Poor households at this study site can be divided into subgroups as follows:

- ***Subsistence households*** (produce less than 25 percent for the market) were more reliant on off-farm occupations—their off-farm income constituted 48 per cent of their total income. The main off-farm occupations among these farmers were wage employment in the localities and wage employment in the city.
- ***Semi-commercial households*** (produce 25-75 percent for the market) were more diversified in their off-farm occupations. Some had wage employment in the localities or in the city. Some drove trucks of vegetables to be delivered in town, some engaged in trading, some would conduct handicraft activities, and others would do construction work. About 30-35 per cent of their total income was from off-farm occupations.
- ***Commercial households*** (produce more than 75 per cent for the market) would do less off-farm jobs, with only 20 per cent of their income from off-farm occupation. Off-farm



work included wage employment, both in the village and in the city, driving a vehicle, trading or construction work.

Livelihood strategies for poor Hmong and poor Karen varied slightly. Poor Karen would seek wage employment in the localities. They would also seek more land to farm by asking to use land for free, and they would reduce spending by seeking wild foods. Birth control was also an adaptive strategy for the poor Karen. As for the poor Hmong, they would do more in seeking better deals with employers or markets with better prices, renting more land, trying to go for high-value fruit trees or investments in inputs and trying to succeed in commercial agriculture by improving soil, practices or new ways of doing things. They would also try to reduce expenditures by seeking wild foods and having more home-made processing, but they dealt less with birth control as an adaptive strategy (Table 4-5).

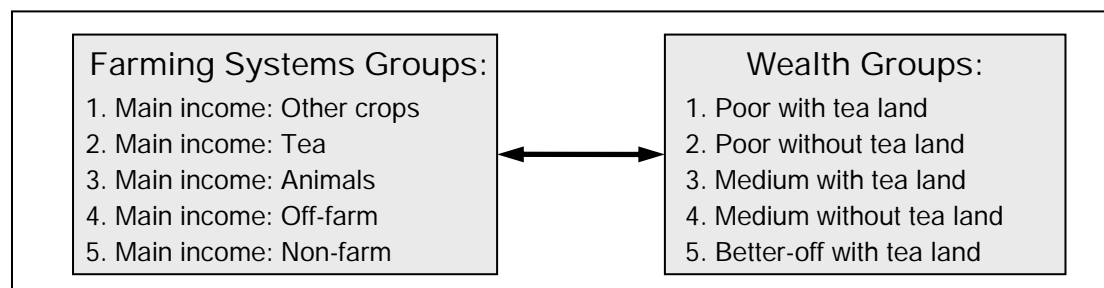
Table 4-5. Comparison of livelihood strategy components of poor household in Mae Hae, Mae Na Chon subdistrict, Mae Chaem District

Adaptive strategies	Poor Hmong	Poor Karen
Agricultural production		
• Commercial agriculture	■■■	■
• Soil improvement and fallow	■	■
• Investment and use of inputs	■■■	■
Off-farm employment		
• Wage employment in the localities	■	■■■■
• Contract employment with high pay	■■■	■
Market exchange		
• Selling in the local market	■■■	■■■■
• Selling in the market which gives higher prices	■	■
Assets related		
• Renting more land if there is not sufficient land	■■■	■
• Asking to use land for free when there is not sufficient land	■	■■■
Spending behaviour		
• Reduce expenditure and rely more on natural foods, and owned food processing	■■■■	■■■■
• Reduce long-term expenditure by having birth control	■	■■■■
What to do when in time of need		
• Go out for wage employment	■	■■■
• Borrow relatives and friends	■	■
• Borrow village funds or cooperatives	■	■
Long term investment		
• Grow high-value fruit trees	■■■	■
Source: Nutchai [2003]		
Note ■■■■ highest intensity		
■■■ high intensity		
■■ medium intensity		
■ low intensity		

### *Households and strategies in North Vietnam*

In our case study of strategies of different households in Hoang Nong and Phu Xuyen communes of Dai Tu district in Thai Nguyen province, 200 households were subjected to a questionnaire survey [Nguyen Le Hoa 2005]. Households were stratified according to whether or not they had land for tea production. A second grouping was according to farming systems, which obtained information on main income sources (Figure 4-8).

Figure 4-8. Farmers' typology in Hoang Nong and Phu Xuyen communes of Dai Tu district



Wealth ranking was based on a list of poor, medium and better-off households that was already available from local commune staff. The poor group was classified according to households that have income per capita  $\leq$  200,000 VND/person/month (following the new poverty line). The better-off group includes the households having an income per capita  $>$  900,000 VND per person per month. Others belong to the medium group.

A farming system analysis of 200 households in Hoang Nong and Phu Xuyen communes indicated that livelihood strategies of different wealth groups can be described as follows:

Most poor households are either “self-sufficient”, which in this case means relying on “other crops”, or have tea as their main income source. Poor groups also appear to have the greatest contribution from off-farm activities compared to other groups. Furthermore, the off-farm group has much smaller land area compared with other groups. The highest percentage of university-educated people is in the group having their main income from non-farm activities. The off-farm group has the highest percentage of high-school educated heads (Table 4-6). This sounds realistic as one would think that people who go to university more often have other professions than farming compared to those with lower education. It is however interesting that none of those with university education were in the better-off group.

Table 4-6. Education level of head of household by farming system groups (%)

Education level	Other crops (n=45)	Tea (n=55)	Animals (n=78)	Off-farm (n=8)	Non-farm (n=14)
Primary school	44	25	33	25	36
Secondary School	49	65	55	63	50
High school	4	4	8	13	7
University		2	3		7
Not specified	2	4	1		
Total	100	100	100	100	100

Source: Structured questionnaires for 200 households, 2005

Animals are providing the main income for 50 percent of the medium households. For the better-off households, both tea and animals provide their main income. Better-off and medium households without tea land have many more buffaloes and pigs than the other groups. Reasons for this may be the investment cost. Farmers who can invest more in their animals will of course get higher outputs if they have more animals and better quality (better price). Similarly, high incomes from tea are explained by farmers as due to higher inputs (Table 4-7) and larger areas for tea. Better-off households also have better contacts with traders that secures their market for tea they produce [PRA survey 2007].

Table 4-7. Expenditures of different groups by quartile

Item	Quartile1 (poorest)	Quartile2	Quartile3	Quartile4 (richest)
Poor (n=52)				
Tea (1000 VND)	725	1,126	1,374	2,072
% of total	26	25	27	27
Total (1000 VND)	2,830	4,509	5,037	7,580
Medium (n=126)				
Tea (1000 VND)	1,186	1,847	2,112	4,376
% of total	23	24	22	28
Total (1000 VND)	5,240	7,722	9,773	15,824
Better-off (n=12)				
Tea (1000 VND)	3,345	5,330	9,973	6,145
% of total	23	23	30	13
Total (1000 VND)	14,485	23,117	32,983	46,123

Source: Structured questionnaires for 200 households, 2005

### 4.3.2 Characteristics of different household types

#### North Thailand sites

In her study of the Mae Hae Royal Project area in Mae Chaem, Nutch [2003] found that poor households had about 9 *rai* (1.4 ha) of land per household, often with poor soil and sloping land. Most had no irrigated land. They grew rice with vegetables and fruit trees. Poor ethnic Hmong had more land than poor ethnic Karen, with a range of 6-17 *rai* (1-2.7 ha) per household compared to from 2-11 *rai* (0.3-1.8 ha) per household for ethnic Karen. Many poor households had aging household heads, a woman as head, insufficient labor or had more dependent members in the family. Household heads typically had low education and many do not speak Thai language well. These households had insufficient rice for consumption; they had some access to loans but would borrow to a small extent only for consumption. Their kinship network was weak. There were some livestock in poor households, but mostly pigs and chickens. Health of household members was usually not very good.

In the study by Charal et al. [1997], their Type A cash crop-based, market-oriented farmers were late settlers in the hill village, and they had limited capital and land. As the latest groups of settlers, these farmers only had access to whatever land others did not want, which was usually purchased at cheap prices. They were typically young, with an average age of 32, and had average land holdings of around 1.3 ha per household with 5.4 members in the

household. So in terms of labor, they had good labor availability. But as newcomers, the majority of them did not have Thai nationality, which limited their mobility for non-farm jobs outside the village. They first started with upland rice and maize, but due to their limited land holdings, output was not sufficient for consumption and the land had high weed pressure. Thus, they had to progressively reorient their production system towards cash crops. But they lacked the capital or village social position required for longer-term investments such as livestock, orchards, or paddy. The objectives of this group of farmers were to maximize income, and to satisfy family consumption needs in the short term.

Charal's Type B farmers (self-sufficient type), on the other hand, had more land compared to those in Type A. They were all early settlers or descendents of early settlers. Objectives of these farmers were to secure self sufficiency in rice, and secondarily to maximize regular family income over the longer term. They had no access to paddy fields, but they had manageable weed pressure levels and enough land to grow upland rice. Average land per household was 1.7 ha. The majority of them had Thai nationality, which offered them good opportunities for off-farm activities, and good social position among other villagers. Family size was 5.2 members per household, most of them young with an average age around 35 years old.

Charal's Type C farmers were old settlers and older in age, and they were part of the big households averaging 9.4 members per household. They had paddy land and large farms with an average of 3.6 ha of available land per household. They were well established farmers in the village with favorable environmental and socio-economic situations, and most had Thai nationality. Their objectives were to maximize income and to have stability through long-term investment activities, such as orchards, livestock, and paddy land. In their paddy land, they could also conduct double cropping in half of the areas, providing them with enough rice for consumption and cash for further investment. With their good social position relative to other villagers, they could have high off-farm income, and access to subsidized inputs and planting materials from development agencies. They were relatively secure in their villages, and they continued to invest in long-term farming opportunities, including perennial crops, terraced paddies, and land under fallow.

With respect to risk, all three types of farmers had those who were risk averse and risk takers. Risk attitude was relative. Risk averse farmers tend to adopt low risk strategies, while those risk takers would be willing to take more risk in return for higher income opportunities.

In their study of four Royal Project sites in Chiang Mai and Lamphun, Bechaphun, Methi and Tanya [2001] found there was a difference in land ownership between self sufficient farmers (Type A) and commercial farmers who had long term strategies (Type E). Self sufficient farmers had less land (1.3 ha) and labor (2.79 laborers per household) than commercial farmers with long-term strategies (4.7 ha and 3.11 laborers per household). Semi-self-sufficient farmers (Type B) also had less land than semi-commercial and commercial farmers (Type C and D). Commercial farmers obtained 62 percent of their capital needs from their own savings, compared to self-sufficient farmers who obtained 80 percent of their capital needs from their own savings. Type E farmers also relied less on borrowing because they were among those with more wealth. Table 4-8 shows land availability, labor and use of

capital from savings for each of the farmer types in the study by Benchaphun et al. [2001], and Table 4-9 displays the distribution of farmer types in the four sites. In the Angkang site, the majority were commercial farmers, as in the Nong Hoi site, but farmers invested more in fruit trees than in Nong Hoi. In Mae Hae, unlike Angkang and Nong Hoi, farmers invested in fruit trees and were also relying on rice for subsistence. In Prabat Huaytom, most were Karen groups, and their attitudes and preferences were predominantly self-sufficient. In Mae Hae, about half of the villages in this site were Karen villages. More farmers in the survey were better educated in Mae Hae, and to a lesser extent in Nong Hoi.

Table 4-8. Land, labor and capital assets of different types of households in four Royal Projects in Chiang Mai & Lamphun, 2001

	Land availability (ha/household)	Average labor per household	Percent of capital from own savings
Type A (self-sufficient farmers)	1.31	2.79	80
Type B (semi-self sufficient)	1.83	3.29	65
Type C (semi-commercial)	2.58	3.3	75
Type D (commercial)	2.59	3.48	62
Type E (commercial, long term strategies)	4.73	3.11	78
Average	2.45	3.25	70

Table 4-9. Distribution of farmer types by site, Royal Project, Chiang Mai & Lamphun, 2001

	Ang Kang Chinese Yunnanese, Shan, Lahu, Yao, Palong	Nong Hoi Hmong, Lisu, lowland Thai	Mae Hae Hmong, Karen, Lisu	Prabat Huaytom Karen
Education among those surveyed	-- percent of total at site --			
No formal education	71	39	42	63
1 <sup>st</sup> -4 <sup>th</sup> year primary education	10	31	12	12
5 <sup>th</sup> -6 <sup>th</sup> year primary education	17	20	26	18
Secondary education & higher	2	9	20	7
Farmer types	-- percent of total at site --			
Type A (self-sufficient farmers)	5.1	9.4	10.6	39.4
Type B (semi-self sufficient)	11.9	11.0	18.2	28.8
Type C (semi-commercial)	17.0	26.6	25.7	18.2
Type D (commercial short-term)	52.5	51.6	19.7	12.1
Type E (commercial long-term)	13.6	1.6	25.8	1.5

Another survey was conducted by the research team in Mae Wang and Mae Chaem watersheds of the UPB during 2006 to investigate in more detail questions concerning the impact of agricultural changes and responses by different household groups, especially on the poor. Thirty-five households were interviewed in 6 villages in Mae Wang (Tung Pi and Ban Kad subdistricts), and 72 households in 3 villages in Mae Chaem watershed (Mae Kong Kha sub-watershed in Kong Kaek subdistrict). Mae Wang watershed is nearer to Chiang Mai city—about 30 km southwest from Chiang Mai with good roads. The Mae Chaem watershed is further from Chiang Mai city—about 150 km. southwest from Chiang Mai city. Simple classification of income was identified here without differentiating their farmer types. Nevertheless, most farmers were of semi-commercial types. They put high emphasis on planting rice for consumption. Mae Chaem farmers reported not being able to continue upland rice farming due to low yields but expressed preference to grow paddy rice. Cash cropping for them was a supplementary income and in most cases, it is a necessity for them.

Annual income per household was used initially to divide farmers into 3 income groups: “poor”, “medium” and “well-off” farm households. Poor households in this case are those with lower than 60,000 baht per household per year; “medium” farm households have incomes between 60,000-120,000 baht per household. Those more than 120,000 baht per household per year are classified as “well-off”. Among the 107 households interviewed in these 2 districts, about 48 percent of the households interviewed were within the “poor” category (52 households), 42 percent were “medium” (45 households), and 10 percent were in the “well-off” category (10 households).

Smaller households were found to have more income per person per day. Overall average household size is 4.07 persons, but average size of Mae Wang households is smaller (3.48 persons) and higher in Mae Chaem (4.32 persons). Thus, at 60,000 baht per household per year, households in Mae Chaem would earn 38 baht per day per person or approximately \$USD 1 per person per day (at 38 baht= \$US 1 in 2006), while those in Mae Wang would earn 52 baht per person per day or approximately \$USD 1.37 per person per day. In other words, households in Mae Wang with smaller household size, more irrigation facilities, and more job opportunities, even with the same level of household income were somewhat better off than their counterpart in Mae Chaem.

But what are the characteristics associated with poor households versus medium and well-off households? As shown in Table 4-10, the majority of households surveyed were poor households. Average age of household heads was higher for the poor and the well-off in Mae Wang (over 50 years old) while it was lower for household heads in Mae Chaem area (43 years old). The education of household heads was higher in the well-off group in Mae Wang (10 years) as compared to 4-6 years for other groups. Poor households had lower proportions of persons with high education (high school or higher). Nevertheless, it is remarkable that for all groups in both areas, there were household members with better education than the heads of the households (10-15 years as compared to 4-6 years for the heads). This shows that households invested in their children’s education even in poor households.

Well-off households had more access to paddy land than medium and poor households (Table 4-11). Poor households had limited access to paddy land and less land ownership. Mae Wang farmers had more access to paddy land than Mae Chaem farmers. The poor in Mae Wang had access to about 0.6 ha per household, but the poor in Mae Chaem had only about half this size. On the other hand, upland availability was more limited for Mae Wang households in comparison with those in Mae Chaem. The poor in Mae Chaem still had 2.4 ha of upland available to them.

Table 4-10. Income range, family size and proportion of high education among semi-commercial farmers in Mae Wang and Mae Chaem watersheds, Northern Thailand

	Types of Households		
	Poor	Medium	Well-off
Average family size (persons)			
- Mae Wang	3.15	3.85	4.5
- Mae Chaem	4.28	4.37	4.25
Average age of household head (years)			
- Mae Wang	51.1	47.6	54.0
- Mae Chaem	42.3	44.0	43.1
Average years of education of household head (years)			
- Mae Wang	3.2	4.3	10.0
- Mae Chaem	4.2	6.0	5.7
Average years of education of the highest educated person in household (years)			
- Mae Wang	9.7	10.7	15.3
- Mae Chaem	9.6	8.9	10.2
Proportion of household members with secondary schooling or higher <sup>1/</sup>			
- Mae Wang	18.3	25.9	65.0
- Mae Chaem	25.2	21.9	28.3

<sup>1/</sup> Having secondary education or higher

Source: field survey, 2006

Table 4-11. Land ownership among semi-commercial households in each income class, Mae Wang and Mae Chaem watersheds, Northern Thailand

	Types of Households		
	Poor	Medium	Well-off
Owned Land area (ha)			
- Mae Wang	0.6	0.82	1.76
- Mae Chaem	2.4	2.91	3.45
Rented land area (ha)			
- Mae Wang	0.27	0.43	0.32
- Mae Chaem	0.03	0.03	0
Land used with no charge (ha)			
- Mae Wang	0.3	0.69	0.69
- Mae Chaem	0.29	0.76	0.76
Paddy area (ha)			
- Mae Wang	0.59	0.67	1.96
- Mae Chaem	0.32	0.37	0.45
Upland/orchard area (ha)			
- Mae Wang	1.0	0.8	0.8
- Mae Chaem	2.4	3.96	3.96
No. of paddy plot			
- Mae Wang	1.5	1.4	2.5
- Mae Chaem	1.0	1.0	1.5
No. of upland/orchard plot			
- Mae Wang	1.5	1.3	2
- Mae Chaem	2.2	2.3	3

Source: field survey, 2006

In terms of assets, one can see from Table 4-12 that well-off and medium households possess greater assets than poor households. They possess to a greater extent, motorcycles, tractors, cars/pickup trucks, refrigerators, pumps, televisions and gold. In terms of livestock, medium and poor households have similar levels, while the well-off have less livestock. Farm households in Mae Wang invested more in car/trucks, pumps, walking tractors, radio-recorder, televisions and refrigerators than those in Mae Chaem, while those in Mae Chaem invested more in livestock such as cows, pigs and chickens, and to a small extent gold, than those in

Mae Wang. Nevertheless, well-off farmers in Mae Wang held livestock in greater proportions than the well-off in Mae Chaem.

Table 4-12. Assets in semi-commercial households by income class, Mae Wang and Mae Chaem, Chiang Mai, Northern Thailand, 2006

	Type of Households		
	Poor	Medium	Well-off
Proportion having	-----% of the income group-----		
Mae Wang			
Car/pickup truck	45	46	100
Motorcycle	75	100	100
Gold	30	31	67
Walking tractor	40	54	67
Pump	55	77	100
Radio recorder	75	77	100
Television	75	100	100
Refrigerator	65	100	100
Cows	5	0	33
Buffaloes	0	0	0
Chicken	55	61	67
Pigs	0	0	0
Ducks	0	0	0
Fish	0	0	0
Mae Chaem			
Car/pickup truck	28	47	63
Motorcycle	69	91	100
Gold	28	31	88
Walking tractor	25	56	25
Pump	9	13	12
Radio recorder	53	69	75
Television	59	78	88
Refrigerator	38	72	75
Cows	16	15	12
Buffaloes	3	3	0
Chicken	91	87	75
Pigs	59	59	37
Ducks	0	0	0
Fish	0	0	0



## North Vietnam site

Characteristics of types of households at our case study sites in North Vietnam are compared using basic aspects of their livelihoods, including farming characteristics, consumption, assets, credit, tea processing, and labor.

### *Farming characteristics:*

The average number of crop species grown is very low in this area, and households without tea are few. Most farmers have planted tea for the last two decades, and the area of tea grown increases with wealth. Results from questionnaires clearly indicate that both income from tea and prices received for tea increase with increased wealth (Table 4-13), suggesting that tea influences wealth positively. However, the percentage contribution from tea to total income does not differ very much among wealth groups.

Three types of tea are grown in this area: grafted, low-mountainous, and seeded tea. Seeded tea is the easiest to grow, receives the lowest price, and is grown in relatively smaller areas than other tea varieties. Grafted tea is the most expensive to grow, while low mountainous tea is grown in the largest areas and receives the best price. The biggest problems in tea production are (1) pests and diseases, (2) processing technology and (3) field altitude (most farmers have medium altitude sites, but some have better higher altitude sites). Different tea types are more or less suitable for conditions in the study area.

Table 4-13. Average crop diversity & tea production of households in five wealth groups

Wealth groups	Average No of crop species	Total years of tea	Area of tea cultivation (ha)	Harvested area of tea (ha)	Tea output (kg/yr)	Tea price at farmgate (VND/kg dry tea)	Yield (kg/ha)	Distance from home to field (m)
Poor with tea land (n=52)	2.1	16.6	0.083	0.079	125.0	22,269	1,664	331
Poor without tea land (n=5)	1.0							
Medium with tea land (n=126)	2.5	18.3	0.142	0.138	276.4	23,659	2,392	364
Medium without tea land (n=5)	2.2							
Better-off with tea land (n=12)	2.5	16.5	0.349	0.349	683.5	26,750	2,093	613
<b>Averages</b>	<b>2.1</b>	<b>17.1</b>	<b>0.2</b>	<b>0.2</b>	<b>361.6</b>	<b>24,226</b>	<b>2,050</b>	<b>436</b>

Source: Structured questionnaires for 200 households 2005

Farmers' knowledge concerning tea production and household economics is good enough for them to be able to calculate production costs and incomes fast and fluently. They made most calculations by themselves, and households usually remembered exactly what they bought, while some noted all expenditure items in their family book (but some items are not very precise). It should be noted that expenditures are in this case only what the households bought from outside, and do not include valuation of their own production.

Some better-off and medium households with tea and animals as their main income sources also have other occupations (non-farm activities), most of which are known for not yielding much cash, such as workers, employees, staff and retired (Table 4-14). It is interesting that policemen and employees obtain more net income from growing tea or keeping animals than from their salary. However, their position seems to provide them with better access to information, as well as market contacts (according to both a 2005 questionnaire survey and a 2007 PRA survey).

Table 4-14. Main occupations of household heads by farming system groups (%)

Main occupation	Other crops (n=45)	Tea (n=55)	Animals (n=78)	Off-farm (n=8)	Non-farm (n=14)
Farmer	100	94	85	100	100
Worker		2	1		
Employee		2	3		
Policeman			1		
Staff		2	8		
Retired			3		
Total	100	100	100	100	100

Source: Structured questionnaires for 200 households 2005

The poor household group with main income from “other crops” seems to be the group with the least income from outside sources, and thus the most likely to be self-sufficient overall. Furthermore, a higher percentage of households with their main income from “other crops” than tea have only attended primary school, and none have studied at a university. As expected, most of them are also not very market-oriented, which may relate to their limited access to information on management and marketing of tea. According to a 2005 questionnaire survey, information from extensionists and the farmer union, for example, reached twice as many medium and better-off households than poor households. Land allocation in the village during 1991-1992 led to households receiving land allocations of equal farm size. But younger households formed since land allocation now have limited access to land, and thus most of them are among the poor households.

### *Consumption patterns*

From data gathered in these villages (Table 4-15) it is clear that expenditures rise with increasing income. Better-off households spend the most for food, whereas poor households spend least, which suggests greater relative self-sufficiency of poor households. This is confirmed by the fact those with crops other than tea as their main income source are mainly poor households, which also indicates higher levels of self-sufficiency.

Table 4-15. Expenditure items of different groups of farmers

Type of expenditure	Poor with tea land (n=52)		Poor without tea land (n=5)		Medium with tea land (n=126)		Medium without tea land (n=5)		Better-off with tea land (n=12)	
	1000 VND	% of total	1000 VND	% of total	1000 VND	% of total	1000 VND	% of total	1000 VND	% of total
Foods and Drink	360	7	212	13	768	8	700	8	1,147	4
Clothes	208	4	150	9	378	4	280	3	764	3
Electricity, water	149	3	88	5	281	3	190	2	817	3
Daily use items	847	17	400	24	2,028	22	1,575	19	4,700	15
Health service	243	5	225	13	342	4	300	4	686	2
Education	547	11		0	967	10	433	5	1,800	6
Crop production	1,732	35	293	18	3,264	35	976	12	7,562	25
of which for tea	1,328	27		0	2,396	26		0	6,198	20
Husbandry	846	17	300	18	1,225	13	4,000	47	13,050	43
Total	4,932	100	1,667	100	9,253	100	8,454	100	30,525	100

Source: Structured questionnaires for 200 households 2005

### Household assets

Most households have their own simple machines for use in processing tea. Some farmers also earn money (off-farm income) by renting out their machines to others. Poor groups have the least assets compared to others, but highest percentages of households having common family use assets occur in the medium group without tea land (Table 4-16). The medium group with tea has the greatest variety of assets, but the better-off group has higher percentages with many common assets. Television, which is thought to be one of assets that best indicates wealth status, is in this case very similar for better-off and medium (with and without tea land together) groups, while percentages for poor groups are considerably lower.

Table 4-16. Assets owned by different wealth groups for different uses

Type of asset	Tea production or family use	Poor with tea land (n=52)	Poor without tea land (n=5)	Medium with tea land (n=126)	Medium with- out tea land (n=5)	Better-off with tea land (n=12)
-- percent of households in each group --						
Television	Family use	4	20	37	60	50
Wardrobe		4		11	20	8
Table and chairs		10		13	40	8
Milling machine						8
Motorbike	production			9		42
	family use	2		23	20	33
Bicycle	production			1		8
	family use	15	20	32	60	25
Water pump	production			6		
	family use			2		17
Crushing machine	production	15		54		83
	family use			2		
Drying box	production	23		21		8
	family use	2				
Other assets for tea processing	production	12		46		84

Source: Structured questionnaires for 200 households 2005

### Credit

Many farmers try to obtain credit in order to invest in their farm activities. The most common uses of credit for tea production are to buy pesticides, to process tea, or to buy a new machine for processing (Table 4-17). But the biggest loans are taken for buying seeds and fertilizer for tea, which accounts for nearly 50 percent of total credit for tea. Sources of credit for farmers in Vietnam are further discussed in chapter 6.

Table 4-17. Credit for tea by purpose, 2004

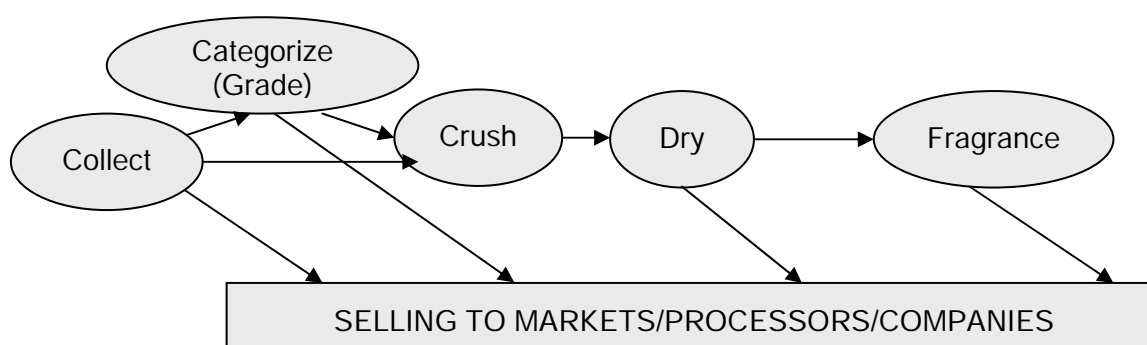
Purpose	Average amount (1000 VND)	% of total credit for tea	% of total households with credit
Buying pesticide (n=9)	1,389	11.2	60.0
Buying grafted tea (n=1)	1,000	8.1	6.7
Buying seed and fertilizer (n=1)	6,000	48.4	6.7
Buying Tea drying machine (n=2)	1,500	12.1	13.3
Processing tea (n=2)	2,500	20.2	13.3
Total	12,389	100	100

Source: Structured questionnaires for 200 households 2005

### Tea processing

Before tea is sold, all farmers process it in various ways. Depending on their skills, machines and labor availability, there may be many processing steps before tea is sold (Figure 4-9). If there is a lack of resources required to complete a step, tea may be sold early at a lower price for someone else to do the processing. First the tea is collected by hand, which is usually done by women since it is not too heavy and requires good eyes and fast-working hands. After picking, some households choose to categorize (grade) the tea by sorting leaves according to their quality. This results in higher prices, but since it also requires more time, relatively few include this step. Next is to crush the tea leaves, after which they are dried. Most farmers sell their tea after completing these steps, but some will continue with the additional step of adding fragrance to the tea, which also results in a bit higher price.

Figure 4-9. Order of processing stages before tea is sold



Source: Structured questionnaires for 200 households

Collection, grading and fragrance setting of tea are all done by hand. Crushing is done with a simple machine, and drying can be done either by machine or in the sun (if the weather is reliable). Costs of different processing steps vary, depending on the tools employed and how carefully it is done. Collecting and drying are the two most expensive stages of processing, and thus it helps to have enough household labor and to dry when the weather is favorable. All processing steps become more expensive for wealthier households, perhaps because they process more carefully to get better prices (Table 4-18).

Table 4-18. Average cost of stages of tea processing for different wealth groups, 2004

Order of process	Stage of tea processing	Poor with tea land (n=52)	Medium with tea land (n=126)	Better-off with tea land (n=12)
-- average cost ( 000 ND/kg) --				
1	Collecting tea (n=102)	672	1,132	2,668
2	Categorizing tea (n=6)	-	70	100
3	Crushing tea (n=163)	257	503	909
4	Drying tea (n=90)	604	1,183	5,344
5	Taking fragrance (n=1)	-	-	20

Source: Structured questionnaires for 200 households 2005

Nearly all farmers who have tea are collecting, crushing and drying the tea themselves. Fragrance was added by only one farmer, who is a better-off farmer for whom non-farm activities are his main source of income. Two poor and four medium farmers graded (categorized) their tea. Three of the farmers who did one of the extra processing steps had tea as their main income, while the others had animals and other crops as their main source of income. Educa-

tion levels of the husband and wife in these households were not different from other farmers, and they had no special experience with tea.

### Labor

Family size actually increases with wealth (Table 4-19). This may indicate the importance of labor availability, especially since most people are within working ages. In all groups, there is on average only 1 child (below 18 years old) in each household, which was less than expected.

Table 4-19. Numbers of households and household members by wealth groups

Wealth groups	% of total hhs	Average No of people in hhs	People <18 years old in all hhs	People ≥18 years old in all hhs	Total No of people in all hhs
Poor with tea land (n=52)	26.0	3.1	54	108	162
Poor without tea land (n=5)	2.5	2.2	3	8	11
Medium with tea land (n=126)	63.0	4.0	125	374	20
Medium without tea land (n=5)	2.5	4.0	6	14	56
Better-off with tea land (n=12)	6.0	4.7	12	44	499
Total (n=200)	100	3.6	200	548	748

Source: Structured questionnaires for 200 households, 2005

Labor is important for all crops, but tea has especially high labor demands during the harvesting period. Generally, groups growing tea spend more hours per year on labor than other groups. Among them, the medium group spends the most time, and the poor group spends the least (Table 4-20). Extra labor invested in tea by better-off households may help explain to some extent the better quality of their tea, but should not be the only reason.

Table 4-20. Labor distribution of different wealth groups of households by activities

Type of HH	Total husbandry		Total crop (excl. tea)		Seasonal hired labour		Tea cultivation		Total
	no.	%	no.	%	no.	%	no.	%	
<b>Poor with tea land (n=52)</b>									
No of labor (persons)	4	44.4	2	22.5	1	11.1	2	22.2	9
<i>No of hours person<sup>-1</sup> day<sup>-1</sup></i>	9	31.4	5	17.7	8	26.1	7	24.8	29
No of hours person <sup>-1</sup> year <sup>-1</sup>	2,449	36.5	1,081	16.1	1,540	23.0	1,631	24.3	6,702
<b>Poor without land for tea (n=5)</b>									
No of labor (persons)	2	58.8	1	41.2			-	-	3
<i>No of hours person<sup>-1</sup> day<sup>-1</sup></i>	4	39.3	5	60.7			-	-	9
No of hours person <sup>-1</sup> year <sup>-1</sup>	1,280	60.5	836				-	-	2,116
<b>Medium with tea land (n=126)</b>									
No of labor (persons)	6	34.4	6	35.8	3	16.3	2	13.5	17
<i>No of hours person<sup>-1</sup> day<sup>-1</sup></i>	17	26.8	27	43.1	10	16.0	9	14.1	62
No of hours person <sup>-1</sup> year <sup>-1</sup>	5,429	29.3	9,588	51.7	1,383	7.5	2,133	11.5	18,533
<b>Medium without land for tea (n=5)</b>									
No of labor (persons)	3	50.0	3	50.0			-	-	6
<i>No of hours person<sup>-1</sup> day<sup>-1</sup></i>	8	30.1	19	69.9			-	-	27
No of hours person <sup>-1</sup> year <sup>-1</sup>	2,710	37.3	4,560	62.7			-	-	7,270
<b>Better-off with tea land (n=12)</b>									
No of labor (persons)	5	46.6	3	27.0			3	26.4	11
<i>No of hours person<sup>-1</sup> day<sup>-1</sup></i>	13	31.2	8	18.2			10	23.7	30
No of hours person <sup>-1</sup> year <sup>-1</sup>	3891	37.8	3,904	38.0			2,488	24.2	10,283

Source: Structured questionnaires for 200 households, 2005

### *Why are the poor poor?*

In comparing these three wealth groups, we can identify several constraints and possibilities:

- The poor in this study are mainly self-subsistence farmers who generally have small land areas for food crops, and little or no land for tea. Some also have an occupation with a very low salary that takes a lot of their labor, so that they cannot spend much time on their farm. Only a low level of inputs is used in their cultivation, and thus the price they receive for their tea is lower due to the poorer quality of their products and their small harvests. This makes it difficult for the poor to increase their wealth.
- The poor without tea land have the lowest total income, only half of what other poor households receive, averaging only 123,000 VND per person per month, or less than 1/3 of 1US\$ per day. Their low incomes can be explained by several factors. This group owns the least number of animals, has the least number of crops (often only rice), and because of their low incomes, they have the lowest expenditure levels. Household size is smallest in this group, and they have only one-third of the labor found in other poor households. The poor without tea land also have the lowest education levels among all groups, which probably helps explain why they have no non-farm income and only small amounts of off-farm incomes to supplement their own farm activities.
- Medium farmers tend to have more diverse cropping and animal patterns, which give them higher security and sometimes enough benefits to expand or invest. They also have more opportunities to identify products with a good market, so that they can focus more on these crops. This group has a more diverse market for their tea, which is interesting and may relate to how they became medium from having been poor.
- Better-off households either have had large areas of land from the beginning, or they have managed investments well and bought more land, thus advancing from medium to better-off status. Better-off households have less diverse farming systems and less diverse markets for their tea, perhaps because they don't need the security that diversification can give them. They already have their security in the bank.
- Access to land and credit are probably the main constraints for poor farmers in increasing their incomes. Sources of income from off-farm and non-farm activities are limited because these villages are remote and the distance to cities or towns is relatively far. What limits them on their farm is mainly land, but capital for farming inputs and labor is also needed to improve the quantity and quality of their products.
- Thus, emphasis on tea varieties and livestock may help improve conditions of poor farmers. Since the type of tea seems to affect both price and harvest, low mountainous tea varieties would be preferred. Other than tea, it seems like animals are a good source of income for many farmers, and animals do not need a lot of labor compared to other farm activities.

The farming systems analysis concluded that middle and well-off groups seem to be the 'winners', while those with poor incomes have far fewer market opportunities. This is explained by the poor having less access to land, and by the poor quality and quantity of their

tea, resulting in low prices and low incomes. This, together with low market accessibility (in terms of both infrastructure and market information) leads to low benefits.

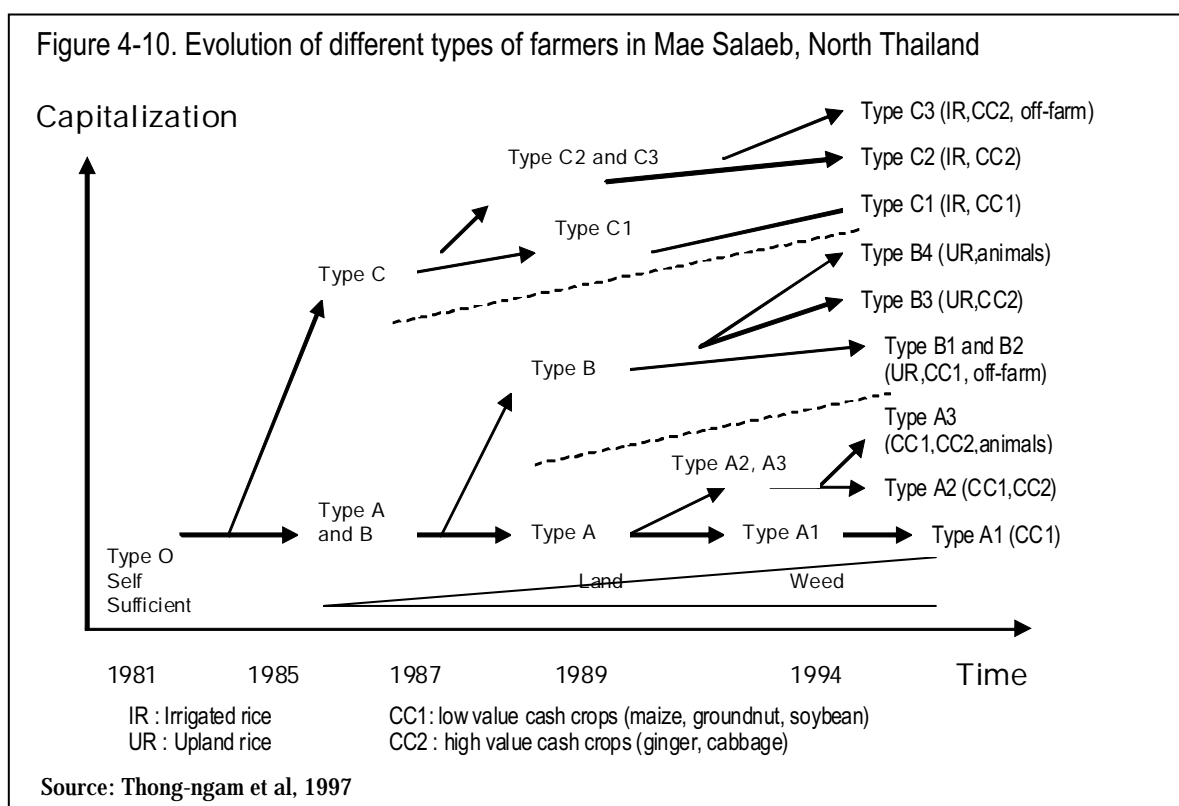
### 4.3.3 How strategies have fared and changed over time

#### North Thailand

##### *Mae Salaeb study*

The study by Charal et al. [1997] demonstrated that through time, farmers have very different socio-economic performance and thus standing in their communities. Trajectories of different household types through time are shown in Figure 4-10.

- Market-oriented farmers with short term strategies (Type A) would end up generally



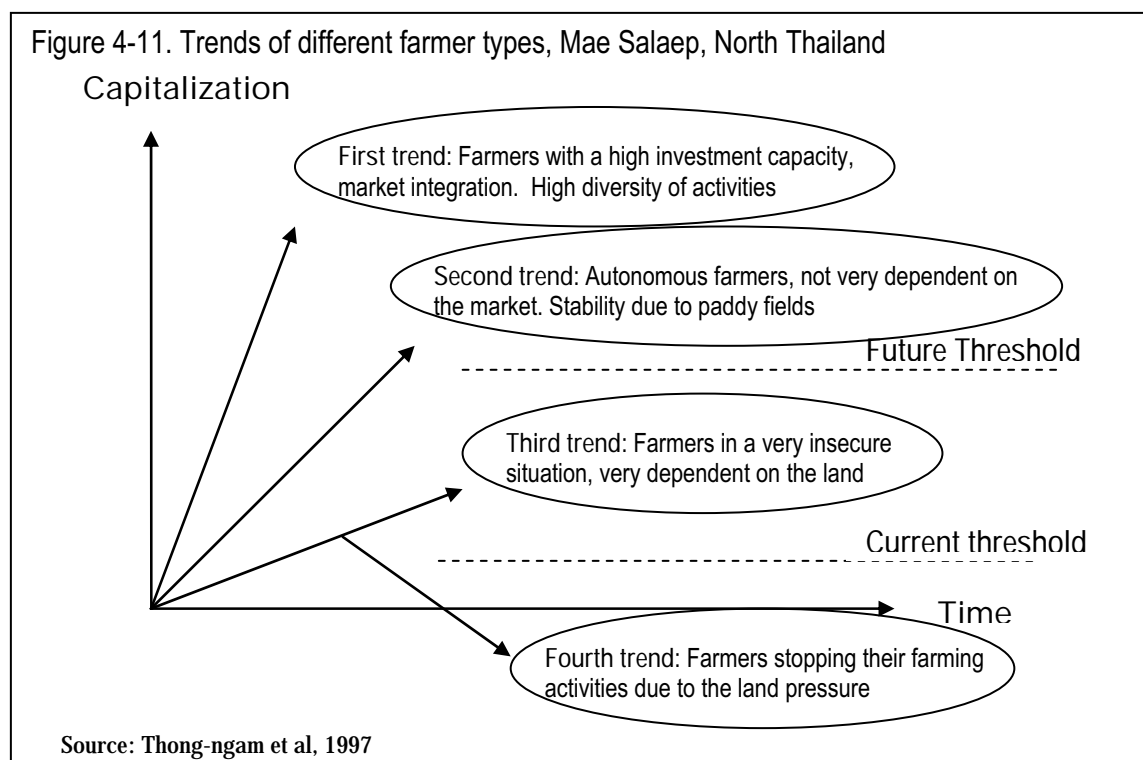
poor, insecure and the most fragile. With higher risks, they may not be able to continue farming. Some were seen emigrating from the villages to find non-farm jobs. Those who stayed had to struggle to survive as they had limited resources.

- Self-sufficient farmers (Type B) seemed to be more preoccupied with stability than with innovation or adaptation. Nevertheless, they need to be more innovative in order to survive. Some who have more money will turn entrepreneurial like some of those in Type C (market-oriented with long term strategies). Upland rice farming is foreseen to be a disappearing crop. Self-sufficient upland rice farmers are unlikely to sustain their strategies and production systems under increasing land pressure. Some type B farmers (self-sufficient) would eventually turn to be Type A farmers (market-oriented with short term strategies) and will be just as vulnerable.

- Market-oriented farmers with long term strategies (Type C) with ability to invest will become highly diversified, and dependent either on paddy rice production or on marketable cash crops, with greater animal, tree crop and off-farm components.

As a consequence, there appears to be four trends among farmers in this watershed area (Figure 4-11):

- *Trend 1: Farmers with high investment capacity, market integration, high diversity of activities.* These include some Type C farmers (market-oriented with long term strategies) + some of Type B farmers (self-sufficient) who could accumulate assets through animal husbandry and off-farm activities.
- *Trend 2: Autonomous farmers, not very dependent on the market, stability due to paddy fields.* These are mainly more conservative farmers among the Type C (market-oriented with long term strategies) group.
- *Trend 3: Farmers in a very insecure situation, very dependent on the land.* This probably includes insecure Type A farmers (market-oriented with short term strategies) and Type B farmers (self-sufficient).
- *Trend 4: Farmers stopping their farming activities due to the land pressure.* This involves some Type A (market-oriented with short term strategies) and B (self-sufficient) farmers being pushed out of agricultural production by lack of sufficient land.



Charal et al. [1997] predicted that Type C farmers (market-oriented with long term strategies) consisting of average and relatively rich households would be able to adjust to changes in farming systems. On the other hand, Type A (market-oriented with short term strategies) and B (self-sufficient) farmers in poor households with a limited resource base would not be



able to survive through farming in the future, as they had neither good land nor capital to invest. Moreover, soil degradation and increased weed pressure would make upland rice productivity very low and unsustainable.

This study confirms that access to resources by Northern farmers is fundamental to their livelihood, and those with less access will have difficulty surviving as farmers in the changing market-oriented economy.

### *Contract farming and agribusiness*

At case study sites in Mae Wang and Mae Chaem in Northern Thailand, there were cases of contract farming and agribusiness. In Mae Wang watershed, an agribusiness firm was present in the area, and there were contract farming arrangements for sweet corn production. It provided people in the area with an option to participate with them, and also provided employment for local people. In the Mae Chaem watershed, there was contract farming for hybrid corn seed production. Farmers like growing hybrid corn for the company because they obtain higher prices for their product. In both cases, income from contract farming was higher than without it, but not substantially greater. Contract farming offers higher output prices, but also includes stringent output quality standards and higher skill requirements. In both cases, farmers needed to obtain production inputs, including seeds, fertilizers, pesticides, etc. and supplied outputs to the company at guaranteed prices. In this way, farmers did not have to have high capital investment requirements for agricultural production, and it was convenient for them. Interviews with farmers in Mae Chaem indicated they liked these arrangements, and mentioned that it provided both a market for their crop and a guaranteed price. They wanted other crops to also have guaranteed prices and markets.

Cases at Royal project sites also resembled contract farming, although they were not operated by a private company. Farmers in Royal Project sites are a bit more free to sell their output to people other than the Royal Project, and sometimes the Royal Project encourages them to do so because supply cannot be totally absorbed by the Royal Project. In terms of inputs such as fertilizers and capital, farmers were also free to obtain them from other merchants. The Project supplied mainly seeds, technical advice and market outlets. Guaranteed prices were also offered. The list of Royal Project members was closely monitored and services were confined to members only. Unlike a private company dealing with contract farming, the Royal Project was more limited in its area coverage.

### *Royal project sites*

In all sites of the Royal Project, there are farmers with access to Royal Project services (members) and those who are not members. A research team found that those who do not have access to the services of the Royal Project were generally poorer [Benchaphun et al. 2001]<sup>9</sup>. Table 4-21 shows the incidence of poverty for those involved in the Royal Project and those who were not.

---

<sup>9</sup> Members of the Royal Projects in Nong Hoi and Mae Hae Royal Project Sites had about 30 per cent more income than those who were not members.

Table 4-21. Poverty incidence among members &amp; non-members of Royal project sites in Ang Kang, Mae Hae, Nong Hoi and Prabat Huay Tom, 2000

	Above poverty line	Below poverty line	All
	-----% of interviewed farmers in each group-----		
Members	49.1	50.9	100
Non-members	27.1	72.9	100

Source: Benchaphun, Methi and Tanya 2001

**Note:** Poverty line was defined by Narinchai and Kamol, 2000 using criteria from the National Economic and Social Development Board, at 10,095 baht per person per year (approximately 27 baht per person per day or \$USD 0.74 per person per day at the foreign exchange rate of \$USD1=37.5 baht)

Ethnic Hmong were found to have 80 percent higher incomes than ethnic Karen in the study sites. The question remains, however, whether participation in the Royal Project lifted people from poverty, or if access to the Project was only possible among the well-off. While our study was not able to establish a clear relationship, we expect that both propositions are true. More specifically, participation in the Royal Project has been more skewed toward clans of village elites, but for those who participated, the Project lifted them from poverty. Table 4-22 shows that Type *E* farmers were most well-off as a result of their commercial orientation with a long-term strategy. On the other hand, Type *A* (self sufficient) farmers were not doing well financially. Using 60,000 baht per household as the poverty line, this table shows that Types *A*, *B*, and *C* were still in poverty, while Types *D* and *E* could escape poverty through commercialization. Self-sufficiency or semi-commercialization as livelihood strategies still leaves farmers in poverty under these highland conditions. Nevertheless, it should be noted that commercialization in this case was with a development project's assistance with marketing and price guarantees -- which makes this a special case.

Table 4-22. Income of each type of farmers in the four sites of Royal Project

	Cash income from agricul- ture	Non-farm cash in- come	In-kind income	All income
	-----Baht per household per year----			
Type A (self sufficient)	2,171	21,207	13,191	36,569
Type B (semi-self sufficient)	11,075	16,060	16,038	43,173
Type C (semi commercial)	25,892	11,853	14,298	52,048
Type D (commercial, short term strategy)	60,765	12,900	7,383	81,048
Type E (commercial, long-term strategy)	72,852	30,676	10,342	113,870

Source: Benchaphun, Methi and Tanya 2001

### *Market response gradient in Om Koi*

During 2004-05, we twice carried out quantitative surveys of a sample of households in three villages at different distances along the main road to Om Koi district town. The three villages were selected to represent a range of circumstance along a gradient of "market" access. The trip to farthest village usually takes about 3 hours in the wet season and 1 hour in the dry. The closest village in contrast is about 15 minutes away in both seasons. The road is not paved.

Demographically, households in the three villages were similar and all Pwo Karen, except for an occasional official like a teacher (Table 4-23). Around 15 percent of households in each

village were Christian and the rest animist. All three villages are well established with individual house locations having been used on average for 44 years. The villages are formally recognized and have TAO representatives.

Table 4-23. Demographic characteristics of sampled households in three villages in Om Koi district

Distance from District Centre	Village	Nos. HH (sampled)	Mean House-hold Size	Mean Nos. Children (< 15)	% HH with Motorbike	% HH with pick-up	% HH primary occupation Upland Rice	Ave HH cash Income (Baht/yr)	% HH illness disrupts work last month
Far	Baina	75 (40)	5.6	2.4	12	0	75	10,000	48
Mid	Mae Ramid	60 (30)	5.6	2.2	23	0	60	34,000	43
Near	Yang Pao Neur	100 (31)	5.6	1.7	55	3	23	22,000	21

As anticipated in the study design, ownership of key assets like motorbikes was highest close to Om Koi town. Average monthly cash incomes are very low in the remote village, in which some households live an almost cash-less existence (Table 4-23). In the month prior to being interviewed during two different times of the year, almost half the households had no work-related income sources at all. Sale of livestock, handicrafts, crops and wage labor are their most common income sources. Households in Yang Pao Neur have paddy, borrow money and are in debt, whereas external loans in Baina are rare. Wage labor was important in Mae Ramid during the year we surveyed because of a period in which daily work on road-upgrading was available to almost households. This explains why they had incomes higher than even the nearest village (Table 4-23).

Follow-up study just 6-9 months later indicated some substantial changes, including decreases in households focused on upland rice farming, increases in average incomes, and a few more households with motorbikes in all three villages. In Baina this change in fortunes was observable in new roofs and houses. Qualitative work over a longer period during 2003 to 2007 reinforces the observations of differential dynamics. Villages nearer to Om Koi (not just those above) have widely adopted a series of cash crops. Coffee has been reintroduced at even some remoter sites and this time may be succeeding. Wage labor is keenly sought everywhere and children go to school for more years (and further away from home). Even so, swidden fields and access to forest products still remain very important for many households in the more distant villages.

#### *Highland village crop diversification in Mae Chan*

One household strategy in the highlands of North Thailand to cope with risks in output, market and prices is crop diversification. Farmers were found to be growing a variety of crops, including fruits, vegetables, flowers, field crops, etc. Since these products have relatively high prices and are sold to urban Thai consumers and to some extent foreign tourists, their market outlets are not very extensive. Thus, by diversifying crops, highland farmers spread the risks of oversupply. Nevertheless, a minimum volume is needed to market a particular crop. Good marketing skills and experience are also key to success. On-farm trials of

these crops and extension services are also needed. Table 4-24 presents cash crop diversification in Royal Project areas of Chiang Mai and Lamphun by income range. Each of these crops has its own stories of successes and failures in terms of agronomic, economic and marketing aspects. But all have been grown by highland farmers in Northern Thailand with varying degree of profitability.

Table 4-24. Income of different crops grown by households in four Royal Project Development Centers, 2000

Income range	Vegetables	Flowers	Fruit & tree crops	Field crops
<5,000 baht / hh	Kale, beet root, green cabbage, brussel sprout, turnip,	Marigold	Longan, banana, tea	Red kidney bean, mung bean, rice
5,000-10,000 baht / hh	Leek, purple cabbage,	Statis, rose, chrysanthemum	Pear, coffee	Groundnuts, field corn
10,001-15,000 baht / hh	Lettuce, green lettuce, taro, potato	Gypsophilla	Persimmon, local peach, strawberry, avocado	
15,000-20,000 baht / hh	Cabbage, Chinese cabbage, michilli,		Litchi	
>20,000 baht / hh	Carrots, green pepper		Improved peach	

Source: Benchaphun et al. 2001

## Vietnam: Tea grower strategies

Livelihoods in the two tea growing villages in Vietnam where PRA studies were conducted (Doan Thang and Dinh Cuong) changed radically in 1991 due to land allocation. The ethnic Kinh village immigrated to the area during the early 60s, while the Dao group had settled there since the 1940's. Since the 1960's, villagers experienced various different forms of land ownership, from village-scale cooperatives (1973-1982), to commune-scale land use (1986), to private holdings in 1991. Following change in land ownership, there were major shifts in crop composition, and tea production became the dominant livelihood activity in both villages. Currently, a newly formulated cooperative model is being developed in the area, which includes private land ownership, but joint efforts in finding markets, developing a brand name and improving cultivation.

In order to further improve their livelihoods, tea growers aim at having tea land and obtaining money for buying more fertilizers, but also look to wage employment, population control, and reducing expenditures [questionnaire survey 2005]. In order to move from average to wealthy, strategies of tea growers in both villages include sending their children out for higher education, savings, better food, applying technologies, investment, marketing and obtaining market information, loans and expanding to larger-scale farms, having direct connections with traders, and producing 'clean tea' (Table 2-14). Two among 12 of the tea growers studied in Doan Thang village shifted from the poor group to the medium-well-being group in 1997, and to the well-being group in 2007. Their main strategies over time were savings, working hard, and good management of diversified agricultural activities (Table 4-25).

To help better understand the market situation, SWOT analysis was also conducted in the study villages; results are summarized in Table 4-26. Tea is seen as a reliable crop, and public

private partnerships are viewed as means for improving opportunities. But problems include poor infrastructure, services and prices. Farmer groups in both villages express concerns about the instability of prices in the tea market, as middle-men control the price in both villages. In addition, paying fees for a seat in the market also upsets farmers very much. Farmer's land for growing tea is often small and scattered, and in order to ensure regular supply for buyers, local farmers need to work together. However, their concern is that there are no regulations that can be applied to the neighborhood. People live in communities and cannot implement business schemes and rules like cooperatives. Some outside companies have ordered farmers to produce tea at one time, but contract farming from some tea companies did not work well, due to the low price they offered to local farmers [PRA survey 2007]. Thus, while optimistic, they still remain somewhat skeptical about the new government-supported tea project.

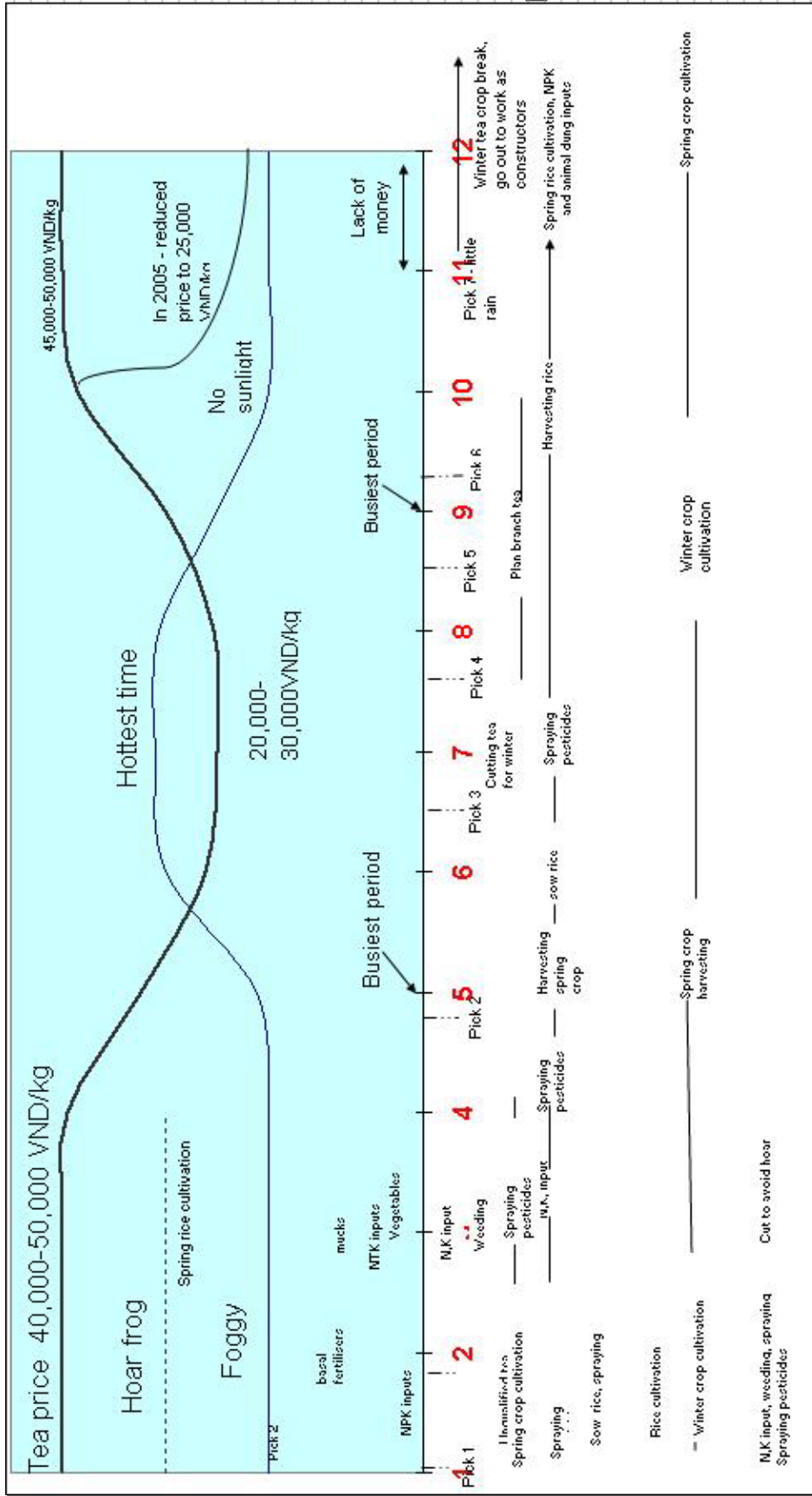
Villagers are also concerned about how new opportunities can fit with seasonal demands for their labor. Figure 4-12 displays patterns of seasonal variation in tea prices, weather and tea production activities. In general, tea growers are very busy during the period from April to October every year, but are less busy during November to December due to no tea for picking, and from January to April due to fog and no tea leaves for picking. If direct marketing links can be obtained, tea growers can work more during these less busy periods on tea processing activities, such as adding fragrance or packaging, in order to improve tea price.

Table 4-25. Change in household stages of progress & poverty status over time, Vietnam study site  
*Note: stages 1, 2 are under poverty line; 3, 4 are average; 5,6 have good well-being*

Sample households	Major Events						Reasons for changes
	82-86	1991-92	1997	2001	2005	2007	
		Land allocation; Red book issued	Sell young labor to south	Electricity available	'safe tea' cooperative started		
The			1			3	Children grow up, health improved, hard working (14 hours/day)
Nhi			4			3	Old parents, pay for small children go to school
Hai					2	3	Purchase more land for tea, children get bigger
Hang				2		3	Children get bigger
Thanh			2			3	Parents are less sick
Hong			1	2		4	Business service, selling equipment for tea and drying processing, selling pesticides
Lan	2			3		4	working with tea, children grow up, more labor
Lang	3	4				4	more labor, creative, pension
Thom	3					4	good management, diversify agricultural activities
Lam					3	4	More labor
Hanh	2		4		6	5	No children at the beginning, have invalid subsidy and reduced school fee due to working in the army
Loc	1	3	4			5	healthy, no children from beginning, safe minded and hard working

Source: PRA Survey, 2007 Location: Doan Thang village, Hoang Nong commune, Thai Nguyen district, Vietnam

Figure 4-12. Seasonal patterns of variation in tea prices, weather and tea production activities



Source: PRA Survey, 2007 Location: Doan Thang village, Hoang Nong commune, Thai Nguyen district, Vietnam

Table 4-26. Market situation SWOT analysis of Doan Thang &amp; Dinh Cuong villages, Dai Tu district

Strengths	Weaknesses
<p>The commune has established a safe tea cooperative enterprise and its brand and logo – Hoang Thien – have been approved by the province.</p> <p>Investment in tea cannot be completely lost. You can only lose one picking time rather than an entire crop</p>	<p>The market is currently regulated by the private sector and intermediaries. Although there are 14-15 tea companies in Dai Tu district, they do not provide useful support and often offer very low price.</p> <p>Bad road, lack of a bridge.</p> <p>High use of chemical inputs for tea and non-hygienic tea processing makes tea not safe, which leads to low price in the market.</p>
Opportunities	Threats
<p>There is an opportunity for tea development since there is a new project during 2006-09 focusing on high tech tea production and establishment of a tea material zone. This project is proposed by the Department of Technology and approved by Ministry of Agriculture and Rural development. The project implementer is Thai Nguyen Export and Import Company. NOMAFSI will be responsible for technical support and pest management.</p> <p>Consumers prefer to have safe tea products</p> <p>Some companies have started production of black and O Long tea for planting in the area.</p>	<p>However, internal evaluation of this project from the point of view of communes shows the project will face major challenges because the price offered is too low.</p>

Source: PRA survey 2007

## Lao PDR: Rubber and NTFPs

As discussed a various points in this report, upland policies in the Lao PDR have emphasized stopping shifting cultivation, relocation and consolidation of remote villages into lower zone transportation and development corridors, land use zoning and land allocation, commercialization of agriculture, and alleviation of poverty.

Implementation of these policies has been inducing many changes in local livelihoods and agroecosystems. Many households, and especially those without paddy land, can no longer produce enough rice for their consumption needs. And as the economy becomes more monetized, most all households are seeking sources of cash income.

Responses by villagers at study sites in Oudomxay and Luang Prabang provinces have largely focused on increased production of cash crops (largely maize and Job's tears) and livestock, as well as commercialization of non-timber forest products (NTFPs) [Vongkhamor et al. 2007]. While many NTFPs have long been part of household livelihood systems, improvement of the main road and increasing trade with China began opening opportunities for commercial sales of some NTFP products, such as bitter bamboo, peuak meuak (*Boehmeria malabarica*), cardamom, rattan, and others. As it became apparent that these types of products have potential as long-term sources of cash income, villagers began managing local forest areas more carefully. Since this source of income requires maintenance of forest areas, they began attracting support from forestry officials and development organizations. Producer groups have been formed for collective management and marketing, and they have been able to increase household incomes and generate funds for their village [Thongmanivong & Fujita 2006].

Village relocation and consolidation has brought increased populations and ethnic mixing to the area as ethnic Hmong have moved from their higher elevation more remote villages, where grazing of large livestock was an important part of their livelihoods, down into the development corridors where they have joined with Tai Dam and Khmu villages. Efforts are being made to zone village land use and allocate lands for household agricultural use, but higher population densities mean less land is available for household agricultural fields and for community forest and grazing uses. Improved management of village forest areas for NTFP production has appeared quite promising because households could join such activities regardless of their agricultural land endowments or wealth status.

But since 2003, there has been a new boom in rubber production that has swept south from the Chinese border through Luang Namtha into Oudomxay and Luang Prabang provinces (see section 3.3.3). While much of the huge surge in planting of rubber trees is driven by contract farming and plantation concession arrangements with primarily Chinese Companies, there is also considerable planting being done by local farmers themselves.

At the study sites in Oudomxay and Luang Prabang, most rubber planting is being conducted by villagers themselves, and primarily by two groups of households. Better off ethnic Hmong have been converting livestock assets to investment in crop production activities as village reorganization and relocation has decreased areas of community lands available for grazing activities. Now they have incomes from cash crops and their investment expansion is moving toward longer-term investment in tree crops. Since the ethnic Tai Dam are early settlers in the area, some households are also relatively well-off in terms of their access to paddy lands and generally larger land holdings. Those with enough capital and labor available in their household have also become interested in tree crops. Overall, households planting rubber clearly have more land and labor than others. Both Hmong and Tai Dam groups of households have social networks that include relatives in rubber growing areas of Yunnan, which has been an important source of information regarding rubber [Vongkhamor et al. 2007].

Thus, as a result of the rubber 'boom', many upland areas are now being converted from forest into rubber plantations. Displacement of forest is, in turn, threatening commercial production of NTFPs by reducing the area of village forest land available for this purpose. While those planting rubber are making long-term investments in perennial cash crops that appear to be in line with major government policies, there are still many questions about the future of rubber production in Laos [Vongkhamor et al. 2007, Weiyi Shi 2008]. But even if rubber production proves to be successful, if it continues to displace village forest, the potential diversity of local sources of income will have been reduced. Moreover, it is the poorest households with insufficient livelihood assets to invest in rubber, who will have lost one of their most promising entrepreneurial responses to new market opportunities.



## 4.4 Diverse strategies and response capacities

Based on the evidence presented in this and preceding chapters, this section returns to the question “What strategies have been used to respond and adapt to changes in opportunities?” We have identified various types of household livelihood strategies and explored various relationships with livelihood assets and institutional contexts, and we now seek to identify overall patterns and trends. Thus, in addressing this broad question, the following discussions seek to synthesize findings according to four more specific sub-questions: (1) How do household strategies vary regarding engagement in commercial markets? (2) How do asset capacities affect response to market opportunities? (3) How do wider institutions affect response to opportunities?, and (4) Is inequality growing? Answers to these questions help reveal general patterns we have found in household responses, and underlying forces and issues with which they are associated.

### 4.4.1 How do household strategies vary regarding engagement in commercial markets?

In the Upper Ping Basin of northern Thailand, where commercial markets have been developing for several decades, we have seen evidence of household strategies that represent a spectrum of responses to emerging market opportunities. In order to summarize these different types of responses, we can aggregate observed strategies into three groups:

#### **Self-sufficient farming**

At one end of the spectrum are strategies that have been the most conservative in terms of market engagement. Overall objectives of self-sufficient farming households at study sites in Thailand tend to seek stability more than innovation or adaptation, and they appear to have the most risk averse livelihood strategies. With less than 25 percent of their agricultural production for sale in commercial markets, strong emphasis is placed on being self-sufficient in rice and mixtures of other subsistence crops, and often on food and other products gathered from wildland resources. They may also produce small amounts of low-value, low-risk cash crops for sale, but tend to depend quite heavily on off-farm wage employment for cash income, usually in relatively low wage rate jobs in rural areas or nearby towns, and sometimes in provincial cities.

Thus, their wealth status depends heavily on the amount and quality of natural capital assets to which they have access, as well as the reliability and wage rates of local wage labor markets. Those able to maintain livelihoods above poverty line levels usually have at least some paddy land, large enough areas for upland rice crops with sufficient fallow to keep weed pressure at manageable levels, at least some access to wildland and forest resources, and sufficient labor. Effective management of local forest resources and rotational forest fallow systems are also especially reliant on maintenance of associated local social institutions.

Medium to longer term prospects for self-sufficient farming in upland areas, however, appear to be linked with the degree of household and community dependency on upland rice pro-

duction and wildland resources, and with their abilities to accumulate assets through savings, livestock, education or other means. Although population growth has slowed, state land use policies are likely to continue applying pressures to exclude households from access to forest resources and to sufficient upland areas to maintain sustainable production of upland rice using traditional forest fallow shifting cultivation techniques. And experience has shown that decreasing land availability leads to shorter fallow cycles that bring increasing weed pressure and decreasing productivity. Accordingly, the longer term viability of self-sufficiency strategies that are heavily dependent on upland rice production and forest products appears to be highly questionable, unless there is very significant change in Thailand's land use policies in montane zones.

At our study site in Vietnam, self-sufficient farmers are those whose main occupations are growing crops other than tea. They also have few large livestock, and often seek income from off-farm sources. Many tend to have relatively little land, lower levels of education, and limited access to outside information. Some are younger households formed since land was allocated among households. These tend to be the poorest households in their communities.

### **Commercial farming**

At the other end of the spectrum of household strategies are those where households have shifted their objectives and efforts to become fully commercial producers in the market economy. Within this category, however, there are two rather distinct patterns:

#### *Commercial short to medium term strategies*

Households with fully commercial short to medium term farming strategies focus on short-season and annual crops, and sell more than 75 percent of what they produce to commercial markets. Thus, they tend to have little paddy or upland rice. Their focus tends to be on intensive year-round vegetable production, often including some more exotic high value crops.

These households tend to be less dependent on off-farm employment than self-sufficient or semi-commercial households, but their sources of off-farm employment are often fairly diverse. They also tend to be less dependent on their own savings for production costs, and thus more reliant on credit from outside sources. Moreover, they tend to be keenly interested in innovation and gaining access to new technology that can increase the profitability of their ventures. This can come through their own efforts, such as developing gravity fed sprinkler irrigation or purchasing transport equipment such as pickup trucks for direct access to more distant higher price markets, or it can come through establishing links with outside sources of improved production or post-harvest technology or market chains and channels.

There are still differences in attitude toward risk among commercial farming households, however, which is reflected in choice of crops. Risk-takers are more likely to invest to a greater degree in crops that have higher risk of agronomic or economic failure, but which also have the potential for much higher returns if successful. Longer term prospects for households employing these types of strategies appear fairly promising, but are dependent on their entrepreneurial capacities to remain successful in producing products with good acceptance and prices in commercial markets, including their ability to withstand periodic crop failures

or economic downturns. They may also be vulnerable to increasing state land use exclusion and restrictions in montane areas, and especially where their use of water and agricultural chemical inputs is perceived as threatening to downstream populations.

#### *Commercial long term strategies*

This type of strategy is also heavily integrated into commercial markets, but is based on investments aimed at returns over longer periods of time. Thus, orchards and other types of tree crops are often prominent components of these strategies, as well as land improvement and conservation farming practices. In order for such components to be viable, they are usually mixed with additional components based on paddy fields, livestock and/or off-farm employment. Some intensive short-season cash crops may be grown, but production is usually limited to paddy lands. These households tend to be less reliant on outside sources of production credit, but also show strong interest in establishing channels and linkages that can provide access to new technology and markets. Some household members usually engage in off-farm employment, and it tends to be at relatively higher paying types of work.

The longer term prospects for this type of strategy may be the most promising because of its tendency toward income diversification, as well as the way it is perceived by environmentalists and state land management organizations. Households who are able to establish and maintain this type of strategy are often associated with relatively high social standing in local communities, and their investments in land improvements and permanent tree cover help improve their standing with state agencies and environmental interests. However, their ability to expand into some types of tree crops, such as para rubber, may be limited by state land use policies at least in some areas.

In Vietnam, the most commercialized households at our study sites rely heavily on income from various combinations of tea and large livestock. These households tend to be relatively better-off, and invest larger amounts of labor and capital in their tea and livestock production operations. Those who produce tea tend to have relatively large plots, and often receive good prices due to their higher quality outputs and good relationships with traders. Some households have members who also have non-farm occupations outside the village, many of which often do not pay well, but provide valuable channels for contacts and information.

#### **Semi-commercial farming**

This category of strategies occupies the middle of the spectrum between self-sufficiency and commercial farming, and is thus quite diverse. These households still produce 25 to 75 percent of their crops for subsistence use, but this also means that between 25 to 75 percent of their crops are for sale to commercial markets. And while they are somewhat less dependent on off-farm wage employment for cash income than those with self-sufficiency strategies, they tend to be involved with a more diverse range of non-farm and off-farm work.

One of the reasons for the wider diversity found within this group of strategies relates to the different types of situations in which these mixed strategies are employed, some of which are transitional in nature. Some of the situations we have seen, for example, include:

- *Insufficient subsistence.* Some households are basically forced into commercial production because they are unable to maintain a self-sufficiency strategy. This is usually because of inadequate capital assets of one type or another. Insufficient amounts of land or poor land quality are one common constraint, and this can be due to exclusion from upland fields by state agencies, or to inadequate land available for newly formed or newly arriving households. It can also be due to insufficient labor in the household, sometimes due to poor health or aging, especially where weed pressure on upland rice is high, or to inability to access wage labor due to lack of citizenship, language skills, or sufficient wage labor opportunities. Attitudes toward risk can vary considerably, but these types of households often engage in production of lower-risk, lower-price crops. These are often the poorest and most vulnerable types of households.
- *Start-up commercial farming.* Some households with livelihood asset limitations employ a mixed strategy during what they at least hope is the start-up phase for their entrance into a fully commercial farming strategy. This type of situation is especially common with young households, for example, who use a partial subsistence strategy to minimize expenditures so that they can invest crop profits and wage employment income into improving and expanding their commercial farming operations. Their future prospects are highly dependent on their entrepreneurial skills and ability to accumulate sufficient capital assets to shift to a fully commercial farming strategy.
- *Non-farm or off-farm base.* We have also seen some cases where a mixed self-sufficient and commercial farming strategy is employed by households whose main objective is to move more into non-farm or off-farm occupations. Thus, their commercial production component may be a means to provide income to help some household members obtain more education or skills in order to obtain better off-farm income. Or, as we have seen with some households in Mae Wang, their main focus may be on developing capital assets that will allow them to gradually shift their livelihoods to activities associated with tourism in the services sector. Thus, commercial cropping is a supplementary form of enterprise, and their future prospects are dependent on their success in other activities.
- *Secure diversified households.* There are also some households who appear to consciously and willingly adopt a diversified income strategy that includes both self-sufficient and commercial farming components. Such households frequently include members with secure sources of income from non-farm or off-farm sources, along with other members who wish to pursue self-sufficient or commercial farming activities on a full or part-time basis. Relatively recent additions to this category may include some who have become convinced by the ideological values promoted under the self-sufficiency economy banner.

For all these types of situations other than those in the secure diversified household category, including other variants of reasons and circumstances underlying adoption of mixed self-sufficient and commercial production strategies, these households are commonly in quite fragile and vulnerable situations. For those who seek to move into commercial farming or non-farm occupations and are successful at doing so, this is a temporary phase. For some, however, vulnerability to fluctuations in environmental, economic, or health conditions may thwart their efforts to make the transition to another strategy. And some of those forced into commercial production because of inability to maintain a self-sufficiency strategy may also be

unable to overcome social constraints related to their citizenship, language skills, ethnicity, or other factors. Those who remain in this category over the longer term without other secure sources of support tend to be the poorest and most insecure households, and it appears likely that their circumstances will force many of them, or at least their children, out of farming livelihoods in the future.

In Vietnam, many of the households at our study site villages employed mixed self-sufficient and commercial strategies. It appears that most, however, wish to move in the direction of increased commercialization – at least at this point in time through improved and expanded production of tea and livestock. Current household shortages of land, labor, capital and knowledge are frequently cited as constraints on their commercialization, and many of the strategies they employ for achieving the next “stage of progress” in well-being are aimed at overcoming these constraints.

#### **4.4.2 How do asset capacities affect response to market opportunities?**

Under the framework of our study, household capacities are based on effective command over mixes of five types of livelihood assets in their household asset portfolios. Thus, our response to this question is organized according to these five types of capital assets:

##### *Natural capital.*

Access to natural resources is a major factor in determining which types of strategies are viable options. Adequate areas of land of reasonably high quality appear to be a basic requirement for both self-sufficient and commercial components of farming strategies. Paddy land seems particularly valuable in this regard, and especially where small scale water resources are available for irrigation. In upper montane (highland) areas, where paddy land is particularly scarce, areas with good soil combined with micro-climates suitable for off-season, sub-tropical or temperate crops, especially where water is available from mountain springs or streams and road access is available, have also provided the basis for profitable commercial fruit or vegetable farming operations.

Especially in Thailand, early settlers in an area usually have had the advantage of selecting highest quality sites for their agricultural fields, and this is reflected in their relatively high representation among households with viable self-sufficient and commercial farming strategies. Vietnam and Yunnan have implemented relatively recent land reform programs that have sought an equitable distribution of land resource allocations among households in local communities. Although Laos is also conducting a land allocation program, it is often complicated by associated relocation of villages wherein early settlers may still have some advantage in access to most desirable land resources. In all cases, however, poorest households are often associated with relatively small amounts of land, poor land quality, and little or no access to water for irrigation.

Moreover, access to group and community managed natural capital also appears to be important, especially for livestock grazing and forest products, including wild foods and medicines upon which both the transient and chronic poor rely to help reduce consumption expendi-

tures. Viable forest fallow shifting cultivation systems, which in Thailand are an especially important part of self-sufficient livelihood strategies of ethnic groups such as the Karen and Lawa, have traditionally been managed at both household and community levels. Thus, these types of natural capital are linked with forms of social capital. Vietnam and Yunnan have implemented programs to recognize and secure village and household claims to wildland resources, and this is an important component of on-going land allocation processes in Laos. In montane zones of North Thailand, however, community claims to wildlands remain informal and contested by state authorities, and legal recognition of such claims is very rare.

Natural capital is converted into other forms of capital primarily through selling or renting out household land assets, or by letting relatives or others use the land with no immediate charge, but an implicit understanding that some form of reciprocity will occur at some point in the future. Similarly, access to natural capital is acquired through purchase, renting, share-cropping, or through free use arrangements that imply future reciprocity, all of which require varying combinations of other types of assets in exchange.

### *Financial capital.*

While access to financial capital is increasingly important for all types of livelihood strategies, it becomes especially important where commercial farming components are present. Financial capital assets are stored as cash, deposited in savings accounts, or converted to gold, jewelry or similar types of easily redeemable types of property. Financial assets are sometimes loaned out to others, with or without interest payments. Moreover, financial capital is readily convertible into most other types of capital assets, which can also be used to store wealth.

Many households have financial capital deficits – or financial debts. Temporary debts incurred through borrowing money to fill critical asset gaps needed for commercial farming production cycles are a common part of commercial production at all levels. In Thailand, semi-commercial and commercial farmers with short to medium term objectives appear to have at least some access to credit and borrow significant proportions of the funds required to complete their production cycles. Commercial farmers with long-term strategies, on the other hand, tend to be able to draw primarily from their own savings and assets. Poorest households, however, are associated with very little savings, as well as often severe constraints on their access to credit due to lack of collateral, lack of citizenship, lack of social standing and low repayment credibility.

Access to credit from commercial and agriculture banks is commonly limited in montane zones of Thailand by lack of official land use rights that can be used for collateral. The parastatal BAAC may be able to provide smaller amounts of credit based on a group guarantee when a group of farmers can develop a plan that is credible to a bank officer. Similarly, access to loans from village funds and similar sources appears to increase with the social standing of a household in the local community and their credibility for repaying the loan. Thus, semi-commercial farmers with very limited assets tend to also have the most restricted access to credit, making it more difficult to stay out of poverty and accumulate assets that would allow them to make the transition to another livelihood strategy. Contract farming or share cropping are sometimes seen as a good options by farmers in these types of situations.

Patron-client relationships with merchants or other more wealthy households are another common option. Assistance through kinship networks sometimes help, but amounts of funds are often limited. Access to informal money lenders is sometimes available, but interest rates tend to be high. Households with limited overall productive capacity who must frequently borrow for consumption are likely to accumulate debts which become unmanageable, which often further decreases their ability to gain access to additional financial assets.

In Vietnam, upland farmers can use their land certificates for collateral for loans from the agricultural bank, and farmers in mountain areas can obtain substantially lower interest rates. A separate social policy bank also provides a lower interest window for the poor, and special programs for poorest communes and ethnic minorities provide more investment assistance. Various forms of contract farming are being employed in Yunnan, Vietnam and Laos, and terms and arrangements continue to evolve.

### *Physical capital*

Various forms of physical capital assets are needed to effectively operate and further develop different livelihood strategies. Housing, outbuilding structures and non-farm facilities are often among the more obvious types of physical capital assets.

In North Thailand, water resource development is most commonly conducted by construction of small scale diversion weirs and distribution canals, and paddy land must be developed by leveling and constructing bunds. Such investments are only possible where terrain allows, and such areas are usually dominated by early settlers. On sloping land different types of investments in physical assets are required, which sometimes include contour strips or various types of terracing, as well as water holding ponds, pipes and sprinkler systems. Various types of pumps and additional equipment are sometimes also required for operation and maintenance of irrigation systems. Since many types of water resource development assets are established, operated and maintained by groups of households, these are also linked with social capital assets.

Other examples of physical capital assets that directly affect the viability and performance of commercial components of livelihood strategies include farm equipment, such as walking tractors, hand tools, spraying equipment, etc., as well as equipment used for processing and storing various products, such as tea at our study site in Vietnam. Transportation is very important and motorcycles, and increasingly small trucks, are now considered to be nearly essential for viable commercial farming operations. Equipment for communication and accessing information are also of growing importance, so that radios, televisions and cell phones are now commonly found in mountain households, and even a few computers are beginning to appear. While most households at all our study sites aspire to have full ownership over these types of physical assets, they are sometimes jointly owned by groups of households. Moreover, owners of some of these types of physical assets sometimes offer them for hire, or offer services in which they are used, for other households who do not yet have their own, thereby helping to defray the cost of acquisition. Especially semi-commercial and self-sufficient farmers often depend on others for services using more expensive physical assets. Although these

types of physical assets can be sold or otherwise converted to other forms of livelihood assets, their value depreciates with use and over time.

Livestock are considered another type of physical asset, although some feel it would be more appropriate to consider them a form of natural capital. In any event, they provide a range of products and services and are considered important assets at all our study sites. Livestock are sold or traded for other assets, and food provided by livestock often help minimize cash expenditures for household consumption. And while animal power is being replaced by farm machinery and vehicles, larger livestock are often used especially by poor to medium (and sometimes well-off, as in Vietnam) households to store and accumulate assets. Thus, one important advantage of this type of living physical asset is its ability to reproduce and increase in value over time. At the same time, however, livestock lose value after a certain age or if its health fails, and are vulnerable to losses through disease, theft, etc. Social status, especially in some minority cultures, is sometimes still linked with livestock ownership and its use in rituals and feasts. And since common property natural assets are often used as a source of food for livestock, there are also linkages with social capital assets. Poorest households, however, often have difficulty raising financial capital for initial investments in large livestock and lack associated social capital that is also required.

### *Human capital.*

The most common measure of the quantity of human capital is the size of the labor force in a household or community. The basic adequacy of labor is usually considered in relation to the number of dependents that must be supported, *i.e.* those who are too young, too old, in school, or otherwise limited or unable to participate in income generating activities conducted by the labor force. Accordingly, small households, which are often headed by elderly persons with few or no working age children in their household, or young households with high dependency ratios, frequently have insufficient labor to fully utilize some other livelihood assets that may be available, and not enough financial or other convertible assets to hire labor to help. On the other hand, labor can also be 'sold' and off-farm employment appears to now be an important component of most all livelihood strategies in North Thailand, as well as other study sites where it is an available option. Poorer households and those with self-sufficiency strategies tend to be particularly dependent on low wage labor as a source of household income.

The other very important dimension of human capital assets relates to their quality. Basic health is fundamental, and various types of physical and mental strengths and capacities are important for different types of work. Constraints on these capacities are often found in poor households. Beyond that, various types of knowledge, skills and experience are required for effective implementation of different livelihood strategies. Local knowledge derived from traditional sources and long experience and familiarity with local conditions are especially important for self-sufficient strategies, but are also sometimes important in developing successful commercial components of livelihoods, such as NTFPs in Laos and other examples. People particularly skilled in certain areas, such as traditional medicines, water resource development or management, construction, etc., have long provided specialist services in local communities, and in some cases are able to commercialize their services in emerging local or



wider markets, either as a service provider or through wage employment. Recent arrivals often bring useful local knowledge from other places, but lack familiarity with local conditions.

Effective participation in market economies and the associated changing social context, however, also requires new types of knowledge and skills, and this appears to be very widely recognized by those employing all types of livelihood strategies we have observed. Perhaps the clearest indicator of this is the very high priority that appears to be placed on investment in education for children, which is clear in data from both North Thailand and Vietnam. Regardless of livelihood strategy or wealth status, educational attainment of young household members tends to exceed that of household heads. The main exception is where children are excluded from education by lack of citizenship, as in some cases in Thailand, or where extreme remoteness and/or poverty put especially higher levels of education beyond their grasp. Substantial inequalities in educational services between rural and urban areas also tend to disadvantage rural and ethnic minority children in access to affordable but highly competitive higher levels of education. While education reflects a fairly long-term strategy for improving human resources, a more immediate objective is often improvement of security and wage rates of off-farm employment components of livelihood strategies; it also appears to help improve social standing in the local community. And although sending children to urban areas for higher education can result in “brain drain” situations where they do not return to reside with the household, remittances provided by them are sometimes important sources of household income.

More immediate efforts to increase the range and depth of knowledge and skills are also very common, and especially among households with livelihood strategies that include commercial production and/or non-farm components. There is substantial variation in the degree of effort put into acquiring new knowledge and skills, and in applying them in innovative and entrepreneurial ways to overcome constraints and improve production processes. In North Thailand, some generalized differences have been seen among ethnic groups, but differences within ethnic groups now appear to be as great or greater. In areas where participation in contract farming, Royal Projects, or other initiatives is possible, these are usually important sources of information, knowledge and training. In these areas and elsewhere, wider kinship networks often help provide channels for gaining access to new information, ideas, and experience elsewhere. All study sites have examples of how interaction with merchants, innovative and successful producers, and public and private extension services are sometimes useful, and production or kinship groups sometimes collaborate in these efforts.

### *Social capital.*

Social capital assets play important roles both in framing the livelihood strategy options available to households, and in assuring their viability and sustainability over longer terms. Moreover, there are multiple levels and dimensions to social capital assets.

At the local level, social capital based on community, group or kinship relationships are usually important in gaining access to various types of group or community-mediated asset management processes. In North Thailand, for example, to the extent that self-sufficient or semi-commercial strategies depend on traditional rotational forest fallow shifting cultivation sys-

tems, social relationships are important in gaining access to upland fields and to joint and exchange labor used in field and fallow management, as well as in crop production. In more traditional systems, periodic reallocations of areas for household cropping are made as needs change with household development stages and cycles, and community relationships can affect one's allocation. In Yunnan and Vietnam land allocations and reallocations are conducted through official channels. Similarly, households with access to paddy lands commonly participate in groups managing small-scale diversion weirs and canals. Community natural assets such as forest and grazing areas are also subject to management at community levels, and their use has been subject to increasing regulation during recent years.

Important roles in these types of groups (either currently or in the past) are often associated with strong social standing in communities where they are or have been important. Good social standing is also sometimes achieved through education or exceptional performance, and especially if it is linked with generosity in participating in or contributing to community or clan functions or institutions. While this is often difficult for poorest households, their efforts to participate may help them gain access to some forms of assistance. Good social standing in the local community appears to be associated with more ready access to community revolving funds, where they exist, as well as with better access to local off-farm employment opportunities, and access to assistance from development programs. Village leaders and elders often play a role in allocation decisions of such processes.

At wider levels of society additional levels of social capital become important. Those with useful "bridging" links with outside institutions or people at distant locations can benefit directly from those links, and often indirectly through better social standing in the local community. In North Thailand, many households with commercial farming strategies with long-term objectives have developed good relationships with government agencies that can sometimes help fend off efforts to exclude their communities from access to natural assets, and provide them with access to subsidized production inputs and assistance. And in terms of commercial production activities, some of the most successful tea farmers at our site in Vietnam cultivate relations with merchants and sometimes maintain poorly paid outside employment in order to strengthen contacts and information channels. The Hmong in Thailand and Laos and the Akha in Laos have been notable for the manner in which they have drawn on wide social networks to access information and in some cases even establish their own marketing channels. But various ethnic groups also draw on wider kinship networks to help access information and more distant sources of wage employment.

Recently arrived households, such as those fleeing from Burma into North Thailand, for example, often begin with very little social capital, and must work hard to build social assets they see as important to achieve a viable livelihood strategy. Basic citizenship, or at least some form of official status is an important factor for them, and has been (and in some cases still is) a serious constraint for many ethnic minority households who have lived in Thailand for generations. Basic Thai language skills are another factor constraining access to educational, health and other services, as well as many types of off-farm employment; poor skills in the Central Thai dialect are a constraint in higher education and interactions with government agencies. Thus, they usually need to begin with building social capital and basic skills in the

local domain, which sometimes assist them in gaining access at wider levels. Less severe but similar issues affect opportunities for many mountain ethnic minorities across the region.

#### 4.4.3 How do wider institutions affect response to opportunities?

While social capital can help households gain access to processes mediated by local institutions, institutions at wider levels can also affect household responses to market opportunities.

*Basic social legitimacy.* One of the most basic aspects of wider social legitimacy is the official identity and citizenship status of household members. Especially for mountain ethnic minorities in Thailand, lack of citizenship status excludes some people from various production and employment opportunities, as well as basic human services. And even for those who are officially recognized with “mountain minority” identity status, their movement and access to various opportunities is restricted. Furthermore, they have no voice or representation in political systems, and are constantly subject to paying often heavy “transaction costs” to “stay out of trouble”. Thus, their livelihood opportunities are largely restricted to those within local domains where they can build local social capital.

A second basic aspect of wider social legitimacy is some form of more official recognition of land use rights that are already recognized by local institutions. This becomes particularly important in contexts where there are substantial and growing discrepancies between what land use is recognized by institutions at these different levels. For most people in montane zones of northern Thailand, for example, there is no form of wider official recognition of their rights to use land for any purpose whatsoever, and most all land is claimed as state forest land. While local institutions continue to regulate land use locally, land cannot be used as collateral for access to normal institutional credit sources, it is difficult to defend against encroachment by outsiders, and state agencies are expanding protected forest areas that exclude all other forms of land use. Resulting tenurial insecurity is an important disincentive for livelihood strategies to include longer-term investments at either community or household levels.

*Basic human services.* Wider governmental institutions are primary providers of basic health and education services. Good health is essential for assuring labor availability to effectively implement livelihood strategies. Formal education for children is a highly valued component of most all livelihood strategies, and non-formal education is sometimes a source of training and skill development for farming, non-farm and off-farm components of livelihood strategies. Access to these services is dependent on official identity status, availability of services in local areas, and costs associated with obtaining services. Some special programs are seeking to reduce disparities in services for mountain areas, especially in Vietnam.

*Location assets and restrictions.* The availability and viability of many market opportunities are related to efforts by wider institutions to facilitate or restrict physical access to various types of livelihood assets. One of the main ways in which wider institutions facilitate physical access is through development of physical infrastructure that becomes an asset potentially available to all people in locations that it services. Primary examples include roads, electricity, telecommunications and water resource development, which are viewed by people at all our

study sites as important factors influencing the viability of various components of livelihood strategies. Extension or upgrading of such infrastructure in a particular area requires investment decisions that are mediated by wider institutions. In northern Thailand, elected sub-district governments (TAO) have relatively important roles in deciding among locations and assigning priorities for infrastructure investments, although agencies and higher levels of government still have strong voices in determining allocations of funds among sub-districts. Private sector concessionaires also influence decisions on placement of investments such as telecommunications. Thus, the relative political voice of local communities and their representatives at these different levels is often reflected in these types of investment decisions.

Wider institutions can also restrict physical access to livelihood assets in particular locations. Clear examples in northern Thailand include expansion of protected area status and watershed classification aimed at excluding and restricting various forms of land use. Basic decisions on when and where to declare and enforce these types of restrictions are usually made at higher levels of government with little or no participation by local communities or local governments. Thus local voice often depends on linkages with elected representatives, local agency officials, or non-governmental groups with access to and active roles in higher level political decision making arenas.

***Livelihood support and development services.*** There are various additional types of services provided by several types of wider institutions that also influence decisions to adopt livelihood strategies, as well as viability of components within strategies. Examples include:

- *Credit.* Access to financial capital is often available from wider institutional sources for those who qualify. Normal institutional sources for individual loans usually require either collateral (most commonly some form of land use rights) from the borrower or from a sponsor who co-signs the loan. Some institutions (like the BAAC in Thailand) also provide loans without physical collateral when all members of a small group of people accept responsibility for repayment of the loan. And government-linked banks or special banks (like the social policy bank in Vietnam) sometimes have provisions for small or poor farmers to borrow funds at very low interest rates. Thus, some combination of natural, physical and social assets is required, as well as a credible plan for production that should be profitable enough to repay the load within the specified time period.
- *Government extension.* In many areas, government extension services have been important sources of information, training, access to subsidized inputs, and other forms of assistance that help households, various types of farmer groups, and communities in developing their livelihood strategies, options, and assets, as well as their production processes. It is not uncommon, however, for government extension agencies to emphasize support for production approaches and systems that have been developed in the context of lowland farming systems, which may or may not be appropriate for conditions in montane zones. Moreover, access to government extension services are often limited in montane zones, either because of logistical or staffing difficulties in these areas or, as in many areas of northern Thailand, because they are located in areas officially designated as forest land so that policies limit or restrict agricultural extension services. In any event, access to government services and programs is often mediated by the official village-subdistrict-district

government hierarchy, which tends to favor those with good social standing as perceived by members of the hierarchy. Thus, local social assets that link with these officials may help provide or improve access to such government services.

- *Private sector initiatives.* Commercial production by its very nature is based on a chain of activities that link producers and consumers. As commercial production becomes more integrated into larger markets and economic systems, production and marketing chains become longer and more complex.

A common sequence in the Upper Ping Basin has been that once basic infrastructure improves physical access to a mountainous area, various private sector merchants and/or middlemen begin to explore production possibilities in the area. One of the first targets is often timber or other natural plant or wildlife assets, but production of crops and other commodities favorable to local conditions usually follows. New local producers often only see the face of these local middlemen or merchants, who sell or provide inputs, purchase outputs, and provide various types, amounts and quality of information. As producers become more experienced and entrepreneurial, however, they begin to understand more about the production and marketing chains, as well as costs and prices involved at different stages. At the same time, increasing commercial production often attracts others to engage in livelihood activities that can fill gaps or improve stages in these chains. Thus, in many cases, chains tend to become more competitive and efficient over time.

In other cases, however, differences between production costs at remote montane locations and prices at district or provincial markets are not sufficient to attract development of complex chains of specialized operations. And for some crops this problem is being exacerbated by low cost imports from distant areas with more favorable environments and production costs provided through globalizing market economy systems. In many such cases, including many parts of the Mae Chaem sub-basin of the UPB, main opportunities for commercial farming may be low-risk but low-price industrial commodities such as rice, maize and soybeans. There are, however, two additional types of private sector initiatives that have emerged in some of these areas.

The first type of initiative has been led by medium to large scale business firms. For commercial crop production, these initiatives often focus on contract farming arrangements. Examples in our study sites in the UPB have included “baby corn” to supply a canning factory established at a nearby location, production of hybrid maize seed for a large agribusiness conglomerate, and coffee production in Omkoi. The first encountered difficulty because production was in direct competition with other livelihood strategy components that are highly valued, while the second has been operating quite successfully for a number of years in a somewhat more remote area. The third is still struggling with difficulties associate with remote mountain areas. These examples reflect the mixed experience with contract farming that has occurred in Thailand. In addition to crop production, however, outside investors have also been developing resorts and recreational facilities of various sorts in some remote areas with characteristics favored by tourism markets. Some of them are beginning to purchase some products from local communities, usually food or handicrafts, but the main opportunities they provide are usually modest-wage employment.

The second type of initiative has been led by growing local entrepreneurship within some remote areas. In these cases, particularly ethnic Hmong communities like those in the Mae Suk sub-watershed in Mae Chaem, have developed effective commercial farming strategies that include their own pickup truck-based transportation system for purchasing inputs and selling products at relatively distant market locations. They also draw on widespread networks among Hmong communities for information and experience that can help them build and improve their production systems. Some more successful producers are now beginning to specialize more in assembly and marketing stages of the chain, and are providing services and support for members of other ethnic communities in the area who wish to enter the production system. Similarly, in Mae Wang we have seen emergence of tourism activities owned and operated by local households and communities themselves that include rafting, elephant rides, handicrafts of increasing quality, and now expansion into homestays and related activities.

- *Projects.* Various types of projects conducted by wider institutions can also influence choice and viability of livelihood strategies and various component activities. Many montane areas, including the Mae Chaem sub-basin, have been sites for various types of development assistance projects. Most such projects tended to be short to medium-term in duration, and especially those supported by international agencies or organizations. They often set up a local “bubble” of highly assisted and often subsidized operations that were effective and viable only under conditions that occurred during project implementation. After the projects ended, production operations often collapsed. Now that the era of development assistance projects has largely ended in the UPB, it is instructive to see what continues to influence local livelihood strategies. Among the most enduring impacts have been those from roads, electricity and physical infrastructure that projects were able to construct or influence government agencies to construct. In some cases, crops introduced by projects have continued, especially where linkages were established with Thai agribusiness companies. Overall, introduction to approaches to commercial production may have been a more useful and enduring contribution than introduction of any specific crop or animal. Indeed, the highland commercial vegetable farming strategies of Hmong communities in Mae Suk were influenced by opium crop substitution projects, although few of the crops they grow today were directly introduced under those projects.

The Royal Project in northern Thailand has been unusual in various ways, and is a very noteworthy exception. Beginning as what was an extraordinarily long-term project, it has evolved into what now appears to be a permanent institution. Moreover, as already described in previous sections of this report, it is a vertically integrated system that addresses issues throughout the entire production and marketing chain, while still retaining a generic enough structure for production of changing lines of products rather than just a few specific products. New government efforts to promote expansion and replication of project operations at new sites may test the degree to which expansion of this type of institution can be effective, and it remains as a challenge for the private sector to be able to construct and successfully operate similar systems. Although focused on a single commodity, the recent efforts to re-launch coffee production in Omkoi may provide a useful new example of how private sector initiatives can build on earlier project experience associated with the Royal Project.

#### 4.4.4 Is inequality growing?

After several decades of increasing integration into commercial economic systems, it does appear that inequality among livelihood strategy outcomes is increasing in the Upper Ping Basin. While many are now better off in terms of income and assets, the rate of improvement is not the same among different areas and groups. At study sites in neighboring countries, processes of integration into commercial markets has begun more recently, so that trends related to inequality are less clear. These countries have also been experimenting with policies and programs associated with socialist ideologies that seek to minimize or reduce inequalities among communities and households, but how effectively they will be able to perform this function in the longer run remains to be seen.

Some of the inequality among livelihood strategy outcomes emerging in the UPB relates to inequalities of effort invested in them, which reflects the diversity of objectives, aspirations, and striving among different individuals, households, groups and communities in the population. In our review of data on inequality in chapter 2, we saw the relatively high levels of inequality present in Thailand. While some areas with high income inequality are also associated with high levels of poverty incidence and depth, many others are not. We have also seen evidence of high income heterogeneity in areas of the UPB considered to have relatively low poverty incidence, wherein households with radically different income levels appear to live together in communities with little class conflict. Moreover, we have seen that households classified as poor do not always perceive themselves as poor or living particularly difficult lives, whereas some classified as well-off feel they do have difficulties. And at all our study sites we have seen examples of inequalities in wealth that are associated with different stages in household life cycle development or various types of household problems that result in inequalities that may be more temporary than chronic in nature.

At the same time, however, there also appear to be important structural inequalities in opportunity among different components of the UPB population, and at least some dimensions of these inequalities may also be growing. Much of the inequality in opportunity that we have seen relates to four factors:

- **Location and public investment.** At a broad level, there are clearly quite significant differences in general livelihood outcomes between lowland and montane zones of the UPB. Lowland areas are where the greatest concentrations of commercialization and urbanization are located, and their urban centers are the major nodes of economic, transport and communications networks that link the UPB with economies at national, regional and global levels. Thus, they are also the centers of political and economic power, as well as the highest concentrations of private sector operations. Not surprisingly, public investments in physical infrastructure such as water resources, energy, transport, telecommunications, *etc.* have also been far greater in lowland zones. Similarly, the quantity and especially the quality of basic public economic and social services, such as health, education, and production support services, are greatest in the lowlands, and especially in the vicinity of urban centers. As in other parts of the region and the world with relatively strong economies, these areas are growing and developing most rapidly and their poverty incidence rates tend to be relatively lower, especially in and near urban centers.

More remote, and especially montane, areas of the UPB have two types of disadvantages in terms of location and public investment. The first relates to logistical and political considerations in terms of allocating resources for public investment in infrastructure and services. The spatially dispersed configurations of rural populations and the complex terrain in most montane zones increases the per capita costs of providing local access to infrastructure and services at the same levels found in lowland and especially urban areas, making it politically difficult to justify such investments. While many areas in montane zones of the UPB have seen significant levels of investment especially in roads, but also in electricity, health and education services, the associated structures and facilities in montane areas are usually much more basic than in the lowlands, and they have often been justified on the basis of national security or opium eradication concerns.

The second type of disadvantage is that even where investments have been made in infrastructure and services, their economic and livelihood impacts may be less than the lowlands. While improved roads, for example, provide improved physical access, high transportation costs to and from remote mountainous areas increase the costs of production inputs and decrease profits received by farm households, and even those from outside wage employment. At the same time, it is often difficult to operate and maintain quality health and education services when the most competent health workers and teachers aspire to live and work in lowland or urban areas.

Vietnam has been implementing several major programs aimed at exploring means for specifically targeting and helping address various of these types of issues in mountain areas, while policies in the Lao PDR have been seeking to induce relocation and consolidation of small remote villages into valley corridors where infrastructure and services can hopefully be provided in a more efficient and effective manner. Substantial public investments are also being made in many mountain areas in Yunnan, especially in infrastructure. While at least some aspects of these policies and programs appear promising, it is still too early to assess their overall longer term impact on lowland – upland disparities.

- *Natural resource qualities and access.* As we have seen, access to natural assets in the form of land, water and forest resources is an extremely important component of rural livelihoods generally, and especially in montane areas where land-based components of household livelihood strategies are dominant. In the UPB, many of the crops favored in recent and current commercial markets are viewed as most suitable for lowland and foothill areas where soil conditions, water resources and ready market access are most favorable. Many of these areas have very high land values and are being converted to urban and suburban development. While small valleys in montane zones provide some areas seen as suitable for these types of crops, such areas tend to be very limited and insufficient for the population. Rather, most montane zones are dominated by sloping lands where sustainable production of such crops is more difficult and requires additional types of investment. Highland (upper montane) zones in the UPB, however, have some areas where natural resource qualities can help offset higher costs of distance, especially where they allow production of high value temperate, sub-tropical or off-season specialty crops.

In all of these natural resource contexts in the UPB, early settlers have usually been advantaged by being able to claim the most desirable and productive resources, and this is reflected in their livelihood strategies and overall wealth status. Newer and more recently



arrived households must develop livelihood strategies that are constrained by less productive resources. Exceptions in some areas include newly arriving people who are wealthy and/or well-connected enough to displace early settlers and obtain legal recognition of their new land holdings. Furthermore, it is often household fields in more marginally productive (at least for major lowland and industrial crops) sloping land areas that are the first to be targeted by agencies seeking to exclude agricultural production and expand protected forest areas, thereby further exacerbating livelihood inequalities. Moreover, while natural resources in highland zones can often be quite productive for specialized agriculture, they are also where most hill evergreen forests are located, making them priority targets for conservationists and excluding any possibility of legal recognition of other local uses. Thus, highland communities not under protective umbrellas such as the Royal Project are very vulnerable to land use conflict, which is further reinforced by increasing downstream concern about impacts of highland production activities on water quality and the quantity and timing of stream flow that feeds expanding lowland irrigated agriculture. Given their impacts on livelihood assets and opportunities, these patterns and processes are fueling asset, income and wealth inequalities among households and communities in the UPB, and these disparities appear to be generally increasing over time.

Major land reform programs in Yunnan, Vietnam and the Lao PDR seek to minimize inequalities of land assets among households in local communities. We have seen evidence, however, that enough time has passed since initial land reforms in Yunnan and Vietnam that inequalities are beginning to re-emerge as household configurations and needs change over time. Both countries are considering new rounds of land re-allocation, but it is not clear how much longer such re-allocation programs will be feasible.

- ***Security and risk.*** Another source of inequality in opportunities relates to differences in land and livelihood security, and associated perceptions of and vulnerability to risk. The issues related to land security and vulnerability discussed above tend to have strong effects on willingness of households to adopt long-term investment strategies that include perennial crops and/or land improvements. Indeed, some investments are made to reduce risk of eviction more than to improve productivity or sustainability. At the same time, however, farm households face risk associated with fluctuations in environmental conditions, and production for commercial markets adds risk due to fluctuating prices.

We have seen that self-sufficient and asset-poor households tend to seek stability by producing relatively low risk but also low price crop commodities. Many more commercial and well-endowed households, on the other hand, are willing to accept higher risks associated with higher value crops because their asset endowments provide them with resilience to shocks associated with periodic crop failures or price collapse of specific commodities. Over the longer term, evidence from the UPB indicates that household production portfolios that include wisely managed higher risk activities will yield higher returns, and thus further increase inequalities in overall wealth. On the other hand, high-risk production that is poorly managed or backed by insufficient asset reserves, as we have seen with some semi-commercial or short-term commercial strategies, can have devastating impacts on households when crops or markets fail. And even when contract farming arrangements include price guarantees that reduce or remove the market risk component, risk of crop failure or quality below minimum standards due to environmental conditions

such as weather or pest epidemics is still born by farmers and results can be the same. Differential results from management of these processes have been associated with longer term trends that are “sorting” livelihood strategy outcomes in various study areas into those who are succeeding and those with trends that make them likely to be driven out of agriculture in the future. Thus, inequality among households and communities also appears to be increasing as a result of such trends.

- ***Ethnicity and marginalization.*** There has been considerable discussion of ethnic minorities and their livelihoods in relation to both land use and poverty in the region. Since many of the areas where ethnic minority communities are most prominent are also quite remote, some of the inequality associated with ethnicity can be seen as more closely associated with spatially disadvantaged locations and/or natural resource endowments that are poorly suited for profitable commercial production or investments in supporting infrastructure and services. In addition, many ethnic minorities have been strongly stereotyped by national societies regarding cultural traits that affect their relative willingness and/or competence to participate in commercial enterprise and “modern” society. Yet, while some evidence of general tendencies toward different types of livelihood strategies has been identified, study findings generally indicate that differences within ethnic groups is now often as great or greater than differences among groups.

But at sites in North Thailand where studies have been most extensive, we also see evidence of ways in which ethnic minorities are being marginalized and blocked from access to various types of livelihood opportunities. The most obvious is where areas with traditional agroecosystem management practices are made targets for protected forest expansion primarily because the practices are seen as primitive, backward, or extravagant in their use of land. It is also quite obvious when minorities are either denied legal identity or given a status that does not allow them to fully participate in society and economic activity, and consequently subjects them to harassment, intimidation and/or extortion if they attempt to do so. Moreover, there is also evidence of discrimination in employment and access to services due to language, cultural norms, religion, or even physical characteristics that prevent them from being accepted as “Thai”. While ethnic discrimination also occurs in neighboring countries we have studied, its impacts on livelihood opportunities appear to be most severe in Thailand. There is also some evidence, however, that at least social dimensions of ethnic discrimination in Thailand may be slowly improving.

Most countries understand that some degree of livelihood outcome inequality is natural and a reflection of diversity in human societies. But to the extent equal opportunity is an important goal in society, inequalities driven by these types of opportunity inequalities need to be carefully assessed and addressed.

## 5. How might larger transitions in society affect opportunities and responses?

Previous chapters have explored poverty and how it is distributed in the region, and how livelihood opportunities for the upland poor have been changing, as well as the strategies that the upland poor have employed to cope with and adapt to the changing livelihood opportunities and constraints they face. But what about the future? Can we assume that current trends will continue and that all that is needed is to assist the poor in “fixing” the problems and constraints they currently face? Or can we anticipate that, as in the past, societies may undergo wider transitions that will further change the overall framework within which local livelihood strategies are formulated and pursued? Since the answers to these questions are themselves fraught with uncertainty, this chapter explores approaches for better understanding uncertainties of the future, and potential implications for alternative trajectories of change.

### 5.1 Future transitions

Market opportunities which emerge and become accessible, and for which particular places and peoples are able to respond and engage in competitively, are strongly shaped by broader transitions in society. This is true whether we take our unit of analysis as an individual, household, village or other social grouping. The changes can be internal, largely operating within mainland Southeast Asia, or for a few key factors, from well beyond.

Some key changes are well known, and within bounds, predictable because of the momentum the present has with respect to the future. Vast regions, for example, are undergoing major demographic fertility declines that will result in an aging population that will, in time, begin to shrink, even though today they may still appear to be growing year in and year out [Jones & Pardthaisong 2000; Pardthaisong 1986].

Other changes are much more uncertain, but equally significant for well-being. Assumptions about several more decades of rapid economic growth across Southeast Asia are contingent upon international relations, especially in trade and military security spheres, as well as the availability of fossil-fuel and alternative energy sources [Lebel 2005a]. Cycles of political reform resulting in lurches toward democracy and administrative decentralization, and retreats following military coups, “security concerns” and other transformations [Ockey 2004], reflect a never ending pursuit of shifting concentrations of power and institutional tools of governance.

Some relationships seem clear when circumstances and contexts are present. Thus, improved road and telecommunication infrastructure in areas where they are now limited will have major impacts on commercialization and development of economic institutions, such as markets for credit, labor and crops [Foran & Lebel 2007]. These are likely to bring new economic opportunities, as well as associated social, business and ecological challenges [Ducourtieux et al. 2006; Kanok et al. 1994; Walker 2004].

Interaction among local and regional sources of uncertainty, social change and ecological processes of varying degrees of resilience, can have profound impacts on livelihood strategies and wellbeing of poor and disenfranchised peoples. Without citizenship, clear rights of mobility and work, or protection from discrimination, many of the benefits of new markets do not go to minorities [McCaskill & Kampe 1997; Vandergeest 2003]. Without sensible, enabling and caring policies with respect to natural resources, education and health, assets of hard working, but cash-strapped households, cannot be invested or built upon to create new surplus.

Exploration of development alternatives for the uplands and by their inhabitants needs to be framed in ways that acknowledge the real uncertainties at both local and more regional levels, including those which arise from contests and negotiations among divergent interests [Lebel 2006]. In this chapter we take a step outwards and forwards to explore how various transitions that are underway or envisaged by some actors might affect the opportunities and responses of peoples in diverse, but often challenging situations and circumstances across montane mainland Southeast Asia.

## 5.2 Scenarios: an overview

One of the ways to approach uncertainties is through scenarios. Scenarios are stories about how the future may unfold. They have been a tool of business and military strategists for a long time, and are now also used in studies of environmental change and development [Gallop et al. 1997; Swart et al. 2004]. Scenarios can be qualitative and quantitative, and they can be told looking forward from today or looking backward from an envisioned future [van Notten et al. 2003].

Scenario building approaches vary with their purpose [Masini & Vasquez 2000; Neumann & Overland 2004]. One approach we felt useful in this project was to use scenarios to “test” ideas about medium-term community or agency-based strategies aimed at improving the livelihoods of vulnerable groups such as upland farmers belonging to minority ethnic populations. Another was using scenario-building exercises to help dialogues in which diverse stakeholders learn about each others’ interests and aspirations, as well as some of the biophysical and natural resource constraints to development [Lebel & Bennett 2004; Wollenberg et al. 2000]. We give examples of both approaches in this chapter.

### 5.2.1. Key uncertainties and contrasting scenarios

In our approach, identification and articulation of a key type of uncertainty provides a basis for constructing an axis of potential outcomes with characteristics that can vary from an extreme type of outcome at one end of the axis to a contrasting or opposing extreme type of outcome at the other, or potentially any intermediate point between the two contrasting extremes. Combining axes that represent two types of key uncertainties allows us to identify four quadrants of systematically varying outcome domains that can be used to explore contrasts and complementarities among four contrasting potential scenarios. Actual outcomes, or those that may be viewed as most likely, desirable or undesirable, of course, can potentially be

located at any point within any of the four quadrants. This section seeks to clarify and illustrate this approach through examples of sets of contrasting scenarios developed through selection of key uncertainties through an expert approach, and through a more participatory dialogue-based approach.

### Expert-driven multi-level scenarios

In order to facilitate understanding of how broader transitions in societies can interact with and influence forces of inertia and change at a local level, contrasting scenarios were developed according to key uncertainties at each of these levels:

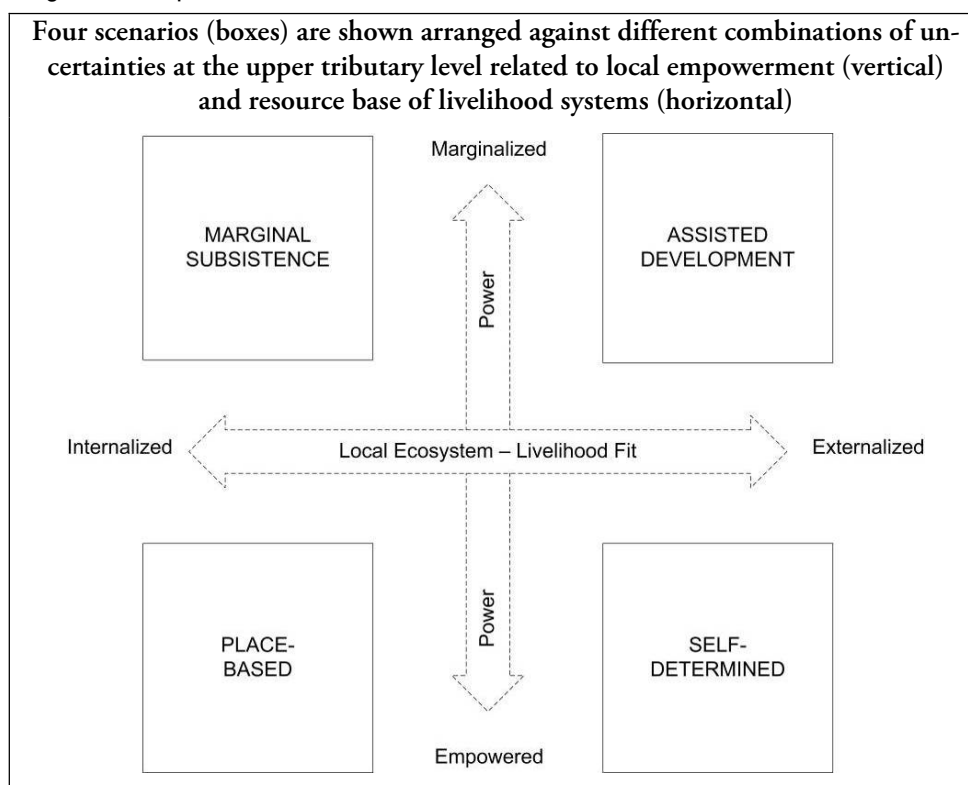
#### *At the local level*

The first step in developing an initial set of contrasting scenarios was to identify the major environmental and social uncertainties relevant to upper tributary watershed landscapes and livelihoods at the local level.

- ***Environmental uncertainties.*** In the uplands the qualities of ecosystem goods and services relative to how they are used is a crucial factor affecting livelihoods and wellbeing [Thomas 2002; Thomas et al. 2004]. While some societies are very heavily dependent on locally renewable land and water resources, other societies are increasingly dependent on external inputs such as fertilizers and fossil fuels. Such relationships can and often do change rapidly with improved access to credit, technologies and markets, and with capital accumulation [Lebel et al. 2003]. The degree to which social-ecological relationships are internalized or externalized is an important axis of uncertainty for upper tributary locations. Thus, the horizontal axis in Figure 5-1 labeled as “*local ecosystem-livelihood fit*” captures uncertainties about how conditions can vary from internalized to externalized.
- ***Social uncertainties.*** The extent to which local minority populations are empowered through formal representation in political and administrative organizations, as well as through informal networks influential in resource governance, is another key local uncertainty. It matters because it can greatly alter the set of available entitlements, such as, for example, free mobility to off-site locations for employment opportunities or for trading activities [e.g. Attwater 1997; Hansen 1998; Pinkaew 2000; Lebel 2005b; Walker 2006]. As we also saw in the previous chapter, lack of full citizenship, discrimination, and *de facto* insecure land tenure are frequently related sources of marginalization for upland households [Neef 2005; Vandergeest 2003]. Thus, the vertical axis in Figure 5-1 labeled as “*power*” captures uncertainties about the degree to which local populations may be empowered or marginalized.

These 2 axes of uncertainty define at their extremes the four local-level scenarios labeled in Figure 5-1 as “*assisted development*”, “*self-determined*”, “*place-based*” and “*marginal subsistence*”. The general characteristics of each scenario in terms of the two types of key uncertainties are indicated by the quadrant in which they are located. Subsequent sections illustrate how story lines can be developed to further articulate each scenario, and how relationships between local level and regional level scenarios can be further explored.

Figure 5-1. Upland watershed scenarios

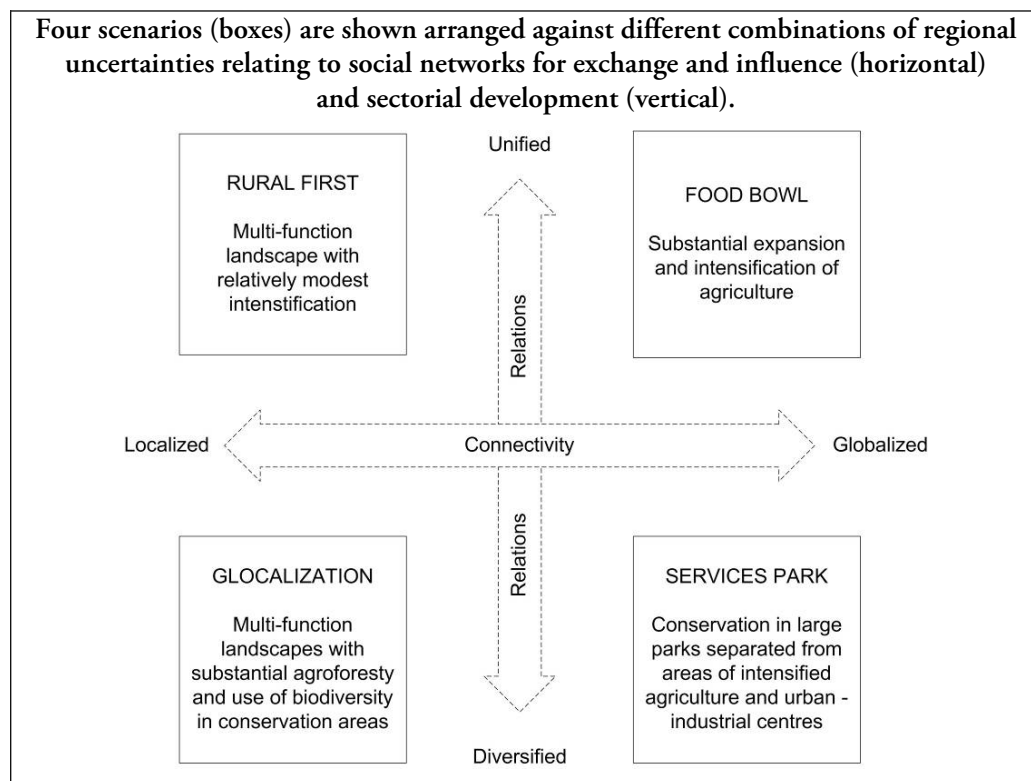


### *At the regional level*

A second set of regional-level scenarios was constructed to capture the great uncertainties about how broader markets and political structures would interact with local landscapes and livelihoods (Figure 5-2). These were derived from previous reviews and scenarios of environmental change and socio-economic trends for the Southeast Asia region [Lebel 2005a, 2006; Lebel et al. 2002].

- The first axis, *connectivity*, varying from “localized” to “globalized”, captures the contrasting ideas that production systems could be primarily oriented to use of local resources and local consumption, or they could be largely oriented towards capture of external resources and to producing goods for export (Figure 5-2). Political systems may likewise vary, from emphasis on empowering local entities to transnational corporations.
- The second axis, *relations* varying from “unified” to “diversified,” is meant to indicate the relative level of economic and political diversification (Figure 5-2). Economic diversification in the context of mainland Southeast Asia in the early 21<sup>st</sup> century is inversely related to the level of dependence on agriculture. In a diversified economy, agriculture is still important, but manufacturing and services employ more people and contribute more to household incomes. In a unified economy, there is heavy emphasis on agricultural and agriculture-related businesses. In political terms, “diversified” implies pluralism, whereas “unified” implies greater unity and integration of purpose, ideology and administration.

Figure 5-2. Regional scenarios



Source: Modified after Lebel 2006

The labeling of scenarios is important but can be misleading. In this set, for example, the *food bowl* scenario is a short-hand for a process that is about development centered on expansion of agro-industrial businesses [Lebel 2006]. It is conceivable that in some variants of this scenario much of the crop production is not for food *per se*, but rather commodities for secondary processing as in bio-fuels.

### Dialogue-based regional scenarios

The regional-level scenarios described in Figure 5-2 were expert-driven and converged the way they did largely because of the views and understanding of their author [Lebel 2006]. Another more participatory scenario building exercise focused on a similar set of issues – development in the North-South Economic Corridor (NSEC) and the wider region, with a focus on borderlands and uplands (Box 5-1). This led to some similar but also some important different possibilities for describing the space of interesting and plausible futures (Figure 5-3).

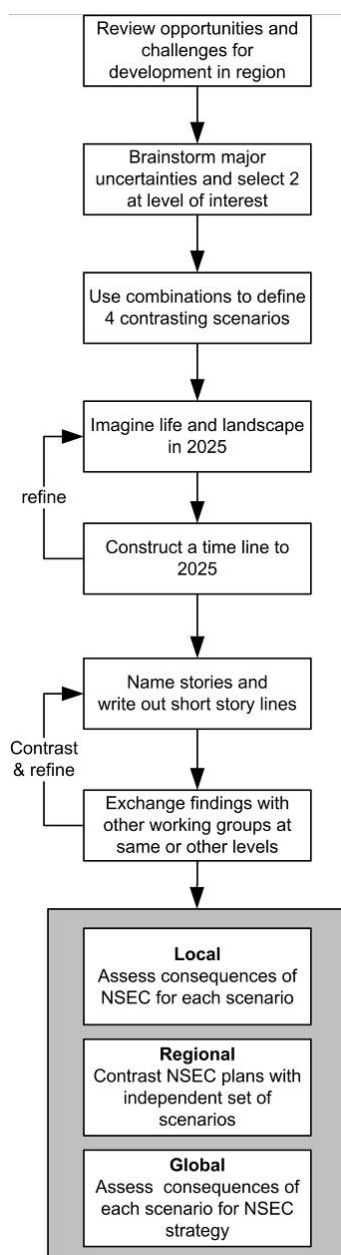
Thus, one group saw the degree of regionalism and environmental protectionism in national policies as being critical to how the region would develop (Figure 5-3). The *free-for-all scramble* for natural resources, especially water and forests, without any regional institutional checks on trans-boundary impacts was viewed, for instance, as a highly undesirable set of conditions for the people living in the region. It was nevertheless a story of the future which the group felt could conceivably unfold in the absence of any multilateralism and lack of any political interest in environmental conservation.

**Box 5-1. Building scenarios together. An exploration of development, water and trade futures in the North-South Economic Corridor region at a dialogue event held in Chiang Mai October 2007**

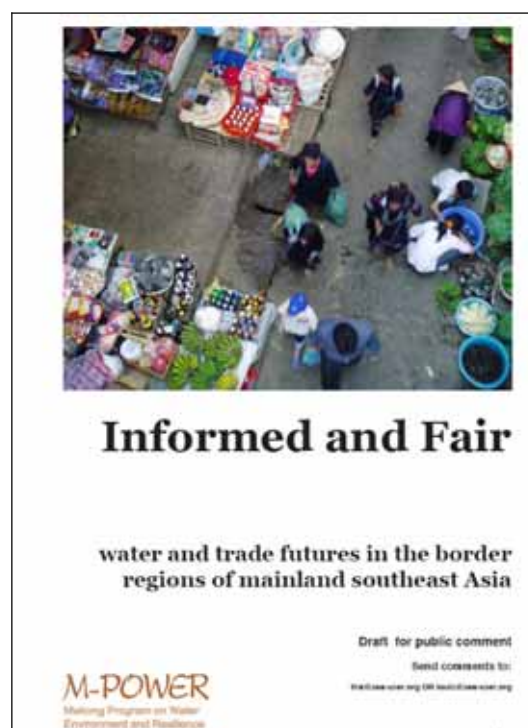
A Road network under construction or completed as part of the Greater Mekong Sub-region North-South Economic Corridor (NSEC) portfolio of infrastructure projects promoted by the Asian Development Bank.



B Scenario-building process used in the dialogue.



C Front-cover of the draft report made available for public comment.



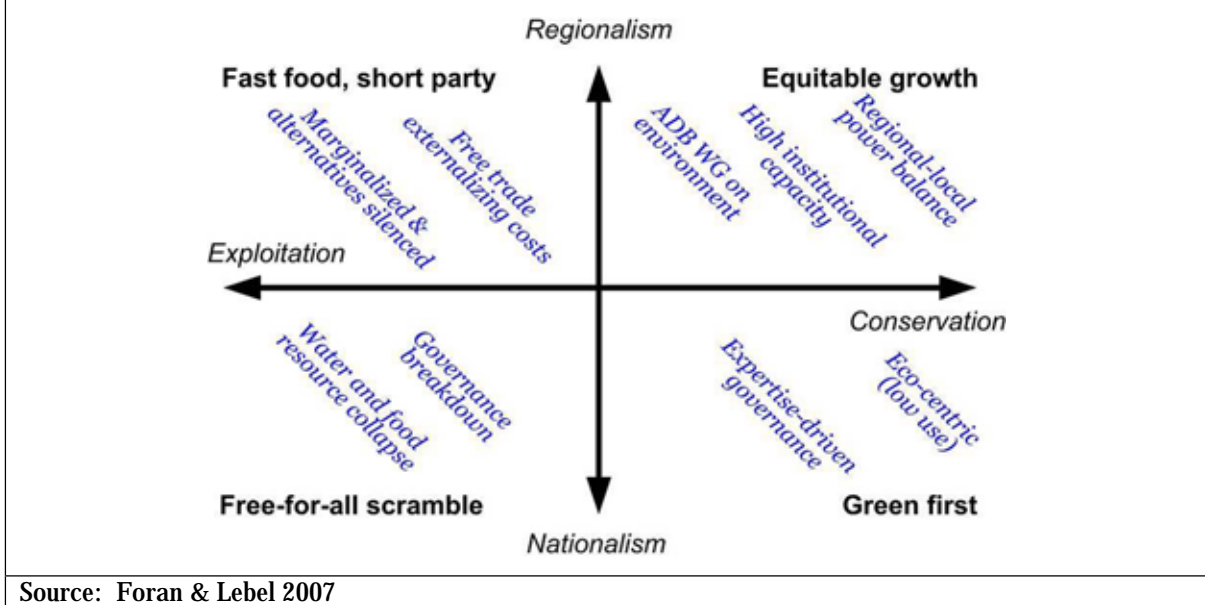
D One of the regional-level round-tables building a scenario set together.



Source: Foran & Lebel 2007

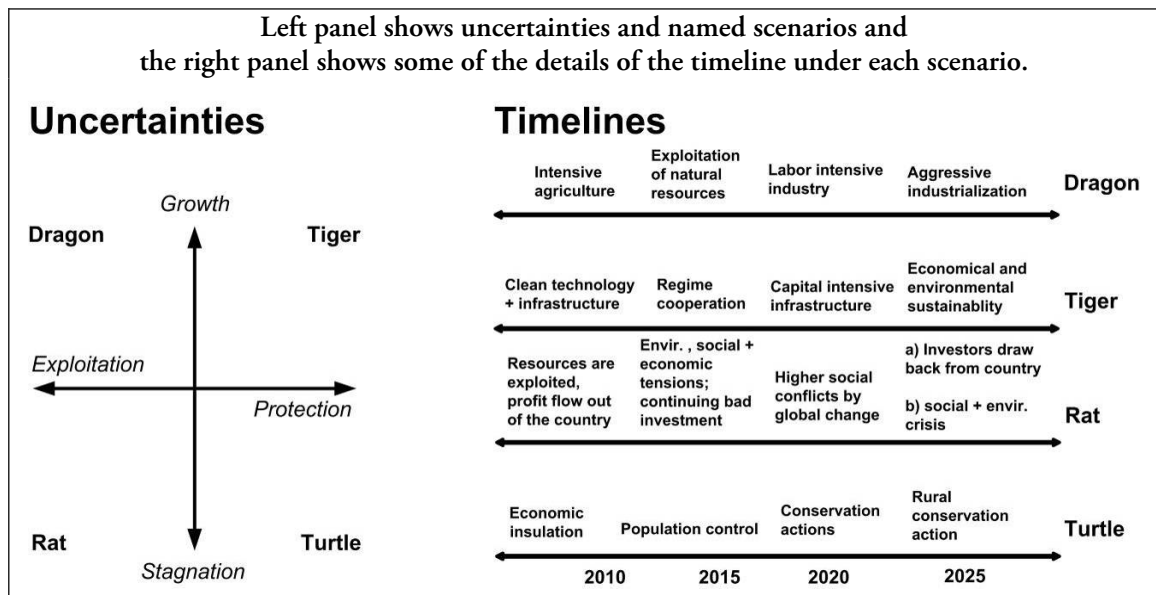


Figure 5-3. Regional scenario developed by participants in the NSEC workshop



At the same workshop (Box 5-1) two working groups also developed scenarios at the “global” level by making coherent sets of assumptions about broader transitions outside the region which will be important to the region’s future (Figure 5-4). Scenario names – *rat*, *turtle*, *tiger* and *dragon* – immediately give a sense of some of the imperatives and how they are pursued

Figure 5-4. Set of global-level (or extra-regional) scenarios developed jointly by one of six working group at a dialogue event on water and trade futures



## Roles for participation in scenario development

The role of participation in developing contrasting scenarios that reflect key uncertainties in potential trajectories of change deserves careful consideration. Building scenarios usually involves expert input and desk research [Neumann & Overland 2004]. Some proponents also seek broader stakeholder inputs or public participation. Participation is interpreted in many ways [International Association for Public Participation 2000]. It can vary from being little more than telling others about the findings through to active involvement in setting goals, refining stories and drawing policy recommendations [Lebel & Bennett 2004]. Our experience with a dialogue-based regional-level approach is an example of one type of participation.

Conveners are those who coordinate, facilitate, and in other ways, support, a scenario-building exercise. Why do conveners recruit other participants to scenario-building exercises? Scenarios of regional futures are made for different purposes. As a consequence, their rationales for different levels and forms of participation differ (Table 5-1).

Table 5-1. Rationales of conveners for participation in building scenarios

Rationales of conveners	Key participants sought	Public Participation Mode
Introduce alternatives	Supporters – articulate advocates Door Openers	Inform
Improve understanding	Experts, target groups	Consult
Facilitate social learning	Stakeholders, consulting experts	Empower

Source: Lebel & Bennett 2004; Lebel et al. 2006b

The form and extent of public participation in building scenarios of regional change matters for what issues get addressed, which sources of knowledge are drawn on, and their use and impact. *Decorative participation* has no purpose other than to give the appearance of having consulted with a wider group. As such it is deceitful. Sometimes there are good reasons not to consult or engage with wider group of stakeholders in a scenario-building exercise, and conveners should not be frightened of being honest. *Meaningful participation*, on the other hand, has as its goal empowering those involved to alter the dynamics, content and impact of building scenarios. It can do so in several ways, but each brings with it important challenges.

- First, having diverse inputs means more factors, interactions and interests. It also means that less well known thresholds, feedbacks and trends can be tabled, but maybe ignored. Bringing these together into internally consistent and plausible individual scenarios, however, is likely to be much harder than with fewer inputs. The temptation is dilution. Negotiating a set of scenarios that will yield informative contrasts gets harder as well.
- Second, social interactions can build understanding and trust without necessarily leading to consensus. It changes the way people think about the future and thus, conceivably, reshapes the future. People who are always challenging and thinking about uncertainties demand more attention be paid to adaptive capacities rather than one-time-only solutions. It can be very difficult for bureaucracies built on conventional division of labor, the fear of short-term election cycles, and fixed mandates, to bring more adaptive approaches into their management strategies and operations. It can also be difficult for citizens. But,

ultimately this shift to embracing uncertainties and thinking more about adaptive capacities is essential for regional sustainability.

- Third, compared to a firm with a relatively narrow set of goals, regional social-ecological systems are extremely heterogeneous. There are more goals and interests but fewer levers for management to pull. Building scenarios in this latter context is inherently a different activity than it is in a firm, or military strategy group. The outcomes are more ambiguous, and plausible response options are broader. And links with decision-making are usually indirect and vague. In this situation, building scenarios is one tool (among several) for supporting “dialogues” rather than a more narrowly construed “decision-support” tool as it has often been framed in other fields. The tension between exploring and giving advice is real, but it belongs in the realm of politics.

With meaningful participation, scenario-building exercises become much more than a variant of conventional approaches to strategic planning, because they turn the activity into a platform for dialogue. Scenario-building is a plausible way for stakeholders, researchers and decision-makers to engage with the complexity of regional development and explore alternative futures.

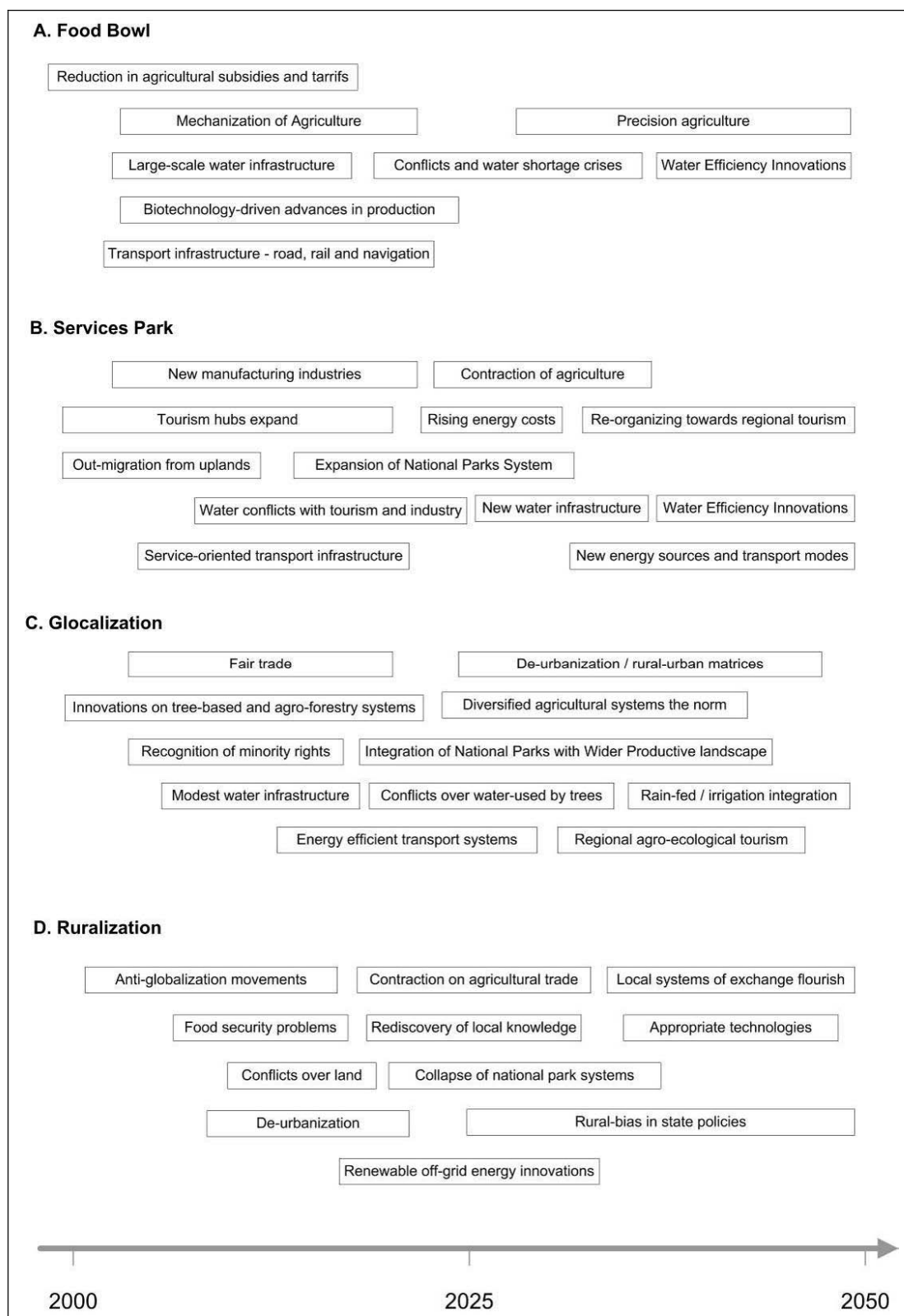
The story lines and illustrative applications of scenario analysis in the following sections return to a more “expert-based” approach. Especially those related to the UPB, however, which has been the main focus of our scenario efforts under this project, our analysis is synthesized from a quite extensive range of studies, findings from interaction with a substantial range of stakeholders, and secondary sources of information. This includes many of the materials contained in other chapters of this report.

### **5.2.2. Scenario story-lines**

Under the expert-driven process used in developing scenarios for further use under this project, after the main uncertainties to be explored were identified, literature was reviewed and spatial and time series data analyzed to strengthen understanding about key processes, interactions and sequence effects [Lebel 2006]. The storylines here were developed as a set that would span an interesting, but plausible, space of trajectories. They are plausible in the sense that it is possible to find stakeholders which articulate some of the key features of each scenario as an either desirable or possible outcome.

Although scenarios were originally distinguished on the basis of just two “uncertainties”, storylines were refined by identifying other key variables for which the scenarios would also be likely to differ from each other. Since these additional assumptions effectively form the core building blocks for writing storylines under each scenario, substantial effort was made to create consistent sets of assumptions within any scenario. In practice, there were some iterations among (a) this table of key assumptions, (b) a graphical timeline that could help in considering sequence effects (Figure 5-5), and (c) a qualitative model of the dominant drivers and feedbacks present.

Figure 5-5. Time lines with key events and issues for four regional scenarios are used to help make storylines more coherent



We illustrate here the story line of the regional level *glocalization* scenario (Figure 5-2), as well as all four of the local level scenarios (Figure 5-1). Other regional story lines are described elsewhere [Lebel 2006].

### Regional “glocalization” scenario

In the *glocalization* scenario significant economic growth occurs, but through exploiting local comparative advantages in agriculture, manufacturing and tourism rather than through adoption of more uniform technologies and production systems (Figure 5-2). Engagement with global markets is highly selective and perhaps also filtered through protective state legislation that tries to embed ecological and social externalities within the prices of traded goods.

This scenario could arise from a reaction against social injustices and environmental consequences arising from how liberalization of investment and globalization of trade have unfolded in practice (Figure 5-5). Fair trade becomes an important principle guiding policy and international cooperation. There is a sharp contraction in long-distance trade for all but specialty and higher-value items. This stimulates innovation and creates, somewhat surprisingly, a massive rise in “boutique” and “super-value-added” products, as trade within the region benefits from the slow-down in global-scale trade. Chinese trading companies grow to dominate the trade of medium-distance commodities across the Mekong Region. Improved information systems allow sharing of knowledge and creation of specialized market chains, making it possible for other aspects of the scenario to unfold. A second wave of portable, hand-held information technologies, for example, creates the social connectivity conditions that allow farmers to talk to farmers, and software programmers to other programmers. Government agencies and large corporations lag way behind small private sector entrepreneurs and their networks. Academics in 2040 are still trying to figure out how it all happened.

Sustainability and local well-being principles are added to “fair trade” to become the pillars of regional cooperation and collaboration. Although profitability is never as high as in some of the boom industries, returns are viable, and prospects for long-term income streams without excessive labor inputs (always volatile) make investments in the agro-forestry sector attractive. Various global environmental institutions re-emerge after several climatic and other extreme events, providing additional incentives for central and regional government support. The control for which local governments have fought through decentralization creates polycentric and multilayered governance that allows some coordination but still substantial flexibility at local levels. Against claims to the contrary made by big business, these changes do not “retard” economic growth but are responsible for continuing rises in measures of well-being, especially among the poorest sectors of society.

In upper tributary watershed contexts, more specialized markets and political decentralization create many new opportunities for viable livelihoods and profitable local firms. The *glocalization* scenario unfolds first in Yunnan province of China, building on expansion of rubber and a history of cross-border markets developed for non-timber products from forests and swidens in the region. Landscapes are once again viewed as multi-use. Conservation-only pro-

tected area systems across the region are replaced by local landscape stewardship councils under control of farmers experienced in complex agro-forestry operations.

How *glocalization* and each of the other regional scenarios (Figure 5-2) enhances or constrains development in particular upper tributary watersheds depends on the characteristics of those places as well as how key uncertainties unfold at the local upper tributary level (Figure 5-1). A multi-level scenario analysis opens up the possibility of exploring “discords” among levels, which occur when a scenario unfolding at one level makes it very hard for a particular scenario to unfold at another level (Table 5-2).

Table 5-2. Cross-level interactions in scenarios

Regional Scenario	Local Upland Scenario			
	Assisted Development	Self-Determined	Place-Based	Marginal Subsistence
Food Bowl	Plausible	Unlikely	Unlikely	Plausible with poor outcomes
Services Park	Plausible	Plausible	Plausible	Unlikely
Glocalization	Unlikely	Plausible	Plausible	Unstable, shifts to place-based
Rural First	Plausible	Unlikely	Plausible	Plausible

Source: After Lebel 2006

### Local-level scenarios

In order to help illustrate the overall process, this section provides examples of very brief story lines for each of the local upland watershed scenarios (Figure 5-1), together with a brief discussion of its plausibility under conditions implied by the set of regional-level scenarios (Figure 5-2), as summarized in Table 5-2.

#### *Marginal subsistence*

The local *marginal subsistence* scenario is similar to recently experienced conditions in more remote areas (Figure 5-1). Inhabitants in these areas have little direct say in national land development and conservation policies which impact them, produce most of their own food, receive little government aid, and draw on wider systems of exchange for only a few special goods. This storyline can arise either from the persistence of neglect, or from the withdrawal of state and private support for development in territories at the periphery.

The *marginal subsistence* scenario is unlikely to develop under the *services park* scenario as such land uses and settlements would be strongly discouraged, given the emphasis on clear separation of land uses and technological modernization (Table 5-2). This local scenario is also unlikely to persist under a *glocalization* scenario because of the infusion of market-related opportunities. The most viable outcomes for upper tributary watersheds are likely to be under the *rural first* regional scenario, as these policies would be most consistent with relatively un-intensified fallow-field landscapes dominated by small scale farming (Table 5-2). The

greatest vulnerabilities to upland societies would probably occur under the regional *food bowl* scenario, as only the least profitable and often poorest agricultural lands would be left and there would be little other assistance.

### *Assisted development*

The local *assisted development* scenario is similar to much current experience in the uplands (Figure 5-1) where state and non-state agencies provide development assistance with the aim of altering land uses and livelihoods in upper tributary watersheds. Local communities are taught, lured and coerced, and have little political influence beyond their involvement as project “partners”. This storyline can emerge in previously remote areas where road access is improved, leading to provision of public services and greater activity by authorities.

The *assisted development* scenario for an upper watershed is plausible all other regional scenarios but is not likely under *glocalization* because of its emphasis on local resources and empowerment (Table 5-2). But assisted development may be especially likely under the regional *food bowl* scenario. With agricultural commodities and trading services in low-lying areas in deltas and main valleys competing strongly with urban and industrial towns, landscapes in upper tributary watersheds would become more and more integrated with mainstream agriculture as production areas for more temperate crops, new varieties, and seed production. With state authorities and non-state organizations playing a large role, local specificities are unlikely to emerge strongly, with the consequence that livelihoods in different locations are more likely to be in direct competition, with favored crops and services converging on more similar configurations.

### *Place-based*

The local *place-based* scenario reflects current emphasis of many community-based initiatives on local stakeholder control and responsibility for local resources (Figure 5-1). It seeks to build on local assets and skills. Upward and downward accountability mechanisms are likely to be crucial to long-term performance on ecological and social justice criteria.

The *place-based* scenario is unlikely under the regional *food bowl* scenario because of the lack of control placed with local authorities, states or communities, but it is plausible under all other regional scenarios (Table 5-2). Livelihoods are likely to vary widely among places but be relatively specialized in the goods and services of particular landscapes. With local control and competition in wider markets, comparative advantages will shift along with local capacities and assets as well as the unfolding of regional scenarios.

### *Self-determined*

The local *self-determined* scenario is perhaps the most radical of local-level upland scenarios, given the current context where most upland dwellers are politically marginalized and lack the assets and skills to take advantage of new information, markets and technologies (Figure 5-1). Moves towards self-determination could produce substantial surprises in terms of livelihoods and land uses, including increased mobility and, perhaps, migration.

The *self-determined* scenario, however, would be unlikely to emerge in either the *food bowl* or *rural first* regional contexts because of lack of local influence over resource access and flows (Table 5-2). When the *self-determined* scenario emerges, there are possibilities of both high levels of resource conservation as well as exploitation made possible by substitution with inputs from elsewhere. Livelihoods are likely to diversify the most under this scenario, and migration to urban-industrial areas could be significant.

### 5.2.3. Implications of scenarios for livelihoods and landscapes

The approach espoused in this chapter emphasizes learning from contrasts among scenarios, including from interactions among different levels, rather than trying to construct our particular “favorite world”. In this mode, it is not necessary for experts to decide, or for stakeholder groups with different interests to agree on what is the most desirable scenario. Rather, the much more modest objective is for an overall set of scenarios that spans an interesting and relevant space around which to identify and deliberate the plausibility of various alternative assumptions about what is likely to happen, what would be necessary for it to happen, what would likely follow from its happening, and what would likely be prevented from happening at all.

In the context of the scenarios described in previous sections, some of the general implications that each of the four local-level scenarios for upland watersheds (Figure 5-1) are likely to have for livelihood opportunities of local upland farmers, and for goods and services provided by local landscape ecosystems, are summarized in Table 5-3. The plausibility of any of these local scenarios actually occurring, however, depends on characteristics of each regional level scenario, and the degree to which the two levels are compatible or in discord.

Table 5-3. General implications for landscapes and livelihoods of four local scenarios where they are plausible under a corresponding regional scenario

Implications	Assisted Development	Place - Based	Marginal subsistence	Self - determined
Livelihood opportunities for upland farmers	Significant as agricultural laborers or agro-industry wage earners. Health and wealth outcomes depend greatly on degree of corporate and state attention to social justice.	Diverse and numerous opportunities in situ. Some differentiation still likely due to variation in comparative advantages of place and skills of people.	In situ unlimited but very restricted set of opportunities. Primarily subsistence or locally exchanged products and services. Difficult, but not impossible to maintain health, education and research services in this context.	Many opportunities most of which are off-site and thus involve seasonal or permanent migration into urbanizing regions.
Landscape ecosystem goods and services	Likelihood of reduced areas of high natural biodiversity, but with substantial human interventions aimed at maintaining or enhancing watershed functions to support agricultural production activities.	Most services and substantial biodiversity likely to be maintained especially where compatible with mosaic and multi-use landscapes.	Opportunities for significant low impact food systems to emerge but much depend on strength of political institutions to support “innovative” cooperative rather than conventional private sector-based competitive models for rural development.	High quality conservation areas in uplands but with little economic benefits apart from tourism and transfer payments for maintaining watershed services used by lowlands.

Source: after Lebel 2006



## 5.3 Illustrations and applications in case study sites

Having developed a general set of potential future scenarios for both regional and local levels, this section turns to more specific illustrations and applications in the context of our case study sites. These are presented in three sub-sections. The first briefly explores three illustrations of emerging changes in the context of some of our case study sites that could lead to transitions with important implications for future development of agriculture in those areas. The second seeks to provide a more general summary of current and potential directions of pressures for conservation in the uplands at wider levels within which our study case sites are nested. The final sub-section then turns to specific applications of scenario analysis, which have primarily been conducted in the context of the Upper Ping Basin and its Mae Chaem sub-basin.

### 5.3.1 Signs of potential transitions in agriculture

Current patterns of change in our study site locations include evidence that various transitions in upland agriculture may be on the not too distant horizon. In order to help illustrate some of the issues involved, the following discussions provide three examples. The first focuses on how change in upland agricultural production systems in North Thailand may be moving toward a transition to systems that place greater emphasis on processing and markets than on crop production. The second explores how urbanization and industrialization in China may be inducing changes in migration and land policies that could have strong implications for agriculture and rural livelihoods. The third explores how very strong emphasis on educational achievement by children in rural households in Mae Wang may be leading to a generational transition in aspirations that would have major impacts on agriculture.

#### Shifts to higher value processing and niche markets in North Thailand

Most policy and development concern and support related to upland agriculture has focused on farm production and its links with input and commodity markets. This has helped set in motion processes that have greatly diversified commercial crop production. During recent years, however, changes in demand for agricultural products, changing structure of market chains, and efforts to capture more value added, appear to be inducing some important further transitions in agricultural production systems in North Thailand.

Indeed, crops that have become popular among farmers in Northern Thailand during recent years are mostly newer crops, such as temperate vegetables, exotic flowers and fruits. Apples, pears, avocados, strawberry, zucchini, lettuce, broccoli, brussel sprouts, carnation, chrisanthemum, *etc.* are among a set of newer higher-value crops aimed at specialty niche markets. And as urban populations in Thailand become wealthier and their lifestyles change, demand for these crops is increasingly for purchase from supermarkets rather than in fresh markets.

While the Royal Project has been a major pioneer in introducing many of these newer crops, other agribusiness companies are also now expanding into more vertically integrated operations for specialty crop production, processing and marketing. For example,

- Coffee is produced by highland farmers, but marketed through various channels, mostly in high-income outlets. It is processed, branded and priced differently by different suppliers. Some, as we saw in the case study from Omkoi, are aimed at niche markets for shade-grown coffee from certifiable sustainable production systems.
- Large head onions are a high value crop demanded by restaurants and fast food outlets for Western style food. As we learned from onion growers in Mae Wang, onion seed is imported from Europe each year by the Onion Growers' Association and their supply is tightly controlled to help reduce boom and bust cycles. Nevertheless, onion farmers still report oversupply drives down prices during some years.
- Sweet corn is grown by contract farmers, but instead of sales in the fresh market, their output is quickly either frozen or canned, and shipped for sale in export markets or in the domestic wholesale-retail chain.

As these examples indicate, the agribusiness companies involved in these types of operations need to be quite advanced in their technology, information and management skills.

Longan is also commonly grown in areas like Mae Wang, but due to often low and fluctuating prices, farmers in Mae Wang are beginning to shift to organic production of longan in order to tap into higher value and more reliable specialty organic markets. Although the Thai Department of Agriculture has extended their "Good Agricultural Practice" (GAP) program to longan production in Mae Wang, farmers report that this still has not addressed the marketing constraints for their product.

And even in the vertically integrated system of the Royal Project Foundation, production and products continue to change, with exotic flowers and ornamental plants now becoming some of their most popularly demanded products. And in order to meet this demand, flowers and ornamentals must be harvested, packaged and transported in special ways to assure the characteristics and quality that attract and satisfy their mostly urban consumers.

Overall, experience and trends of Northern Thai agriculture in general indicate that the greatest difficulties and constraints faced in producing newer high-value crops for specialty markets are not at the farm production level. Rather, the most important constraints are insufficient entrepreneurship and management skills associated with the processing, packaging and marketing of these higher value products into specialty niche markets. For those operations that have been relatively successful, good entrepreneurship among local merchants and traders play essential roles in this kind of business. As new waves of opportunities and challenges emerge with changing trade arrangements at international and global levels, further transitions in agricultural production systems appear likely.

## Working on the farm in China: labor and migration

In China, continuing rapid urbanization and industrial growth appear to be providing incentives for a significant transition in state labor and migration policies that could have important implications for agriculture and livelihoods in rural areas. Indeed, state policies on migrant labor and land tenure are two key factors in the future of the rural landscape, as they strongly influence labor allocation practices of rural households. Shifting the country's surplus rural labor (estimated at 300 million in the year 2000) to off-farm employment is a crucial component for sustaining economic growth and poverty reduction, and has been encouraged by government policies.

The 1994-2000 Poverty Alleviation Program stated that by the end of the year 2000, every household in a poor area should have one family member working either in a rural enterprise, in an agricultural sideline, or as a migrant in a developed region [Zhang 2003]. One campaign slogan was, 'The migration of one person frees the entire household from poverty.' However, there are still significant obstacles to rural-urban labor flows. Until 2005, farmers were still required to provide a land tax in grain or cash to their local township, which effectively locked some labor from each household into the agricultural sector [Kung 2002].

Recent rural and urban policy reforms have made it easier for rural residents to migrate. By 2005, almost all rural taxes and fees were eliminated, removing a significant burden from rural households. The lack of urban public services for migrant workers, such as education and health, is also starting to be addressed. Several urban areas have allowed access to social services for those with temporary resident certificates, and some have approved the establishment of schools for migrant children [Wang 2004]. And growing acceptance of the informal transfer of rural land use rights means that farmers can reduce their responsibilities at home without forfeiting rights to their agricultural land. The main obstacle remaining is the *hukou* (household permit) system, which remains largely intact, despite experimentation by some cities and provinces with relaxing *hukou* requirements.

The difficulties of transferring household registration, and the current land tenure system under which land cannot be sold, mean that rural residents maintain strong ties to their ancestral land. Those ties create a circular migration pattern, as young adults leave to work in urban areas, but return to set up households at their rural origins. The effect of this migration on agricultural production varies, with some locations maintaining agricultural output and others in decline due to a lack of able-bodied labor. Often children and the elderly are left behind in the village, while those of working age spend most of their time in provincial cities or factories in China's southeast. In other cases, contacts and business experience provided by off-farm employment actually help to boost agricultural productivity and diversification.

If state policy on population movement and household registration continues to relax, circular migration may be reduced as rural residents find it easier to permanently relocate to urban areas. The flow of rural workers to urban areas would increase, reducing labor and also capital availability in rural areas. This could have a variety of effects on agricultural production. The loss of labor and financial resources may reduce the prospects for improving agricultural production. Alternatively, as population pressure is reduced, the opportunities for cultivation

of commercial crops may actually increase due to consolidation of land resources and a shift away from subsistence agriculture.

### **Aspirations of the next generation in the UPB: education and livelihoods**

A generational transition in livelihood aspirations seems to be emerging in some rural areas of the Upper Ping Basin, and appears to have the blessing of members of the older generation. During field interviews conducted by the Chiang Mai University team with villagers in Mae Wang watershed in 2006, villagers reported that their children are mostly all in schools pursuing higher education opportunities. Upper high school and tertiary levels of education are common among children of farmers in this area, and many have children in universities.

Parents encourage and support their children to obtain the highest level of education they are able to achieve, especially among those who can afford it. Moreover, student loans and scholarships have also become available from the Thai government during the last 10 years, which has enabled many more students from medium and poor families to finance their study at schools and universities by themselves. After completing higher studies, most children seek jobs outside of the agricultural sector – some work in factories, others in hospitals, private companies, government offices, self-employed jobs, etc.

Parents are well aware that their children are not likely to continue in farming, although some may be willing to maintain their parents' longan orchards. Farmer parents report that they intend to farm their land until they become too old to do so, but that their lands may not continue to be farmed when they are passed to their children. Indeed, they say they do not know what will be the future of farming in their area.

Since the Mae Wang watershed is part of Chiang Mai Valley, these households are near enough to quite easily travel to Chiang Mai City and return in the same day. This phenomenon of dramatic single generation change in education and aspirations appears to be emerging in such areas more quickly than in other more remote areas. But we have also noted in studies at more remote upland locations in the UPB, as well as in the uplands of Vietnam, that even poor upland household's place strong emphasis on education for their children.

### **5.3.2 Future of conservation: land constraints in the uplands**

As we have already seen in previous chapters, transitions are not new to mainland Southeast Asia, including our case study site areas. In recent history, the colonial era brought a range of geopolitical, administrative, economic and social transitions to countries of the region. In section 3.1 we saw how a new series of geopolitical transitions emerged around the middle of the 20<sup>th</sup> Century, including the end of colonial rule, socialist revolution and self-sufficiency campaigns in China, revolutionary movements and international responses resulting in devastating wars in several countries, and defensive responses in Thailand that included launching of national security programs and economic development plans. Beginning in the mid-1970's, new waves of transition followed the end of armed conflict and completion of geopolitical struggles, and by the mid-1980's all countries had undergone economic and political transitions that increasingly "opened" their economies to broad international trade and in-

vestment, as well as growing forces of globalization. Periodic economic reforms have continued, as well as cycles of reform and various retrenchments in political and social arenas.

While central focus of these successive waves of transition was largely in lowland zones, impacts on upland areas were also important and increasingly strong. Harvest of forest timber for commercial markets, for example, had its first major impacts on Myanmar and Northern Thailand during the colonial period, but impacts have spread across the region in recent decades. Impacts of war were sometimes very heavy, and still linger in some areas. Upland areas were also affected by the opium economy that began during colonial times, followed by spread of drug control and crop substitution programs. Similarly, national security programs of various types have affected upland areas, and pulled remote mountain communities more strongly into national administrative and “development” systems. Especially during recent decades, these efforts have become more closely linked with provision of government services and poverty alleviation programs, including welfare-oriented programs for mountain minorities. Many such programs have also sought to end traditional agricultural practices involving shifting cultivation of various forms, which are looked upon with disdain by mainstream lowland societies, who view them as primitive, backwards and wasteful. Meanwhile, economic integration has brought market production opportunities for a growing range of crops.

One result of these cumulative waves of transition has been growing national concern about environmental impacts of land use in upland areas, which is now being strongly reinforced by environmental dimensions of globalization processes. Since lowland zones in the region are most all heavily settled and converted to irrigated agriculture and urban areas, it is primarily upland zones that have become targets for expansion of protected forest areas, conservation farming and agricultural chemical reduction campaigns, and other types of environmentally-oriented programs. Indeed, upland mountain areas have become the main arena for discussions and debate related to “linkages” and “trade-offs” based on “upstream-downstream”, “conservation-development”, “poverty-environment”, “agriculture-forestry” and similar types of relationships. We see various manifestations of these issues at all of our study sites.

Thus, as we look to the future, it is also important to consider various types of potential further transitions that may result from demands from wider societies for increasing types and levels of conservation in “upland” montane zones. Directions such transitions may take will depend to a large extent on answers to three questions: Conservation of what? Conservation for whom? Conservation by whom?

The basic object(s) that are likely to be the focus of conservation can be grouped into three categories: goods, land, and environmental services.

- Current evidence indicates that conservation of goods is likely to focus either on timber and/or other forest products, or else on “agricultural” output of local livelihood systems, which can be consumed, sold to markets for agro-industrial commodities, or produced for specialty niche markets. Conservation of forest for timber production was a major issue in the past, and could re-emerge in areas where it is ecologically and politically feasible. Conservation directed toward production of agricultural goods could take various directions, and at study sites we have seen campaigns aimed at reducing chemical use, pro-

moting shade-grown coffee, “safe” tea, organic longans, etc. Most of these examples involve economic incentives from specialty markets that assign higher value to such crops.

- Conservation of land relates primarily to activities involved with “non-natural” uses of land, and has two important dimensions: quantity and quality. The quantity dimension is most often reflected in efforts to impose land use zoning and land allocation regimes that “rationalize” and limit various types of land use. This is one aspect of major land allocation programs that have been conducted in the uplands of Yunnan, Vietnam and the Lao PDR, which often designate bounded areas for “forestry” and “agriculture” types of land use. The quality dimension of land conservation emphasizes requirements for soil conservation and conservation farming practices, usually within “agriculture” land use zones, and frequently including use of trees or other perennial plants in various spatial and/or functional configurations.
- Conservation of environmental services is a more recent conceptualization, but is now one of rapidly increasing concern. There are currently four primary types of environmental services that are the focus of most concern: (1) *Water conservation* focuses on flows of water within watershed landscapes, in terms of water quantity, timing and quality. (2) *Biodiversity conservation* is more ambiguous, and can focus on conservation of individual species, habitats and communities, or entire ecosystems; spatial scales can vary widely, and agricultural or other human components may or may not be included. (3) *Carbon conservation* focuses primarily on the amount of carbon that is sequestered in a particular area, and is aimed at contributing to reduction of carbon dioxide in the atmosphere and its impact on climate change. (4) *Scenic beauty conservation* is the most intangible and subjective type of environmental service, but can be quite highly valued by various parts of society for its contribution to recreation, tourism, and quality of life.

As this very brief summary suggests, primary beneficiaries of conservation can vary. But wider societies at various levels are generally the main beneficiaries toward which conservation policies are directed. Levels can vary from relatively defined and often fairly localized “downstream” beneficiaries of various forms of water conservation, through national societies who value some of these goods and services as national assets, to global beneficiaries of efforts to conserve planetary biodiversity and moderate climate change. Thus, it should not be surprising that forces driving change in conservation policy are largely based at watershed to national and global levels. At the same time, however, many of the arguments forwarded by conservationists emphasize benefits that will also be accrued by local communities. Such arguments have three major themes: (1) local people will also benefit from improved sustainability of their livelihood systems; (2) local households can benefit from higher values associated with production for “green” markets; and (3) local people also benefit as members of wider societies at national and global levels.

Questions of who will be the agents and managers of conservation, and how conservation efforts will be conducted, tend to generate two types of answers in this region, and have sometimes fostered heated and divisive debate. One school of thought places primary responsibility and authority in the hands of state agencies and their “experts”. Thus, in its extreme form, government agencies formulate and implement upland conservation programs

that include “appropriate” land use zoning, including establishment of protected forest areas, watershed classification zones, water resource investments, etc. These are authorized by laws and regulations passed at central government levels, and specialized agencies are empowered to enforce regulations and implement programs, and induce and supervise any needed groups in local areas. The second school of thought, on the other hand, places primary emphasis on the role of local communities. Thus, in its extreme form, local communities decide on what is “appropriate” for land use zoning in areas under their jurisdiction, and formulate their own programs to conserve natural resources and maintain environmental services, in a manner that adapts to changing local conditions. Efforts to address the concerns and needs of “downstream” or other wider communities or societies are conducted through iterative processes of negotiation rather than unilateral decisions. While these two depictions represent extreme cases, and more realistic and viable outcomes are likely to be located somewhere between the extremes, we have found advocates associated with case study sites who reflect a substantial range of views along this continuum.

How these questions and issues are addressed within particular national and local contexts will determine the range of potential upland livelihood and landscape outcomes that are likely to be viable in the future. For example, will there be strong government pressure, as we see in Thailand, for expansion of protected forest areas that return large areas to completely forested landscapes managed by government agencies? Will forestry and agriculture be segregated into largely agency-managed forest landscapes with only small enclaves of small plots where intensive commercial agriculture and off-farm employment are the only viable alternatives? Will local people be able to have areas of community forest where they can make their own production and management decisions? Will more integrated mosaic landscapes with forestry, agroforestry and agricultural components that are managed to maintain specified environmental services while still providing resources for diverse local livelihoods be acceptable? Will there be “space” and mechanisms for negotiating landscape configurations and allocation of benefits and costs among local and more distant stakeholders? Will there be some forms of compensation for upland communities whose livelihood opportunities are severely constrained in order to provide benefits for downstream or other wider societies?

It is still quite difficult to predict the direction and extent of conservation policies across the region, and how their impacts will be manifest in any specific areas. From the evidence we have seen in countries of the region and our case study sites, however, it appears to be quite safe to assume that conservation constraints on upland livelihoods and landscapes will play an important role in their future.

### 5.3.3 Scenario applications at case study sites

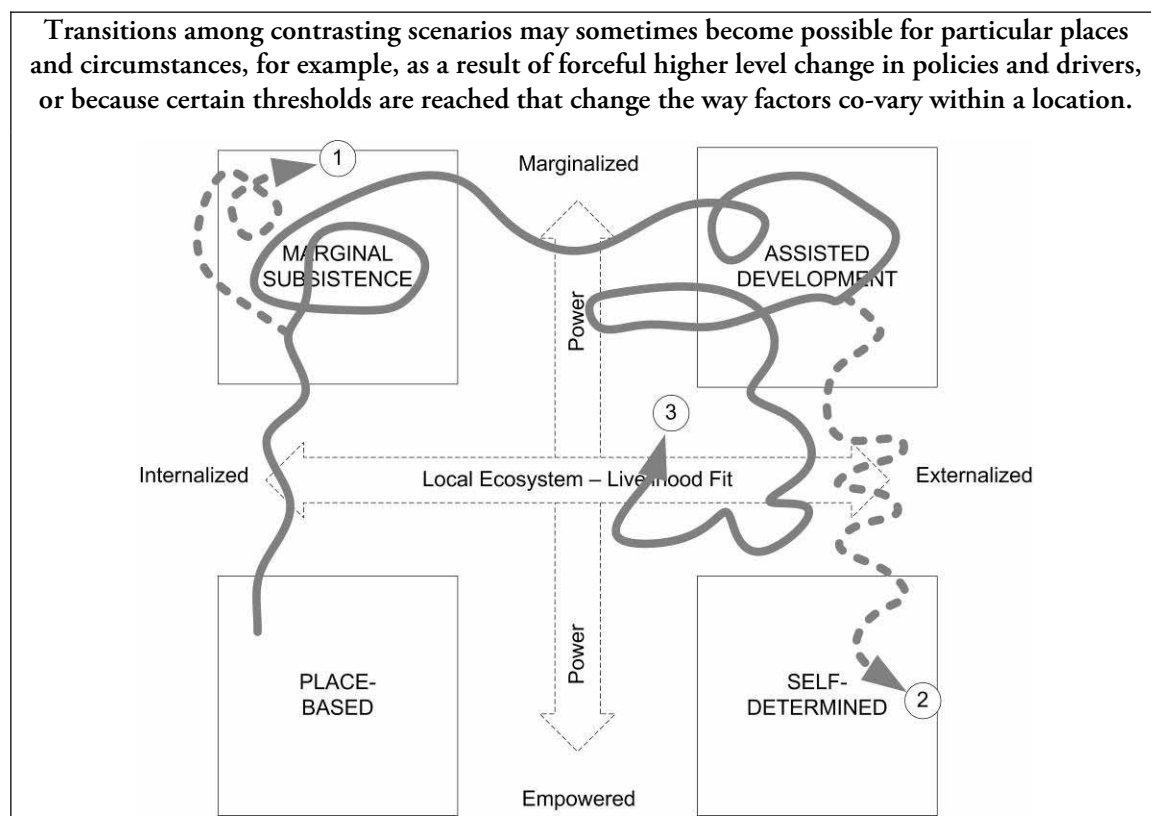
Our application of the scenario approach at case study sites began with its use as a tool to help us more clearly identify and understand past transitions that have affected livelihoods and landscapes of poor communities in the Mae Chaem sub-basin of the UPB. Building on this experience, our most extensive effort expanded to include the entire UPB. Here we focused on potential future trajectories of change that incorporate processes of urbanization and upland-lowland interactions at levels both within and beyond the boundaries of the UPB. Our third example is a very preliminary application to upland tea producing communities at our site in Vietnam.

### Looking back at scenario transitions in Mae Chaem

Although most of our exploration of transitions has been looking forward, looking backward at local histories from the position of the present may also be helpful for understanding what kinds of change are possible, what sorts of relationships are highly resilient, and what processes and relations might be broken under certain conditions.

Thus, local histories of development of different locations may suggest transitions among the more extreme versions of scenarios in a set established to maximize their contrasts. Thus, we may see how it was possible to break-out of one set of coherent processes and move into another. Taking the example of upland areas in the Mae Chaem sub-basin in North Thailand, past trajectories can be schematically mapped against local scenario spaces (Figure 5-6).

Figure 5-6. Past trajectories of change in the Mae Chaem sub-basin, North Thailand





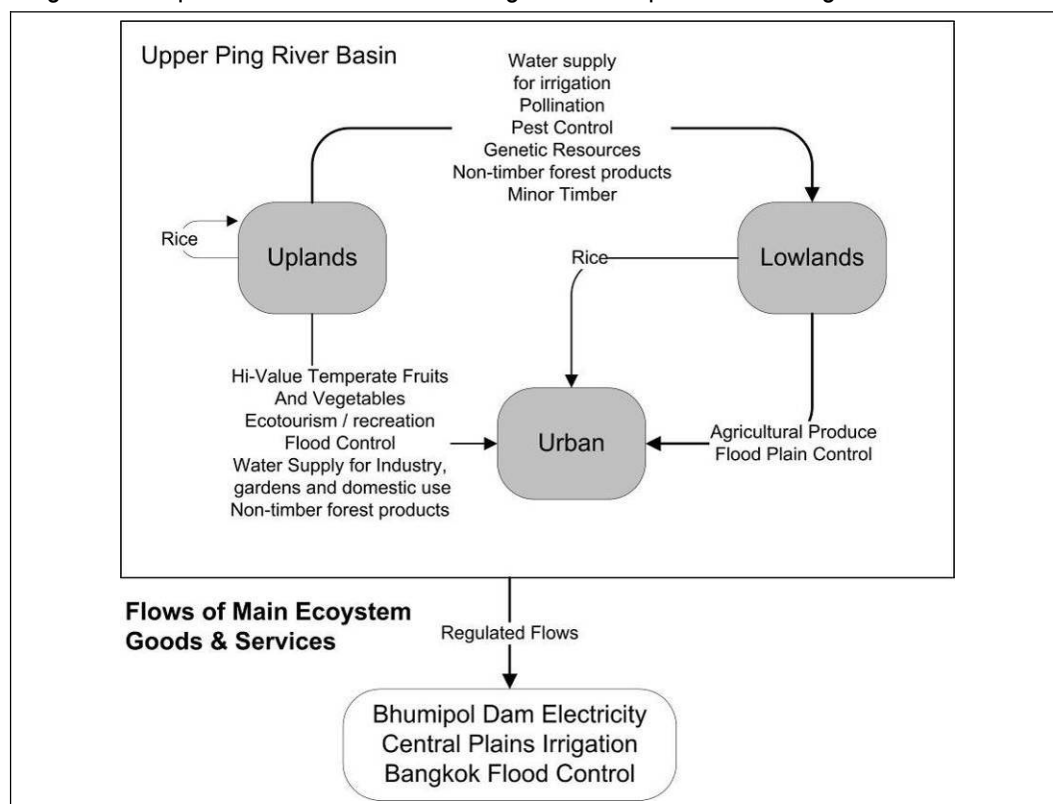
This diagram reflects an associated explanatory narrative:

- Many Mae Chaem localities with a long history describe an increasingly distant past when communities had something more similar to a “*Place-based*” independent existence, where their livelihoods emphasized self-reliance and communities were largely able to make and implement their own decisions with few constraints imposed by outsiders.
- Gradually, however, outsiders associated first with logging concessions and the opium economy, and later with increasing penetration of state administration and declaration of reserved forest lands, began claiming and transforming local natural resources, and reducing and altering local livelihood options. As a result, communities began to live in more of a “*Marginal subsistence*” context, wherein they were still responsible for developing and conducting their own subsistence strategies, but felt increasingly “boxed in” (or “fenced out”) and constrained by outside interests. While this context continued for many years in a few of the most remote areas (Position 1, Figure 5-6), this approach has more recently become untenable.
- Beginning in the 1970’s, large national parks began to be declared in the eastern ridge of the Mae Chaem sub-basin, forest watershed management units were established at various locations, and state forest plantations began to be planted into areas that were part of local forest fallow agriculture systems (see discussions in section 3.3.1). Roads began to be improved and expanded, and by the 1980’s, major projects backed by the government and international donors had been launched in Mae Chaem, aimed at opium crop substitution, anti-communism interventions, stopping shifting cultivation, and other government programs including education and public health. As projects spread to more parts of the sub-basin, village histories began to reflect more characteristics associated with an “*Assisted Development*” scenario. Many villages continued to wander around in such a space, as internationally supported projects ended and some activities they promoted collapsed. They were then followed by various waves of government, Royally-initiated, and NGO projects, all seeking to induce various changes in livelihoods and natural resource management in various parts of the sub-basin.
- Then, with the 1997 constitution and government reforms associated with strengthening elected local governments (TAOs), many villages found themselves, for the first time, moving toward the types of political representation and power found in the “*Self-determined*” quadrant. More local initiatives began to appear, including informal multi-village networks and locally-organized studies, with some gaining assistance from NGOs, the Thailand Research Fund, and other sources.
- Following the last military coup, discarding of the people’s constitution, and strengthening of older forms of governance, however, many now feel a “*Self Determined*” scenario may have become only a legend or dream (Position 3, Figure 5-6).
- At least a few communities, however, have not yet lost hope and continue the pursuit of “*Self Determined*” scenarios (Position 2, Figure 5-6), based on various contexts that include their locally organized and managed informal networks, and in some cases growing economic strength and influence at least in the local context

## Urbanization, upland-lowland linkages, & potential transitions in the UPB

While much change is driven by developments at national and regional levels, lowland zones and their increasingly influential urban centers also play important roles in shaping directions of change in livelihoods and landscapes in the UPB. With an understanding of the multi-level dependencies inherent in urbanization, it should be possible to consider some of the key linkages across these scales. Two appear important for Chiang Mai livelihood, water and land issues. First is the upstream-downstream physical and political relationships with Bangkok and the central plains, while the second is linkages within the UPB between upland areas and lowland zones where urbanization is occurring (Figure 5-7). As we note in discussion of historical transitions, water management within the Upper Ping is partly determined by interest downstream in the lower basin.

Figure 5-7. Upstream – downstream linkages: central plains and Bangkok factor



### *Urbanization and Ping water management transitions*

In Thailand, national land and water policies have been largely driven by interests centered in the capital, Bangkok, and surrounding rural and industrial areas of the Delta [Lebel et al. 2007a; Molle 2007]. Indeed, the first World Bank assessment in Thailand, which was part of preparations for the first national 5-year economic development plan, emphasized the role of the North as the source of water for Central Plains agriculture and Bangkok [World Bank 1959]. Subsequently, massive areas in the North (and elsewhere in the country) were declared reserved forest, followed by establishment of protected forest areas and a watershed classification system that are especially restrictive for land use in the North.

Dams on main tributaries of the Chao Phraya River were built and operated to produce electricity for industrial-urban development and to regulate monsoonal-varying flows for irrigation in the Central Plains. The centralized administrative system strove to bring standardization and orderliness to diverse locally managed irrigation and rain-fed farming systems, up-scaling levels of resource planning, development and allocation in the pursuit of export-oriented economic development initially founded in agriculture, but subsequently shifting toward industrialization. The imperative for actors that would make use of key institutions of the state to secure and expand power has been, when expedient to do so, to look north (as well as northeast) and appear to attend to those distant rural interests. This need has flowed seamlessly through excursions into electoral democracy punctuated by military rule.

While the Upper Ping River basin itself has a long history of leaders and elites deploying institutions of the state to control and manage people and water extending back at least 700 years, it also has a long history of self-organization by communities to solve water management problems [Cohen & Pearson 1998; Uraivan 1983]. Over the last five decades, water and land-use has been transformed by expansion and intensification of agriculture, by urban-industrial growth and by tourism. The urbanizing Chiang Mai – Lamphun Valley region is one of the most economically important areas outside the Chao Phraya Delta [Hung 1998; Lebel et al. 2007b]. With demand mounting for water for dry season irrigation and expanding residential, commercial and industrial areas, water shortages are now a recurrent, nearly annual source of conflict toward the end of the dry season. Conversely, floods during the wet season pose increasing burdens and risks to urban areas built on former agricultural and flood-plain lands.

At the same time, controversy and conflict over upland watershed policies has also centered on this region because forest cover has been retained and people still live in forest areas [Pinkaew 2000; Thomas et al. 2002; Walker 2006]. The popular media, government bureaucracies, and the public in Bangkok blame deforestation in “upland areas” for both flooding and drought. These views have had substantial impact on forest and watershed policies that have become increasingly restrictive toward land use in upper tributaries, and especially those that feed the Chao Phraya river system. Scientific evidence for many of these impacts is quite weak, however, while there is still much less discussion or consideration of rapidly increasing demands for water for agriculture, industry and urban settlements, or of impacts of activities such as road construction on sedimentation.

The significance of the Ping River is underscored by its strategic position: the largest tributary of the Chao Phraya River system, with the Bhumipol hydroelectric dam at its lower-end supplying electricity to Bangkok. It is not surprising that the Upper Ping was one of the two pilot sites from 25 basins in the country for introducing River Basin Organizations [CMU 2004; Thomas 2005] and promoting integrated water resources management (IWRM).

Based on our study of historical documents and interviews, we recognized four primary transitions in how water has been managed during the last five decades (Figure 5-7). Transitions partially overlap in time, may be left incomplete, and are contested. The manufacture and avoidance of crises [cf. Lebel et al. 2006a] are important in mobilizing support both for and

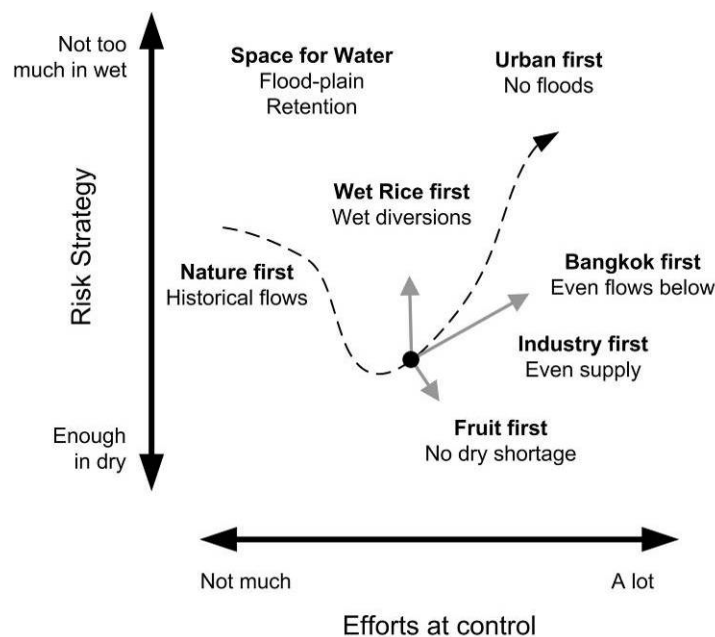
against transitions. Each of the transitions expands the domain of active management in a particular way. From transitions one to four, expansion was in terms of: the time horizon, number of water users, water stocks and flows, and values beyond flow (Table 5-4). These correspond to key structuring variables for management regimes and transitions between them (Box 5-2).

### Box 5-2. Conceptualizing transitions

We conceptualize transitions as a regime shift. This can be visualized as a trajectory across a system space defined by a few key structuring variables [Gunderson & Holling 2002; Holling 2001]. This space may have strong “basins of attraction” reflecting combinations that are very plausible relative to others which are not (Figure below). A management regime is an assemblage of plans, investments, technologies, infrastructures and preferred ecosystem configurations.

For example, in the Upper Ping River Basin, some actors have a strong preference for managing water resources so as to avoid dry season water shortages whereas others place greater emphasis on eliminating the risks of flooding in the wet season. Actors also differ in how much they believe should be invested in physical infrastructure to control water flows. In this figure below “risk strategy” and “efforts at control” are postulated as key structuring variables.

A transition from a wet Rice first to a fruit first or urban first management regime represent a major shift described by the two management variables selected for display. Regimes differ in their resilience and the system space can be relatively smooth or discontinuous with thresholds. Some transitions may be largely irreversible and path-dependent. In the Upper Ping, for example, the wet-rice-first regime persisted for centuries, but now the hydrology of the basin has changed substantially and it may be very hard to return to.



Source: Lebel et al. 2007a

The *farm to city* transition, for example, emphasizes needs to control floods (Figure in Box 5-2), expands services considered to include “flushing” and “assimilation”, and introduces institutions that secure piped water supplies (Table 5-4). The *goods to service* transition expands legible resources even-further and starts to consider technologies that link and re-use water.

The capacity to turn support for a particular transition into policies, procedures and programs that help institutionalize practices often requires alliances among local and national

level politicians and bureaucrats. Each of the transitions has involved institutional reforms as part of the suite of changes promoted or realized. There have been examples of efforts to institutionalize practices in different components of water management (Table 5-5)

Table 5-4. Four key transitions in how water has been managed in the Upper Ping River Basin

Management Transition	Planning Objectives	Implementation Technologies	Legible Resources	Institutional Flavors
Wet to dry	Diversion of wet to all year around irrigation supply	Small to larger storage and delivery canals	Main valley surface river flows	From right to use to coordinated allocation. Water user groups.
Farm to city	Secure urban supplies and prevent floods	Water treatment & pipe delivery infrastructure; Drainage	Groundwater, flows for flushing pollutants	From development to economic efficiency. Service agreements.
River to basin	Manage full water budget not just surface river flows	Monitoring, modeling and GIS	Groundwater, rainfall and run-off	Basin or watershed management and land-use planning (IWRM)
Good To service	Maintain diverse services not just direct consumptive uses	Treatment, re-use, rain and groundwater management, land-use planning	Multiple, including watershed services	From using to paying for services (PES)

Source: Lebel et al. 2007a

Thus, under the *river to basin* transition, efforts to engage stakeholders have been framed by the Department of Water Resources to focus on certain types of small infrastructure projects and a complex planning procedure that allows traditional experts in the bureaucracy to regain control of the outcomes. At the river sub-basin level, institutionalization has intentionally sought to be much more diverse [Thomas 2005, 2006], but it is unclear that such an enabling framework for local government and user groups will continue to be pursued. Institutionalizing under the goods and services transition (Table 5-5) is also fairly exploratory, with discussion about payment for ecosystem services underway but not yet implemented.

Table 5-5. Institutionalizing practices in the four key transitions in how water has been managed in the Upper Ping River Basin

Management Transition	Planning	Developing	Allocating	Using
Wet To dry	Gaining public acceptance for new infrastructure	Financing and investing in infrastructure	Water User Groups	Rights to use based on fees (rather than labor contributions)
Farm To city	Urban-industrial and regional development planning	Investing in delivery infrastructure. Service contracting.	Securing supplies through service agreements	Waste water standards and water treatment technologies
River To basin	Basin and Sub-Basin planning activities	Multi-stakeholder negotiations	Multi-level planning and budgeting	Multi-level coordination procedures
Good To service	Acknowledging and sometimes valuing services	Incentive and payment schemes	Land and water use planning	Monitoring & accounting systems

The net outcome of the various incomplete transitions (Table 5-4) has been a substantial increase in institutional density and complexity of governance [Garden et al. 2006; Uraivan et al. 2005]. Water and land governance from the highlands through to the lowlands is affected by the practices of actors and emergence of formal and informal rules at multiple levels [Lebel et al. 2005]. Cutting across these level-dependent features are important cross-scale interactions, some designed, but many, not. With multiple levels, services and interest alliances to take into account, negotiation becomes critical to articulating plausible systems of rights to water [Molle 2004]. Finally, a range of both local and wider networks create opportunities for influence and knowledge to be exercised and shared in ways that can break some types of scale-dependencies.

The growth of political actors and arenas for decision-making around water and land management was checked again with the 2006 military coup that removed the popular, decisive and sometimes divisive Prime Minister Thaksin Shinawtra, and threw out the progressive 1997 Constitution. This history of lurching towards democratization and empowerment of local levels has been an important context in which all 4 transitions have unfolded.

The notion of actors with divergent strategies pulling society away from certain management regimes towards others can explain a lot of what has been observed in the recent history of the Upper Ping River basin. But it does not, on its own, explain satisfactorily the lags, the periods of relative institutional stasis, or conversely, rapid paradigmatic shifts. For that we needed to explore more carefully ideas that some management regimes are sticky, or resilient, whereas others are more brittle. Crises associated with dry season shortages and abnormally severe flood events gave some insights into these dynamics. Interplay is also a key component of coevolution: in the Upper Ping River basin new institutional forms are overlain and interact with earlier systems rather than replace them. The outcome is a complex, but highly adaptive infrastructural, organizational and institutional mix of state and communal, formal and informal, hierarchical and network, elements.

### *Uplands as “setting” for lowlands and urban centers*

In addition to the role of upland and highland areas as upper watersheds that collect and convey water to downstream agriculture, hydroelectric facilities, and urban and industrial users, upland areas have additional attributes that affect urbanization and development processes in the lowlands in various ways. In the Upper Ping Basin, mountain forest lands, tourism, and ethnic diversity have played especially important roles:

- **Mountain forest lands.** During the last century, evolving lowland and urban views about forests have been reflected in activities of forestry agencies. During the 1880s -90s most valuable old-growth timber resources of the northern region began to be sold-off as teak concessions to British companies, with logs floated down the Ping River to ports for export. Key fortunes were made by families well-connected to the northern nobility or further downstream, who still play large roles in political and corporate life in Thailand. By the mid-1950's little valuable large old-growth timber remained. As national 5-year development plans began implementation and the Bhumipol dam was completed, legal processes also completed conversion of state claims to forest timber species into claims to vast “reserved forest” lands. As the economic role of timber became overshadowed by

other sectors, urban views of forest links with nature, recreation and biodiversity grew. Many forest reserves began to be “upgraded” to protected area status as national parks or wildlife sanctuaries, and the conservation side of forestry agency operations began their ascent. The current extent of forest land claims in the UPB was displayed in Figure 3-25.

Meanwhile, expansion and intensification of lowland agriculture has resulted in the virtual elimination of lowland forest ecosystems. Only small transformed pockets of “community forest” remain scattered among expanding orchards in the foothills to serve as areas where useful products can still be extracted mostly for domestic consumption, or to support local art and craft industry. But the many forested areas on mountains around urbanizing valleys have long provided a wide diversity of goods and services that residents of Chiang Mai have consumed directly, or used as inputs into production for trade. Only in recent decades has growing emphasis on conservation and tourism brought sharp curtailment of the range of direct uses.

Today, relationships between urban actors and upland biodiversity are more subtle than in the past, and one of the most important is perceptions of domestic and international visitors that the north is beautiful because of its forests and mountains [Lebel et al. 2004]. Symbolically, this is reinforced by successful maintenance of high forest cover on the face of Doi Suthep Mountain that faces Chiang Mai town. While this is a scene that is increasingly harder to appreciate as all “unused” visual space in the city becomes filled with advertising signs and billboards, it is an important part of Chiang Mai urban identity. This symbolic power is strongly amplified by presence of the very popular, revered and wealthy temple perched on the mountain near one of the Royal Family’s palaces.

- **Tourism** has been a high priority since the Sixth National Economic Social Development Plan with significant investments in public infrastructure in key destinations like Chiang Mai stimulating even greater private sector investments. Doubling since the mid-80s, annual tourist arrivals to Chiang Mai have grown from 3 to nearly 4 million since 1997, and conventions are common. Average duration of stay is between 3 to 4 days, and more than 40 percent of visitors are international. There was a further surge in tourism during 2006 due a Royal Expo, but it then dropped with political instability and strengthening value of the Baht. Tourism is an important contributor to provincial gross product and employment, and is a major user of energy.

In addition to the role of forested mountains in painting an attractive image for tourism, operations and impacts of tourism activities concentrated in the city also spill strongly over into areas in smaller mountain valleys near the Chiang Mai urban zone. Thus, over the past two decades the Mae Sa Valley, located 20 km from Chiang Mai town, has been transformed from rice and mixed agriculture into a 15 km stretch of golf courses, hotels, resorts, butterfly, snake and orchid farms, and brothels [Singhanetra-Renard 1999]. Various other valley areas around Chiang Mai have also been transformed, but perhaps less dramatically. Locally owned tourism operations in Mae Wang are described in earlier chapters. Some areas in and near the city are also sites for vacation homes for Bangkok and Chiang Mai elites, as well as retirement homes for both Thais and foreigners.

Some operations and impacts also penetrate still further into mountain areas. Chiang Mai is a key launching point for trekking tourism that over the past 2 decades has transformed

from low-key alternative tourism [Dearden & Harron 1994] into a major industry for more conventional tourists [Tourism Authority of Thailand 2000; Weaver 2002]. For those wanting more remote and less well-traveled adventures, the city also serves as a base for trips to remote mountain areas in adjacent countries.

Dependence on tourism provides special incentives to maintain and improve urban air quality and public transport infrastructure, since deteriorating air quality and traffic congestion decrease the city's competitiveness as a tourist destination. As in other cities in that benefit from tourism-related economic growth, Chiang Mai must come to terms with the concomitant rise in various urban environmental management challenges, or face the prospect of destroying one of its more important income streams.

- ***Ethnic and cultural diversity.*** Ethnic, cultural and institutional diversity is a very significant feature of the Upper Ping Basin. It helps drive the tourism industry, reveals a history of discriminatory practices, and on historical time-scales probably played a major role in the "resilience" of the overall upland-rural-urban (elite) system. The different world views and practices that arise from this diversity are a source of both conflict and innovation [Lebel et al. 2004].

The main ethnic minority groups in the UPB include: Karen, Lawa, Hmong, Lahu, and Lisu, along with smaller numbers of Yao, Htin and Palong, as well as enclaves of Yunnanese Chinese. Distribution of their settlements is mapped in Figure 2-13, along with those of ethnic Northern Thai ("Khon Muang"), who earlier identified themselves with the Lanna Kingdom. While distributions such as this have been used to cluster ethnic groups according to the altitude zones where most of their settlements are located, minority groups are increasingly mixing with Northern Thai in lowland and some upland areas. Moreover, younger generations are increasingly migrating both temporarily and permanently to urban areas, along with those from other areas in North Thailand such as the Akha, working in tourism and other sectors. And in recent years, Shan populations have grown in both rural and urban areas as they fled from persecution, hardship and political conflict in Myanmar. Urban areas also include Thai from other historical regions, Chinese, and various groups from a growing range of other countries and continents.

Within and across groups there is a large diversity of languages, cultural norms, and traditional institutional arrangements, local knowledge and natural resource and agroecosystem management practices and skills. For many lowland and urban Thais, tourism operators, and outside observers, there has been a tendency to develop ethnic "packaging" that seeks to lock ethnic groups into static stereotypes that can be marketed to tourists as "quaint" or "exotic". They are also used as a basis for discrimination in employment, access to social services, and social acceptance and mobility. Thus, one of the most difficult issues for many to grasp is that "these groups" are not monolithic but contain significant heterogeneity in views and practices, and these are dynamic. While there is evidence of some general differences in livelihood strategies among ethnic groups in parts of the UPB, for example, we find even greater differences within groups. Moreover, with differences within groups increasing more rapidly than differences among groups, the overall dynamic is negating the basis for ethnic "packages". At the same time, however, there is



potential for an emergent synthesis that might take the form of a neo-Lanna society that incorporates contributions from a diverse range of origins.

In this regard, there is also a need to recognize that “culture” is not static, and is reproduced, re-molded, and re-invented to suit particular purposes. For issues of water and land management and rights of access, for example, ethnic identities, “traditional” institutions, and “culture” have often been used as part of political strategies by various sides of conflicts over natural resource management [Chayan 2003; Pinkaew & Rajesh 1992]. Moreover, even many rural ethnic minority communities are themselves now “reinventing” their identities in a quest for dignity and a way forward for them, and especially their children. Given the nationalistic zeal that often emanates from Bangkok, however, and its use of concepts like “Thai-ness”, a more inclusive synthesis for Chiang Mai would likely need to be driven by strong local initiative.

As a consequence, in part, of high profile of environmental conflicts and “crises” in northern Thailand related to these factors, there is now also a huge number of “new” stakeholders: local and international NGOs installing water systems, Royal Project Foundation initiatives experimenting with specialty crops, conservationist monks delineating “*sacred forests*”, community-based activists facilitating dialogues, forest department officials patrolling and demarcating village and park boundaries, government extension agents teaching good agricultural practices, and military and police moving in and out in the interests of “national security”.

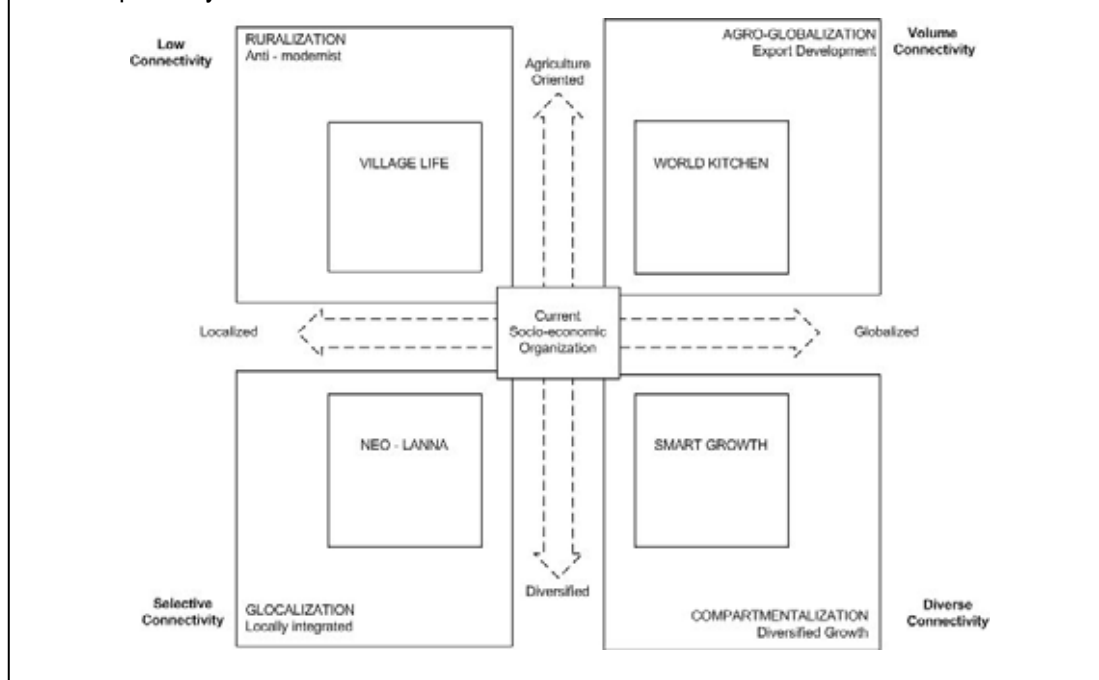
These “crisis” players come in addition to the middle men and women entrepreneurs linking growers to markets for inputs, credit, commodities and labor, as well as un-coordinated local government and state line agencies conducting various types of “development” projects.

### *Urban scenarios*

To further explore multi-level processes associated with urbanization and interplay among them, two parallel sets of scenarios were developed at the northern Thailand scale. One scenario set seeks to capture processes affecting the Mae Ping Basin as a whole including upland areas, while the other scenario set focuses on processes in the main inter-montane valley where the urbanized Chiang Mai – Lamphun area sits. Scenarios were constructed to intentionally capture the large uncertainties about how livelihoods and regions could engage with wider markets and social structures. At the northern Thailand scale of analysis, the four scenarios are labeled after the kind of market integration they imply (Figure 5-8). Inner boxes represent ways the urbanizing area within this regional development pattern are likely to develop, and are labeled with the kind of “catchy titles” that are already to some extent floating around discussions in the region: *Village Life*, *World Kitchen*, *Neo-Lanna*, and *Smart Growth*.

- The ***Neo Lanna scenario*** is characterized by appeals to the past for values, styles and organizing principles, but at the same time a willingness to adopt modern technologies, and thus, selectively engage in trade and court external investments. More than any other scenario this requires the region to maintain a significant degree of control over how urbanization and other development processes unfold within it. This is achieved socially by re-creating a “neo-Lanna” identity that is beneficial for firms developing niche markets for higher-value products and services.

Figure 5-8. Urban scenarios embedded in larger regional socio-economic scenarios for how landscapes may evolve



Ecologically, the emphasis on regional values means that the quality of the environment in the basin receives a high priority, not as “wilderness” but rather as an aesthetic contribution to the cultural landscape. Cultural diversity is fostered to the extent it doesn’t challenge the “emerging” regional identity. This is prefixed with “neo” because invariably it includes significant contributions from ethnic minority and Chinese culture, as well as values fostered by decades of high levels of western tourism. Cultural heritage tourism provides a critical starting point for this scenario to take hold. Some of these forces are given added support by national level reactions against locally destructive forms of globalization. *Neo-lanna* rhetoric fits well with ideas of regional sustainability and with its emphasis on arts and culture sees urbanization as a strong contributor. Overall urban growth continues with, however, significant change in form as a result of constraints placed around development that would adversely impact historical areas. Surrounding district capitals take away many commercial and administrative functions formally entirely centralized in Chiang Mai. This is enabled by an effective system of light rail between these district centers that, in turn, stimulates substantial corridor (along lines) and nodal (at switching centers) urbanization. The areas away from these major routes stabilize as high quality agriculture zones that include a high proportion of less labor intensive tree based products, not just fruit, but also various lacquers and other secondary products used in the large interior decorating and household implements industry.

- The *Village Life* scenario is probably the most radical of the scenarios given current political and economic trends. It is anti-modernist and local in perspective. It is sold as pro-rural and pro-poor and labeled by its opponents as everything from “communist”, through “nostalgic” to “reactionary”. It sees the purpose of economic development as serving rural areas and the poor rather than the other way around. The city is seen as a place of concentrated services for rural areas, including developing the capacities of the

rural poor. In practice the scenario does not unfold as radically as any group argues, but emerges as a compromise.

Significant parts of wealthier segments of society, including many from outside the region, migrate to the basin as part of a growing voluntary simplicity movement that has taken hold across Asia. This is based on a vegetarian diet, low energy, and a low mobility lifestyle. Households are not necessarily food self-sufficient, but communities at the village or tambon scale are often nearly so. Markets and other systems of exchange, such as labor and cultural services, are still important institutions, but more diverse in form than current patterns. One of the main problems is imagining what kinds of triggering events would be needed for such a scenario to become more plausible, apart from various complete breakdown scenarios resulting from war or a prolonged global economic recession that greatly reduced trade and international investment. Once started, however, it could be strongly reinforcing because participants in it could be rewarded by improved well-being without necessarily increasing wealth or consumption.

- The *World Kitchen scenario* is based on a notion that engagement with larger scale commodity markets for food, and technological and other inputs required to produce it, is the broad and dominant force of socio-economic change and land-uses. Regional economic development is pursued primarily through agricultural and agri-business industrialization, and although the manufacturing industrial sector also expands, its land-use implications are not large, at least directly, but may be important for water and energy resources. Chiang Mai is re-oriented towards this primary production role with huge investments in agricultural, processing, and marketing research and development.

As a result of the unhindered flow of capital, commodities and, eventually, labor for agriculture, individual locations within the region go through wild booms and busts. Commodity price swings, and major shifts and shuffling among commodities produce a highly dynamic landscape if viewed in terms of crop-types, but overall land allocated to crops grows fairly steadily with the typical fluctuations of agriculture business boom-bust cycles. The challenge is whether the rates of innovation and skill improvement in agricultural firms can outpace those of other major competitors. The primary source of labor in the first few decades is Myanmar, but over-time and after further political upheavals, labor also comes from further a field, in south Asia, and possibly, the poorest regions of China. This is assisted by the gradual breakdown of restrictions on immigration for work between countries in the region. At the same, time intensification and mechanization of agriculture reduce the labour requirements per unit production. The most important advance as the transition continues is in the shift to value-adding and the creation of large volumes of food products for the supermarkets of the world. The assembly lines and industrial kitchens, although partly automated, still require a huge labor force and this drives additional urbanization, primarily around satellite towns of Chiang Mai where the land costs were lower at times the factories were initially set up in “kitchen estates”.

This scenario is already implied by various official visions. The region is seen as rich in natural resources, the people skilled in agriculture, and the potential for rapid and sustained growth over several decades a distinct possibility as a result of relatively low labour costs. The success of commercial agri-business sees small-scale farming essentially disap-

pear except for specialist high-value ingredients, like herbs and spices. Farmers without the capital or business skills loose out completely to larger better organized firms. Market mechanisms loom large in inputs and dealing with externalities. Water is costly and a major constraint in production until a series of innovations in farm management aided by breeding and GMO technologies sees large improvements in water efficiency and recycling. The primary livelihood option is labor on larger commercial farms. Because of competition from cheap labor from Burma, this causes some unemployment and social disturbance. The implications for the environment are complex, but many serious problems are avoided because local firms need to meet rising standards to successfully compete in international consumer markets.

- The *smart growth scenario* comes closer than the other scenarios to purporting to balance multiple objectives of economic growth, industrialization and conservation. The main pattern being that different commercial, conservation, recreation, settlement and other activities become increasingly segregated spatially. It places a strong emphasis on spatial planning, controlling land-uses and the allocation of resources like water and high quality soils. Technical expertise is highly-valued and engineering solutions are sought for any limitations to continued growth arising from environmental feedbacks. The well-managed industrial estate is the symbol of this scenario. The poor record in industrial management [Forsyth 1994], however, suggests that better governance structures and capacities will be crucial if such a scenario is to unfold in ways that will not further degrade the environment.

In the Chiang Mai context, such a growth strategy is diversified, with significant agricultural activities still occurring in the basin, but also with continued emphasis on strengthening industrial-manufacturing and service sectors. As a consequence, Chiang Mai is no longer thought of as an agricultural or primary tourist town. Agriculture contracts substantially in area and proportional contribution to regional economic development. The philosophy of segregating activities means that urbanization will continue as a dominant trend for several decades, bringing most of the basin's population into urban-type settlements and lifestyles. Continued diversification in the industrial sector will be a key initial driver, and over time this diversification could lead to a significant intermediate technology and information technology industries. The strategy to attract high-skilled labor and the relevant firms is fraught with difficulties of competition and new risks from modern environmental technologies, but the incentives are there as large markets for intelligent household appliances and computer equipment soar in the newly industrializing economies emerging in the region. One of the key developments may be bilateral partnerships with Chinese technology firms as the valley is seen as an attractive place relative to more heavily industrialized regions in China.

Tough conservation measures in the upland areas will see forest cover increase to high levels that reinforce the attractiveness to urban-based factory and design workers. The implications of this scenario for the rural and urban poor, upland farmers and potential economic migrants from neighboring countries are not particularly good. Without requisite skills, employment opportunities in the informal and low-end service jobs are small and highly sought after. Out-migration to more rural-oriented regions is one possible

outcome. Some of the major sources of conflicts under this scenario could arise around water resources if some of the industries and lifestyles become water demanding. The technical orientation of the bureaucracy means that this is likely to be “solved” by large infrastructure projects, that is, inter-basin transfers with tunnels and canals from neighboring countries. Such plans are already visible, but now still mostly talked about as securing water for farmers.

The four scenarios represent plausible-at-stretch trajectories for Chiang Mai, but as a set span a more plausible space of trajectories. Each scenario has its key vulnerabilities [Lebel et al. 2004]. The *Neo Lanna* scenario, for example, because of its dependence on tourism is susceptible to insecurities, like terrorist attacks that affect foreign travel or otherwise scare visitors away from Chiang Mai in particular or any part of the region as a general fear. The *Smart Growth* scenario is really contingent on the quality of innovation of northern Thai firms relative to the global market place. The *World Kitchen* could be undone by fierce periods of competition from much larger Chinese producers or shortage of cheap Burmese labor.

### Vietnamese highland tea in wind tunnel

The viability of different household livelihood strategies depends on socio-economic class, tea prices and wider regional development. These relationships were further explored by using regional development scenarios (Figure 5-2) as a wind-tunnel for exploring the plausibility of different livelihood strategies (Figure 5-9). In this figure value-adding strategies are considered to fall within a hierarchy of: no tea, collecting, crushing, drying and fragrance management. Only the highest expected levels of value-adding in a particular scenario are shown (Figure 5-9). Boxes with the terms poor, medium and better-off in Figure 5-9 refer to the opportunities available to particular households recognizing that some value-added strategies may require higher levels of assets and other capacities that come with wealth.

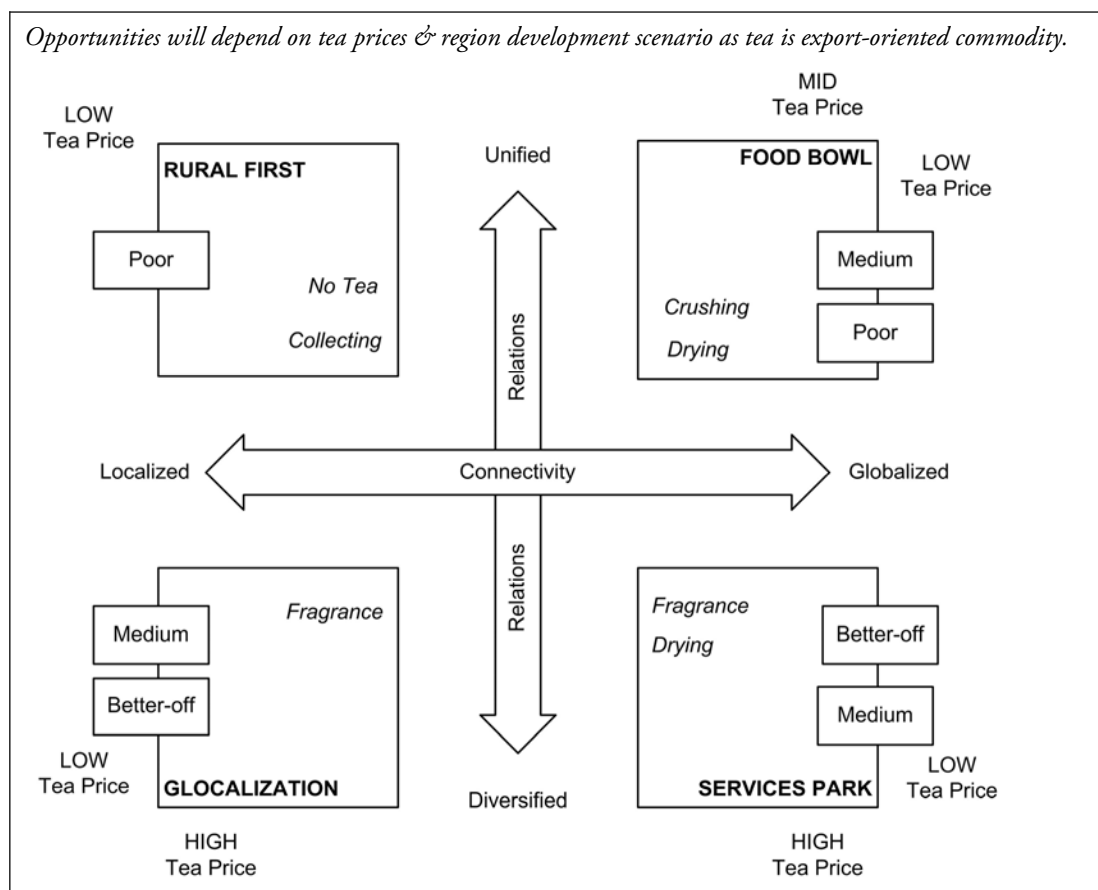
Under a *Rural First* scenario, tea prices will be low as there is no opportunity for wider market access. Only poor households are likely to be engaged in just collecting if tea is part of their household strategy at all. Such a household strategy is likely to be resilient, in the negative sense of providing little opportunity for improvement.

With much larger volumes of tea trade under the *Food Bowl* scenario, opportunities for poor and medium households expand to include crushing and drying (Figure 5-9). Tea prices, however, are unlikely to rise very much for undifferentiated tea, and only modest increases are likely for value-added products. When prices are low it may be quite difficult for poorer households to do more than collect tea (as in *Rural First*).

Fragrance management as a value-added strategy becomes most plausible under *Glocalization* and *Services Park* scenarios (Figure 5-9). Under *Glocalization* this is because of the niche-market opportunities created, and under *Services Park* because of the overall higher levels of technological innovation and economic development. Opportunities for medium and better-off households to engage in tea expand, while opportunities for poorer households are elimi-

nated or very restricted, for example, as wage labor in collecting. Of course, some poorer households would be expected to become better-off under this scenario during periods of reasonable to high tea prices. If prices remain low, however, poor households may not benefit much from value-adding activities especially where trade volumes (in Glocalization scenario) are modest.

Figure 5-9. Opportunities for different household classes for growing tea in Dai Tu district



Source: Hoang Minh Ha and Louis Lebel

Of course this type of analysis is highly speculative and does not take into account details of how land and credit factors interact. The analysis serves primarily to show how wind-tunnel approaches might be used to explore value-added strategies. It should be noted that some of the differences among alternative future “scenarios” may themselves be played out within larger landscapes as differences among specific local places. For instance, places with very poor road access and few market or credit channels may behave as if they were in a *Rural First* regional setting, whereas places closer to major towns may behave more like a *Services Park* context, and so on.

## 5.4 Responding to larger transitions and uncertainties

This chapter has underscored the dynamic nature of processes that shape livelihood opportunities and constraints found in upland landscapes across mainland Southeast Asia. We have employed systematic exploration of alternative future scenarios as an approach for helping clarify uncertainties about how processes may continue to unfold, how decisions and events at various levels can influence their direction, and how various vectors of change can converge to reinforce or negate emergence of different types of conditions and their associated sets of livelihood opportunities and constraints.

The central theme underlying this exploration has been to help clarify our understanding of how larger transitions in wider societies might affect future livelihood opportunities at more local levels in the uplands of mainland Southeast Asia, and the manner in which local households and communities are willing and able to respond to those opportunities.

### 5.4.1 The past may not be a good guide for the future

We already noted that past and current trends create inertia for continued movement in current directions. We have also seen, however, several indicators of emerging uncertainties and transitions that may shift change into some quite different directions. With the help of scenario analysis, we have explored implications of some “plausible” alternative trajectories of future change that reflect ideas and directions of change advocated by various stakeholder groups, officials and activists.

Examination of past events and processes in Mae Chaem demonstrate that transitions among states described by alternative scenarios can and do occur. But change is not inevitable. Under some wider contexts the possibility for economic stagnation in remote locations is real. Households that are relatively poor under scenarios which maintain isolation and poor access conditions may create communities without options for change. Change in these circumstances could come primarily from migration (e.g. of younger generation) rather than introduction of innovations that change land-uses, sources of income or access to natural resources. The opportunities from large-scale infrastructure development, for example, as explored around the north-south economic corridor, do not necessarily “trickle-up” to the headwaters if they are accompanied by repressive conservation policies or if the road upgrades are confined to long-routes between major cities.

In some locations, changes to livelihood options as a result of the intersection between improved market access, local capabilities and regional development processes are profound. Too narrow a focus on current problems and constraints from a perspective based on historical experiences may be completely misplaced. Thus, some of the tensions about upland forest losses could be made irrelevant by migration of younger generation to urbanizing regions for employment, education and, eventually, settlement where minorities do not face discrimination barriers to urban education and employment. Some problems may “solve themselves” without much active policy change. The past may not be a reliable guide to the future.

### 5.4.2 Market opportunities depend on both local and wider scales

Scenario analysis has important limitations when exploring the evolution of market opportunities. Rarely, for example, can analysis be made very commodity specific because markets are wont to differentiate; on the other hand, analyses for categories of similar goods, like perishable, high value per weight, may be fairly robust. In any case, both expert and more participatory approaches to thinking about the future underline the importance of taking into consideration processes both at more local and at wider regional levels. Factors at both levels will be important for the emergence and maintenance of new market-related opportunities for upland poor households.

Access to markets for products is only part of the barrier and opportunity story. Other markets are also very important, in particular, credit and labor. These other factors can vary in importance with more regional factors that are also uncertain, such as exchange rates, trade and security relationships with neighboring countries, and so on.

Analyses of sets of scenarios derive much of their value from comparison rather than predictive qualities. They help to reveal assumptions about development, capacities and constraints in markets for the poor. In our example earlier in this chapter, analyses of tea-based livelihood strategies illustrated how conventional business-oriented wind-tunnel approaches might be applied to explore value-added strategies of poor and better-off households.

Finally, it should be noted that some of the differences among “scenarios” as alternative futures may themselves be played out within larger landscapes as differences among specific local places. For instance, places with very poor road access and few market or credit channels may be have as if they were in a *Rural First* regional setting, whereas places closer to major towns may behave more like a *Services Park* context, and so on.

### 5.4.3 Political roles and resource access and stewardship may co-evolve

Broader political changes, in particular those which deepen democracy through providing accountable and representative local government, potentially have major implications for natural resource management and, consequently, livelihoods of upland households. These broader political transformations are uncertain, rarely uni-directional over time, and may be spatially incomplete and heterogeneous. Scenario exercises have often underlined the importance of “protection” and “conservation” norms in society for both policies on paper and their implementation on the ground. Local authorities often re-make national policy in more pragmatic ways.

There are uncertainties about how multi-level governance will unfold over time in particular locations. Individual projects, both state-led and non-government-led, can reshape power relationships of upland farmers with others. Against this backdrop, households pursue and adjust their livelihood strategies as far as they are able. Although most of our work has focused on access to natural resources, in some instances, it is access to political process which



may have the most profound impacts on long-term trajectories of livelihoods and landscapes in the uplands.

Perceptions about changing conditions of forest, land and water resources, as well as the capacity of local government and communities to manage these resources are based on prejudices, observations of current conditions, and expectations about future constraints and opportunities. Developing coherent scenarios to explain recent past and explore alternative futures often reveals how mental models of the world shift with perceptions. One consequence is that the political roles for local farmers and other resource users (e.g. in cultural or nature-based tourism) can be expected to co-evolve with rights of access and responsibilities for landscape stewardship.



## 6. What are the implications of state policies for market opportunities & access for the poor?

State policies have, sometimes, played an important role in shaping market opportunities and access for the poor across the region. But seldom has the policy process with respect to upland zones of the Greater Mekong Region been simple or linear. National policies and program have often had unintended or adverse consequences on livelihoods or landscapes even when state intentions were to benefit the poor. As society considers and pursues alternative visions of the future that address poverty in the uplands it has become increasingly important that these deliberations and decisions be well informed by analyses of the outcomes of past policy experiments in different places and circumstances. This chapter builds on previous chapters in exploring the policy dimensions of findings under our study.

### 6.1 Policies and their impacts in upland areas

State policies are generally seen as inherently national level phenomena. Thus in one sense, articulation of policies can be seen as a reflection of at least some level of consensus among those with voice, power and authority in the national policy making arena regarding the subject of the policy and the stability or directions of change it seeks to achieve. While societies differ in terms of their political ideologies and processes for arriving at policy decisions, there appear to be various areas of convergence where similar interests and sets of external factors tend to limit options and drive change in similar overall directions. We have seen evidence of this in changes in various macro-economic policies in the region during the last 20 years.

Both history and current evidence indicate, however, that another important dimension of policy concerns the manner in which policies articulated at a national level are translated, adapted or reinterpreted as they cascade down through hierarchies of social organization that are expected to implement those policies within specific contexts at very local levels. Moreover, differences among specific local contexts can strongly affect the nature of policy impacts and the degree to which they bring about change that is desired or undesired. Thus, policies aimed at improving livelihoods or reducing poverty can in some circumstances have quite the opposite effect. On the other hand, actual impacts of poorly formulated policies can sometimes be improved through reinterpretation in increasingly specific local contexts.

During significant periods of history, “upland” areas in montane zones of mainland South-east Asia were remote and quite weakly connected with centers of political, military and economic power associated with empires based largely in lowland zones. As we have seen, however, important processes of change, especially during the last 50 years, have brought both motivation and tools for increasing integration of remote upland areas into national political, economic and social systems. Moreover, increasing integration has come from various directions and sectors. While local interactions among impacts of different types of integration can sometimes be synergistic, they can also sometimes be much more negative. As claims on and interests in upland resources multiply in ever more complex ways, the range of stakeholders

also grows, and needs for communication, negotiation, coordination and collaboration increase. Sections in this chapter take a somewhat closer look at issues in some key policy areas at regional and case study site levels.

## 6.2 Major areas of policy concern in the region

Project findings presented in previous chapters suggest four general areas of policy concern across the region that appear to be very important for livelihoods of the poor in upland areas, both in the past, and especially in the future. They include (1) mountain land use, (2) commercialization, competitiveness and comparative advantage, (3) infrastructure and services, (4) identity and citizenship, and (5) governance and subsidiarity. The following discussion includes a sub-section on each.

### 6.2.1 Mountain land use: protection versus development

Previous chapters have already demonstrated that montane zones of mainland Southeast Asia are where most remaining forest cover is located, that they are often viewed as catchment areas for water that feeds lowland irrigation and urban water systems, and that they have increasingly moved to center stage in relation to conservation issues and targets. And in section 5.3.2, we summarized points related to emergence of three major thrusts of conservation issues and programs directed primarily toward the uplands: (1) conservation of goods, (2) conservation of land, and (3) conservation of environmental services.

As a result of increasing concern and pressure from agencies, experts, activists, and other interests from fairly local to global levels, societies and their governments are formulating and implementing a growing range of state policies that aim to increase conservation in upland montane zones. Major components of most of these policies are directed toward how access to land in upland zones is controlled and allocated among different users and uses, and regulation of how users may use land within different types of areas.

Previous chapters have also demonstrated, however, the very important role that access to land and other forms of natural capital plays in most livelihood strategies of households and communities living in upland areas. Indeed, limited access to land has repeatedly been mentioned as a key characteristic of households who are among the poorest and most vulnerable.

Thus, policy makers in each society in the region are faced with trade-offs and often difficult decisions in formulating upland land use policies that provide the most “appropriate” mix of efforts both to protect their natural resource base, and to provide livelihood opportunities for often poor minority communities living in those areas, who are dependent on land for their livelihoods. Three basic areas of land use policy that reflect these issues include policies related to protected forest areas, protected watershed zones, and land allocation processes.

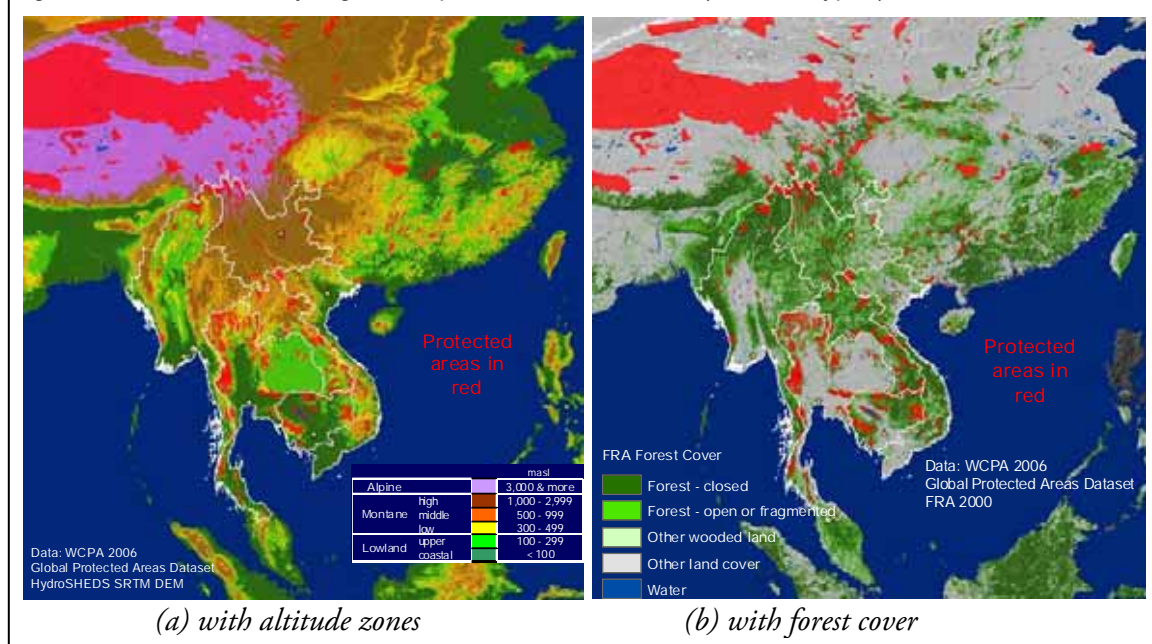
#### **Protected forest areas**

National policies for establishing and managing protected forest areas are primarily directed toward conservation of natural biodiversity. This approach seeks conservation of biological diversity through preservation of natural communities, habitats and ecosystems, and special

management considerations may be directed toward particular species, especially those classified as endangered. Thus, the focus is clearly on natural landscapes, so that agriculture and human settlements are seen primarily as threats, and it usually (but not always) tends to pay little or no attention to conservation of biodiversity in agricultural systems or agroforestry landscapes. Emphasis is usually on segregation of natural forest from other land types of use.

As part of the environmental dimension of globalization processes, nations from around the world have joined global programs associated with establishment, expansion and management of protected areas. In association with the UN Environment Programme, there is a World Commission on Protected Areas, and a World Conservation Monitoring Center, as well as a World Database on Protected Areas. Systematic definitions of categories of protected areas have been developed by the International Union for Conservation of Nature (IUCN), along with criteria and standards for management of each of the six major categories. The global database registry includes protected areas established under the authority of national governments themselves, as well as those that are associated with national commitments under international treaties, such as Ramsar (wetlands), World Heritage, Man and Biosphere Reserves, and others, as well as new regional programs such as those being developed under the Association of Southeast Asian Nations (ASEAN).

Figure 6-1. Internationally registered protected forest areas (all IUCN types)



In order to provide an overview of the current distribution of protected forest areas in the region, Figure 6-1 displays protected areas in red color, which is overlaid on maps of altitude zones (Figure 6-1(a)) and forest cover (Figure 6-1(b)) for mainland Southeast Asia. Areas in red color include terrestrial protected areas in all national and international categories of the international registry, without distinguishing among parks, wildlife sanctuaries, etc.

While most protected areas tend to be located in montane zones, the degree to which these protected forest areas generally exclude or restrict access to natural capital assets in upland areas varies among countries. The vast protected areas on the Tibetan plateau are mostly un-

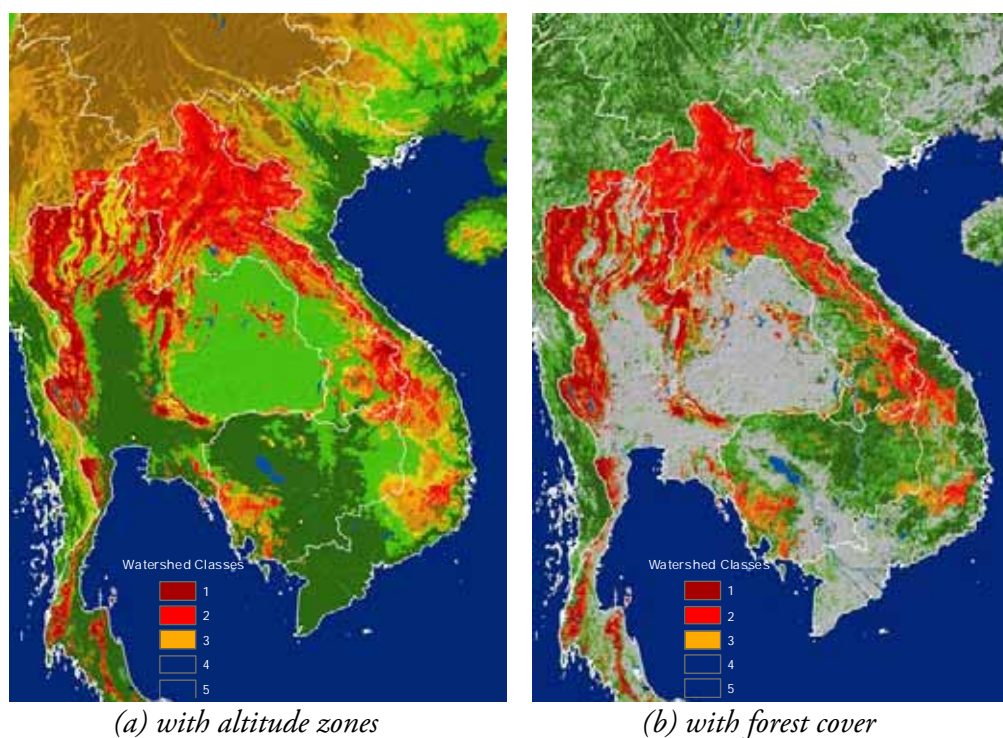
populated areas in the upper reaches of major river basins. And while an increasing number of protected areas are located in mountains along the common border of Vietnam and the Lao PDR, the heaviest concentration of protected areas is in montane zones of northern and western Thailand, where few forest areas remain outside of protected areas.

The significant amount of area covered by these internationally registered protected areas tends to include areas with the most strict laws and regulations for excluding or severely restricting alternative forms of land use. Yet these maps still do not fully reflect restrictions on upland land use related to forest conservation. For example, these maps do not include the various types of provincial and local level categories of production, protection, and conservation forests in the Lao PDR, which cover many montane zone forest areas, especially in the North. Nor do these maps include the vast areas of reserved forest land that precludes legal land holdings by households in most all montane zones in Thailand.

### Protected watershed zones

A second component of national land use policy that is increasingly common around the region is associated with establishing national watershed classifications. Basic notions underlying this approach center on mapping of physical landscape characteristics associated with their vulnerability to damage due to “inappropriate” land use that would degrade watershed services provided by those areas. While the general theory provides a range of variables that

Figure 6-2. Watershed classification in Thailand and the Lower Mekong Basin



should be used in articulating and assigning watershed class status, in reality the primary factors have been hill slope and altitude zone, but in various areas there have been some adjustments associated with geology, soil type (where known), forest type and cover, and minimum mapping unit size. Classification is usually an expert-driven process conducted by agencies and/or consultants, wherein any form of local input or consultation is viewed as unnecessary.

Watershed classification systems in the region tend to all use a five-level classification approach wherein Class 1 indicates zones for greatest restriction, and usually it is said only natural forest cover should be allowed. Classes 2 and 3 allow increasing levels of human activity and influence, but use is still highly restricted and limited to forms of forest or tree plantation management with strong soil conservation practices. Class 4 requires only milder forms of soil conservation, while land use in Class 5 areas is unrestricted. Distribution of the most restrictive watershed classification classes (zones 1-3) for Thailand and the Mekong River Basin are mapped in Figure 6-2 as overlays on maps of altitude zones (Figure 6-2(a)) and forest cover (Figure 6-2(b)). As these maps indicate, the most restrictive watershed classification zones are mostly all in montane altitude zones, where they blanket vast areas.

## Land allocation and tenure

While the previous two components of national land use policies focus on exclusion and restriction of livelihood opportunities for local communities that require natural capital assets, this policy component is directed toward defining and recognizing areas where such activities can occur, and providing at least some degree of legitimacy and security for them.

- **China.** Since the socialist revolution in China, land tenure arrangements in Yunnan have passed through various phases. While land reform and allocation were part of programs that quickly followed the revolution, forestlands were nationalized, and by the mid-1950s land ownership was collectivized and communes and state rubber farms were established in Yunnan. During the next two decades, state and collective forests were differentiated, and successive campaigns aimed at increasing grain production led to deforestation in upland areas of Yunnan. By the late 1970's, agricultural land was de-collectivized and placed under household responsibility through land allocation programs, while campaigns promoted "opening" of "wastelands". During the early 1980's, 22 new nature reserves were established in Yunnan and remaining forestland was de-collectivized and allocated under programs known as the "Forestry Three Fixes". Subsequent programs during the last 20 years have increased emphasis on tourism and "bio-resources" protection and management in Yunnan, including new national forest parks and the Great Rivers World Heritage site. Watershed concerns are being addressed with economic incentives under upland conversion and "grain for green" programs, and further forest land reforms are being conducted to enhance private ownership. As we saw in previous chapters, some reallocation of agricultural land has occurred, and land cannot be sold. Given the incentives for people to move into wage employment and urban areas, potential changes in land ownership and labor migration policies may bring much more change.
- **Vietnam.** After its socialist revolution, Vietnam also passed through a period of land collectivization that affected remote mountain areas and their ethnic minority communities in various ways. Many were also affected by "sedentarization" programs aimed at stopping shifting cultivation practices, and by programs to establish New Economic Zones wherein groups were resettled from very densely settled lowland and delta areas into "under-populated" upland zones. National forest lands were primarily in the hands of state forest enterprises. After *Doi Moi* reforms began during the 1980's, communal "coopera-

tive” forms of management and organization were phased out, and during the early 1990’s major land allocation programs distributed agricultural lands among households and gave them long-term “red book” certificates that legitimized their land entitlements for both residential and agricultural uses. Recognizing that household land needs change over time, only residential rights are permanent, and further re-allocations of land are expected in the future. And while national protected forest areas for biodiversity conservation were established, additional government land allocation programs during the late 1990’s allocated other forest land areas and provided “green book” certificates to provide a legal basis for land use security, although purposes for which the land could be used are more limited (but longer term) and substantial areas went to state forest enterprises.

- **Lao PDR.** Laos also experienced a period of collectivization after its socialist revolution, although impacts on traditional ways of life of ethnic minority communities in more remote mountain areas were quite variable. And, under economic reforms associated with its “New Economic Mechanism” during the late 1980’s it abandoned collectivization, and household managed agriculture returned. With most of its large proportion of mountain areas considered by the state to be forest land, legal recognition of land tenure rights has been closely linked with forestry policies and agencies. A general policy to end shifting cultivation of all forms has featured prominently in forest and land policies for the uplands since the 1970’s, and still remains in place. This approach is seen as complementing and reinforcing newer policies related to opium eradication and concentration of development at “focal sites” that include inducements for relocation and consolidation of small villages near valley and foothill locations where road and service corridors are being established. One inducement is a village land allocation program that demarcates village boundaries and allocates officially recognized land areas for both household and village use. While a promising “participatory” land use planning process is promoted for village land allocation, it has been somewhat slow and difficult to implement in many areas, and large portions of village lands are often zoned for use as village zones for forest production, protection or conservation. Official land documents have not yet been issued to upland households, and district and province governments still maintain considerable authority to enter into land use agreements with outsiders, including companies.
- **Thailand.** In contrast to its neighbors, Thailand did not experience any period of land collectivization, and it has been the most reluctant to provide any form of legal recognition for land used as livelihood natural capital assets by households or communities living in its montane zones. Whether viewed as benign neglect, marginalization or part of national security strategy, mountain minorities were officially “invisible” as logging concessions exported valuable timber during the region’s colonial era and were subsequently converted into massive “reserved forest” lands. Minority communities soon became seen as a “problem”, however, because of their role as producers in the opium economy, uncertainties about their loyalty in terms of national security, and their traditional shifting cultivation practices seen to be degrading national forest and watershed resources. In order to “reclaim” state forest lands, protected forest areas were launched in the 1970’s and expanded steadily for the next 20 years, and during the 1980’s watershed classification and zoning (previous section) was established. Meanwhile, various waves of development projects promoted intensive commercial crops to replace opium, built roads and brought



education and public health services, and induced “settled” agriculture through schemes that ranged from subsidies to intimidation. Yet, with a few very small exceptions, village land use was never officially recognized. Rather, their land use security has depended completely on patron-client relationships with forest agencies, projects, or others with power to shield them from eviction. It has also both facilitated informal cross-border movements, and allowed agencies to claim that old settlers are recent migrants. Ironically, now that villages in areas such as Mae Chaem have citizenship, or at least legal identity, many find themselves fully legal and functioning components under local governance reforms associated with the 1997 constitution, but all of the land where they live and upon which their livelihoods depend is completely illegal, and continually subject to claim by expanding protected forest areas. Only a few areas of foothill “degraded” forest are being allocated to households under Thailand’s “land reform” program, which is primarily directed toward recognizing some long converted areas of forest reserve land in other regions of the country. Not surprisingly, huge uncertainties and much anxiety remain.

### **Inflexible national policies**

Across each of these policy domains and in their combination the key problem has been inflexibility. National policy-making has assumed a “one-size fits-all” approach for each type of policy, and in doing so, upper tributary watersheds in upland areas have often come out at a distinct disadvantage in terms of access to resources used and managed by people.

Thus, within a relatively short period following the disastrous Yangtze floods in 1998 China introduced a range of policies to conserve forests and protect watersheds. These include bans on commercial logging, reforestation, and restrictions on upland farming and controls on grazing [Melick et al. 2007]. Some of these policies include the first large-scale experimentation in the region with economic incentives associated with the concept of payment for environmental services. Yet as elsewhere in montane mainland Southeast Asia, policy implementation has been applied without regard to huge variation in rural livelihoods and landscapes. Forest-dependent people in upper tributary watersheds, for example, in Yunnan province, have been put at a disadvantage and many of their locally-derived institutions for management have been ignored or made dysfunctional [Jianchu & Ribot 2004; Melick et al. 2007].

Land policies in Vietnam have placed primary emphasis on huge national programs for land allocation in combination with establishment of protected forest areas. While allocations of land for smallholder agriculture (red book) and forest (green book) uses may seem clear to planners, it is not always so clear for mountain communities with opportunities to produce perennial crops such as tea, coffee, cashew, rubber, or others. Indeed, green books provide longer tenure, which is more compatible with investment in perennials. Moreover, many important environmental services can be provided by agroforestry configurations based on mixtures of perennial crops and natural tree species, such as tea or coffee grown under shade, while also producing products for emerging high value niche markets. Some ‘buffer zone’ projects for protected areas are already recognizing needs for more land use flexible policies.

In Thailand watershed protection, conservation and land tenure policies have also been characterized by efforts to apply uniform national legislation across regions and localities of the

country with very different ecological and social contexts. Inflexible policies themselves are a product of centralized decision-making (see 6.2.5), lack of trust in more localized decision making processes, poor representation of interests of ethnic minorities, and lack of public deliberation in policy formulation. Flexibility is only provided by lack of local enforcement, or in areas where informal relationships with influential patrons can shield or adapt enforcement. In those few areas where local use is recognized by 'land reform' certificates, few traditional agroforestry systems or uses of natural forest qualify for recognition. While some policies urge upland communities to invest in conservation farming and tree crop production, and stop using agricultural chemicals, difficulties they face include lack of land security, no collateral for financing such investments, little technical support, and many others.

National policies in the Lao PDR have induced widespread relocation and consolidation of villages at sites along roads. While localized zoning of land in these areas has reflected efforts to provide some local flexibility, as in other countries of the region, emphasis has been on compact areas for intensive commercial agriculture and much larger areas for forest. But as commercial production opportunities began emerging, rapid widespread planting of rubber in association with sometimes substantial land policy reinterpretation at provincial and district levels, is currently throwing uniform central policies on upland land use into disarray.

As these examples indicate, if upland communities are to find an acceptable balance between conservation and development in the context of increasing integration into the globalizing economy, more flexible land policies (see also 6.3.1) will be needed that take into account local needs, capabilities and landscape dynamics. These will probably require more attention to multi-level systems of governance (see 6.2.5).

### **6.2.2 Competitiveness and comparative advantage**

We have already seen in chapters 1 and 3 how change in macro-policies related to modes of production, and especially toward international trade and investment, have brought dramatic change in growth and structures of national economies across the region during the last two decades. Production of agricultural commodities for export markets has grown rapidly, resulting in Vietnam emerging as a key producer of various commodities for world markets, China becoming globally prominent in both production and consumption of many commodities, and Thailand continuing to be an important food exporting country. Moreover, structural change has been associated with even faster growth in industrial and service sectors, driving especially rapid growth in urban areas, as well as dramatic growth and evolution of domestic markets for an increasing range of agricultural and forestry products.

We can see various impacts of these types of policies in Northern Thailand, where policies were implemented earliest and the agricultural sector has become quite monetized. Social relations in agricultural activities have given way to a cash economy. Increased wage labor and market dependence of individual households has reduced various social and cultural relationships among people of the North. Traditional exchange labor during rice planting and harvesting is now being replaced by hired labor, making farming more expensive as cash is needed at all stages of production. With increased urban-based non-farm employment, labor

is becoming a scare resource for agriculture with high opportunity costs. Rental of equipment and machinery is common. Thus, farm production needs more cash investment and costs are higher [Nuanmai 2004], while the role of traditional local organizations is being replaced by individual management of labor and land [Decho 1996].

And now recent and expected international trade agreements are bringing still more new waves of change following from closer integration with global markets. The agricultural sector in North Thailand, and especially in Chiang Mai, Lamphun and Chiang Rai, is now modernized, diversified, competitive and commercialized. It is open to world and interregional competition. Farmers must constantly improve efficiency and seek new crops, markets, products and niches. In order to survive, they must find ways to produce their products at cheapest prices, and constantly look for new crops and innovations. Traders and suppliers of products must find niche markets and ways to process, handle and ship products speedily, efficiently, and according to consumer demand. Agricultural products are competing with regional and world markets not only in the lowlands, but at least in some cases in the uplands and the highlands as well. Comparative advantage in producing agricultural products is at play as GMS countries open their economies and adopt free trade principles, with each competing for lowest costs and best quality.

As competition in global markets becomes more intense, attributes of location and resource configuration become more important in helping determine the distribution of “winners” and “losers”. For example, under a bilateral free-trade agreement (FTA) between Thailand and China that took effect in October 2003, tariffs on trade between the two countries are being eliminated, beginning with fruits and vegetables (116 items as listed by Thai customs). Since implementation began, trade between the two countries has been increasing. China exports more fruit (especially pear, apple and grape and orange) and vegetables (mainly garlic, onion, broccoli, carrot and Chinese radish). Value of Thai exports to China has also increased in terms of both fruit (mainly fresh and dry longan, and durian) and vegetables (mainly cassava). While the value of Thai exports to China has been greater than imports from China, the value of Thai exports depends on a very narrow range of fruits and vegetables compared to the much wider variety of fruits and vegetables imported from China.

There are favorable and unfavorable effects of this agreement, in terms of both exports and imports. Some Thai producers of fruit like longan benefit from increasing export volume and value, and Thai consumers around the country also benefit from cheaper prices and more variety of fruit to consume, and especially urban consumers with increasing levels of disposable income. But adverse effects are felt by farmers in North Thailand whose livelihoods have focused on growing sub-tropical and temperate vegetables and fruits. One example is garlic, onion and shallot farmers, who have been negatively affected by increasing amounts of imported garlic, onion and shallot in the market, causing a decline in both wholesale and farm level prices. The apparently much lower production costs of these crops in China provide Chinese farmers with a definite comparative advantage over Thailand.

More generally, negative effects of the Thai –China FTA are likely to be felt most by farmers in Northern Thailand who have been producing competing crops. In addition to growers of

garlic, onion, and shallots, growers of a range of temperate fruits and vegetables will likely be adversely affected in the long run. While Thai producers are able to export more longan, cassava and rubber to China, the main production centers for cassava and rubber are not in the North. Thus, the free trade agreement creates real challenges for fruit and vegetable farmers in the northern region, who have been quite successful in the past, by introducing new waves of threats to often poor farmers as they face increasing international competition.

Public sector investment policies are sometimes aimed at helping to mitigate such negative impacts. The Thai Ministry of Agriculture and Cooperatives offered a program to assist garlic farmers in switching to ornamental tree production by paying compensation to help reduce supply of garlic in the market during 2005. But switching to a new crop has not been easy for garlic farmers in North Thailand, due to their longtime focus on garlic cultivation and difficulties they have found in adjusting to planting techniques for new crops.

In these types of situations, farmers' need for strategies to help them rapidly adapt under competitive pressure. Such needs are likely to become more common in other areas and countries in the region in the future. Indeed, there is a need for policies that can help facilitate and foster innovation and investment from the private sector, and to foster development of local entrepreneurship among local growers and producers. These are not areas where government agencies and programs have a strong performance record.

### 6.2.3 Infrastructure and services

Public investment policies aimed at providing infrastructure and services with strong impacts on livelihoods can be grouped into three major categories, according to their main focus:

- *Basic physical connectivity infrastructure* focuses on physical capital that can help reduce locational disadvantages of many upland areas, such as through improvements in transportation infrastructure in the form of roads, railways, and airport facilities, as well as in energy or telecommunications systems. At the GMS regional level, this has been a central focus of initial phases of investment by member states and the ADB (section 3.2.5). At the most local level, local governments appear to be assuming increasing levels of responsibility for directing and maintaining especially road infrastructure, whereas at intermediate levels, various government agencies usually have strong influence over government investment decisions. But at all levels, system design and location can greatly influence the spatial distribution of benefits derived by different local communities and areas.
- *Basic public sector services* focus on systems to improve human capital, largely through public health, education, and access to information (which can include basic agriculture extension services), as well as systems to improve access to other types of livelihood assets in short supply, such as financial capital (through credit) and natural capital (through land tenure). An example of policies aimed at directly targeting improvement of such services in the uplands might be the set of HEPR programs in Vietnam. A more indirect type of policy might support research or development of information or technology needed for development of private enterprise, but constrained by inability to mobilize private sector investment.

- *Private sector services* focus mainly on private sector strengths in providing access to markets and more advanced forms of technology, innovation and entrepreneurial skills. Public policies can seek to enable, facilitate and promote emergence of these types of services, and can also try to channel or weight incentives to favor services provided by large, medium or small scales of private sector operations. And sometimes just as important, public policies can also be aimed at reducing barriers to emergence of such services, or excessive “taxes” (of various forms) or other state obstacles that prevent them from being viable.

#### 6.2.4 Identity and citizenship

Upland zones are home to people of diverse ethnic identities. State policies regarding citizenship, identity and migrants have, and continue to play a significant role in the livelihood opportunities of some of the poorest households in the region. Discriminatory policies and practices can have major implications for access to natural resources, as well as for access to employment and to government services, such as health and education (chapters 3 & 4). Basic social legitimacy is a prerequisite for full participation at both local and wider social levels.

As we saw in earlier chapters, mountain areas with high proportions of ethnic minority populations are generally characterized by high poverty incidence percentages, with Yunnan being the only apparent exception. We have also seen, however, that some general components of rural poverty in these areas are related more closely to location than to ethnicity per se. Thus, for example, rough terrain and long distances to urban market centers impose additional production costs that put remote areas at a disadvantage, while quality of health and education services in remote areas is often constrained by logistical and staffing difficulties. Some of these disadvantages can also cascade to other levels, as when off-farm employment opportunities are limited by the relatively poor education received in remote schools. These types of issues are common to remote area disparities found in most parts of the world.

We have also seen, however, indications that additional factors can be involved. National identities of states in the region have been primarily shaped by lowland ethnic groups that have grown to dominate society within each state. The main dominant ethnic groups in areas under this study include the Han in China, the Kinh in Vietnam, the Lao Loum in the Lao PDR, and the Central Thai in Thailand. All states in the region have a relatively recent history of viewing ethnic minority cultures, lifestyles, and livelihood practices as ‘primitive’ and ‘backward’, and all states share a disdain for traditional land management practices that include forms of shifting cultivation. Thus, all have in various ways seen it as their duty to bring ‘civilization’ and ‘modernity’ to mountain minority communities.

Yet at the same time, efforts by minorities to become more integrated into “mainstream” society have often met various forms of discrimination. We have seen examples of how inadequate fluency in dominant languages or dialects can reduce access to higher education, training and some types of employment. Access to social capital assets at different levels of societal organization can also be limited by perceptions that include ethnic discrimination, and this can limit access to financial or other types of livelihood assets. Moreover, we have seen con-

sistent reference to wage rate differentials that place ethnic minorities at lower levels than their ethnic mainstream counterparts.

We can also see, however, that some ethnic minority groups are seeking to ‘reinvent’ their identity in the context of the commercializing and globalizing world. Although tourism is one of the first venues where economic benefits may be seen, minorities must often struggle to participate with dignity and achieve a fair share of the benefits produced. It appears that progress is being made in some areas, however, and that a wider range of other possibilities may be opened if development pursues more *place-based* or *self-determined* directions.

While such generalizations appear appropriate across the region, additional aspects of how processes are playing out within individual states are instructive:

- *Vietnam*. The state recognizes that ethnic minorities are primarily located in montane zones, and that these areas have the highest levels of poverty incidence and severity. While there is also now increasing recognition that many past upland and minority policies were based on misunderstanding of upland natural resource capacities and traditional land management practices of mountain minority communities, there is still a general insistence that growing population density requires different practices. There has been a specialized agency to consider issues and policies related to ethnic minorities for many years, but during recent years their emphasis has shifted more toward management of special poverty reduction programs that target poor minority communities. At least at some local levels, impacts of such programs include children of mixed marriages between ethnic minority and Kinh parents increasingly being registered as ethnic minorities in order to gain access to support services provided. There also appears to be substantial representation of minorities in at least local to mid-level leadership positions, and at least evidence from our case study site indicates quite good local working relationships among ethnic groups.
- *Lao PDR*. At the national level, Laos has the largest proportion of ethnic minorities. As in Vietnam, the state recognizes that montane zones are populated primarily by minorities, and this is where the highest rates of poverty incidence and severity are located. In earlier times, most of these areas had relatively weak links with the central government, and some ethnic groups sometimes opposed central government regimes. Recent state policies in Laos, however, have emphasized relocation and consolidation of remote mountain communities into lower elevation road corridors where development programs are focused. One result is a growing number of multi-ethnic villages, although village housing and farm lands are often still clustered by ethnic groups. Social capital at the overall village level is still usually weak in such communities, and other types of livelihood assets have often been weakened or disrupted by relocation and consolidation processes. Local leaders are often from ethnic minority groups, but may be associated with a particular faction more than the overall community. How these processes will continue to play out and drive reshaping of ethnic identities and local politics still remains to be seen in many mountain areas.
- *Thailand*. Policies associated with mountain ethnic minorities in Thailand were for many years focused primarily on opium production, national security, and stopping shifting cultivation. Since most were considered ‘non-Thai’ and not allowed to have citizenship status, their land use claims were basically ignored during establishment of forest reserves and pro-

tected areas. Seen mainly as a 'problem' by central government authorities, mountain ethnic minority groups were lumped together under a term officially translated as 'hilltribes', and their official relationships with the state were primarily administered through a special welfare-oriented unit of the Ministry of Interior. During more recent years, a large number of people in minority communities such as those in our case study sites have obtained Thai citizenship. Most of the rest have obtained 'hilltribe' identity cards, which still highly restrict mobility, employment, and many rights and privileges, while most of those remaining 'undocumented' are recent arrivals fleeing persecution or lack of livelihood opportunities in Myanmar. Those with less than citizenship status make frequent payments to 'stay out of trouble'. With local governance reforms associated with the 1997 constitution, most communities began participating in 'normal' local governance processes associated with elected subdistrict governments (TAO), and now the role of 'hilltribe' welfare agencies is being deemphasized. Local governments in mountain areas still face many extra difficulties, including inability to levy land tax because of the absence of legal tenure. While acceptance by 'mainstream' institutions and urbanizing lowland societies is gradually improving and minority voices and leaders are beginning to become part of local governance, there are still usually strong limitations on the types of employment in urban centers open to most minorities, and representation at higher levels of governance or society is still extremely rare.

- *Yunnan.* Within the context of China, Yunnan is recognized as the province with the greatest ethnic diversity. Especially since the 1949 revolution, processes to integrate Yunnan more fully into national systems have been operated largely by members of the Han majority, including for example, those who relocated to Yunnan to establish state rubber plantations and various state enterprises. Minority communities have always been viewed as members of Yunnan society, however, and expected to implement major government programs. Local leaders from minority communities are common, and some have risen to quite high levels in Yunnan society. With dramatic economic growth based largely on industrialization and urbanization during recent years, substantial numbers of Han have relocated to urban areas or returned to other parts of China to seek attractive livelihood opportunities there. Some minorities are moving to fill vacancies left in some of these institutions, while others are developing production relationships with emerging 'private' business operations. While colleagues in Yunnan confirm there are still some linkages between ethnicity and poverty, our assessment of poverty data in chapter 2 indicates such linkages appear to be far weaker than what is found in other countries of the region. In any event, specially funded poverty alleviation programs have been targeting poor areas for more than a decade, and poor households are encouraged to send members to work in urban industries. Moreover, large programs seeking to change land use in upper watersheds have been compensating people dependent on these lands, and ethnic diversity is being celebrated as a central theme in Yunnan's 'backbone' tourist industry, which is among the top 10 favorite domestic destinations for Chinese tourists. If policies on land ownership and migration are indeed modified, it will be instructive to see how this plays out for ethnic minorities, and how well minority migrants will be able to compete in urban labor markets.

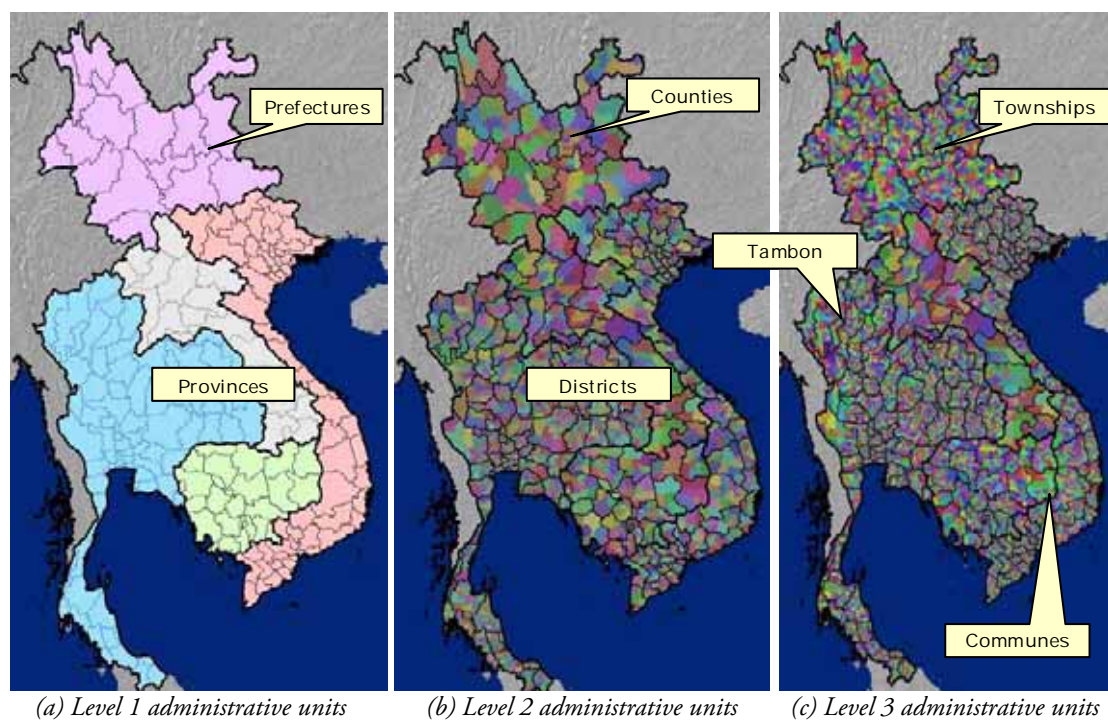
While there appears to be progress in reducing discrimination, much remains to be done before these issues are fully addressed. Reforms in governance processes may be able to help.

### 6.2.5 Governance and subsidiarity

Policies related to governance are also very important for market opportunities and access for poor households and communities in upland areas. Several trends in governance policies have been associated with the various waves of reform that have been sweeping through the region during the last two decades.

But before considering governance policies and on-going types of reforms, we first need to remind ourselves of the hierarchies of administrative systems that currently exist in the region. Thus, Figure 6-3 displays boundaries of sub-national administrative units of all GMS states except Myanmar (for which comparable data is not available) at three increasingly local levels of jurisdiction. Note that since the district is the lowest official level in Laos, it is repeated at the third level. As these maps help make clear, increasingly more local levels of jurisdiction allow administration to focus on more specific local conditions, priorities and interests, and increase the possibilities for direct participation and voice by local communities and other stakeholders. At the same time, however, processes requiring some form of coordination across broader areas or populations become vastly more complex and challenging.

Figure 6-3. Administrative units in GMS states at three levels



Especially during their collectivization phases, socialist countries placed great emphasis on highly centralized policy formulation and planning processes, under which more local levels of jurisdiction were seen mainly as having responsibility for implementing central policy. And the same was true in Thailand during its early 5-year plans. During the various reform processes of the last 20 years, however, there has been increasing interest in and movement toward increasing roles for more local levels of jurisdiction in governance processes. These changes are associated with policies aimed at two types of change in these processes:



- *Decentralization* of administration enables government agencies to implement central policies and programs with more sensitivity to the needs and circumstances at specific localities. In order to benefit from avoiding “one size fits all” types of central policies and programs, however, policies must be designed with sufficient flexibility to allow local adaptation, and with sufficient mechanisms for transparency and accountability to prevent abuse or corruption. Thus, many ministries and their agencies have established offices at provincial, district, or even more local levels, sometimes under authority shared with government leaders at those levels, such as provincial governors or district officers.
- *Devolution* of decision-making takes another step by assigning decision making authority to more local levels. Thus, while central policies may be used to establish a general direction and framework, local jurisdictions would essentially be allowed to establish their own “sub-policies” and plans through their own decision-making processes. This is where the principle of subsidiarity becomes particularly important, wherein various types of decisions are made at the lowest level at which they are appropriate, effective and viable. While examples of real devolution are still relatively rare around the region, local governance reforms in Thailand associated with the 1997 constitution (which was abolished in 2006) were moving in that direction in several areas of management.

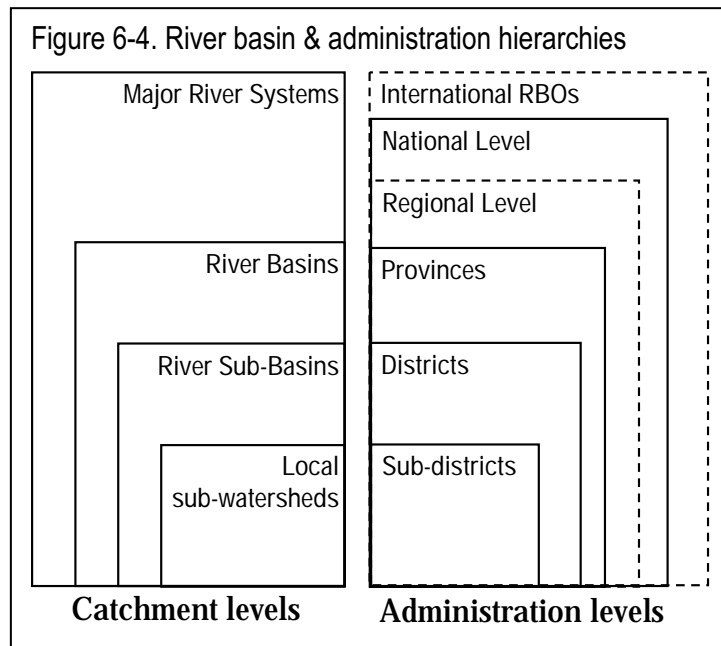
But decentralization or devolution of governance does not imply anarchy. Rather, it requires a systems approach, wherein systems of governance and management decision-making and operations are conducted in a more distributed manner. Thus, while more local units of administration and management operate with more independence in many regards, they are still responsible for playing their role as part of a larger system.

One key element in enabling decentralized or devolved systems to function effectively and efficiently is the need for improved approaches and policies for obtaining, maintaining, distributing and using information. While centralized systems have a tendency toward information stockpiling, control and secrecy, this approach is not viable in decentralized or devolved systems. Sufficient quality and flow of information among components is essential. Lack of suitable attitudes, policies and technologies related to information is one of the most important current constraints faced by efforts to decentralize or devolve governance in the region.

A second set of constraints on these efforts centers on inadequate mechanisms for coordination among local jurisdictions, and for providing funding and support for their development and operations. Especially when boundaries and scales of jurisdictions do not match with various problems and/or management needs, systems often fail to provide appropriate management functions. Yet as we saw in chapter 5, interactions and interplay among different spatial and social levels of organization can be very important components of processes of change and development.

Another important dimension of decentralization and devolution policies and issues in the region that is especially important for upland zones and mountainous areas relates to organizational levels, units and mechanisms for improving governance processes related to natural resource management. We have explored the importance of conservation policies in section 6.2.1, including the timber, land resources and environmental services from upland areas that

are highly valued by urbanizing lowland-oriented national societies. In their search for more effective approaches to governance of these natural resources, watershed and river basin frameworks are now becoming more important. Generic levels of river basin catchments and government administration units are compared in Figure 6-4. The rough equivalency among levels of the two hierarchies actually varies quite widely, and general patterns across the region are that boundaries of administrative units only occasionally coincide with the ridge-based boundaries of river basins and watersheds.



Thus, many natural resource management issues that require coordination at the level of natural units such as watersheds are proving very difficult to manage through conventional administrative hierarchies, and decentralization or devolution can make various issues even more complex and difficult to resolve.

Thus, countries like the Lao PDR and Thailand have already introduced policies that establish “official” boundaries at both river basin and sub-basin levels. These river basins are most all sub-units of the major river systems discussed and mapped in chapter one. National-level initiatives in Thailand have established river basin organizations (RBOs) in all 25 of its official river basins, and both countries are experimenting with pilot programs to develop management organizations at sub-basin, and less formally at even more local sub-watershed levels that are within domains where local communities, organizations and networks can at least in principle play a much more active role.

One of the major issue these types of initiatives face relates to “identity” and “turf” struggles in relation to other groups, organizations and institutions, and especially those that are part of the government administrative structures whose jurisdictions already blanket the entire country. Thus, while additional hierarchies such as those based on natural units such as water catchments may appear to have promising roles to play in decentralization and/or devolution of various aspects of resource governance, their development can be expected to be a long-term and quite complex process [Lebel et al. 2008; Lebel et al. 2005; Thomas 2005, 2006]. The same would, of course, also be true of other types of units that might be promoted as a basis for decentralization or devolution of governance functions, such as production zones, market service areas, etc.

## 6.3 Policy issues and impacts at case study sites

Since we have already presented considerable discussion related to policy issues and impacts of change in state policies at our case study sites, our discussion in this section summarizes some of the main points discussed in more detail in other sections of this report.

### 6.3.1 Land use policies

In our discussion of land use policies for mountain zones of the region in section 6.2.1, we have already summarized major policies related to land use at national levels. Thus, the following points about land use policy impacts at study site areas are made in the context of national policy approaches and history within each country.

In Yunnan, vegetable producers at our study site have shown how they are adapting to higher level policies regarding land allocation and ownership, by actively engaging in land rental arrangements and contract farming. We have also seen, however, how higher level policies encourage development of private sector production systems on one hand, but still emphasize government planning and crop production campaigns on the other. Moreover, elimination of state taxes on products produced through private systems, has perhaps inadvertently set up incentives for local governments and state agencies to campaign more aggressively for production of crops under their planning and management domain that can still yield taxes, and thus revenues for their own continued operations. Thus, local farmers appear to be caught in the middle of competing production systems.

In Vietnam, evidence from our case study site has clearly indicated how state land allocation policies that provided households with agricultural land backed by “red book” certificates, played a key role in providing a basis for development of tea production and a surge in local development more generally. Moreover, prospects for further development of livelihood opportunities are promising in relation to “safe” tea production and related activities in forest lands that have been allocated and backed by “green book” certificates. Their location in the “buffer zone” of a protected forest area reinforces some of these directions.

In Thailand, we have seen how livelihoods and agricultural production in upland areas continue to evolve in a context where local land use security is based almost entirely on informal patron-client relationships that can help shield or adapt local impacts of high-level land use policies. Official policies focus primarily on expanding exclusion of local mountain communities from protected forests and watersheds, and increasing restrictions on their livelihood production systems. For areas outside of areas shielded by patrons, various important actors seek to effectively limit communities to marginal subsistence scenarios. We have seen how these pressures have helped shape livelihood opportunities and responses in upland areas such as Mae Wang, Mae Chaem and Omkoi, where uncertainty and anxiety levels can run high, yet communities adapt and forge ahead, increasingly in partnership with various levels of private sector enterprise.

In the Lao PDR, we have seen how national land use policies emphasize orderly transition to more “rationalized” landscape configurations, which are to be based in village domains where participatory land use planning and land allocation processes have been conducted. Meanwhile, however, the increased market value of natural rubber has created a boom in rubber production that is spreading across the country. As a result, upland rice fields and fallow lands, particularly those near roads, are rapidly being converted into rubber plantations by smallholders and companies alike. Among smallholders, those with sufficient capital and labor are often the first to make claims to lands by planting rubber, as formal titles under village land allocation programs have not yet been issued. In their case study of Sing district in Luang Namtha Province, Thongmanivong and Vongvisouk [2006] indicate that early settlers have greater access to agricultural land, including rubber fields, while recent migrants who have been induced to relocate from more remote areas have limited access to agricultural lands. At the same time, the still ambiguous status of communal lands is becoming a source of conflict as investors seek concessions to land on which villages claim customary rights, but which may not be formally registered as being within the village boundary under their land allocation scheme [Mahaphonh et al. 2007, Seidel et al. 2007, Vongkhamhor et al. 2007].

### 6.3.2 Trade policies: uncertainties and new opportunities

We have already seen in section 6.2.2 some of the impacts of market integration and trade agreements in *North Thailand*, in terms of increasing competition and comparative advantage factors, and how they are affecting different types of livelihoods associated with resource and investment configurations in various lowland and upland areas of the UPB. Shifts in international trade policies inevitably result in ‘winners’ who benefit from new production and trade opportunities, as well as ‘losers’ whose livelihoods suffer as a result of competition from distant areas with a comparative advantage in production. The current situation in the UPB has all of these characteristics, including the uncertainties, anxieties and adjustment difficulties that are part of the package.

At sites in the *Lao PDR*, the situation is a bit different. Since rural mountain areas in North Laos have had much less previous experience with production for commercial markets, competitive impacts from expansion of rubber production are being largely felt by those engaged in production of NTFPs and subsistence crops in terms of competition for land. Moreover, with growth of demand for rubber in China exceeding its production capacity, expansion in Laos is not linked with decline elsewhere, at least under current market conditions. Of course the growing prominence of rubber may also bring greater dependence and vulnerabilities associated with uncertainties about the future of rubber markets and production elsewhere.

At our study site in *Vietnam*, we saw in section 3.2.2 how national policies that include membership in the World Trade Organization (WTO) have begun shifting the context of tea production. This is resulting in changing product price structures and quality standards that are bringing strong incentives to improve tea quality, productivity, and competitiveness. While this is bringing adjustment difficulties for many, and especially poorer tea producing households, it is also leading to experimenting with production of “safe” tea and better brand identity. We see parallels in promotion of shade grown coffee in Omkoi in North Thailand, and in growing interest in “green” markets generally around mountain zones of the region.

Our explorations of alternative future scenarios in chapter 5 also indicate plausible alternative visions of the future include various elements of pro-free trade and anti-free trade policy. Thus, while uncertainty is already growing about what will happen under emerging trade agreements, both in the near term and in the longer term, there is also some uncertainty about how strongly future policy directions will support further expansion of free trade.

### 6.3.3 Emergence of private extension services and business strategies

We have already seen trends toward production of new crops in both lowland and upland zones in *North Thailand*. In introducing new crops and methods for growing them, it is often necessary to have some extension staff with detailed knowledge of cultivation methods to work with farmers. Government extension officers often do not know details about new crops, and are now usually busy working with data collection and compilation for their agencies. As a consequence, they have neither the knowledge nor the time to provide support services for farmers investing in new crops.

Lessons from case studies in North Thailand reveal that extension services for new crops have most frequently been provided by private companies that also deal with the marketing of those crops. This is true in Mae Wang, Mae Chaem and the Royal Projects, where techniques for cultivating sweet corn, hybrid corn seeds, temperate fruits, vegetables and flowers had to be provided by relevant company or development project extension agents. It is also true in Omkoi, where a private company is providing extension services for coffee production by building on expertise and extension experience developed under the Royal Project.

Moreover, as many new crops are grown in highland areas, policies of the Thai government preclude provision of public agricultural extension services. Agricultural activities in forest lands or highland zones are in principle not encouraged, and thus lie outside the jurisdiction of the Department of Agricultural Extension. This policy leaves the poor in upland/highland areas excluded from access to agricultural knowledge via public channels. Thus, private extension services for specific crops are emerging to meet local needs and fill this gap in current production chains.

In *northern Lao PDR*, a study of smallholder rubber conducted by NAFRI [Vongkhamhor et al. 2007] indicates that farmers planting rubber are mainly learning their approaches and practices for planting rubber through informal social networks (such as relatives or other villagers), because there are no formal extension services related to rubber production that are offered through agencies of the Ministry of Agriculture and Forestry. In addition to informal social networks, other sources of extension services for rubber production are beginning to be provided by private companies engaged in contract farming and concession operations.

In *Yunnan*, vegetable growers are producing new crops using comprehensive production systems introduced by the private sector through their “company + household” pattern supported by vegetable traders from outside local areas. While higher levels of government encourage such approaches, we saw in section 3.3.3 how local government officials sometimes

see private systems as competing with government agricultural planning and promotion campaigns, which can result in conflict and problems for both companies and local growers.

### *Business strategies*

We can see in these examples from various countries that production conducted in association with private business is conceived and operated as part of an overall business strategy of the private firms. As these examples suggest, apart from access to extension services and financing, competitiveness of upland farming could be strengthened with improved business strategies that allow producers to function effectively and efficiently in the context of increasingly integrated and globalizing economic systems.

Such business strategies have been lacking in many upland development programs. In Tengchong County of western Yunnan, for example, farmers have adapted to new market opportunities by planting higher value crops and trees like Chinese fir despite challenges to ecological sustainability because of the much better returns-to-labor [Shiro et al. 2007]. Here and elsewhere, insufficient attention has been given to possibilities of value-added processing opportunities for higher value crops like and what technical and business training is needed to develop such local business capacities.

But in the case of tea and coffee, there are some interesting experiences in Vietnam and Thailand. We saw in section 3.3.3 how coffee production now appears to be re-emerging in Om Koi district of North Thailand after its unsuccessful promotion during earlier decades. The main difference is that the new approach centers on a carefully considered business strategy initially formulated by a private business firm that is being further developed and elaborated in collaboration with local communities and agency stakeholders in the area. In the case of tea production at our study sites in Dai Tu district in North Vietnam, we have seen in several sections of this report how more successful tea producing households are able to obtain higher prices and capture more value added by employing strategies that improve the quality and extend the processing of their products. This is seen as very important as the tea market is reshaped by free trade agreements. Several interests are now joining together to explore production of higher value “safe tea”.

And even in the context of the special-status Royal Project in North Thailand, much of its success as a business operation has been due to its attention to development of a vertically integrated operation from smallholder production to retail marketing, and to the collaborative assistance it has received from private business. This has enabled it to effectively produce and market suites of products that shift by season and market demand. We have also seen that even in highland vegetable production areas outside of the Royal Project domain, more successful smallholder household operations often group together in producing a changing array of crops that responds to market prices and local environmental comparative advantage, as well as in developing their own capacity to transport their products to various markets.

It remains a major challenge across the region to formulate and implement policies that can further stimulate and support such smallholder-based business strategies in upland areas.

### 6.3.4 Access to financial capital

Previous chapters provide substantial evidence that access to financial capital through credit is an increasingly important issue for mountain livelihood systems as they become more commercialized and integrated into larger economic systems. Credit is especially important for households in poor and medium wealth categories, who lack savings or other types of livelihood assets that can be readily converted into financial assets when needs arise. Moreover, credit for production costs is a common component of commercial production systems of all types and at all levels and scales of production. Thus, policies that seek to improve access to credit are often an important component of rural development programs.

At our study sites in Yunnan and the Lao PDR, primary sources of financial capital for new commercial production activities are from household savings or through contract farming. Households who develop commercial production operations independently are usually those from relatively higher wealth categories who have accumulated savings in various other types of livelihood assets that can be converted to financial capital. But for those in medium or poorer wealth categories, the most active channel we have found has been contract farming arrangements with companies through which products will be marketed. Thus, we found “company + household” arrangements in Yunnan, and the “2 + 3” arrangements in Laos, both of which recognize the role of credit as part of partnerships with private companies.

#### *Experiments with credit in Thailand*

At UPB case study sites in Mae Wang and Mae Chaem, we found that when farm households face financial difficulties in addressing their livelihood problems, most households in both will borrow money (Table 6-1). Households in the medium wealth category tend to borrow slightly more than poor households, whereas poor households will seek wage employment to a larger extent. Overall, a substantial majority of farmers in Mae Wang and Mae Chaem report having problems with capital availability (Table 6-2). Poor households experience such problems more than medium or well-off households, with about 90 per cent of the poor reporting problems with financial capital. When it comes to borrowing, however, medium wealth households tend to borrow to a larger extent than poor or well-off households, especially in Mae Wang. The poor in Mae Wang report that they cannot borrow or cannot borrow very much because they do not have adequate means to repay the loan. Only 70 per cent of poor households borrowed in Mae Wang, as compared to 97 percent of the poor in Mae Chaem, and the well-off in Mae Chaem also borrow more than their counterparts in Mae Wang. Indeed, borrowing seems to be a popular adaptive strategy for all wealth groups in Mae Chaem, where the poor seem to have better credit access.

Policy-related measures that appear to have helped poorer farmers include those that have improved availability of credit at cheap prices, such as from village funds or from the Bank for Agriculture and Agricultural Cooperatives (BAAC). Credit sources at study sites include:

- **Banks.** BAAC, the bank for agricultural credit in Thailand, was founded in 1966 and is operated as a state enterprise. It has been very successful in providing credit to millions of farmers. In its initial phase, it needed government support in designing regulations fa-

vorable to its operations, such as a requirement for commercial banks to provide a fixed percentage of credit going to agriculture, which provided funding to BAAC from commercial banks. The BAAC is now more independent from commercial banks, and operates on funding and borrowing from the Ministry of Finance, overseas sources, and shares and savings from the general public [BAAC 2005]. It has gained a reputation of being a financially healthy public enterprise that can operate without much subsidy from the government. In 2005, BAAC provided 239 billion baht in credit to 5.5 million households, and in North Thailand, BAAC loans to farmers and agricultural cooperatives increased from 31 billion baht in 2001 to 70 billion baht in 2005. Repayment rates have been good, but many farmers must borrow from other sources to try to repay their loans. Our study site interviews indicate current interest rates from loans obtained directly from the BAAC are about 6 percent per year, while interest on loans from cooperatives, which also obtain their funds from the BAAC, is currently about 12 percent per year.

Table 6-1. Adaptive financial strategies of households in Mae Wang &amp; Mae Chaem

	Household wealth category		
	Poor	Medium	Well-off
-----% of the group-----			
In times of financial difficulties, households would:			
• Borrow money	60	67	55
• Seek wage labor employment	39	20	-
• Seek forest products	4	2	9
• Other means (sell assets, find other occupations)	6	2	-
No financial difficulties	0	0	27
Could not specify	8	11	9

Source: field survey, 2006

Table 6-2. Capital availability problems, borrowing &amp; loan sources, Mae Wang &amp; Mae Chaem

		Household wealth category			Overall	
		Poor	Medium	Well-off		
-----% of the group-----						
Do you have problems concerning financial capital?						
Yes	Mae Wang	90	46	0	67	
	Mae Chaem	88	75	63	79	
Do you borrow money?						
Yes	Mae Wang	70	100	67	81	
	Mae Chaem	97	94	88	94	
Where do you borrow from?						
BAAC	Mae Wang	50	69	33	56	
	Mae Chaem	19	59	63	42	
Cooperatives	Mae Wang	15	8	33	14	
	Mae Chaem	28	25	38	28	
Village funds	Mae Wang	35	46	33	39	
	Mae Chaem	84	81	88	83	
Saving groups	Mae Wang	20	8	0	14	
	Mae Chaem	6	9	0	7	
Relatives	Mae Wang	10	8	0	8	
	Mae Chaem	13	6	0	8	
Merchants	Mae Wang	0	8	0	3	
	Mae Chaem	0	0	0	0	

Source: field survey, 2006

Loans obtained directly from the BAAC are widely reported at study sites in both Mae Wang and Mae Chaem, and are the most prominent source of credit in Mae Wang (Table 6-2). Evidence indicates that BAAC can provide a larger loan over a longer term than



cooperatives, village funds or savings fund. Some farmers can obtain 5-10 year loans from BAAC for livestock and fruit orchards. Farmers with land or property that can be used as collateral can obtain 100,000-150,000 baht loans. Those who have no collateral, such as farmers in Mae Chaem with no official land documents, can still borrow through group lending. A group of 10-15 BAAC members can borrow approximately 50,000 baht each under a 1-year short-term loan based on a guarantee by the group to repay amounts on which any group member may default. In Mae Chaem, BAAC loans are more accessible by well-off and medium farmers, who usually have better social capital, whereas less than 20 percent of the poor reported BAAC loans. In Mae Wang, where more households have land documents, 69 percent of medium and 50 percent of poor farmers reported BAAC loans. Well-off farmers borrow less from BAAC in Mae Wang as they may not need loans. Cooperatives have a smaller role in providing credit at both sites, but are more prominent in Mae Chaem, where they provide loans to more poor households than more direct BAAC channels.

- **Village funds.** Access to credit by poor households has been improving. Since 2001, the Thai government initiated a popular credit policy called the “1 million” village fund program, under which one million baht was provided by the government to every village. This policy was implemented nation-wide and benefited millions of farmers during 2002-2006. Unlike other credit programs, village funds are managed by villagers themselves, under a village committee set up to oversee use of the fund. Typically, the fund was divided among those who wanted to borrow. On average, the 1 million baht would allow some 50 households to borrow about 20,000 baht each, but local variations in details were designed by village fund committees. Normally, the villagers could borrow some 15,000-20,000 baht to be repaid in a year along with 6 percent interest.

At our case study sites, village funds have been an important source of credit in Mae Wang and especially in Mae Chaem, where more than 80 percent of households in all wealth categories reported loans from this source (Table 6-2). Interviews indicate the village committee would assess villagers’ ability to repay before making a loan, so that some poor households would be able to borrow only a half or a quarter of the amount loaned to medium to well-off households. As this fund was a one-time allocation by the government, most village fund committees tried to make sure loans are repaid by fellow villagers. Contrary to claims by government critics, village funds in our study sites appear quite successful and repayment rates have been good, although there are selected cases of loan defaults. The majority of farmers surveyed in Mae Wang and Mae Chaem report they could repay, although sometimes not on schedule and with various difficulties.

- **Savings groups.** Establishment of local savings groups has been encouraged by various government agencies and non-governmental organizations. Farmers in our Mae Wang and Mae Chaem study sites also have various savings groups, such as pig-raising groups, fertilizer groups, crop savings groups, and housewives’ groups. After a period of savings, members can borrow from these savings group at low interest rates. Amounts of loans that can be obtained from these savings groups are usually quite small, and all are made to households in poor to medium wealth categories. Savings groups are generally more active in Mae Wang than in Mae Chaem (Table 6-2).

- **Informal sources.** Informal credit from relatives, neighbors and merchants has been decreasing in importance over the years. Interest rates from these sources vary from 0 percent to 60 percent per year. At our study sites, loans from relatives were reported by about 10 percent of poor households, and a smaller proportion of medium households. Loans from merchants were only reported by 8 percent of medium households in Mae Wang (Table 6-2). No well-off households reported loans from these types of sources.

### *Credit for the poor in Vietnam*

Various government programs seek to develop human capital and improve access to financial capital for highlanders in Vietnam. National programs that began in 1998 under the banner of Hunger Eradication and Poverty Reduction (HEPR) have included components seeking to promote various aspects of development in communes classified as poor, and especially those considered to have “extreme difficulties”, many of which are in mountain areas and include ethnic minority populations.

At our study site, for example, Hoang Nong commune has been receiving support since 2005 from program 135 for “Poor Communes with Extreme Difficulties in Mountainous and Remote Areas (PCED)”, which operates under the national Committee for Ethnic Minorities. In addition to providing health insurance and schools, funds have also been used to support efforts by poor farmers to develop their livestock (focus on raising cattle), to improve tea processing (purchasing processing equipment), and to pay school fees for their children. Support provides about 80 percent of total costs, while farmers pay 20 percent themselves.

In addition to poverty reduction programs, however, many farmers try to obtain credit from institutional sources in order to invest in their farm production activities. The most common uses of credit for tea production are to buy pesticides, to process tea, or to buy a new machine for processing (see Table 4-17). But the biggest loans are taken for buying seeds and fertilizer for tea, which accounts for nearly 50 percent of total credit for tea. Sources of credit are often banks, but friends and relatives also can help if amounts needed are not too much (Table 6-3). Government policies directly related to providing credit in rural areas are primarily focused on two major institutions:

- The *Vietnam Bank for Agriculture and Rural Development (VBARD)* is a common source of credit for all wealth groups. Also known as *AgriBank*, VBARD was established in 1988 as commercial banking was reintroduced to Vietnam under *Doi Moi* reforms. Today, the bank offers a range of credit programs. Households at our case study sites are able to use their “red book” land use rights for collateral in mortgaging their land to obtain loans from VBARD. While the interest rate is the same for all groups, medium and better-off households on average are able to obtain larger loans. Some other banks give still larger loans, but most banks have a current interest rate around 1.0 percent per year.
- The *Vietnam Bank for Social Policy (VBSP)* has been operating since 2003 as an independent bank to extend loans for production, business, job creation and living standard improvements that contribute to meeting targets of national programs on poverty reduction and social stability. Loans to poor households and for job creation account for more than 90 percent of its outstanding loans. Various relatively poor households at our study

sites report borrowing from VBSP at low interest rates for the poor (0.6 percent). Loans from this source are smaller loans, however, which may be why few medium and no relatively better-off farmers use it.

Table 6-3. Credit amounts and interest rates for purposes other than tea production by source

Borrowing source		Bank for Agriculture and RD	Bank for Social policy	Friends, Relatives	Other Banks
Poor with tea land (n=8)	Amount (1000 VND)	1,500	1,250	1,833	
Poor without land for tea (n=3)	Amount (1000 VND)	2,000	300		5,000
Medium with tea land (n=20)	Amount (1000 VND)	2,333	1,000	2,000	5,500
Medium without land for tea (n=2)	Amount (1000 VND)	5,000			4,000
Better-off with tea land (n=3)	Amount (1000 VND)	6,000			3,000
<b>Average</b>	Amount (1000 VND)	<b>3,367</b>	<b>850</b>	<b>1,917</b>	<b>4,375</b>
Cost	Interest Rate year	1.0	0.6	0.0	1.0

Source: Structured questionnaires for 200 households, 2005

There are also many programs for subsidized seeds or breeds for farmers. Most of these programs are regional, and rural and mountainous areas are often assigned high priority as they are found to be the poorest. National programs include animal breeding and subsidized seed import and multiplication, together with an extension program where seed prices are subsidized (60 percent in mountainous areas and 40 percent in plains areas). Many farmers have subsidized seeds, irrigation, fertilizers and electricity. Loans with preferential interest rates can also be taken by farmers, with 30 percent lower interest rates for farmers in mountainous areas or on islands or belonging to Khmer minorities [Nguyen & Grote, 2004].

### 6.3.5 Education and access to opportunities

Across most all of our study sites, we have been repeatedly impressed by levels of interest and investment in education for children of farm households. And, although current educational levels are often higher for households in medium to relatively well-off wealth categories, even poor households appear to be investing heavily, both in terms of financial costs and the opportunity costs of labor that might otherwise be contributing to household livelihood production activities. Thus, policies that improve access to higher quality education in rural up-land areas appear to receive strong support and response from local communities.

While reasons for investing in education may vary somewhat among households and across societies, there are also some very commonly encountered themes. The most prominent theme is that education can bring access to better livelihood opportunities. What those opportunities are and where they are located can also vary, but they are very often seen as lying outside of agriculture, and not uncommonly in often distant urban centers. This is perhaps most obvious in China, where poverty alleviation policies actually strongly encourage some members of poor households to go work in industrial urban centers and remit part of their

earnings to help lift their rural families out of poverty. But it is also a common theme in Vietnam and Thailand, where more certain and higher levels of prosperity are seen by rural households as lying outside of the demanding but uncertain and poorly rewarded world of agriculture. Additional common themes for parents include better social standing in their communities and more likelihood of security in their old age.

### *Role of education in opportunities and access in uplands of the UPB*

Our investigations in Mae Wang and Mae Chaem watersheds included a component that focused on the importance of education. Nearly all household interviews confirmed that education is important for providing opportunities and access to better paid jobs and occupation. Only 2 per cent of farmers reported that higher education was not desirable because they needed labor on the farm, or that higher education made their children leave their home and local community. Another 2 per cent reported that they wanted their children to have higher education, but do not have the means to do so. All the rest (96 percent) reported that they view education as important to very important, and that they want to send their children to achieve the highest level of education that is possible for them.

Most households say that higher education for their children will enable them to engage in other occupations that are better than farming—which is hard work and has high risks. Households with more highly educated members receive more respect from others in the community, while at the same time having more means and better access to knowledge, income and wealth. Table 4-10 in Section 4.3.2 reveals that while education of the household head is about 4-6 years (primary education), education of their children is about 9-10 years (secondary education). In well-off households in Mae Wang, most children have tertiary education. Moreover, most households want to see their children working in occupation where regular salary can be earned. In Mae Chaem and Mae Wang watersheds, young men and women with 12-16 years of education obtain work in companies, government service, factories and other non-farm employment. Education is viewed by farmers as a way to escape poverty and hard work. Some also say they send their children for higher education in order for their children to have higher income and thus be able to support their parents when they get old. Thus, the future of farming is uncertain as these children are not expected to come back to work on their parents' farm.

In 1996, the Thai government initiated a student loan programs called *Kor Yor Sor*, under which students of poor households can borrow to pay for their studies. After finishing their studies, they are required to pay the cost of their education back to the government in installments with an interest rate of 1% per year over a term of 17 years. This program has enabled poor students to access higher education at both secondary and tertiary levels, and by 2006 it had dispersed some 200 billion baht to students. While the program has had a reasonable degree of success, the default rate has nevertheless been high (around 30 per cent) [Pakapat, no date]. Therefore, the Thai government readjusted this program in 2006 to reduce the subsidy rate and increase efficiency of the program. The new program is called "Income Contingent Loan" (ICL), and unlike the earlier loan program, ICL is not subject to poverty criteria, but rather to the cost criteria of higher education. It remains to be seen how successful this program will be. Nevertheless, the two student loan programs (*Kor Yor Sor*

and ICL) have undoubtedly enabled many poor students to have access to higher education. And the continuing popularity of such programs in rural lowland and upland communities indicates motivations for education and movement out of agricultural occupations remains strong. This is consistent with data presented earlier in Table 3-1 that shows consistent movement out of agriculture into industrial and especially service sectors across the region.

### 6.3.6 Experiments with local resource governance

Previous sections underscore the complexities and uncertainties associated with growing concentration on conservation policies in the uplands, as well as with commercialization of agriculture and the impacts of economic and trade policies on competitiveness and the role of comparative advantage. We have also seen that given the uncertainties that they face, many upland households are borrowing funds and making investments both to be able to survive and hopefully prosper under changing production and market conditions, and at the same time to enable the next generation to escape the difficulties of rural life in the uplands for the perceived better future they may be able to build in other economic sectors and locations.

At the same time, however, various policies across the region are aimed at improving rural life and livelihoods, and the ability of rural upland communities to derive benefits from participating more fully in economic and social change without having to permanently migrate to lowland urban centers. In order for this to happen, however, ways need to be found to stimulate and support local innovation, creativity and entrepreneurship in identifying and addressing local problems, and in building more productive, equitable, healthy, reliable and sustainable livelihoods and social and biophysical environments.

Decentralization and devolution of resource governance institutions appears to be a quite fundamental aspect of what is required to achieve such goals. But in order to be effective, these approaches require considerable amounts of restructuring of a range of associated policies, organizations, attitudes and institutional arrangements. This will not be easy.

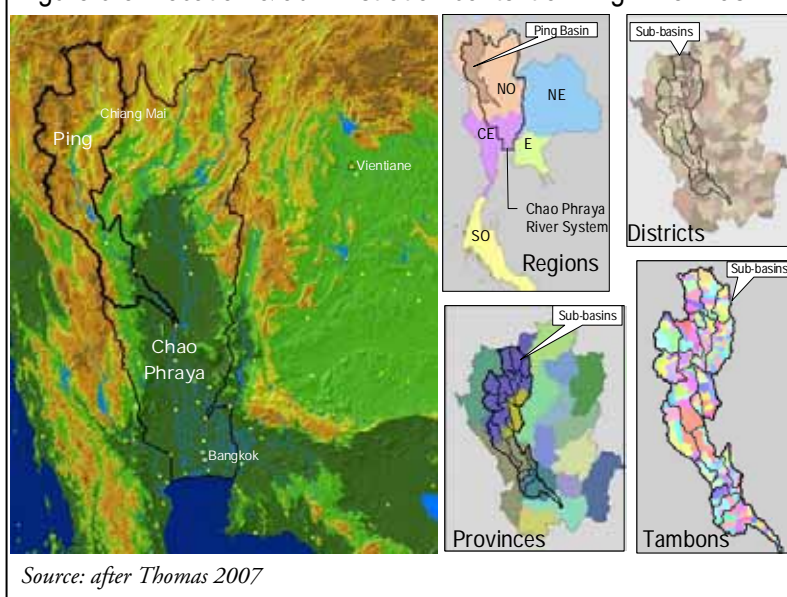
#### *Sub-basin management organizations in the Ping River Basin*

Complementary studies and activities conducted in parallel with this project included collaboration with a pilot project managed by the Office of Natural Resources and Environmental Policy and Planning (ONEP) in Thailand, directed at exploring development of river sub-basin management organizations in the Ping River Basin. Detailed context and findings of studies and pilot project results have been reported elsewhere [Thomas 2005, 2006].

The key issues driving these efforts centered on parallel trends under policies associated with the 1997 constitution that supported decentralization of government administration, as well as devolution of numerous governance functions to much more local levels of social organization in the country. Change related to most governance functions focused on the hierarchy of administration levels that range from national to local sub-district (*tambon*) levels. But difficulties were encountered in relation to especially natural resource management, which includes water, agricultural land and forest lands, as well as pollution and other factors with impacts on environmental quality and public health. Some saw growing polarization between

local institutions focused on livelihood improvements on one side, and higher level agencies more concerned about conservation on the other side. In response to these issues, efforts had been underway for some years to establish river basin management organizations (RBOs) that could help manage natural resource and environmental issues in units that corresponded to the physical realities and

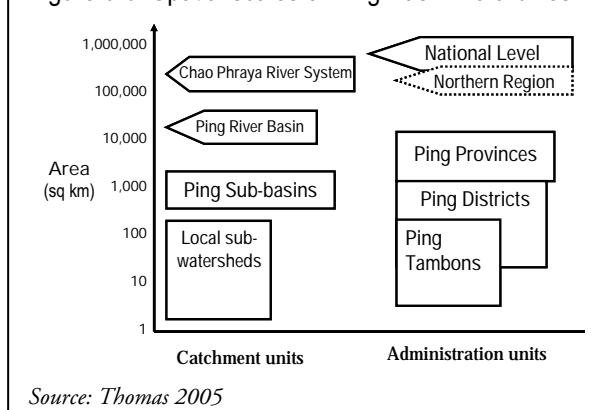
Figure 6-5. Location & administration context of Ping River Basin



boundaries of natural resources. Such efforts were drawing criticism, however, because many perceived that they focused on very large areas and top-down types of organization, and appeared to be trying to displace or compete with more local governance institutions that were elected by local populations. The location and administrative context of the Ping River Basin is displayed in Figure 6-5.

In order to better address such issues, various leaders both within and beyond the Ping River Basin proposed that organizational efforts explore other levels of river basin watershed hierarchies. As indicated in Figure 6-6, spatial scales of catchment unit and administration unit hierarchies help suggest levels at which various cross-linkages may be especially important and appropriate. At the levels of the Chao Phraya river system, or even the overall Ping River Basin, linkages with

Figure 6-6. Spatial scales of Ping Basin hierarchies



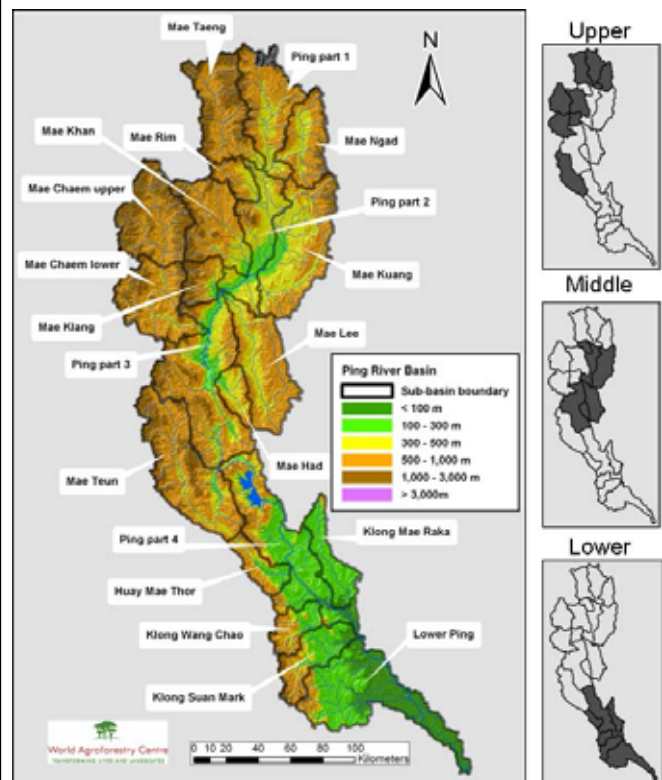
national to provincial levels of administration appear appropriate and logical. At the level of locally-elected sub-district governments, on the other hand, it may be most appropriate for them to work with various local sub-watershed levels within their domain, where many local groups have already been taking their own initiatives in many areas. Indeed, this assessment helped make it clear that the sub-basin level of organization may be the level that can offer the most “value added” by providing a venue where more local institutions and groups can join together in efforts to address issues that are larger than what they can manage themselves, while at the same time providing “middle ground” where local groups and initiatives based in “bottom-up” processes can interface with “top-down” agencies and wider societies. Together, they could form a system through which more suitable approaches could be negotiated and implemented to meet both “upstream” and “downstream” needs and concerns.

Thus, an “official” set of sub-basin boundaries were authorized by the Ministry of Natural Resources and Environment (Figure 6-7), which project studies suggested should be grouped into upper, middle, and lower categories that reflected real differences in their characteristics [Thomas 2005]. One pilot sub-basin was selected within each of these groups for further efforts in developing sub-basin organizational and planning processes.

Considerable debate then arose over what would be the most appropriate form that sub-basin management organizations should take. Based on review of experience at international and Ping River Basin levels, several aspects of organizational structure and operations were proposed for priority consideration in developing models of organization for river sub-basin management organizations (RSBOs) [Thomas 2005]. Particular emphasis was on: 1) the scope of the RSBO mandate, which reflects how integrated activities are intended to be; 2) the duties and roles of organization in managing sub-basin natural resources and environment; 3) the main sources of the organization’s authority; 4) the range of stakeholder groups represented in the organization, and the manner in which representatives are selected; 5) key leadership positions, source of candidates and selection procedure; 6) primary organizational linkages at higher and lower levels of organizational hierarchies; and 7) main potential sources of funding to support the organization and its activities.

While various options exist under each of these considerations, they tend to ‘cluster’ around alternatives that are internally consistent and able to support viable RSBO structures and functions. To help clarify how different compatible combinations can provide a set of realistic alternative structures for RSBOs, five alternative organizational models were described to represent variations under three generic types of organization (Box 6-1). In order to facilitate sub-basin stakeholder discussion and consideration of these alternatives in the context of conditions in different sub-basins, a comparison chart of the major structural characteristics of each type of model was also developed (Figure 6-8). Stakeholders within pilot sub-basins then explored these alternatives and what would be most appropriate in their local context.

Figure 6-7. Official sub-basins of the Ping River Basin



### Box 6-1. Organizational Models for Ping River Sub-Basins

A. Government-oriented organizations. These models continue past trends toward establishing RBOs through central government initiative aimed mainly at improving government programs.

- Type 1: Focused government model. The main objective under this model is to assist and improve programs of the lead ministry. Emphasis is on improving efficiency and effectiveness of using institutional arrangements under a single ministry to implement activities within its mandate. It would move beyond 'business as usual' to provide real coordination among departments, clearer ministry-wide policies and roles for local organizations and communities, reduced confusion, and improved implementation and enforcement.
- Type 2: Broader government model. The main emphasis under this model is still on efficiency and effectiveness in using government institutional arrangements and mechanisms, but the scope is broadened to include activities within the mandates of multiple ministries. Given the difficulties in coordination among ministries at high levels, provincial local administration hierarchies are brought in as a partner to assist with coordination and integration of plans at more local levels.

B. Multi-level partnerships. These models employ multi-level partnerships to establish the sub-basin level as the primary venue for an interface between top-down and bottom-up processes.

- Type 3: Central-local partnership model. Emphasis under this model is on creating a real partnership among groups and organisations from central to local levels, but with a degree of asymmetry that assigns somewhat greater weight to central and provincial government agencies. Primary coordination and integration functions are shifted to provincial and local levels, and implementation plans are integrated into regular development planning processes. This model represents a context where central ministries reach downward in administrative and natural resource hierarchies to form real partnerships with local agencies, local governments, civil society and other stakeholder groups. While the ministry and province administrations still provide a degree of leadership, this model encourages and requires much more active local participation and decision-making.
- Type 4: Local-central partnership model. Under this model, emphasis is also on creating a real partnership among groups and organizations from central to local levels, but with a degree of asymmetry that assigns somewhat greater weight to local government and civil society groups and institutions. Thus, this model represents a context where local governments and organizations organize and reach upward to form partnerships with provinces, central agencies under relevant ministries, and other stakeholder groups. Its structure helps reduce threats of government domination, but requires strong local leadership, participation, and initiative.

C. Non-government alternatives. This model views the sub-basin organization as a further extension of bottom-up non-governmental processes.

- Type 5: Local non-governmental model. The main emphasis of this model is on effectiveness in mobilizing non-governmental groups and civil society institutions to formulate, advocate and monitor activities within the mandate of the sub-basin organization. This model represents a context where local non-government groups and organizations lead efforts to organize themselves into an independent organization outside the government sphere, and to conduct independent analyses, planning and monitoring activities that advise and assist local government, provinces and central agencies. They also emphasise strong efforts to raise public awareness, support and pressure for integrating improvements into relevant decisions in the policy arena.

Source: Thomas 2005



Figure 6-8. Comparison chart of characteristics of alternative forms of organization for Ping River sub-basin organizations

	Government-Oriented		Multi-Level Partnerships		Non-Government
	Focused Government	Broader Government	Central-Local Partners	Local-Central Partners	Local Non-Government
Scope of Mandate	X	X	X	X	X
	X	X	X	X	X
	X	X	X	X	X
	X	X	X	X	X
	X	X	X	X	X
Duties	assistance	assistance	lead	lead	lead
	assistance	assistance	lead	lead	lead / advise
	assistance	advise	advise	advise / assist	advise
	assistance	advise	advise	assist	advise / assist
	assistance	assistance	lead	lead	lead / assist
Main authority sources	ministry	ministries - prov	min - prov - local govt	local govt - prov - min	Local govt advisor / public
	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
Representation	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
Leadership	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
Primary Linkages	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
Main funding sources	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public
	Ministry	ministries	min - prov - local govt	local govt - prov - min	Local govt advisor / public

\* can also include kamnan and village headmen

source: Thomas 2005

Many lessons were learned from this and other components of project activities in pilot sub-basins [Thomas 2006]. Overall, local leaders and communities in both lowland and upland areas expressed very strong interest in becoming involved with sub-basin management efforts, and most appear to understand quite clearly most of the issues related to interactions among livelihoods, natural resources, public health, pollution and the environment more generally. While there are some substantial differences of opinion among different upland and lowland stakeholders, most feel there is an important need for processes that can improve mutual understanding of their needs and concerns, and for negotiation processes that can help achieve more equitable outcomes. Furthermore, most all agree sub-basin processes will need to build upon existing local organizations and institutions, including informal groups and local networks, and to collaborate with local governments rather than try to compete with them. No one wants another competing level of bureaucracy.

It is also evident that there are substantial differences among sub-basins in social relationships and local approaches to organization, including their perceptions of the best balance between local initiative and agency initiative. Especially in sub-basins dominated by upland conditions, local groups and leaders have very strong desire to have more voice in policy matters, including more responsibility and authority in natural resource governance. Similar feelings are expressed in areas near Chiang Mai urban centers, but since issues are seen as more complex and social organization is more difficult, they see a need for more balanced partnerships with various central agencies, at least until sub-basin organization can build strong support among the complex range of stakeholders. In lower Ping sub-basins, where relationships with Central Thai culture are most strong, however, government agency initiative and styles of organization are more acceptable, and local organizations are seen as playing more of a supportive role. It is interesting to note, however, that sub-basin representatives and leaders all express respect for different approaches in other sub-basins, and feel they will have no problems in working together with them on matters of mutual concern.

Among the needs identified by all sub-basins if RSBOs are to be further developed are:

- Clear government policy and commitment to support and engage with sub-basin organizations to help motivate stakeholders to invest their time and energy, to help other local and provincial governance institutions see the importance of sub-basin efforts, and to help motivate central government agencies to participate with sincerity and consistency.
- Clear mandate to actively engage with all stakeholder groups, including partnerships with private sector enterprise and non-governmental organizations, so that stakeholder needs and concerns can be addressed in the most equitable manner possible
- More access to information and data (and methods for understanding and using it) is a need that is strongly expressed in all sub-basins. There is a common sense of frustration with outside experts from agencies or elsewhere who claim to have information and data to which they have no access, but with is used to make and implement policies that have strong impacts on their livelihoods and lives.
- Support in the form of technical assistance, training and support that responds to their needs and helps them monitor conditions, identify problems, and assess impacts of policies and projects using evidence that will be accepted by stakeholders at different levels.

### 6.3.7 Improving access to information in Thailand

As evidence in this report clearly indicates, efforts to cope with change that is occurring at an increasing pace at multiple levels can no longer be based on decisions by a small centralized group of elites making policy decisions that are then simply implemented at all other levels of governance. From urbanizing lowlands to remote mountain areas, livelihood opportunities and abilities of households to respond to those opportunities are increasingly closely linked with complex, multi-level, and globalizing processes, forces and patterns with biophysical, economic, social, political and cultural dimensions and impacts. If skills associated with innovation, entrepreneurship and creativity are needed to effectively participate in the world of today and tomorrow, a growing sense of urgency needs to be associated with formulation and effective implementation of policies that will develop the information and information distribution systems that will be critical for meeting demands created by these processes.

Of our case study sites in the region, the Upper Ping Basin in North Thailand is where change associated with commercialization, market integration, and globalization have had the longest and strongest impacts. It is also where our project has its closest links with colleagues who are closely involved in efforts to identify major emerging needs for information related to livelihoods, agriculture and natural resource management, and to develop pilot approaches for addressing those needs. As we saw in sub-basins around the Ping River Basin, needs for more access to better data are already strongly expressed by local groups and leaders. Thus, this section provides a brief summary of progress that is being made toward IT policy development and implementation in the context of Thailand.

#### *National IT framework*

In 1996, the Thai government launched its first information technology policy. This policy aimed for nation-wide IT development by focusing on building basic information infrastructure, human development and information reform in the government sector. Five years later, the second IT policy (2001-2010) set a vision for Thailand becoming a knowledge-based society, building good governance, and enhancing competitiveness for better livelihoods of Thai society. The 10 year policy has five flagships: e-Government, e-Commerce, e-Industry, e-Education, and e-Society [NECTEC 2002]. Key strategic plans include:

- Utilizing IT to improve efficiency in delivering convenient, speedy, easily accessible and good quality public services. It was expected that 70% of government services would be on-line by 2003, and that overall goals will be achieved by 2010.
- Supporting application of IT for agricultural and agro-industry development.
- Promoting development of information service content that is relevant to needs of communities and society.
- Closing gaps in access to information and knowledge within Thai society.
- Encouraging knowledge networking among local wisdom, communities and universal knowledge to develop alternatives for sustainable development.

### *Data Demand and Supply*

In response to this policy, related ministries and organizations set up strategic plans and actions that cascade from central to sub-district levels of administration. Consequently, there is rapidly growing demand for spatial and non-spatial data from both public and private sectors, as well as from government agencies. Furthermore, newly emerging problems and challenges require more accessible, accurate, and up-to-date information:

- In order to tackle poverty problems efficiently, it is essential to identify who would be affected, where they are, how well they would be able to access natural resource, markets, and services, as well as what are the potential alternatives to improve their livelihoods.
- To cope with potential ramifications of trade agreements there is need for information on location and extent of growing areas of crops that will be potentially affected, as well as alternative crops for replacement.
- Increasing frequency and damage of floods, landslides and drought require more accurate models for prediction of such events, which in turn requires up-to-date and more accurate biophysical and socioeconomic data in both spatial and non-spatial forms.

On the supply side, two main organizations serve as data providers for most basic spatial databases in Thailand: the Royal Thai Survey Department (RTSD) and the Geo-Informatics and Space Technology Development Agency (GISTDA). RTSD is the key provider of digital map layers for topography and infrastructure (roads, villages, and other landmarks) at the scale of 1:50,000, which is the standard map scale most organizations use for their spatial databases. GISTDA provides data services relating to space technology and geo-informatics, and provides access to satellite data from sources including Landsat, SPOT, IRS, Radarsat, and NOAA. Other organizations provide specific data and information in the form of spatial features and tables that are required for agricultural and natural resource management. Some of the key providers of these types of specific data include:

- **Land data.** The Land Development Department (LDD) is responsible for soil resource inventory, and monitoring of land use for improving land use policy for sustainable development. It also provides services for analyses of soil, water, plant, and fertilizer samples to farmers and others involved in land development. LDD routinely give recommendation on land improvement and rehabilitation to farmers and other organizations, through data and information in forms such as maps, tables, and reports. LDD is an example of government agencies that deliver different forms of information to the public both online and in multimedia. Access to online information is through its website ([www.ddd.go.th](http://www.ddd.go.th)), which includes databases such as: (1) Organic agriculture and low chemical inputs farming database; (2) Volunteer “soil doctor” database; (3) Small scale water resources database; (4) Soils of Thailand knowledge-base; (5) Vetiver grass information.

LDD is also active in developing and distributing spatial information system data related to soil and land resources. The first product distributed as shape files is a Soil Group map layer, containing spatial data used in many applications, such as land evaluation, soil erosion estimation, and land-use planning activities. Information on soil groups is now available as a WebGIS at [www.gissite3.ddd.go.th](http://www.gissite3.ddd.go.th).

Another map layer produced by the LDD is Land Use. This map layer has been updated from time to time, and the most recent one was published in 2006 for major cash crops. Although demand for land use maps is high for use in many fields of study, LDD has not distributed this data as widely as in the case of soil maps.

Recently, LDD commissioned a private company to produce digital color orthophotos of the entire country at the scale of 1:4,000 and 1:25,000. Accompanying products under this project include a digital elevation model (DEM) and contour lines with contour interval of 2 m in flat areas and 5 m in the highlands. These products are now being used by various government agencies, including LDD to refine soils maps, Land Reform Office to support land right approval, Royal Irrigation Department to help water resource planning and management, and Ministry of Natural Resource and Environment to reshape boundaries of state forest lands. As a result, spatial data produced by these government agencies is expected to be more accurate in the future. Thus far, however, access to these products has mainly been limited to specialized government agencies.

- **Natural resources data.** The Ministry of Natural Resource and Environment is developing a WebGIS ([www.warehouse.mnre.go.th](http://www.warehouse.mnre.go.th)) to facilitate access to spatial data on forest resources, environmental resources, geology, water resources, and ground water resources. Information on current water situations can be accessed from the websites of the Royal Irrigation Department ([www.rid.go.th](http://www.rid.go.th)), and the Hydro and Agro Informatics Institute ([www.haii.or.th](http://www.haii.or.th)). HAII is also developing an Agricultural Network ([www.thaiaig.net](http://www.thaiaig.net)) that is an excellent example of coordination among different agencies to organize a common database and query system to facilitate access to data on socioeconomics, population, health, risk prone area, water situation, agriculture, energy, and village funds. Results of queries are to be displayed as tables with statistics and maps, but the system is still under construction.
- **Agriculture data.** The Department of Agriculture ([www.doa.go.th](http://www.doa.go.th)) has on their website information related to improving quality of important crops and use of hazardous chemicals used in Thailand. The Department of Agricultural Extension site ([www.doae.go.th](http://www.doae.go.th)) provides information on recommended practices for major crops, local knowledge, and ecotourism, and a WebGIS on planted area and yield of major crops. Data on macro and micro economics, agricultural production statistics, current prices of commodities and inputs, as well as commodity profiles and country profiles to support agricultural trade can be accessed at the Office of Agricultural Economics site ([www.oae.go.th](http://www.oae.go.th)).
- **Local socio-economic data.** One of the most widely used datasets in rural development is the NRD2 dataset that contains results of village surveys conducted every other year since 1984 under the Community Development Department (CDD). This database covers basic information on villages in rural areas of Thailand, such as general description, economics, education, local participation, strength of community, health, labor, drug addiction, etc. CDD also provides data on household basic need status based on surveys conducted annually since 1990. Recent datasets can be accessed at the CDD website ([www.cdd.go.th](http://www.cdd.go.th)) and data is distributed on CD. It is still very difficult, however, to link these data with spatial features such as village location for further analysis in GIS systems.

Overall progress in implementing online services of such data providers vary. Promising basic improvements have been seen in GISTDA services, in terms of both the method of data distribution (an option for online data download) and the speed of response to clients. And, RTSD has updated new digital map layers to their L7018 series, and now uses WGS84 as the standard datum, which provides more widespread compatibility. And various of the specialized data providers are gradually improving data content and distribution.

Many difficulties still remain, however. In terms of basic issues, various types of data are still not accessible beyond small circles of government agency elites. Other data are either not put into formats to facilitate access, or access is provided in a manner that it cannot be used in analysis or problem solving by clients. In terms of basic specific operational issues, response time to clients of RTSD needs to be further improved, and their method of data distribution should be similar to GISTDA practices. Users still have to struggle with RTSD labels for villages, which is a key link to other important databases such as NRD2. Located under the CDD, the NRD2 is one of the most potentially widely useful and most frequently updated datasets. Access and usability of NRD 2 data could be greatly improved by simply providing a link with village location feature datasets produced by RTSD. Because of the lack of common village codes to link these two important databases, many analyses cannot be conducted, and in those that are, a huge amount of skilled effort is being wasted to match villages ID codes and names. Problems such as this are increased whenever new administrative boundaries are revised. One of the most frequently asked question among GIS users is who has correct sub-district boundary files, which vary widely among sources. This issue should be simply addressed through an internet download service by as specifically authorized data provider. This would be a simple way to save an immense loss of time by GIS users. These types of problems reflect the difficulties inherent in trying to make government agency services become more user-oriented and user-friendly.

Although WebGIS technology seems to be a good way to meet user demand for accessibility, up-to-date information, and access with no requirement for GIS software, one major problem is the poor speed of information access on the internet in Thailand at present. Users who visit the WebGIS sites discussed above suffer from slow response to request for map information access largely due to inadequate investment in web and database servers of data providers. At the time of this report, very few sites are at a mature stage of WebGIS development, and many are still experimenting with their design, contents, and story lines. Another major limitation of most WebGIS is the difficulty in integrating key essential data related to agricultural and natural resource management, and the inability to perform spatial analysis needed to answer many types of specific queries. This is partly due to the narrow focus of each agency in providing its own authorized information, and partly due to limitations in the software itself. While WebGIS can help meet some needs, it is inadequate by itself.

Moreover, the nature of problems and challenges in improving rural livelihoods and resource management in the context of broader patterns of change often call for a tool that serves as a platform for data integration and visualization. This is especially necessary in planning process that involves different agencies and levels of governance, where multidimensional datasets are required to assess problem situations at different hierarchical levels. An example of such a

tool is Decision Support System for Agricultural Resource Management and Services (DSSARMS) developed in the Project supported by Thailand Research Fund (TRF) as described in Methi et al. [2005] and briefly overviewed in Box 2. This tool was used in conducting analyses and constructing visualizations related to the UPB that have been presented in numerous parts of this report.

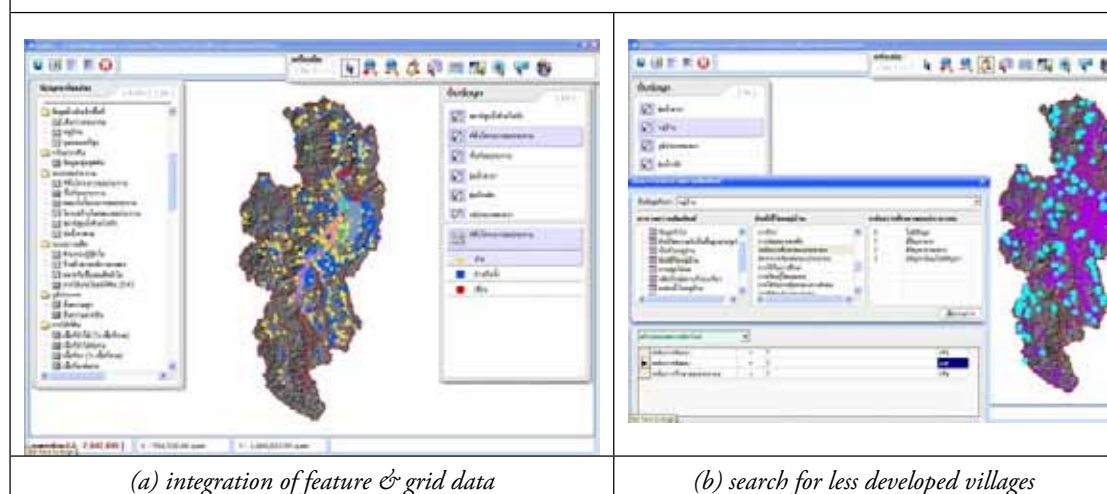
#### Box 6-2. DSSARM (A GIS Tool for Integrating Spatial Data)

Decision Support System for Agricultural Resource Management and Services (DSSARMS) was designed to offer a GIS-based user interface in Thai and to serve as a platform for integrating spatial data to support and promote uses of spatial information in agricultural and natural resource management [Methi et al. 2005]. Users may import different types of features and grids in DSSARMS, select map symbols and rename the fields in Thai to facilitate visualization and interpretation of results in interdisciplinary groups or meetings, or under integrated development projects. Users may also join or relate tables to map features in order to further explain the features on the map.

DSSARMS also provides necessary tools for users who are not familiar with GIS so that they can benefit from using agricultural resources databases to support their decisions. The system facilitates both attribute and spatial queries to ensure effective uses of spatial information in strategic planning and management of agriculture and natural resource management at the provincial level. Quantitative data may be displayed in graphical forms in DSSARMS to enhance visualization and interpretation in order to facilitate communication among various groups of users ranging from practitioners to policy makers. Users may design their own map layout for printing. In order to help support integrated development projects, results generated from other analysis packages such as MCE-GIS may be imported into DSSARMS for display with other map layers already available.

Although DSSARMS was originally designed for the users at the provincial level, it has been well employed in the current Project where watersheds are used as a operational units instead of administrative boundaries. To accomplish this, all spatial data were organized into 3 hierarchical levels of nested watersheds, the Upper Ping, the watershed level 3, and watershed level 4. The geodatabases were then imported into DSSARMS using tools provided for importing and editing. Once spatial data have been imported and organized, they can be displayed, identified, and queried from the geodatabases using their attributes and features (Figure 6-9)

Figure 6-9. Integrating different data types and searching village data in the UPB



continued on next page



## Box 6-2. (continued)

The window on the left in Figure 6-9(a) illustrates the list of map layers that were organized and ready to be displayed together with other map layers. In this figure, distribution of the irrigated areas and sites of dams, reservoirs and weirs in UPB may be exhibited by dragging the appropriate map layers on the list to the center of the screen. Similarly, one may display transportation network and distribution of land use in the UPB to explore spatial data and possible relationships among the spatial variables that are being investigated. The user may make a query from the attribute searching window (Figure 6-9(b)), for example, select query from the village layer for communities which have low development index and low education opportunity, the villages that meet both conditions are shown as the blue symbol in Figure 6-9(b). Attributes query can be made as many conditions as required using standard Boolean operators, and may be made from attributes of any feature types, i.e., points, lines, and polygons. For instant, the user may query on land use map layer to identify the areas in the UPB where possible effects of the FTA agreement may reach. The production systems which are highly vulnerable to this policy would be the garlic and onion; both crops are grown after rice. The result of the attribute query on rice-garlic or rice-onion cropping systems in UPRB would be highlighted in the map.

Figure 6-10. Examples of spatial query and data displays in DSSARMS

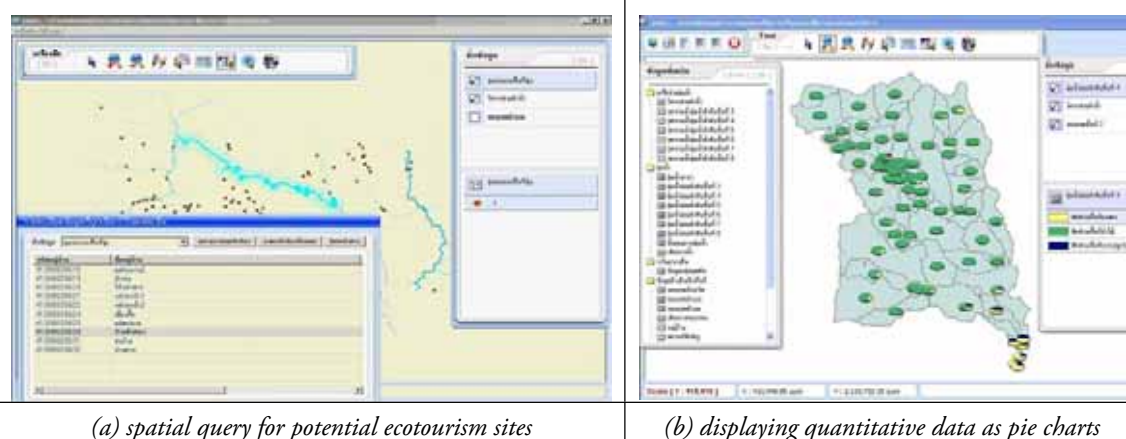


Figure 6-10(a) illustrates the result of spatial query on the potential stream for ecotourism development and search for the villages within 1.0 km on both side of the selected stream. The result in this figure shows the selected stream, its 1.0 km buffer, the location and names of the villages within this buffer. Detailed information on these villages can also be found to support the final site selection.

DSSARMS also provide a tool for presenting quantitative attribute, an example in Figure 6-10(b) displays the chart representing the proportion of forest, rainfed agriculture and irrigated agriculture land in sub watersheds level 4 of Mae Khan. Various ways of visualization of spatial data and attributes of different nature in DSSARMS can greatly enhance sharing information in a meeting for planning and decision making in an integrated development project.

DSSARMS and associated databases have been installed in UPB provinces, and we had hoped to help explore its utilization at provincial and more local levels under this project. But due to the turn of political events in Thailand that included abolishment of the 1997 Constitution and emphasis on previous styles of governance, this has not been possible. Thus, like further development of local governments and governance institutions such as sub-basin organizations in the Ping River Basin, testing and further development of information systems to support more distributed decision making are “on hold” until new policies provide the “space”, the commitment, and the incentives for further activity and innovation.



### *Roles of experts: case of remote-sensing*

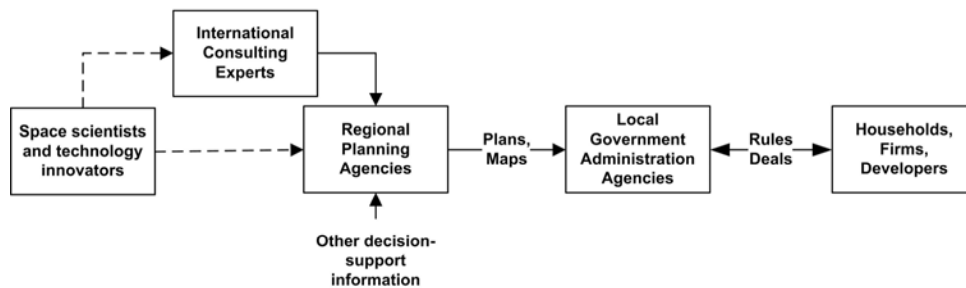
As innovations in distributed information systems continue to evolve, the role of experts in land-use policy, planning and management may be changing. This can be illustrated with respect to rapid changes in use and users of remote-sensing information within Thailand.

The conventional model of how remote-sensing-based information and its expert interpreters contribute to land-use planning, management, and policy has been linear and technocratic (Fig 6-11a). The pathway from imagery to maps, through classification schemes and then land-use plans and policies, is portrayed as part of support for technical decisions, and thus beyond the realm of politics [Lebel et al. 2007].

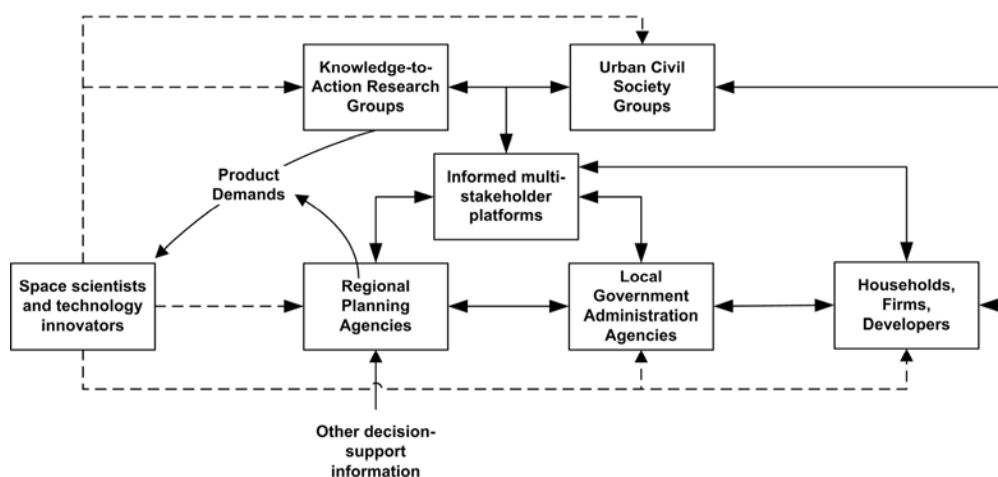
Figure 6-11. Two perspectives on remote sensing contributions to land planning & management

*Dotted lines focus on primary remote-sensing products, while solid lines are more processed and integrated products with communications. Boxes represent individual and collective actors*

#### **A. The Conventional Past**



#### **B. The Innovative Future**



Source: After: Lebel et al. 2007

In the innovative future (Fig 6-11b), however, remote-sensing imagery and derived products are easily accessible to many actors in a more distributed system providing information support for decentralized and devolved decision-making processes. When this begins to occur, even the way products are prepared – such as defining of classification categories and associated uncertainties - is not left unquestioned [Lebel et al. 2007]. Thus, the rational basis for decision support begins to become more transparent. Accordingly, policy-related positions

adopted by decision makers, civil society, and lobby groups must be more spatially explicit, clearly articulated and justified, and open to scrutiny. And since performance can be monitored independently, key actors at various levels can be held more accountable.

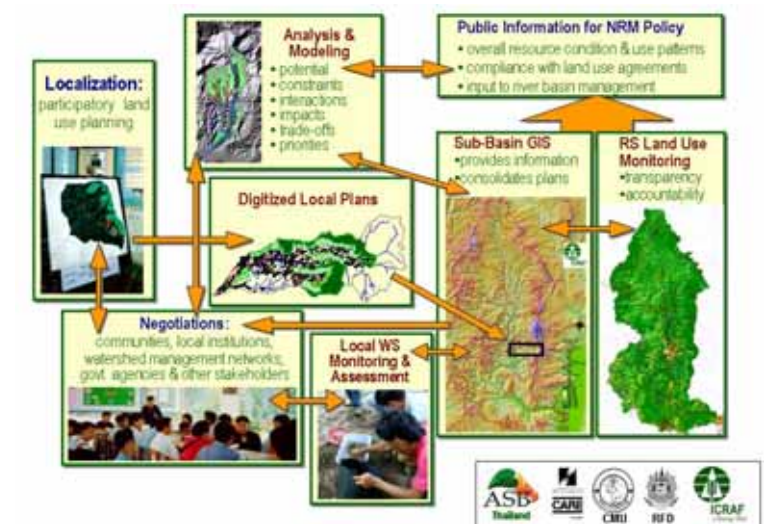
Under this type of approach, remote-sensing researchers are no longer the hand-maidens of planning agencies. Rather, they see their role in development as helping create arenas for discussion and debate, and as contributors helping to better inform deliberative processes. They no longer provide e-governance or geo-spatial solutions to only a single set of interests, but actively explore options for open access by many.

Moreover, information and knowledge from various important stakeholders can be integrated to better inform remote sensing classification and interpretation processes. We have seen in section 3.3.1 one example of how remote sensing has been used as part of participatory mapping of land-use planning and zoning (Figure 3-46-49) conducted by local villagers themselves in parts of the Mae Chaem sub-basin where all local land use remains officially unrecognized [see also Saipothong et al. 2005; Thomas et al. 2004].

This type of information can be used to improve understanding of land use implications of local livelihood strategies (e.g. Table 3-11). But it can also be used to help better inform discussion, debate, and negotiations, as well as design and implementation of activities by local governments, multi-village resource management networks, emerging sub-basin management networks and organizations [Thomas 2005], and various other types of interests, groups and organizations as they continue to evolve. Moreover,

Figure 6-12 illustrates relationships among components of a prototype local information support system for participatory watershed management. Components of the system have been tested in the context of Mae Chaem [Thomas et al. 2004]. Although subsequent further support for this type of approach is not yet forthcoming from higher levels of governance, local efforts based on sub-

Figure 6-12. Prototype information support system for participatory watershed management



Source: Thomas et al. 2004

basin level networks of more local networks continue to work in directions that confirm the future relevance of this type of approach. Further improvements that have already been suggested include its expansion to incorporate more dimensions of local knowledge, livelihood development, and channels for linking with multi-level governance systems, which local communities hope will receive renewed emphasis in the not too distant future.

## 6.4 Implications for upland policies

This section provides a brief synthesis of findings under our project regarding implications of how state policies affect livelihood opportunities in upland areas, and abilities of poor households and communities to respond, both now and especially in the future.

### 6.4.1 Conservation-based constraints on upland land use and development

Natural resource conservation and environmental management are policy areas of rapidly increasing activity in all states of the region, and reflect growing public concern within national societies and at international levels. Those promoting and formulating such policies, however, need to be aware of the especially strong impacts many of these policies are having on livelihood assets and opportunities of poor households and communities in upland areas. Most of these areas already face many constraints in responding to new opportunities that are providing pathways for other people in society to escape poverty.

- Some states, such as Vietnam, seek to address these issues by providing land use certificates that can also be used as collateral for subsidized institutional credit, as well as special assistance programs for especially poor areas and those adjacent to protected forest areas.
- Others, like China, allocate land but also encourage poor households to send members to work in industrial areas, and provide economic incentives for households and communities to increase tree cover in sloping areas seen as important for river basin management.
- But in states like Thailand, policy focus seems to be mainly on increasing uncertainty and constraints related to conservation, with little concern about impacts on local livelihoods.

In all countries there is increasing rhetoric and campaigns to promote more “green”, “safe”, or “environmentally-friendly” types of technology and production approaches to produce for higher-value “green” markets, which suggest movement toward a *place-based* future scenario. There are also policies and campaigns to promote transformation of livelihoods to focus on ecotourism or related support services, which would be most compatible with *glocalized* or *services-parks* regional scenarios. But since many of these campaigns are conducted thus far in more of a *government-assisted* mode, many upland households and communities are understandably still very skeptical about making major changes in their livelihood strategies until it becomes clearer that such approaches and activities are really viable under their conditions.

In any event, if national policies are to further pursue development of upland areas as “conservation zones” under anything other than a *marginal subsistence* scenario, then related policies and programs will need to be much more transparent and accountable to local populations. More serious attention also needs to be given to coordination of different relevant policies, including public investment and support service policies, to help achieve conservation objectives while still improving livelihood opportunities in upland areas. Especially if states wish to pursue more *place-based* or *self-determined* approaches, they need to consider a wider range of policy options, as China has already begun doing, including providing rewards or even payment for environmental services provided by upland areas as a consequence of constraints being placed on upland livelihood opportunities.

### 6.4.2 Basic infrastructure and physical connectivity

State policies related to investment in infrastructure and basic services can clearly have strong impacts on upland livelihood opportunities. Indeed, in many areas access to roads, electricity and telecommunications have resulted in bursts of various types of development, especially in areas where private sector entrepreneurs have emerged to provide efficient links in production and marketing chains without distortions from monopoly control that can result in exploitation or focus on resource extraction.

Despite the progress that has been made in improving physical connectivity infrastructure in upland areas in various parts of the region, much remains to be done. While GMS states are increasing macro-level physical connectivity through investments such as those supported by the ADB, basic design of these systems tends to focus on efficiency of flows between major lowland urban centers. But intermediate and local levels of infrastructure are needed to complete the overall systems, especially in areas such as many parts of North Laos where little complementary infrastructure is currently in place.

Moreover, in chapter 5 we highlighted uncertainties associated with connectivity as an important axis in identifying plausible alternative scenarios for the region. While connectivity in that context has various dimensions, there are considerable implications related to development of the physical connectivity upon which further dimensions of connectivity must rely. Flows of goods, services, information and people all depend on roads, electricity and telecommunications, while costs of movement and access to information are determined by their efficiency, and risks and uncertainties are associated with their reliability. Upland areas tend to be relatively disadvantaged in all these dimensions compared to lowland and urban areas. Public investments that can help reduce the disparities can assist upland areas greatly.

But ultimately, of course, impacts of physical connectivity infrastructure depend on how it is used. Thus, distinctions made by ADB consultants (section 3.2.5) between “hardware” providing basic physical connectivity and “software” needed for corridors of multi-dimensional connectivity, opportunity and development may sound a bit overly-dramatic and optimistic, but are basically probably appropriate. The nature of infrastructure design and operation is likely to vary according to the type of development scenario pursued by policies of each state, region and locality, and the type of connectivity that is required to achieve desired outcomes. But in all cases, progress in achieving desired outcomes and avoiding undesired ones will relate closely to overall policy consistency, sequencing and coordination.

### 6.4.3 Improving access to financial capital in upland areas

Policies directed toward expanding access to financial capital through institutional borrowing also appear to be making substantial progress in the region. We have seen in examples from Thailand and Vietnam that institutional credit programs in the region are improving and providing access to financial capital for many rural farming households, including those in upland areas. While access to their major lending facilities is easier for those with sufficient land and assets to use for collateral, group credit is also possible if households have sufficient social capital. Thus, some of the poorest households can still have problems.

Experimentation with village fund credit mechanisms in Thailand appears to be interesting. Although somewhat controversial, it appears to have dramatically increased the reach of access to credit among upland minority communities with no land documents in Mae Chaem. But since village “bankers” still share some similar views with institutional bankers, poor households with little social capital may find amounts they can borrow are relatively small, and access and loan amounts are linked with repayment credibility.

For growing numbers of poor upland households, contract farming is another channel that can help address constraints on access to financial capital needed for production inputs. State policies encourage such arrangements in all countries as a form of farmer-private sector partnership. While overall experience has been mixed, many promising examples have been identified. Some of the problems that have emerged in various cases appear to be related to provision of production inputs in kind with prices determined by the company, together with commitment to sell production output to the company at a price perceived as too low. Some farmers are also concerned that they must bear all crop failure risks, or that “share-cropping” contracts for long-term crops like rubber may not be equitable. Policies supporting more open competition among contracting companies, mechanisms to insure contracts are fair, informed and voluntary, or possibly some types of crop insurance schemes are possible directions for further exploration by state policies to help address such issues and concerns.

Access to financial capital is also sought by many households through off-farm employment, and in China this approach is encouraged under poverty alleviation policies. In other states, however, there appears to have been relatively little policy intervention or even rhetoric related to off-farm employment in upland areas. Student loans, however, have been supported by state policies in Thailand, and appear to be receiving a quite enthusiastic response. It is not clear how much these policies are intended to serve as a mechanism for enabling the young generation to leave the agriculture sector and rural upland areas, but that appears to be one of the most important motivations for parents and students participating in the program.

#### **6.4.4 Emerging private alternatives for production support services**

One major focus of state rural development policy has been on providing state extension services. Especially in socialist countries, but also in Thailand, extension systems have often been used as agents for conducting campaigns to promote production of various crops selected through central planning processes. And in some cases, during recent years most notably in Vietnam, various campaigns have resulted in very dramatic increases in crop production and export levels that have even affected global commodity markets. In many other cases, however, crops have been promoted largely on advice from agronomists, resulting in a “marketing problem” when farmers found they could not sell their crop products.

But in many upland areas, even access to state extension services has been limited by human resource, logistical or budgetary factors, and in Thailand by policy that excludes state extension services because the state does not want to encourage agriculture in montane zones. And even in upland areas where extension services have been provided, there have been frequent complaints that crops, technologies, and practices being promoted were developed in the lowlands and not suitable for upland conditions.

Moreover, past extension services in upland areas of the region have often been provided under various types of development or opium crop replacement projects, or under programs to stop shifting cultivation and/or promote conservation farming technologies. While some projects, such as the Royal Project in Thailand, have been quite successful in supporting development of viable commercial production, many projects were overly dependent on subsidies and artificial conditions that collapsed after the end of the project. Indeed, one of the most longstanding and most reliable sources of “extension” information for many remote mountain areas across the region has been through kinship and social networks of various sorts.

During recent changes across the region, however, private enterprise has started to emerge as an increasingly important provider of extension and related types of agricultural services. This is especially clear in terms of new crops and technologies that are responding most quickly and effectively to changing market and production opportunities associated with changing trade policies and integration with wider markets. Indeed, most of the progress in exploring and developing production for the types of “green” markets promoted under upland conservation policies is being led by private companies in direct partnership with local producers and communities. We have already noted the importance of contract farming in relation to access to credit, but the contract farming approach is equally important in providing technology, inputs and markets, as well as experience with commercial production approaches.

Thus, policy reforms need to consider shifts that are occurring in the roles of state and private sectors in providing various types of support services. For example, one of the important strengths of the Royal Project in Thailand has been its ability to draw on experts and consultants from research agencies and academia for help with basic research issues, while at the same time drawing on help from private sector companies regarding issues related to products, practices, equipment and marketing. While the Royal Project Foundation is difficult to replicate because of its privileged status that allows it to function the way it does, its relative success in mixing sources of support services can be instructive. In Omkoi, we have also seen an example of private company efforts to draw on Royal Project experience in building its own support services, as well as in developing working partnerships with state agencies to help reduce production constraints and risks associated with land use policy. In Yunnan, on the other hand, we have seen how emerging success by private companies can be seen as a threat to the tax base and revenues of local government, state agencies and state enterprise.

Since policies in all states of the region claim to promote expansion of the role of the private sector in their agricultural production systems, there clearly needs to be more attention to the incentives and impacts of different policies that affect private sector operations and development. Such assessments may also need to consider how policies may provide incentives and impacts that differ among large, medium, small-scale or even non-profit enterprise components within the private sector. Moreover, reforms directed at improving the policy environment for development of private sector services, or reductions in disparities among private sector actors, will need to be formulated and implemented in collaboration with those who have direct experience in the private sector itself.

This process could also provide an opportunity to improve and refine public investment policies for related public sector institutions. For example, one result might be that public sector comparative advantage is seen to be moving more toward areas like basic types of research

and development in which private sector companies are not yet able to invest, which is a pattern familiar to technically advanced countries. In this case, perhaps investment policies should shift more emphasis in public institutions to longer-term research and development, which now receives relatively little public support in most countries of the region.

#### **6.4.5 Roles for education and information technology policies**

Development of vibrant urban and industrial centers able to successfully compete in the global marketplace is most always associated with migration of both lower wage labor and bright educated young people from rural areas. Thus, it is not surprising that education is seen as one of the most important channels for achieving a better life and social mobility, or that national policies are constantly trying to further expand access and improve the quality of education. We have seen quite clearly the widespread support for and response to such policy even in poor ethnic minority households in remote areas. At this point, it appears the main role of education is to provide access to work that will provide young people with an escape from the drudgery and uncertainties of upland agriculture-based livelihoods.

Although this may be considered as an achievement of national policies, it still begs the question about the degree to which educational policies should also be producing more knowledgeable and skilled people to live and work in upland areas. At this point, it appears that the “brain drain” relates largely to two issues: (1) desire for the security that comes from salaried non-farm occupations, and (2) the perceived lack of more rewarding livelihood opportunities in upland areas. That these perceptions are real and widespread is reflected in national economic and employment data discussed in earlier chapters that show movement out agriculture and into service and industrial sectors associated with lowland urban areas. While governments have no desire to reverse these overall trends, it does underscore questions many are now asking about the future of agriculture and life in smaller towns and rural areas.

Indeed, we have seen that many of the new opportunities in upland rural areas that are emerging in association with greater economic integration, increased emphasis on conservation, and globalization more generally, relate to increased diversification of agriculture into more production linked with high value specialty and now ‘green’ markets, as well as new livelihood opportunities linked with services such as tourism, and now especially ‘ecotourism’. And exploration of mechanisms for rewarding upland areas for maintaining or improving environmental services that benefit wider society may add complementary opportunities. In our explorations of plausible alternative future scenarios, we have seen that at least under some sets of conditions, these types of opportunities could basically transform upland life.

But in order for these types of opportunities to fully unfold and have such impact, they must be able to link with education and with development of information technology. Many types of new ideas, attitudes and entrepreneurial skills will be necessary to produce the innovations and private sector linkages required to make these operations viable in a manner that significant components of “value added” can be captured by upland livelihoods. As education policies must put major emphasis on trying to meet the needs of societies that are undergoing major restructuring and transformational processes, it may be possible to allocate a bit more of this effort toward needs associated with similar processes in upland areas. Tendencies in

educational systems to portray agriculture and rural life as “the past” may need some balance by visions of potential “successful” upland livelihoods and their rewards and requirements.

Moreover, most recent education and IT policies tend to recognize that information technology is a very important pathway and toolkit for building the type of multidimensional “connectivity” that is fundamental for many of the most important emerging opportunities of today and tomorrow. But societies of the region currently place most emphasis on relationships between IT and opportunities in urbanizing and industrializing areas. While this is extremely important and should remain a central focus, more attention is needed on elaboration of the overall IT system and its components that can link more widely and deeply with broader society in countries that are much larger and more complex than urban city-states.

In Thailand, we have seen some of the progress being made under IT policies aimed at building information technology systems in the government sector, including some of the issues, problems and difficulties that are being encountered. These difficulties are exacerbated by poor physical infrastructure for access from outside of Bangkok, by inadequate investment in provider systems, and by attitudes of some key actors who still want to limit information access and resist coordination with others. But we have also seen how innovations such as the DSSARMS approach may be able to help bring about significant transitions in how complex and sophisticated data and information can become much more accessible and useful for a new and much broader range of actors in Thai society. In this regard, government provincial planners are only the first step in processes that are needed to open access to – and especially use of – information by stakeholders that can even include communities and private entrepreneurs in upland areas. Approaches for achieving this type of vision are likely to also require more serious attention to decentralization and devolution of governance.

#### **6.4.6 Policies on decentralization, localization and subsidiarity**

Many types of upland policies tend to be based on static notions of a rural peasant class that is simple, ill informed and dependent on more knowledgeable and sophisticated outside patrons for guidance and help. Traditional agricultural systems are often seen as backward, unsustainable and inappropriate for the modern world. Thus, development policies have sought to “settle” them into fixed field agriculture on “farms” that are segregated from forests, and integrate them into “modern” commercial agricultural production systems. But because upland areas provide environmental services that are important to outsiders, policies now tell them to make additional investments in conservation farming practices and reduce use of production inputs that play an important role in increasing agricultural productivity elsewhere. Many upland policies are also welfare-oriented and associated with publicity photos of patrons passing out food, blankets or other one-time subsidies to show their generosity.

Yet upland policies based on strengthening capacities, reducing constraints, and building partnerships are relatively rare. Although many improvements can be cited, their lives are often still difficult as they invest their limited livelihood assets into production activities associated with environmental risk and growing economic uncertainties. In many areas, however, one decision such “simple” households are making for themselves is to invest heavily in edu-



cation for their children, in order to provide them with a chance to escape from difficult and poorly rewarded upland livelihoods.

Trends under increasingly open trade policies now suggest that upland livelihoods need to diversify into production for specialty markets in the globalizing economy, as well as into services such as those associated with ecotourism. Thus, policies are now beginning to urge upland households and communities to become more innovative, outwardly engaged and entrepreneurial. But, assuming these policy directions continue, historical evidence from many societies indicates that higher skilled, and more innovative, outward-looking and engaged populations want their own voices to play a larger role in helping determine their own futures. Innovation tends to be seriously constrained under conditions where the innovators have little or no voice or influence in policies and programs that have impacts on them.

Moreover, various increasingly complex sector-oriented policies seek to pull or push activities in upland areas in often conflicting directions, or else require support from other policies that have not yet been implemented. Thus, there are also growing needs for better policy coordination and sequencing, including monitoring and feedback processes that can adjust, correct, and improve implementation to better achieve desired policy impacts in local contexts. And, there are often also needs for negotiation among various stakeholders affected by policies regarding impacts and the distribution of costs and benefits among stakeholder groups. Such negotiations require mutual respect among stakeholder groups, and removal of barriers and biases based on ethnicity or other forces that have marginalized various groups in the past.

Policies promoting decentralization are often aimed at trying to improve “localization” of development policies to make them more suitable and effective under specific local situations and conditions. Close interaction with and participation by the full range of local stakeholder groups is usually a key element of this approach. These processes also tend to include coordination and sequencing of implementation under various types of development policy components and initiatives, because needs and appropriate configurations can also vary among situations. Indeed, it is difficult to identify potential alternatives to decentralization that could effectively conduct such tasks.

While progress that is being made in decentralization policies across the region needs to continue, emerging efforts to implement policies that require more proactive local participation, innovation and entrepreneurship are likely to also require more devolution in at least some components of governance. The fundamental issue here will be improvements in effectiveness, efficiency and sustainability that can be achieved through application of the principle of subsidiarity, so that various types of decisions can be made at the most appropriate and effective level. Resulting multi-level governance systems are likely to be based on decisions that are distributed among levels, but also on cross-level interactions that enable the overall system to perform more efficiently and effectively. We have seen examples of some implications in the context of river basin management from pilot explorations in the Ping River Basin. Applications under a wide range of other contexts are also very possible.

Indeed, without more progress in these types of directions, it is highly likely that the brightest young people will all continue to leave the uplands for better opportunities elsewhere,

leaving long-term prospects in the uplands likely to center on stagnation, marginalization, poverty, conflict, and eventual depopulation.

## 7. Summary and Conclusions

This study has been a preliminary comparative analysis of market and resource access of the poor in upland zones of the Greater Mekong Region. This final chapter provides a brief summary and synthesis of our findings and conclusions. More detailed findings, maps, diagrams, tables and references are provided in previous chapters.

### 7.1 The Uplands

Our explorations began with an operational definition of upland areas, a brief overview of their general characteristics, and a survey of where they are located in the Greater Mekong Region. At the regional level, we have defined the ‘uplands’ as encompassing the ‘montane’ zones that is found between 300 to 3,000 meters above sea level. This includes three sub-units operationally defined as lower (300-500 masl), middle (500-1,000 masl) and upper (1,000-3,000 masl) montane zones. The ‘lowlands’ are defined to include coastal (0-100 masl) and upper (100-300 masl) lowland zones, while areas located above 3,000 masl are defined as being in the alpine zone. The distributions of these zones across the entire region are mapped in Figure 1-2, as well as in the context of major river systems (Figure 1-3) and national boundaries (Figure 1-4). These zones are used in quantitative assessments presented in various chapters of this report.

We then briefly surveyed of patterns of demographic and economic change across the region since 1970, to help set the context for understanding the importance of underlying forces of change that have made market integration a major issue in the region. Societies in the region and their governments have come to view economic growth and change as a force of central importance in achieving a better life. They have also sought to address issues associated with demographic change by reducing their population growth rates and supporting urban development. As they assess their progress, they are also recognizing more clearly how unevenly participation in and benefits from economic growth and change have been distributed. While dramatic growth and change is taking place in major centers in lowland zones, significant components of the population remain in conditions defined as poverty, and governments have clearly declared their intentions to reduce these inequities.

At the same time, states of the region are formulating policies and building programs to address the still more recent twin challenges of environmental sustainability and globalization. While globalization is most frequently viewed in terms of sweeping changes in the global economy being induced by new trade agreements, there are many additional dimensions of growing global connectivity. Among these are global awareness and measures to address dimensions of environmental sustainability including biodiversity, water, and climate change.

These issues have now converged in their attention to ‘upland’ montane zones of the region. Efforts to reduce rural poverty in disadvantaged upland zones are taking place in the context of evolving regional trends toward greater restrictions on upland land use induced by environmental concerns, generally more pluralistic and participatory multi-level governance (despite periodic setbacks), and an increasingly globalized economy. National and regional de-

velopment policies emphasize investments in infrastructure that are expected to bring upland rural communities into the growing market economy. Skeptics, however, are concerned that poor minority communities cannot effectively engage in production for globalizing markets, that national and local institutions will not be able to provide appropriate governance and information, and that market economics will only bring additional hardship and deterioration of environmental services. How to address these concerns is one of the greatest development challenges in the region today.

This study has sought to build on promising innovative efforts in the region to combine livelihood approaches with modern information systems technologies, in order to improve understanding of how poor upland households and communities have responded to and been affected by market opportunities. In the process, we have sought to provide examples of how emerging spatial information systems can be extended and adapted to help address particular conditions and problems faced by small upland farmers and enterprises. We have also explored alternative future scenarios related to current debate about directions development should take in the region, in order to more dispassionately assess likely impacts on patterns of livelihood opportunities and landscape transformation.

Major methods and information systems include a regional-level spatial and statistical database constructed from a variety of global and national sources, and a regional-level collection of secondary materials. At more specific local levels, we have built on previous and current work in the Upper Ping river basin of northern Thailand, as well as coordinated complementary case studies at sites in Vietnam, Laos and Yunnan, China, and secondary materials on each country. These components have provided the basis for the preliminary comparative assessment of livelihood and landscape transformation processes, conditions and patterns presented in this report.

## 7.2 Multiple Poverties

Poverty has many faces and causes. Our explorations of who and where are the poor in the Greater Mekong Region were presented in Chapter 2. Findings from these explorations at both regional and local levels reveal different types of poverty that depend on how it is conceptualized, measured and perceived. They also underscored the multi-dimensional nature of poverty, and the relevance of the sustainable livelihoods approach for assessing livelihood assets in subsequent parts of our analysis in a manner that can help us classify dimensions of poverty and suggest causal links.

### 7.2.1 Poor areas, poor populations, and inequality

Our broad survey of poverty in the region using the conventional conceptualization of poverty as material deprivation based on monetized levels of income helped us identify three different types of poverty distributions. Broad spatial assessments of poverty using nationally-determined poverty lines and income data from relatively small local areas were used for preliminary identification of distributions of poor areas, poor populations, and general inequality in wealth status.

Our first encounter with multiple types of poverty arose when discrepancies occurred between the findings of approaches based on poor areas or numbers of poor people.

- The Lao PDR is the most obvious case where poor areas also contain greatest numbers of poor people. Both are located in extensive but sparsely settled areas in montane zones.
- Vietnam had the largest discrepancy between assessments based on poor areas (poverty incidence, gaps or severity) and numbers of poor people (poverty density). The poorest areas are in montane, and especially remote middle to upper montane zones, whereas the greatest numbers of poor people are in far more densely settled rural areas in lowland zones. This underscores the fact that there are different types of poverty in the country, which are likely to have different underlying causes, so that different approaches and priorities may be required to address poverty issues.
- In Thailand these types of discrepancies are mixed. In the northern region, highest poverty incidence and severity is associated with more remote, sparsely settled areas in montane zones largely inhabited by ethnic minority groups, resulting in discrepancies that are similar to those in Vietnam, but with lower magnitudes. In the Northeast region, however, distributions of poverty incidence, severity, and density show similar patterns.
- Many remaining parts of Thailand and areas in Yunnan show more modest levels of both poverty incidence and poverty density, suggesting persistent poverty among certain components of the population. We saw evidence of heterogeneous combinations of poor and non-poor households and/or communities in studies from the Upper Ping Basin.

We also found discrepancies between income inequality, as measured by the Gini coefficient, and distributions of poverty incidence or density based on national poverty line standards.

- Although Vietnam has the highest levels of poverty incidence and density, it also has the lowest levels of inequality, and its highest inequality levels appear to be in areas where poverty incidence is high and poverty density is low.
- Yunnan and Thailand both have much lower overall levels of poverty incidence and density, but inequality in Thailand is by far the highest in the region, whereas Yunnan has relatively low levels of inequality that appear to be relatively evenly distributed.

In order to explore the degree to which at least some components of the population are able to achieve livelihoods that exceed poverty line standards, we also mapped distribution of the density of non-poor populations. Findings revealed generally very low levels of people with incomes above poverty line standards in montane zones across the region. This is in considerable contrast to lowland areas of Vietnam, for example, where large numbers of both poor and non-poor live in the same very densely settled areas.

These results underscore the diversity and complexity of poverty distributions, and provide fairly strong evidence that over-simplistic approaches to poverty alleviation are likely to be only partially effective at best. And since access to markets and resources are important factors related to poverty programs, there is a need to understand more clearly the nature and roles of constraints and impacts that occur in different contexts.

### 7.2.2 Perceptions of poverty

Additional faces of poverty were revealed through more local-level studies at our research sites. We found material income is also frequently used as an indicator of wealth at local levels. But here income seems to be more commonly used in the context of articulating relative wealth categories or rankings, in a manner more similar to a measure of inequality. It is also more common at local levels for placement of people, households or groups into wealth categories to be subject to modification by additional information about their characteristics.

At very local levels it is quite common to find perceptions of poverty status based on some mixture of asset indicators and information about the intentions, capacities and/or trajectories of people or households. Thus, for example, poor people may be seen as either “hard working” or “lazy”, based on their individual characteristics, their family history, their ethnicity, or other factors. They may also be seen as unfortunate, such as households headed by elderly women whose children have died or moved away and are not willing or able to help to “properly” care for their parents during old age. Or they may be seen as being “temporarily” poor, as in the case of young couples with several young children who thus have high dependency levels and small labor force assets.

These more complex and sometimes more intuitive faces of poverty reduce the relevance of efforts to seek a single definitive ‘standard’ for defining and assessing poverty. This may suggest that indicators and measures of inequality may be preferable for characterizing areas and populations, as well as for understanding local self-perceptions of relative poverty. Assessments of inequality introduce notions of equity. Social acceptability often relates to whether inequality results from differences in outcomes or opportunities. Differences in livelihood outcomes are generally more acceptable, whereas differences in access to opportunities can result in accumulation of social pressures that in the longer term can lead to social and political instability.

Indeed, local self-perceptions often appear to include factors related to levels of inequality that are seen as equitable, or at least acceptable, as indicated in areas of heterogeneous wealth status in North Thailand. Such perceptions are often based on rather complex judgments that may also reflect values and aspirations by integrating abstract notions of satisfaction or happiness associated with quality of life. Thus, some people classified as poor may not perceive themselves as experiencing hardship, whereas some people classified as quite wealthy may perceive themselves as living with only a moderate level of comfort – presumably either because there are people who have more than them, or because they feel it is not culturally appropriate to flaunt your wealth or status.

On the other hand, some well-off elites view themselves as having superior fates or attributes that are responsible for their better fortune, so that the poor (and often other ethnic groups) should only aspire to a much more meager status and position in life. For example, a quite well-known Bangkok-based Thai environmental guru recently told one of the authors of this report: “Stop talking about the upland poor. They are surviving, so they are not poor. Besides, they could never be like us anyway.” These types of perceptions also help us better understand apparent contradictions in Thailand as manifest in the nationally promoted princi-

ples of the sufficiency economy, which in practice is promoted primarily among lower strata of society, while media and advertising feature Bangkok's top-level shopping centers and their highly publicized celebrations of extreme material wealth and consumer excess.

In any event, governments across the region recognize the importance of eliminating, or at least minimizing poverty and perceived inequities in opportunities in their societies, and this recognition tends to be based on some combination of three lines of reasoning:

- *Moral.* Poverty (inequity) can be a moral or ideological issue, and governments engage in extensive rhetoric about how their programs will help everyone in society to meet their basic needs and pursue prosperity.
- *Economic.* Reducing or eliminating poverty (inequity) is an economic issue because of the cost of programs to help poor people, at least in times of crisis. And as people above poverty levels produce and consume more, it can stimulate the economy.
- *Security.* Poverty (inequity) can be a national security issue because of threats to political stability that can arise when significant components of the population are not able to meet their basic needs, or feel they are excluded from access to prosperity.

Moreover, all governments in the region have proclaimed that increased market integration is a central component of their approach to poverty (inequity) alleviation. There are many different views on how this can or should be achieved, and many additional factors seen as important for promoting broader notions of improved well-being and quality of life. And while more immediate improvements in livelihoods and reduction of poverty are important, sustainability of change needs to be understood in the context of generational change. Nevertheless, promotion of broad effective participation in globalizing market economies is a key element of their approach, and action programs are being designed and implemented.

## 7.3 Changing opportunities, responses and constraints

Our explorations of changing livelihood opportunities and responses in upland areas were divided into two parts. One part examined how market opportunities have been changing in the uplands (chapter 3), while the second focused on strategies that have been used by upland households and communities to respond and adapt to these changes (chapter 4). Insights into important constraints on how people can respond to changing opportunities emerged from both parts. This summary of our main findings and conclusions focuses on market opportunities, response strategies, response capacities, and major constraints.

### 7.3.1 Market opportunities

In order to help clarify the broad context of changing opportunities, we surveyed the recent history of key regional geo-political events, and broad patterns of national economic change associated with economic "opening" that began in Thailand in the 1960's and spread to all states in the Greater Mekong Region by the mid-1980's. Common patterns have involved emphasis on commercialization and export production in agriculture, economic restructuring that shifts emphasis to industrial and services sectors, rapid technical change based largely on

importing and adapting foreign technologies, strong emphasis on international trade, and rapid growth in domestic and foreign investment in production enterprises, as well as in infrastructure and support services required to enable economic systems to function and grow. As a result, growth everywhere in the region except Myanmar has ranged from very promising to highly impressive. The impacts of this economic growth, however, have not been uniform. There are substantial and growing disparities both among countries and among sub-national regions and sectors within each country.

But despite many disadvantages and disparities that have marginalized mountain areas, market opportunities have been changing at an increasingly rapid rate. Since China, Vietnam, and Lao PDR had passed through a socialist period of collectivization, processes of economic “opening” have been associated with allocation of responsibility for assets, and especially land, back to individual households and local communities, enabling them to formulate and implement their own entrepreneurial initiatives. Along with relaxation of monopolies operated by state enterprises, this has allowed emergence of a new generation of “private” merchants, industries and associated players in production, processing and marketing chains linked with national and international markets. We have seen examples of these processes at work in relation to tea production in Vietnam, to vegetable production in Yunnan, and to commercialization of NTFP production and expansion of rubber in Laos.

Since Thailand did not pass through a similar period of socialist reorganization and began its process of economic “opening” earlier, economic restructuring and development of private sector entrepreneurial activity is now more extensive and complex than in other states of the region. Although public sector initiatives have influenced various parts of the economy, there has been little serious attention to reallocation of basic assets or even recognition of land holdings in midland and highland areas. The main focus of government investment has been in infrastructure to support primarily private sector-led development of the market economy. In the Upper Ping Basin, most state investments in irrigation and other physical infrastructure has been concentrated in lowland zones of major valleys, where increasingly complex and dynamic intensive cropping systems and production zones have emerged. The first important exception was investment in mountain road networks, initially motivated primarily by national security and opium crop substitution programs. Thus, market production opportunities in mountain areas have come primarily from two directions: up from the lowlands, in the form of linkages with agro-industrial companies such as we saw in Mae Chaem and Mae Wang; and down from the highlands in the form of intensive commercial production of horticulture crops that began with opium crop substitution programs, and are now epitomized by the Royal Project. Further growth and development of opportunities has been facilitated by emergence of more local marketplaces, elaboration of electricity and communications networks, and gradual improvement of other types of infrastructure and support services. A new round of initiatives led by private companies is reflected in the example of highland shade grown coffee production.

Parallel patterns of economic change are occurring across the region:

- Yunnan’s economic growth and change is led by markets for products, services and labor in other parts of China’s globalizing mega-economy. Since the area of crops such as rub-



ber is already about maximized, more production must come from increased yields or expansion into neighboring countries. State enterprise crops are now encountering competition from emerging private sector operations and less-taxed, often higher value alternative cropping opportunities, as we saw with vegetables. Demand for crop products in urban markets is increasing and evolving, while crops that depend on sub-tropical areas face increasing competition from neighboring countries.

- Vietnam's economic growth and change is surging with heavy international trade and investment, and high population density forces pursuit of urbanization and industrialization. Past emphasis on high volume of low value industrial crops faces limitations in upland areas, as well as changing international market demands and standards under trade agreements, as we saw with highland tea production. Mountain region sub-tropical or temperate crops face increasing competition from China.
- Lao PDR is trying to zone land use and commercialize agricultural production, while seeking a suitable position in regional patterns of international trade and investment. Initial opportunities emphasize becoming a spatial add-on for markets and operations in neighboring countries producing industrial crops using standard technologies developed in lowland areas, as we have seen with rubber. But some are urging newer directions of specialization in potentially higher value and more environmentally friendly niche products and services. Policies must consider the scale and urgency of national needs, as well as limited resources and leverage in international arenas and markets.

Moreover, expanding market opportunities in montane zones are not limited to agricultural crops, as we saw from roles of livestock and non-farm income in case study sites. Wage employment in expanding labor markets is now an important opportunity in many areas, as are non-farm activities associated with tourism and other services. Improved transport and communications systems widen domains within which people seek wage labor and non-farm opportunities, providing incentives for people to migrate out of montane zones on a temporary, seasonal, or permanent basis. In China, incentives for labor flows from rural into urban areas and industrial zones are bringing pressure to further ease constraints on migration.

Market incentives in upland areas are also becoming increasingly dynamic as economic systems become more regionalized and globalized. New market opportunities can arise and fade. Thus, differences in local resource characteristics that provide a basis for profitable specialization in local or national markets can disappear when market integration brings competition from distant locations with more favorable characteristics. We have seen examples in the Upper Ping Basin. And, product quality and marketing strategies that were adequate in the past may no longer be sufficient under more globalized conditions, as we have seen with tea in Vietnam. Entrance of new opportunities can also threaten or displace others, as with NTFPs and rubber in Laos. But globalization also stimulates demand for new market opportunities if policies, practices and livelihoods can be appropriately adapted, as we have seen with tea in Vietnam, coffee in Om Koi, and ecotourism in Laos and Mae Wang.

*Technical change & innovation.* Virtually all changes in market opportunities we have seen are associated with technical change. In some cases, change is primarily based on adaptations of local or indigenous technical knowledge, but new knowledge is still required for effective

organization and marketing. We have seen needs for technical change even in crops that have been commercially produced for some time. In other cases, technologies required for effective production require entire new “packages” of inputs and practices. As these technologies are new to mountain areas, adaptation and “localization” will require innovation by local producers. Moreover, many technologies need production inputs, equipment and tools that require access to capital and input markets, as well as sufficient knowledge to make appropriate purchases and employ them in an efficient and effective manner.

Technical knowledge can come from government extension agencies and promotion campaigns, but we have seen examples of contract farming where usually private companies provide technical knowledge, as well as examples of knowledge coming from non-governmental or international projects, or from friends or relatives through social networks. As engagement in commercial production activities continues evolving over time, technical change and innovation appear more likely to come from local farmers and farmer groups themselves, as we can see in the Upper Ping Basin and among innovative tea growers in Vietnam. Thus, combinations of experience, access to information, and educational advances will be of great importance over the longer term. But perhaps the most important need is for entrepreneurship and capacities to rapidly adapt production resource mixes, practices, tools and facilities to effectively cope with a constantly changing market environment. This is necessary to improve production efficiencies and product forms, quality, processing, packaging and marketing so that local producers can effectively compete in globalizing markets where demand and price fluctuations and trends are affected by a myriad of factors beyond their control.

*Role of the state.* Macro-level state policies that have opened the door for emergence of market production opportunities emphasize the need for states to “back off” from strict central planning and state enterprise monopolies, and allow emergence of private sector initiatives to shape and manage production for commercial markets. States are to focus on coordinating investment policies to create an environment where private initiative can flourish and provide opportunities in which poor mountain communities can effectively participate. While there has been much progress in this direction, we also see some blurred boundaries between “state” and “private” sectors. State bureaucracies and organizations, including military and political components, still have strong roles in all states of the region, and there are frequent links where agencies and individuals play important roles in both spheres. But examples of emerging tensions between state and private sectors, such with vegetable production in Yunnan, indicate differences are emerging and competing for engagement by local farmers and communities. There are also efforts to privatize or transform state enterprises to behave more like private enterprise, and to transfer some public sector initiatives to more entrepreneurial private sector actors. But such changes may require new thinking in both public and private sectors that is likely to require generational change. Other aspects of state roles include:

- *Infrastructure.* There is widespread agreement on the state’s role in providing physical infrastructure and basic services. Expansion and upgrading of road networks have been critical for emerging market opportunities, especially when accompanied by electricity and telecommunications. While such physical infrastructure appears necessary for most opportunities we have seen, they are sufficient only for those who are otherwise prepared to effectively participate in market production. Especially in montane zones, such people are quite rare.

- *Services.* Basic services where state roles are seen as very important include health care and education, as well as credit, information and research services when there are insufficient incentives for private sector initiatives. While most states have substantially improved the reach and quality of these services, there are still considerable disparities between urban and rural areas, between lowlands and uplands, and among different social strata of society. There are also often special issues where local populations have different ethnic, linguistic or cultural characteristics, as is commonly the case in montane zones.

Other services often provided by government agencies or their parastatal offspring include subsidized agricultural inputs, production quotas under state monopolies, or information through extension materials, along with various incentives or disincentives to induce formation of groups to engage in activities they promote. Such services are frequently associated with national campaigns to promote one or another commodity or product and are often aimed at meeting politically determined production targets. With the emergence of growing private sector initiatives, states must carefully consider comparative advantages in providing such services, and ways in which their role can most effectively target constraints faced by poor and marginalized components of society.

- *Hidden taxation.* We have seen examples of state organizations at various levels effectively “taxing” emerging private enterprise by imposing requirements to improve infrastructure, contribute funds, or assist state programs. While such approaches are often advertised as “showing social responsibility” or “returning benefits to society”, there is a limit to how much an enterprise can contribute and still survive. There are also issues of transparency, accountability, and impacts on prices received by poor farmer producers where policies include poverty alleviation.

### 7.3.2 Response strategies

In the Upper Ping Basin, where commercial markets have been developing for several decades, we have found household strategies that represent a spectrum of responses to emerging market opportunities. These response strategies can be aggregated into three basic groups:

*Self-sufficient farming.* These strategies are the most conservative in terms of market engagement. Overall objectives of these households seek stability more than innovation or adaptation, and they have strong aversion to risk. With very little of their agricultural production for sale, there is strong emphasis on being self-sufficient in rice, other subsistence crops, and products gathered from wildland resources. They may produce small amounts of low-value, low-risk crops for sale, but depend heavily on off-farm wage employment for cash income, usually in low wage rate jobs in rural areas or nearby towns, and sometimes in provincial cities. Those with livelihoods above poverty levels tend to have at least some paddy land, large enough areas for upland rice with sufficient fallow to keep weed pressure at manageable levels, some access to forest resources, and enough labor. Effective management of forest resources and forest fallow systems relies on associated local social institutions.

Medium to longer term prospects for these strategies are linked with dependence on upland land and forest resources, and with abilities to accumulate assets through savings, livestock, education or other means. State policies are likely to continue pressure to exclude households

from access to forest resources and to upland field areas sufficient for sustainable production of upland rice using forest fallow techniques, leading to shorter fallow cycles, increasing weed pressure and decreasing productivity. Thus, longer term viability appears highly questionable without significant change in Thailand's upland land use policies.

*Commercial farming.* At the other end of the spectrum of strategies are those where households have shifted their objectives and efforts to become fully commercial producers in the market economy. Within this category, however, there are two rather distinct patterns:

- *Commercial short to medium term strategies.* Households with these strategies plant short-season and annual crops, and sell most all of their produce to commercial markets. With little paddy or upland rice, their focus tends to be on intensive year-round vegetable production, often including exotic high value crops. They tend to be less dependent on off-farm employment, but sources of off-farm employment are fairly diverse. They are also more reliant on credit from outside sources for production costs, and keenly interested in innovation and access to new technology to increase profitability of their ventures, such as sprinkler irrigation or pickup trucks for direct market access, and in links with outside sources of technology or market chains and channels. Those willing and able to accept more risks are likely to invest more in crops with higher risk of agronomic or economic failure, but potential for much higher returns if successful.

Longer term prospects for these types of strategies appear fairly promising, but dependent on entrepreneurial capacities to produce products with good acceptance and prices in markets, and on ability to withstand periodic crop failures or economic downturns. They may be vulnerable to state land use restrictions, especially where their use of water and agricultural chemicals is perceived as threatening to downstream populations.

- *Commercial long term strategies.* This type of strategy is heavily integrated into commercial markets, but based on investments aimed at returns over longer periods of time. Orchards and other tree crops are prominent, as well as land improvement and conservation farming practices. Overall viability is increased by additional components based on paddy fields, livestock and off-farm employment. Some intensive short-season cash crops may be grown, usually on paddy lands. There is less reliance on outside sources of production credit, but strong interest in channels and linkages providing access to technology and markets. Some household members usually engage in off-farm employment, and it tends to be at relatively higher paying types of work.

Income diversification under this strategy makes its longer-term prospects the most promising. Households with this strategy are associated with high social standing in local communities, and their investments in land improvements and permanent tree cover improve their standing with state agencies and environmental interests, although state land policies may limit their expansion into some types of tree crops, such as rubber.

*Semi-commercial farming.* These strategies are intermediate between self-sufficiency and commercial farming, and thus quite diverse, including a diverse range of non-farm and off-farm work. One reason for the wide diversity within this group is the different types of situations in which these mixed strategies are employed, some of which are transitional in nature. For example:

- *Insufficient subsistence.* Some households feel forced into commercial production because they are unable to maintain a self-sufficiency strategy. This is usually due to inadequate livelihood assets of various types. Insufficient amounts of land or poor land quality are common, often due to exclusion from upland fields by state agencies, or to lack of land available for newly formed or arriving households. Insufficient household labor is also common, due to poor health, aging, or inability to access wage labor for various reasons. Attitudes toward risk can vary, but often results in production of lower-risk, lower-price crops. These are often the poorest and most vulnerable types of households.
- *Start-up commercial farming.* Some households with livelihood asset limitations employ a mixed strategy during what they hope is the start-up phase for their entrance into a fully commercial farming strategy. This is especially common with young households using a partial subsistence strategy to minimize expenditures so they can invest crop profits and wage income into improving and expanding their commercial farming operations. Their future prospects are highly dependent on their entrepreneurial skills and ability to accumulate sufficient capital assets to shift to a fully commercial farming strategy.
- *Non-farm or off-farm base.* We have seen some cases where a mixed strategy is used by households seeking to move more into non-farm or off-farm occupations. Their commercial production is a means to provide income for helping some household members obtain more education or skills so they can earn better off-farm income, or for developing assets that will allow them to shift their livelihoods to other activities, such as services associated with tourism. Thus, commercial cropping is a supplementary form of enterprise, and their future prospects are dependent on their success in other activities.
- *Secure diversified households.* There are also some households who appear to consciously and willingly adopt a diversified income strategy that includes both self-sufficient and commercial farming components. Such households frequently include members with secure sources of income from non-farm or off-farm sources, along with other members who wish to pursue self-sufficient or commercial farming activities on a full or part-time basis. Relatively recent additions to this category may include some who have become convinced by the ideological values promoted under the self-sufficiency economy banner.

For situations other than those in the secure diversified household category, households with mixed self-sufficient and commercial production strategies are commonly in quite fragile and vulnerable situations. While this is a temporary phase for those who are successful in moving into commercial farming or non-farm occupations, others can fail due to their vulnerability to fluctuations in environmental, economic, or health conditions. And some of those forced into mixed strategies by asset limitations may be unable to overcome other constraints related to their citizenship, language skills, ethnicity, or other factors. Those remaining in this category for long periods without other secure sources of support tend to be the poorest and most insecure households, and it appears likely that their circumstances will force many of them, or at least their children, out of farming livelihoods in the future.

At our study site in Vietnam, where commercial production is more recent and tea is the main commercial crop, somewhat parallel strategies could also be identified:

- *Self-sufficient farmers* are those whose main occupations are growing crops other than tea. They tend to have few large livestock, and often seek income from off-farm sources. Many have relatively little land, lower levels of education, and limited access to outside information. Some are younger households formed since land was allocated among households. These tend to be the poorest households in their communities.
- *Commercialized households* rely heavily on income from various combinations of tea and large livestock. These households tend to be relatively better-off, and invest larger amounts of labor and capital in their tea and livestock production operations. Those who produce tea tend to have relatively large plots, and often receive good prices due to their higher quality outputs and good relationships with traders. Some households have members who also have non-farm occupations outside the village, many of which often do not pay well, but provide valuable channels for contacts and information.
- *Mixed self-sufficient and commercial* strategies are employed by many households, but it appears that most wish to move in the direction of increased commercialization. The best way for doing so is currently seen to be through improved and expanded production of tea and livestock. Current shortages of household land, labor, capital and knowledge are cited as constraints on commercialization, and strategies they employ for achieving the next “stage of progress” in well-being are usually aimed at overcoming these constraints.

Upland household strategies for responding to market opportunities are clearly not homogeneous or static. Some have strategies that reflect their aspirations fairly well. Others have transitional strategies, while still others are just doing the best they can to get by. This diversity in response strategies is strongly influenced by household capacities to adopt different response options. Response capacity is closely related to a household’s livelihood assets.

### 7.3.3 Response Capacities

The diversity of response strategies we found in our study sites in the Upper Ping Basin and North Vietnam are associated with diversity in household asset endowments. Under our study framework, household capacities to respond to opportunities are seen as based on effective command over mixes of the five types of livelihood assets in household asset portfolios:

- *Natural capital.* Access to natural resources is a major factor in determining which types of strategies are viable options. Adequate areas of land of reasonably high quality (including water and micro-climate characteristics) are a very important basic requirement for both self-sufficient and commercial components of farming strategies. Poorest households are very often associated with relatively small amounts of land, poor land quality, and little or no access to water for irrigation. In terms of access, early settlers tend to be advantaged in Thailand and to some extent Laos, but land allocation has sought greater equity and security for upland land use in Yunnan and Vietnam.
- *Financial capital.* While access to financial capital is increasingly important for all livelihood strategies, it is especially important for commercial farming components. Many households have financial debts. Temporary debts to fill critical asset gaps are common in commercial farming, and households with commercial farming components usually have sufficient access to institutional credit to borrow significant proportions of the funds re-

quired for their production cycles. Exceptions tend to be commercial farmers with long-term strategies, who can draw from their own savings and assets, and semi-commercial farmers with limited assets, who tend to have the least access to credit. Thus, semi-commercial farmers often see contract farming arrangements as particularly attractive. Poorest households usually have very little savings and severe constraints on credit access due to lack of collateral, citizenship, social standing and/or repayment credibility. Households with limited overall productive capacity who must frequently borrow for consumption are likely to accumulate debts that become unmanageable, further decreasing their ability to access additional financial assets.

- **Physical capital.** Various forms of physical capital assets are needed to effectively operate and further develop different livelihood strategies. Structures, land improvements, and equipment required for irrigation and conservation farming on sloping lands are often important, as are various types of farming equipment, such as walking tractors, hand tools, sprayers, etc. Processing and sorting equipment are needed for some crops, such as tea at our study site in Vietnam, motorcycles or pickup trucks are increasingly viewed as essential for commercial production, and equipment for communications and accessing information is increasing. For more expensive forms of physical capital, households may help defray costs by renting them out or offering services to others who cannot afford their own. Livestock are also considered physical capital and are important assets at all study sites, both for products they provide and as a means to store and accumulate assets.
- **Human capital.** The most basic quantity of human capital is commonly seen to be the size of the labor force in a household or community, and its adequacy is assessed in relation to the number of dependents that must be supported. Households with insufficient labor to fully utilize other livelihood assets may need financial or other readily convertible assets to hire additional labor. For most households, off-farm employment is an important component of most all livelihood strategies where it is an available option. Poorer households and those with self-sufficiency strategies tend to be particularly dependent on low wage labor as a source of household cash income. Quality of human capital relates to basic health and capacities to conduct various types of work, including knowledge, skills and experience. Those with specialized skills often provide local services that may become commercialized. Most upland households, regardless of farming strategy or wealth category, are investing as heavily as they can in education for their children. Some households, usually with commercial production or non-farm activities, also actively seek new knowledge and skills from a range of outside sources that they can apply in innovative and entrepreneurial ways to overcome constraints and improve production processes.
- **Social capital.** Social capital assets are important in framing livelihood strategy options and assuring viability and sustainability over time. At local levels, social capital based on community, group or kinship relationships are important in gaining access to various group or community-mediated asset management processes, and especially those related to land and water. Good local social standing often comes from roles in such groups, or through education or exceptional performance, especially if linked with generosity in contributing to community or clan functions or institutions. Good social standing is associated with more ready access to community revolving funds, where they exist, as well as with better access to local off-farm employment opportunities, and development assis-

tance where village leaders play roles in allocation decisions. At wider levels of society additional levels of social capital become important. Those with useful “bridging” links with outside institutions or people at distant locations can benefit directly from those links, and often indirectly through better social standing in the local community. Efforts to participate in community activities may help poor households gain access to some forms of assistance, either from village sources or through links with outside sources.

### 7.3.4 Key constraints

While the range of opportunities for market production in montane zones has clearly been expanding, efforts by poor people living in these areas to respond to these opportunities by modifying their livelihood strategies and developing their livelihood assets still face several types of important constraints.

- *Location characteristics.* Despite advances that have been and are currently being made in physical infrastructure, physical access is still an important constraint in many montane areas. And even when basic physical infrastructure and services are in place, the terrain and relative remoteness of many areas in montane zones still impose higher costs in time and transport on the inputs they require and the products they produce. This makes it difficult for these areas to compete directly with areas that have a locational advantage, unless other factors such as seasonality or product characteristics or quality can offset such constraints and help establish a comparative advantage.
- *Access to information & knowledge.* Limited information, knowledge and expertise impose further constraints on opportunities, and these constraints are usually more severe in montane zones, and especially for poorest households. In addition to more difficulties in physical access, low non-poor densities in montane zones reflect the general scarcity of successful entrepreneurs and sources of knowledge and expertise. It is a very common complaint from local leaders that they and their communities need more access to information and data, and more capacity to understand and apply it in their efforts to improve local livelihoods and communities. Many are growing weary of outside “experts” who claim to have definitive information about their areas to which they have no access, or business interests who are able to exploit them by providing only partial information.
- *Access to education & basic services.* Generally lower levels of education and literacy are also indicative of broader issues, which can be further complicated by language and cultural issues associated with ethnic minority populations. Moreover, disparities in access to many programs and services often relate to ethnicity or affiliation with groups that are marginalized by society. We have also seen in Vietnam, however, that some newer government support programs seek to turn the tables so that ethnic minority status can be an advantage in accessing support. While it is still an open question how much such programs will be able to affect the overall balance of constraints faced by ethnic minority groups, at least it appears to be a good start. We have also seen in Yunnan, where ethnic diversity is part of the provincial identity marketed in its “backbone” tourism industry, ethnicity seems to have little relationship with income-based measures of poverty status.
- *Production chain gaps.* Critical gaps in production, processing and marketing chains are often very important constraints that are more difficult to fill in montane zones. We have



seen how vertical integration that incorporates contract farming mechanisms appears to be a promising approach, yet results and acceptance by farmers appears mixed. And where systems have been put into place largely through initiatives from lowland agro-industry companies, resulting areas of intensive production in mountain regions, sometimes based on only one or a few commodities, are coming under increasing criticism and restrictions related to their perceived environmental impacts. Newer more ‘green’ technologies may help, but many poor farming households remain skeptical.

If maintenance of diversity is to be one of the priorities for mountainous areas, then the example of chains that have been developed by the Royal Project Foundation in northern Thailand may be indicative of the types of systems that need to be put into place in order to have well-functioning mechanisms for capturing value added and effectively marketing products into high value urban niche markets. The fact that there appears to be so few examples where this has been accomplished and the unusual characteristics of the RPF are indicative of the difficulties involved. One important aspect of what the RPF has been able to accomplish is establishment of systems and operations that are generic enough that the same facilities and systems can be used for product lines that include a relatively diverse and evolving set of products, rather than the single commodity or narrowly focused chains that are more common in the region. It has also managed to draw on expertise from both private and public sector sources. At this point, there are still very few examples of private or public sector initiatives that have been able to effectively develop such “backbone” systems capable of supporting diverse product lines that play on the relative advantage of complex ecological conditions found in mountainous areas.

- *Access to land resources.* But perhaps the single most important set of constraints for people living in montane zones in many parts of the region relates to access to land resources. In some cases, especially in parts of Vietnam, this is associated with increasing population density resulting from high rates of population growth. But in many more areas it is not so much population growth that underlies land resource access issues and problems, but rather various combinations of lack of recognition and security in local claims to land resources, redistribution of land use patterns associated with induced resettlement and land allocation programs, and increasing exclusion from access to land resulting from state land use policies. Many of the underlying issues here are associated with the nature of traditional agroecosystem management practices, which have been difficult to integrate into the conceptual framework of mainstream land tenure schemes, and which include practices that mainstream societies find extravagant in terms of the areas they occupy, and unacceptable in terms of their perceived environmental impacts. Other issues are associated with urban-based policy visions of protected mountain forest landscapes without settlements or agricultural activities.

## 7.4 Potential future pathways

Our exploration of potential future transitions and alternative potential pathways for future development in chapter 5 underscored the dynamic nature of processes that shape livelihood opportunities and constraints found in upland landscapes across mainland Southeast Asia. There is a range of important uncertainties about how processes may continue to unfold,

how decisions and events at various levels can influence their direction, and how various vectors of change can converge to reinforce or negate emergence of different types of conditions and their associated sets of livelihood opportunities and constraints.

While assessments of previous change and current trends can help us understand past transitions and how factors at multiple levels have influenced change and responses, they have also increased our awareness of how emerging transitions can change the context of opportunities and responses to an extent that the past may no longer be a reliable guide to the future. We have seen indications of some potential transitions at our case study sites. Moreover, at the time this report is being completed, global oil prices are at an all-time high, sharply increasing costs of transport and fuel for oil-dependent energy grids. At the same time, food costs are surging, including prices of rice, maize, and dairy products. There is also growing discussion and debate about economic impacts of competition from purchase of maize, and increasingly other crops, for use in bioenergy production.

At the broadest level, growing economic integration and openness appear to have been simultaneously increasing livelihood opportunities, uncertainties, and vulnerabilities. These trends are being driven by macro-economic policies and increasing integration into regional and global markets, and most people are assuming these directions will continue. But change is not inevitable, and there are still alternative variants in these directions that will likely be influenced by policy choices, such as:

- What will be the balance between conservation and production in upland areas, and to what extent must these be segregated or allowed to be integrated in upland landscapes?
- Will patterns of national investment in economic and infrastructural development encourage concentration in urban and industrial centers with access through migration, or will they encourage a more widespread distribution of participation and prosperity?
- Will patterns of support for production of exports from the uplands emphasize a few high volume commodities, or a diverse range of lower-volume specialty products?
- Will investments in improved connectivity be narrow and centrally-oriented, or will they seek to build connectivity that is more multidimensional and distributed?
- Will society accept and seek to build on diversity and devolution, or will it pursue a narrow social bandwidth directed by central elites?

Our exploration of scenarios has helped demonstrate how answers to these types of questions, which will come largely from political processes at international, national and local levels, will have strong influences on what type of alternative futures will be plausible and most likely in various upland areas of the region. Furthermore, these influences will be further narrowed by how combinations of these types of uncertainties are resolved, as well as interactions among resolutions reached at different levels, since not all combinations are viable or stable. Moreover, the whole system of interactions is dynamic and decisions reached at any specific location in the system are always subject to change. Complexity and uncertainty appear to be the main characteristics of the future that are most clear.

## 7.5 Policy issues and processes

Policy is about making social choices among alternative pathways for stability and/or change. Since the mandate of this study is to examine market and resource access of the upland poor (Figure 3-6), this concluding section on policy-related findings targets market access and natural resource access issues. More detail on policy implications can be found in chapter 6.

### 7.5.1 Improving market access

State policies aimed at improving market access of the poor in upland zones need to expand their consideration of various inter-related factors that include.

- *Transferring lowland strategies.* It is often far from clear that technologies and development strategies that may be effective in easily accessible lowland locations are readily transferable to upland areas. In particular there is often concern that higher transport risks and costs, as well as limitations, for example, with respect to water storage, can mean margins for upland competitiveness in shared markets are very low. Where road improvements can be made, they can clearly help. But in general, most solutions for upland livelihood and landscape issues are likely to require extensive adaptation and localization for upland settings, including specialized support from research and information technology systems.
- *National policy uniformity.* Related to the issue of transferability, is the preponderance of blanket, inflexible, or highly uniform policies with respect to economic development, land, and natural resource management. Ecological and social conditions in upland zones are diverse and often substantially different from the main agricultural production areas of those making policies. This is why moves to decentralize and devolve development decision-making are so vital to upland interests and needs. At the same time it is important that such “re-distribution” also takes place with respect to public research and development and information systems that could stimulate private investment.
- *Impacts of international trade on relationships within domestic markets.* Recurring cross-scale interactions affect prices, demand and availability of labor. Very often, for example, information about consumers within a country, much less about those across borders, is very limited in upland zones, so that producers in these areas may be even more dependent on (and vulnerable to) middlemen. On the other hand, private sector initiatives have often been at the forefront of innovation, establishing new production systems and linking producers to new and wider markets (see section 6.4.4). Policies should seek to facilitate private initiatives, but at the same time support wide access to cross-scale flows of information in order to help widen opportunities, build capacity, and reduce exploitation.
- *Niche-oriented production strategies.* In many upland locations, limited areas ecologically suitable for production of a particular crop, as well as seasonal availability of labor, means that boutique or niche-oriented strategies that may include value-added processing will often provide greater benefits than mass or bulk production volume strategies. One challenge is that such options often require significant investments in both technical and market dimensions of research and development. Another may be need for ‘backbone’ types of production and marketing chains for ‘suites’ of niche products. Policies may also

be needed to support labeling and certification schemes to reduce risks that place-based specialties (like teas) can be out-competed by inferior but misleadingly marketed products from elsewhere. Of course recognizing rights to land, water and farming activities in the first place is an important pre-requisite for establishing such *place-based* approaches.

- ***Non-agricultural goods and services.*** There needs to be more policy recognition that markets of interest are not only for agricultural commodities, but also for other goods and services derivable from upland landscapes. Non-farm incomes are an important but neglected component of livelihood strategies of the upland poor. Economic development policies for mountain areas should pay much more attention to existing and improving non-farm related capacities and skills. Education clearly has a crucial role. It is also important to recognize that non-farm incomes could help stimulate innovation and improvement of farm-related activities if investments are recycled into upland areas.
- ***Off-farm employment.*** Off-farm wage employment is an important supplemental component of most upland household livelihood strategies whenever such options are available. The poor are particularly dependent on it for cash income. For the poor, upland options often tend to be choices among low-paying agriculture, dead-end menial jobs, or low-paying service sector jobs often associated with tourism or urban areas. Yet off-farm employment is also seen by some as a means for escape from such options. Since many see dignity and security as epitomized by salaried jobs with government or a big company, parents are investing heavily in education for their children to improve their chances for such employment, probably at some distant urban location. Without education, some of those unable to develop other marketable skills often end up in urban slums, or seeking income from darker activities such as drug deals or prostitution. Yet only China appears to have any policies directly related to off-farm employment by poor rural households in upland areas.
- ***Diverse response capacities.*** Households vary hugely in their capacity to take advantage of emerging market-related opportunities. This is reflected in the diversity of particular responses and overall strategies. In upland zones, “self-sufficiency” components often remain an important part of household resilience to environmental, economic and political shocks. At the same time, ability to enter into long-term commercial farming and non-farming sources of income is crucial for many households, communities and areas to escape poverty traps. A range of different livelihood assets are important for capacities to respond to and cope with changes in opportunities and challenges. Policies and poverty programs need to provide options that can assist poor households in building those assets that limit their capacity to participate in opportunities and pursue their aspirations.
- ***Multiple dimensions of poverty.*** Market access is only one of the factors contributing to poverty in the upland zone (see section 2.4.2). Policies to improve access for groups of the poor more broadly – and there are many more poor people in lowland than upland areas in some countries (section 2.4.1) – will need to include some upland-specific components, and especially ones that help address both physical and social barriers to access. Social barriers, and especially those related to ethnicity and social legitimacy, have especially strong impacts on upland households and communities. Vietnam is experimenting with focused programs for its poorest communes in mountain areas. Other important

dimensions include technical innovation, which is invariably a key partner in the expansion of market opportunities, and development of a range of entrepreneurial skills.

### 7.5.2 Access to natural resources

State policies have generally not been aimed at improving access to natural resources of people in upland zones. But improving opportunities for commercial production without also attention to issues of natural resource access and capacities (see Figure 3-6) is unlikely to be effective. In order to compensate, or to make exceptions, that would benefit poor households, policies need to expand consideration of several issues:

- Natural resource management policies across the region have generally been quite different among countries. This is apparent, for example, in comparing policies related to (1) conservation by exclusionary protected areas, (2) support for non-timber forest product markets, and (3) responsibilities for watershed management. Thailand and Laos have had more similar policy objectives for upland zones with respect to watershed conservation and expansion of protected areas, especially in upper montane zones where both seem to want landscapes wherein agriculture and forestry are segregated. But Laos is seeking to implement localized zoning processes aimed at providing security for land use by local households and villages, including recognition of village forest areas and local commercial production of NTFPs. Thailand, on the other hand, appears to prefer forms of land and forest access dependent only on patron-client relationships, and limiting any local use of forest products to subsistence purposes. Policies in Vietnam and China appear to have been considerably less aggressive in expanding exclusionary protected areas or restricting production of NTFPs.
- It has become increasingly apparent through environmental research that maintenance of key watershed functions is not incompatible with multi-functional landscapes that include areas for growing crops, agroforestry practices, or sustainable harvest of forest products. Policy, however, often continues to lag behind both local and research-based knowledge in this area. In Laos, and especially in Thailand, policies have tended to support segregated rather than more integrated approaches to conservation and development for the poor. Policies in China and Vietnam appear considerably more flexible and willing to accept multi-functional agroforestry landscapes in many areas. While large-scale watershed programs in China promote replacing upland fields with trees on sloping lands, their approach has placed more emphasis on compensation for changes in upland land use using concepts similar to those in payment for environmental services schemes.
- Natural resource access needs of poorest households may be substantially different from needs of average low income households in the uplands. Policies to address poverty in these circumstances need to look carefully at entitlements: are basic human rights and needs being respected and met in an equitable manner? Resource access issues may be particularly acute and adversely affected by wider policies that support intensification of agriculture and industrialization within a landscape framework that clearly segregates ecosystem-based and energy-based activities, as in a *Services-Park* scenario (see chapter 5).

- Incentives and responsibilities for local government, and thus *place-based* policy orientation, have often not been well aligned with those of line agencies and their uniform approaches under narrower centralized policy objectives. In Thailand, although TAOs are an important form of representative local government, they have not systematically taken on environmental management responsibilities even when mandated, due in part to contradictory policies of various centralized line agencies claiming exclusive authority over such matters, and to lack of legal authority in upland areas where local land use is unrecognized and technically an illegal encroachment on land ‘belonging’ to agencies. There are also higher scale-related dimensions to this issue, for example, at levels of provinces versus the nation, as well as among various levels of the natural resource hierarchy from local subwatershed to sub-basin to river basin to river system (see section 6.3.6).
- Rules of access to natural resources have often not been applied uniformly across different interests. Rather, they tend to favor those with least need for special assistance, such as large commercial or parastatal interests. Examples include state support for private sector mining, resorts, estates, large concessions and hydropower related access, in contrast to the restrictive rules and regulations applied to poor farming households. The “public interest” appears to often be more closely aligned with narrow elite private interests than with securing livelihoods of poor households with much fewer investment options. Improving local participation in governance in the uplands is critical to addressing poverty.
- Local capacities to manage natural resources, including the complex and diverse set of goods and services that can be derived from upper tributary watersheds, have often not been supported by management initiatives at higher levels. Rather, agency-directed top-down schemes are usually pursued, even for upper tributaries where agencies often have little implementation capacity. Management of natural resources, especially in the type of river basin frameworks being emphasized in Thailand and Laos, stand very little chance of being effective without serious attention to and application of principles of subsidiarity (see Chapter 6). This needs to include capacity for cross-scale interaction, for example where local land managers in upper tributary watersheds can enter into direct negotiations with downstream interests who believe they are suffering negative impacts. Moreover, such negotiations need to be based on evidence rather than emotions stirred by calls about ‘crisis’ or about need for ‘stability before change’.

Moreover, attractive market-based opportunities for the upland poor need to offer expectations of reasonable levels of returns to labor and acceptable risk of failure. People need to have sufficient connectivity, information and access to livelihood assets to be able to respond to them and invest in their further development. And especially over the longer term, opportunities need to have characteristics associated with people’s aspirations, and especially for the young this is likely to include their perceptions of a ‘modern life’. Vibrant, entrepreneurial and responsibly engaged upland communities where people feel they have dignity and a good quality of life and want to invest in the future for themselves and their children, appear to be possible. But they are unlikely to be achievable until important barriers to their achievement are reduced and such aspirations are integrated into society’s vision of the future.

## REFERENCES

- ADB. 2000. *Agricultural sector program ADB [Asian Development Bank] Phase 1 Technical report of Vietnam agricultural sector*. ADB TA 3223-VIE. In association with IFPRI and Lincoln International. March 2000.
- ADB. 2001. *Participatory Poverty Assessment: Lao People's Democratic Republic*. Manila: Asian Development Bank
- ADB. 2004. *Poverty in Asia: Measurement, Estimates and Prospects*. Special Chapter in: *Key Indicators 2004*. Manila: Asian Development Bank.
- ADB. 2005. *The Greater Mekong Subregion Tourism Sector Strategy*. Manila: Asian Development Bank. 71 p.
- ADB. 2007. Inequality in Asia. Special Chapter in: *Key Indicators 2007*. Manila: Asian Development Bank.
- ADB. 2007b. *Mid-Term Review of the Greater Mekong Subregion Strategic Framework 2002-2012*. Manila: Asian Development Bank. 66 p.
- Ahamed, T.R.N., K. G. Rao, and J.S.R. Murthy. 2000. GIS-based fuzzy membership model for crop-land suitability analysis. *Agricultural Systems* 63: 75-95.
- Ahmad, Yusuf, Chor-Ching Goh. 2007. 'Poverty Maps of Yunnan Province, China: Uses and Lessons for Scaling Up.' Chapter 7 in: T. Bedi, A. Coudouel, K. Simler [eds] *More than a Pretty Picture: Using Poverty Maps to Design Better Policies and Interventions*. Washington DC: The World Bank. pp. 143-152.
- Alton, C., D. Bluhm, S. Sannikone. 2005. *Para Rubber Study: Hevea brasiliensis*. Vientiane: Lao-German Program. Rural Development in Mountainous Areas of Northern Laos.
- Andersson, Magnus, Anders Engvall, Ari Kokko. 2006. *Determinants of Poverty in Lao PDR*. European Institute of Japanese Studies Working Paper 223. Stockholm: Stockholm School of Economics. 46 p.
- APPI. 2005. *Greater Mekong Subregion: Tourism Sector Strategy*. Two volume consultancy report to the ADB under TA 6179-GMS. Manila: Asia Pacific Projects International.
- Attachak Sattayanurak. 1991. *The Transition and Evolution of Northern Thailand* [after World War II]. Faculty of History, Chiang Mai University. [In Thai]
- Attwater, R. 1997. *Process, property and patrons: land reform in upland Thai catchments*. GateKeeper Series No. 69. International Institute for Environment and Development, London, United Kingdom.
- AusAID. 2001. *Reducing poverty-the central integrating factor of Australia's Aid Program*, Available at: [www.ausaid.gov.au/publications/pdf/povertystrategy.pdf](http://www.ausaid.gov.au/publications/pdf/povertystrategy.pdf)
- BAAC. 2005. *Annual Report: Fiscal Year*. Bank of Agriculture and Agricultural Cooperatives (BAAC): 1 April, 2005 - 31 March 2006. [Available online] <http://www.baac.or.th/file-upload/2007-02-09-483673633-annaul-2005.pdf>,

- Badenoch, Nathan A. 2006. *Social Networks in Natural Resource Governance in a Multi-Ethnic Watershed of Northern Thailand*. PhD dissertation. Kyoto: Graduate School of Asian and African Area Studies, Kyoto University. 232 p.
- Baja, S., D.M. Chapman, and D. Dragovich. 2002. A conceptual model for defining and assessing land management units using a fuzzy modeling approach in GIS environment. *Environmental Management* 29[5]: 647-661.
- Bedi, Tara, Aline Coudouel, Kenneth. Simler [eds]. 2007. *More than a Pretty Picture: Using Poverty Maps to Design Better Policies and Interventions*. Washington DC: The World Bank. 286 p.
- Benchaphun Ekasingh, Kamol Ngamsomsuke, Tanya Promburom and Teeka Yothapakdi. 2004. "Costs and returns in longan production in Chiang Mai and Lamphun". *Chiang Mai University of Journal of Economics* 8[1-2]: 17-44.
- Benchaphun Ekasingh, Kuson Thong Ngam, Tanya Promburom, Supakit Sinchaikul and Naruemon Thinrach. 2005. Production systems and land use productivity of farmers in Chiang Mai, Chiang Rai and Lamphun. *Journal of Agricultural Economics* 24[2]: 49-69.
- Benchaphun Ekasingh, Kuson Tongngam, Tanya Promburom, Supakit Sinchaikul, and Naruemon Tinrach. 2004. Productions, productivities, and alternative landuse system of farmer in Chiang Mai, Chiang Rai, and Lamphun Provinces. In: Multiple Cropping Center [Ed.]. *Toward safety food production system, value added, and sustainable resource use*. Proceedings of the 3<sup>th</sup> National Farming System Seminar. Chiang Mai, Thailand, pp. 53-63. [In Thai]
- Benchaphun Ekasingh, Methi Ekasingh, and Tanya Promburom. 2001. *Indicators of Sustainable Agricultural and Natural Resource Systems in the Highlands: Socio-economic dimension*. Chiang Mai: Multiple Cropping Center and the Royal Project Foundation. [in Thai]
- Bouttavong, S., Emerton, L., Kettavong, L., Manivong, S., Sivannavong, S. 2002 *Lao PDR Biodiversity: Economic Assessment*. Vientiane, Lao PDR: IUCN
- Braimoh A.K., P.L.G. Vlek and A. Stein. 2004. Fuzzy-based land evaluation. *Environmental Management* 33[2]: 226-238.
- Bryant, D., et al. 1997. *The Last Frontier Forests: Ecosystems and Economies on the Edge*. Washington, DC : World Resources Institute.
- Burrough, P.A. 1989. Fuzzy mathematical methods for soil survey and land evaluation. *Journal of Soil Science* 40[8]: 477-492.
- Carney, D. (ed.). 1998. *Sustainable Rural Livelihoods: What Contribution can we make?* London: Department for International Development (DFID).
- Chalernpol Samranpong, Prapatsorn Pansompong, and Methi Ekasingh. 2007. Development of multicriteria spatial decision making: A case study for land evaluation. In: *Proceedings of the 2007 MCC Annual Meeting*. Multiple Cropping Center, Chiang Mai University, pp. 48-54. [In Thai]
- Chamberlain, J. R. 2007. *Participatory Poverty Assessment II (2006)*. Vientiane, National Statistic Centre, Asian Development Bank.



- Charal Thong-Ngam, Benchaphun Shinawatra, Sean Healy and Guy Trebuil. 1997. Resource Management and Decision Making in the Thai Highlands. *Journal of Contemporary Asia* 27(2): 179-197.
- Chayan Vaddhanaphuti. 2003. The role of the social sciences in emerging civil society in Thailand. *Asian Journal of Social Science* 31:155-161.
- Clement, Floriane, Jaime Amezaga, Didier Orange, Tran Duc Toan. 2007. *The Impact of Government Policies on Land Use in Northern Vietnam: An institutional approach for understanding farmer decisions*. Research Report 112. Colombo: International Water Management Institute.
- Clendon, K. 2001. *The Role of Forest Food Resources in Village Livelihood Systems, a Study of Three Villages in Salavan Province, Lao PDR*. Vientiane: IUCN.
- CMU. 2004. *Project to develop a master plan and implementation plan for conservation and development of environmental and water quality of the Ping River and its tributaries*. Final report submitted to the Office of Natural Resources and Environmental Policy and Planning, Ministry of Natural Resources and the Environment. [Thai language]. Chiang Mai University, Chiang Mai.
- Cohen, P. T., and R. E. Pearson. 1998. Communal irrigation, state, and capital in the Chiang Mai Valley [Northern Thailand]: twentieth-century transformations. *Journal of Southeast Asian Studies* 29:86-110.
- Daecho Chaitap. 1996. *An Adaptation of Peasants in Modern Economy: A case Study of Non-Farm Income Generating Activities and Changes of Social Relationship in a Chiang Mai Village*. Thesis [Master of Arts in Social Development] Graduate School, Chiang Mai University. [in Thai]
- Dearden, P., and S. Harron. 1994. Alternative tourism and adaptive change. *Annals of Tourism Research* 21:81-102.
- DLD. 2005. *Para Rubber. Field crop area soil and water conservation research and development group*. Office of land management research and development. Bangkok: Department of Land Development, Ministry of Agriculture and Cooperatives.
- Do Hoai Nam. 2001. *Opportunities and challenges for Vietnam in WTO accession*. Report paper.
- Ducourtieux, Oliver, Phoui Visonnavong, Julien Rossard. 2006. Introducing cash crops in shifting cultivation regions – the experience with cardamom in Laos. *Agroforestry Systems* [2006] 66: 65-76.
- EC-JRC. 2003. *Global Land Cover 2000 database*. European Commission, Joint Research Centre. <http://www-gem.jrc.it/glc2000>
- Engvall, Anders. 2006. *Ethnic Minorities and Rural Poverty in Lao PDR*. Stockholm: Stockholm School of Economics. 30 p.
- ESRI. 2002. *ArcGIS Desktop*. CA: Environmental Systems Research Institute.
- FAO. 1976. *A Framework for Land Evaluation*. Soil Bulletin 32. Rome: Food and Agriculture Organization of the United Nations.

- FAO. 2005. *Current market situation and medium-term outlook*. Committee on Commodity Problems, Intergovernmental Group on Tea. 16th Session Proceedings. Bali, Indonesia.
- Flatters, F. and Santikarn Kaosa-ard, M. 1994. Global and Regional Economic Change: Implications for Northern Thailand. *TDRI Quarterly Review* 9(1): 8-15. [Online], Available, <http://www.tdri.or.th/library/quarterly/text/changrai.htm>, [September 18, 2007].
- Foppes, J. and S. Khetphanh. 1997. *The Use of Non-Timber Forest Products in Lao P.D.R.* Workshop on Protected Area Management, Xishuangbanna, Yunnann, P.R. China.
- Foppes, J. and S. Ketphanh. 2005. *The Importance of Non-Timber Forest Products in the Lao Uplands*. Improving Livelihoods in the Uplands of the Lao PDR\_Vientiane, NAFRI, NAFES, NUoL.
- Foppes, Joost, Souvanpheng Phommasane. 2006. Local initiatives to link farmers to markets in upland Laos. *Mountain Research and Development* 26(3) [August 2006]: 200-204.
- Foran, T., and L. Lebel. 2007. *Informed and fair? Water and trade futures in the border regions of mainland southeast Asia*. USER Working Paper WP-2007-02. Unit for Social and Environmental Research, Chiang Mai University, Chiang Mai.
- Forsyth, T. 1994. Shut up or shut down: how a Thai medical agency was closed after it questioned worker safety at a factory owned by Thailand's largest employer. *Asia Inc.* April:30-37.
- Forsyth, T. 1998. Mountain myths revisited: integrating natural and social environmental science. *Mountain Research and Development* 18:126-139.
- Fujii, Tomoki. 2003. *Commune-level estimation of poverty measures and its application in Cambodia*. U.C. Berkeley. June 7, 2003.
- Fujii, Tomoki. 2007. "To Use or Not to Use? Poverty Mapping in Cambodia." Chapter 6 in: T. Bedi, A. Coudouel, K. Simler [eds] *More than a Pretty Picture: Using Poverty Maps to Design Better Policies and Interventions*. Washington DC: The World Bank. pp. 125-142.
- Fujita, Yayoi. 2006. Understanding the History of Changes in Laos: An important premise for development efforts. *Mountain Research and Development* 26[3] [August 2006]: 197-199.
- Gallopín, G., A. Hammond, P. Raskin, and R. Swart. 1997. *Branch Points: Global Scenarios and Human Choice*. Global Scenarios Group, Stockholm Environment Institute, Stockholm.
- Garden, P., C. Chirangworapot, and L. Lebel. 2005. *Knowledge in development: making ends meet in Omkoi, northern Thailand*. USER Working Paper WP-2005-14. Unit for Social and Environmental Research, Chiang Mai University, Chiang Mai.

- Garden, P., L. Lebel, F. Viseskul, and N. Badenoch. 2006. *The consequences of institutional interplay and density on local governance in northern Thailand*. USER Working Paper WP-2006-03. Unit for Social and Environmental Research, Chiang Mai University, Chiang Mai.
- Gunderson, L. H., and C. S. Holling, editors. 2002. *Panarchy: Understanding Transformations in Human and Natural Systems*. Island Press, Washington DC.
- Ha, D.T., Phuoc, P.H.D., Thuy, N.N., Du, L.V., Hung, P.T., Espaldon, V.O. and Annielyn, O. *Impacts of changes in policy and market conditions on land use, land management and livelihood among farmers in central highlands of Vietnam*. Magsino2. Sustainable Agriculture and Natural Resource Management – Collaborative Research Support Program in Southeast Asia [SANREM CRSP/SEA], SEAMEO Regional Center for Graduate Study and Research in Agriculture [SEARCA], College, Los Baños, Laguna, Philippines.
- Hansen, P. K. 1998. *Shifting cultivation development in northern Laos. Upland Farming Systems in the Lao PDR: Problems and Opportunities for Livestock*. ACIAR Proceedings Number 87, Australian Centre for International Agricultural Research, Canberra.
- Healy, Andrew J., Somchai Hitsuchon, Yos Vajaragupta. 2003. *Spatially Disaggregated Estimates of Poverty and Inequality in Thailand*. Massachusetts Institute of Technology, Thailand Development Research Institute. September 3, 2003. Available on-line at: <http://siteresources.worldbank.org/INTPGI/Resources/342674-1092157888460/Healy.DisaggregatedThailand.pdf>
- Heinimann, Andreas, Peter Messerli, Dietrich Schmidt-Vogt, Urs Wiesmann. 2007. The Dynamics of Secondary Forest Landscapes in the Lower Mekong Basin: A regional-scale analysis. *Mountain Research and Development* 27[3] [Aug 2007]: 232-241.
- Hilton James. 1933. *Lost Horizon*. London: Macmillan.
- Holling, C. S. 2001. Understanding the complexity of economic, ecological and social systems. *Ecosystems* 4:390-405.
- Hulme, David, Andrew McKay. 2005. *Identifying and Measuring Chronic Poverty: Beyond monetary measures*. CPRC-IIPA Working Paper 30. Chronic Poverty Research Centre and Indian Institute of Public Administration. 35 p.
- Hung, T. 1998. *Integrating GIS with spatial data analysis to study the development impacts of urbanization and industrialization: a case study of Chiang Mai-Lamphun area, Thailand*. School of Environment, Resources and Development. Asian Institute of Technology, Bangkok.
- IDA. 2007. *Vietnam: Laying the foundation for steady growth*. International Development Association. 8 p.
- IFPRI. 2003. *Poverty and Inequality in Vietnam: Spatial pattern, geographic determinants*. IFPRI MTID Report. Washington: International Food Policy Research Institute.
- Imber, Val., Morrison, J. and Thomson, A. 2003. *Food Security, Trade and Livelihoods Linkages*. Oxford Policy Management. London

- International Association for Public Participation. 2000. *Public participation spectrum*. International Association for Public Participation.
- International Development Association [IDA]. 2007. *Vietnam: Laying the Foundation for Steady Growth*. The International Development Association, the World Bank. [Online], Available, <http://siteresources.worldbank.org/IDA/Resources/IDA-Vietnam.pdf>, [Nov 1, 2007].
- Jensen, H. & Tarp, F. 2003. *Trade Liberalization and Spatial Inequality: Methodological Innovations in a Vietnamese Perspective*. Tokyo.
- Jianchu, X., and J. C. Ribot. 2004. Decentralisation and Accountability in Forest Management: A Case from Yunnan, Southwest China. *European Journal of Development Research* 16: 153–173.
- Jodha, Narpat. 2005. Adaptation strategies against growing environmental and social vulnerabilities in mountain areas. *Himalayan Journal of Sciences* 3(5): 33-42.
- Jones, H., and L. Pardthaisong. 2000. Demographic interactions and development implications in the era of AIDS: findings from northern Thailand. *Applied Geography* 20: 255-275.
- Kakwani, Nanak, Bounthavy Sisouphanthong, Phonesaly Souksavath, Brent Dark. 2001. *Poverty in Lao PDR*. Asia Pacific Forum on Poverty. Manila: Asian Development Bank. 31 p.
- Kakwani, Nanak, Gaurav Datt, Bounthavy Sisouphanthong, Phonesaly Souksavath, Limin Wang, 2002. *Poverty in Lao PDR during the 1990s*. Vientiane: National Statistics Center. mimeo:
- Kanok Rerkasem and Luechai Chulasai. 2001. *Northern Thai Economic Development Strategies: Agro-Systems*. Chiangmai: GMS International Academic Center, Chiang Mai University. [In Thai]
- Kanok Rerkasem, Benjavan Rerkasem, Mingsarn Kaosa-ard, Chaiwat Roonruangsee. Sitanon Jesdapipat, Benchapun Shinawatra and Pronpen Wijukprasert, 1994. *Assessment of Sustainable Highland Agricultural Systems*. Thailand Development Research Institute [TDRI], Bangkok.
- Kerkvliet, Benedict J. Tria. 2006. Agricultural Land in Vietnam: Markets tempered by family, community and socialist practices. *Journal of Agrarian Change* 6(3): 285-305.
- Körner, C. 1995. Alpine Plant Diversity: A Global Survey and Functional Interpretations. In: F.S. Chapin III, and C. Körner [eds.], *Arctic and Alpine Biodiversity: Patterns, Causes and Ecosystem Consequences*. Ecological Studies 113, Springer, Berlin, pp. 45-62.
- Kung, JK. 2002. Off-farm labor markets and the emergence of land rental markets in rural China. *Journal of Comparative Economics* 30: 395-414.
- Kwa, A. 1999. *The WTO and Developing Countries: Will Vietnam Benefit from Being a WTO Member?* Hanoi: International Economic Integration Unit, Vietnam Ministry of Foreign Affairs.

- Lebel, L. 2005a. Environmental change and transitions to sustainability in Pacific Asia. In: S. Tay, editor. *Pacific Asia 2022: sketching futures of a region*. Japan Center for International Exchange, Tokyo. pp. 107-143.
- Lebel, L. 2005b. Institutional dynamics and interplay: critical processes for forest governance and sustainability in the mountain regions of northern Thailand. In: U. M. Huber, H. K. M. Bugmann, and M. A. Reasoner, editors. *Global Change and Mountain Regions: An Overview of Current Knowledge*. Springer-Verlag, Berlin. pp. 531-540.
- Lebel, L. 2006. Multi-level scenarios for exploring alternative futures for upper tributary watersheds in mainland Southeast Asia. *Mountain Research and Development* 26:263-273.
- Lebel, L., and E. Bennett. 2004. *Participation in scenarios for regional development*. USER Working Papers WP-2004-12. Chiang Mai: Unit for Social and Environmental Research, Chiang Mai University.
- Lebel, L., D. Thaitakoo, S. Somporn, and D. Huaisai. 2007. Views of Chiang Mai: the contributions of remote sensing to urban governance and sustainability. In: M. Netzband, W. L. Stefanov, and C. Redman, editors. *Applied Remote Sensing for Urban Planning, Governance and Sustainability*. Springer-Verlag, Berlin. pp. 221-247.
- Lebel, L., G.-I. Ooi, S. Tay, T. Moya, B. Malayang, D. Murdiyarso, A. Snidvongs, and Y.-k. Sheng. 2002. Southeast Asia: economic globalization as a forcing function. In: P. Tyson, R. Fuchs, C. Fu, L. Lebel, A. P. Mitra, E. Odada, J. Perry, W. S. Steffen, and H. Vriji, editors. *The earth system: global-regional linkages*. Springer-Verlag, Heidelberg, Germany. pp. 151-154.
- Lebel, L., J. Manuta, P. Garden, D. Huaisai, S. Khrutmuang, and D. Totrakool. 2004. *Urbanization in the Mae Nam Ping Basin: are transitions in the Chiang Mai - Lamphun corridor contributing to regional sustainability?* USER Working Paper WP-2004-02. Chiang Mai: Unit for Social and Environmental Research, Chiang Mai University.
- Lebel, L., P. Garden, N. Subsin, and S. Na Nan. 2007a. *Averted crises, contested transitions: water management in the Upper Ping River Basin, northern Thailand*. USER Working Paper WP-2007-15. Chiang Mai: Unit for Social and Environmental Research, Chiang Mai University.
- Lebel, L., P. Garden, and M. Imamura. 2005. Politics of scale, position and place in the governance of water resources in the Mekong region. *Ecology and Society* 10:18. [online] URL: <http://www.ecologyandsociety.org/vol10/iss12/art18/>.
- Lebel, L., P. Garden, C. Myint-Stock, and S. Khrutmuang. 2003. *Biodiversity and sustainable livelihoods in the uplands of northern Thailand*. USER Working Paper WP-2003-02. Chiang Mai: Unit for Social and Environmental Research, Chiang Mai University.

- Lebel, L., P. Thongbai, K. Kok, and et al. 2006b. Sub-global scenarios. Pages 229-259 in M. E. Assessment, editor. *Ecosystems and human well-being: multiscale assessment*. Findings of the sub-global assessments working group. Island Press, New York. pp. 229-259.
- Lebel, L., R. Daniel, and X. Jianchu. 2006a. Crises in the commons. In: L. Lebel, X. Jianchu, and A. P. Contreras, editors. *Institutional dynamics and crisis: how crises alter the way common pool resources are perceived, used and governed*. Chiang Mai: Regional Center for Social Science and Sustainable Development, Chiang Mai University. p 1-9.
- Lebel, L., R. Daniel, N. Badenoch, and P. Garden 2008. A multi-level perspective on conserving with communities: experiences from upper tributary watersheds in montane mainland Southeast Asia. *International Journal of the Commons* 1:127-154.
- LNTA. 2005. *National Ecotourism Strategy and Action Plan 2005 – 2010*. Vientiane, Lao PDR: Lao National Tourism Administration.
- Lyttleton, C. & Allcock, A. 2002. *Tourism as a Tool for Development: The UNESCO-National Tourism Authority of the Lao PDR Nam Ha Ecotourism Project*. External Review. Bangkok, Thailand: UNESCO Office of the Regional Advisor for Culture in Asia and the Pacific.
- Lyttleton, C., P. Cohen, H. Rattanavong, B. Thongkhamhane, S. Sisaengrat. 2004. *Watermelons, bars and trucks: dangerous intersections in Northwest Lao PDR*. An ethnographic study of social change and health vulnerability along the road through Muang Sing and Muang Long. Vientiane: Institute for Cultural Research and Macquarie University. 118 p.
- MacDonald, A. 2001. *Building a Geodatabase*. Redlands, California: Environmental Systems Research Institute.
- Mahaphonh, N., P. Ngaosrivathana, M. Phimpachanh, S. Chittasupha, S. Pasay and P. Jones. 2007. *Study on Land Conflicts and Conflict Resolution in Lao PDR*. Vientiane, Lao-German Land Policy Development Project [German Contribution to the Lao Land Titling Project II in Lao PDR].
- Malczewski, J. 2004. GIS-based land-use based suitability analysis: a critical review. *Progress in Planning* 62: 3-65.
- Manat Suwan [et al.]. 1991. *Impacts of the government & non-government projects and policy in human resource development on socio-economic changes in northern communities*. Chiang Mai: Chiang Mai University. [In Thai].
- Manivong, V., R.A. Cramb. 2007. Economics of Smallholder Rubber Production in Northern Laos [revised version]. Paper contributed at 51<sup>st</sup> Annual Conference of Australian Agricultural and Resource Economics Society, Queensland.
- MARD. 2001. *Vietnam's agriculture: a strategy toward WTO*. Hanoi: Ministry of Agriculture and Rural Development.
- MARD. 2005. *Overview report of tea industry*. Hanoi: Ministry of Agriculture and Rural Development.

- Masini, E. B., and J. M. Vasquez. 2000. Scenarios as seen from a human and social perspective. *Technological Forecasting and Social Change* 65: 49-66.
- McCartan, Brian. 2007. China rubber demand stretches Laos. *China Business* 19 Dec 07. *Asia Times Online*: [www.atimes.com](http://www.atimes.com).
- McCaskill, D., and K. Kampe 1997. *Development or Domestication: Indigenous Peoples of Southeast Asia*. Silkworm Books, Chiang Mai.
- Melick, D., X. Yang, and J. Xu. 2007. Seeing the wood for the trees: how conservation policies can place greater pressure on village forests in southwest China. *Biodiversity and Conservation* 16: 1959-1971.
- Methi Ekasingh, Charit, Soomhem, and Chalernpol Samranpong. 2005. Development of a decision support system for agricultural resource management and services. In: M. Ekasingh et. al. [Ed.]. *Final Report of the Decision Support System for Agricultural Resource Planning and Services for Northern Thailand Phase I: Resource Use and Decision Support System*. Multiple Cropping Center, Faculty of Agriculture, Chiang Mai University, pp. 203-231. [In Thai]
- Methi Ekasingh, Chanchai Sangchyoswat, and Vorraveerukorn Veerajit. 2003. Development of a cropping systems geodatabase from multitemporal remote sensing data. In: *Proceedings of the 2003 National Mapping and Geoinformatics: Survey and mapping for sustainable development*, November 18-20 November, 2003, GISDA, Ministry of Science and Technology, pp. 18-29. [In Thai]
- Minot, N. & Baulch, B. 2002. *The Spatial Distribution of Poverty in Vietnam and the Potential for Targeting*. MSSD Discussion Paper No. 42. March 2002.
- Minot, N. 2003. *Income diversification and poverty in the Northern Uplands of Vietnam*. Prepared by: Markets, Trade, and Institutions Division, International Food Policy Research Institute, Washington, D.C., for: Social Development Division, Sector Strategy Development Department, Japan Bank for International Cooperation, Tokyo, Japan, 10 July 2003.
- Minot, N. 2005. *IFPRI Publications Review Seminar: Income Diversification and Poverty in the Northern Uplands of Vietnam*. International Food Policy Research Institute.
- Minot, Nicholas and Bob Baulch. 2005. 'Spatial patterns of poverty in Vietnam and their implications for policy.' *Food Policy* 30 [5-6]: 461-475.
- Minot, Nicholas, Bob Baulch, Michael Epprecht. 2003. *Poverty and inequality in Vietnam: Spatial patterns and geographic determinants*. Washington DC: International Food Policy Research Institute. 87 p.
- MOFA, Vietnam. 2007. *Viet Nam, Laos to Cooperate in Establishing Further Rubber Plantations*. News release 20 July 2007. On-line at: <http://www.mofa.gov.vn/en/>
- Molle, F. 2004. Defining water rights: by prescription or negotiation? *Water Policy* 6: 207-227.
- Molle, F. 2007. Irrigation and water policies: trends and challenges. In: L. Lebel, J. Dore, R. Daniel, and Y. S. Koma, editors. *Democratizing water governance in the Mekong region*. Mekong Press, Chiang Mai. pp 9-36.

- MOP-WFP. 2002. *Estimation of poverty rates at commune-level in Cambodia*. Phnom Penh: Ministry of Planning and World Food Programme. 65 p.
- Morris, Jason, Sounthone Ketphanh. 2002. *Bitter bamboo and sweet living: Impacts of NTFP conservation activities on poverty alleviation and sustainable livelihoods, a case study for Lao PDR*. Project 3-IC on poverty alleviation, livelihood improvement and eco-system management. Vientiane: NAFRI and IUCN. 35 p.
- Morris, J, Le Thi Phi, Ingles, A, Raintree, A and Nguyen, V. D., 2004. *Linking Poverty Reduction with Forest Conservation: Case studies from Vietnam*. IUCN, Bangkok, Thailand. 74 p.
- Muller, Daniel, Michael Epprecht, William D. Sunderlin. 2006. *Where are the Poor and Where are the Trees? Targeting of poverty reduction and forest conservation in Vietnam*. Working Paper No. 34. Bogor: Center for International Forestry Research [CIFOR]. 20 p.
- Narayan, Deepa, Robert Chambers, Meera K. Shah, Patti Petesch. 2000. *Voices of the Poor: Crying Out for Change*. Washington DC: The World Bank and Oxford University Press.
- Narinchai Patanapongsa and Kamol Ngamsomsumke, 2000. *Socio-economic conditions of farmers in Royal Project Development Centers Year 2000*. Final report submitted to Highland Development Department, Office of the Secretary of the Ministry of Agriculture and Agricultural Cooperatives. (in Thai)
- NECTEC. 2002. *Thailand Information Technology Policy Framework during 2001-2010*. National Electronics and Computer Technology Center, National Science and Technology Development Agency, Ministry of Science Technology and Environment. 74p.
- Neef, A. 2005. Participatory approaches for sustainable land use in Southeast Asia: An overview In: *Participatory approaches for sustainable land use in Southeast Asia*. White Lotus, Bangkok:1-31.
- Neumann, I. B., and E. F. Overland. 2004. International relations and policy planning: the method of perspectivist scenario building. *International Studies Perspectives* 5: 258-277.
- Nguyen Le Hoa, 2005. *Potential Impact of WTO Accession for Tea Farmers in Vietnam: The Case Study in Dai Tu District, Thai Nguyen Province*. MSc thesis at the Swedish University of Agricultural Sciences (SLU). Uppsala. Sweden.
- Nguyen Thang. 2004. *The Poverty Impact of Doha: Vietnam*. Overseas Development Institute. London
- Nguyen van Sanh. 2005. *Food security, Livelihood and Rural Development*. National workshop on Food security, Farming System and Landscape, Ho Chi Minh city, 17-18 October, 2005.
- Nguyen, H. & Grote, U. 2004. *Agricultural policies in Vietnam: Producer Support Estimates, 1986-2002*. MTID Discussion paper no 79. Center for Development research [ZEF] Discussion paper no 93. Markets, Trade, and Institutions Division. Washington: International Food Policy Research Institute.



- Nuanmai Vichaicharn. 2004. *"Changes in Agricultural Production System of Communities in the Northern Irrigation Area"*. Thesis [Master of Education in Nonformal Education] Graduate School, Chiang Mai University. [in Thai]
- Nutcha Liwisitpattana. 2003. *Adaptation of poor farmers' livelihood in the context of highland agricultural changes* Masters' thesis in Agricultural Systems. Faculty of Agriculture, Chiang Mai University.
- OAE. 2005. *Agricultural Statistics of Thailand year 2005*. Bangkok: Office of Agricultural Economics, Ministry of Agriculture and Cooperatives.
- OAE. 2006. *Para Rubber: Planted area, tappable area, production, and yield for year 2005-2006 by province*. Bangkok: Office of Agricultural Economics, Ministry of Agriculture and Cooperatives.
- Ockey, J. 2004. *Making democracy: leadership, class, gender and political participation in Thailand*. Honolulu: University of Hawaii Press.
- Oehlers, Alfred. 2006. *A critique of ADB policies towards the Greater Mekong sub-region*. *Journal of Contemporary Asia* 36(4): 464-478.
- Olson, D. M, E. Dinerstein, E.D. Wikramanayake, N.D. Burgess, G.V.N. Powell, E.C. Underwood, J.A. D'amico, I. Itoua, H.E. Strand, J.C. Morrison, C.J. Loucks, T.F. Allnutt, T.H. Ricketts, Y. Kura, J.F. Lamoreux, W.W. Wettengel, P. Hedao, & K.R. Kassem. 2001. *Terrestrial Ecoregions of the World: A New Map of Life on Earth*. *BioScience* 51:933-938]
- Osmani, Siddiqur Rahman. 2003. *'Evolving Views on Poverty: Concept, Assessment, and Strategy'*. Poverty and Social Development Papers No. 7. Manila: Asian Development Bank. 33 pp.
- Oxfam. 2004. *Will Viet Nam join the WTO on pro-development terms?*. Oxfam International Briefing Paper 67.
- Oxfam. 2005. *Kicking down the door*. Oxfam International Briefing Paper 72.
- Pakapat Sirisuk. [no date] "Kor Ror Or [ICL] or Kor Yor Sor : New Faces of Tertiary Education" [online] Available: <http://www.hppthai.org/news/press/17-49ICL.pdf> [November 14, 2007]
- Pandey, S. & Khiem, N.T. 2002. *The Effects of Population Pressure and Market Access on Food Security and Poverty in the Uplands of Southeast Asia: Some Insights from Northern Vietnam*. International Symposium on sustaining food security and managing natural resources in Southeast Asia.
- Pinkaew Laungaramsri, 2000. The ambiguity of "watershed": the politics of people and conservation in northern Thailand. *Soujour Journal of Social Issues in Southeast Asia* 15:52-75.
- Pinkaew Luangaramsri, and N. Rajesh, editors. 1992. *The Future of People and Forests in Thailand after the Logging Ban*. Project for Ecological Recovery [PER], Bangkok.

- Pinpetch Sakulsongboonsiri and Methi Ekasingh. 2005. Development of watershed network geodatabase in the Upper North.. In: *Proceedings of the Third National Agricultural Systems Seminar: Towards a safe and sustainable agricultural production systems*. November 9-11, 2004, Pang Suan Kaew Hotel, Chiang Mai, pp. 416-425. [In Thai]
- Pornwilai Saipothong, W. Kojornrungsot, and D. Thomas. 2005. Comparative Study of Participatory Mapping Processes in Northern Thailand. In J. Fox, K. Suyanata, and P. Herschok, editors. *Mapping communities: ethics, values, practice*. East-West Center, Chiang Mai. p 11-18.
- Pramote Prasartkul, et. al. 2007. 'Urban Population Explosion in Thailand'. Paper presented at IPSR 2007 Annual Conference III on Urbanization and Urbanism. [Thai language] Available on-line at: <http://www.ipsr.mahidol.ac.th/content/Home/ConferenceIII/Articles/Article01.htm>
- Prasit Wangpakapattanawong, 2001. *Ecological Studies of Reduced Forest Fallow Shifting Cultivation of Karen People in Mae Chaem Watershed, Northern Thailand, and Implications for Sustainability*. PhD Dissertation. Vancouver: Department of Forest Sciences, University of British Columbia.
- Qiu Xueqin. 2005. 'Tourism development in Yunnan Province'. Paper presented at Workshop on Mekong Tourism: Learning across borders. Chiang Mai: Social Research Institute, Chiang Mai University.
- Raintree, J. 2001. Human Ecology and Rural Livelihood in the Lao PDR. Chapter 6 in: *National Human Development Report Lao PDR 2001*. Vientiane, United Nations Development Programme. p 71-95.
- Rattanaporn Sethakul. 2003. *A Century of Northern Economic Communities [1899-1999]*. Bangkok: The Thailand Research Fund. [In Thai]
- Roth, Robin. 2004. *'Fixing' the Forest: The spatial reorganization of inhabited landscapes in Mae Tho National Park, Thailand*. PhD dissertation. Worcester, Massachusetts: Department of Geography, Clark University. 236 p.
- RRIT. 2007. *World Rubber Statistics: natural rubber production in Thailand*. Bangkok: Rubber Research Institute of Thailand, Department of Agriculture, Ministry of Agriculture and Cooperatives.
- Schipani, S. 2007. "Ecotourism as an Alternative to Upland Rubber Cultivation in the Nam Ha National Protected Area, Luang Namtha." *Juth Pakai* 8: 5-17.
- Sciortino, Rosalia, Therese Caouette, Philip Guest. 2007. *Regional Integration and Migration in the Greater Mekong Sub-region: A Review*. Paper presented at the 8th APMRN International Conference on Migration, Development and Poverty Reduction, 26-29 May 2007 at Fujian Normal University, Fuzhou, China. Canberra: Asia Pacific Migration Research Network.  
<http://apmrn.anu.edu.au/conferences/8thAPMRNconference/>
- Srawooth Paitoonpong. 1999. *Consultations with the Poor*. National Synthesis Report, Thailand. Washington DC: The World Bank. 111 p.

- Seidel, K., K. Phanvilay, B. Vorachit, L. Mua, S. Boupphachan and R. B. Oberndorf. 2007. *Study on Communal Land Registration in Lao PDR*. Vientiane, Lao-German Land Policy Development Project.
- Shiro, C., J. Furtad, and L. Shen. 2007. Coping with pressures of modernization by traditional farmers: a strategy for sustainable rural development in Yunnan, China. *Journal of Mountain Science* 4: 57-70.
- Sicat, S.R., E.J.M. Carranza, and U.B. Nidumolu. 2005. Fuzzy modeling of farmer's knowledge for land suitability classification. *Agricultural Systems* 83: 49-75.
- Singhanetra-Renard, A. 1999. Population mobility and the transformation of the village community in Northern Thailand. *Asia Pacific Viewpoint* 40: 69-87.
- Somchai Jitsuchon. 2001. What is Poverty and How to Measure It? *TDRI Quarterly Review* 16(4): 7-11.
- Somchai, Jitsuchon, Kaspar Richter. 2007. 'Thailand's Poverty Maps: From Construction to Application.' Chapter 13 in: T. Bedi, A. Coudouel, K. Simler [eds] *More than a Pretty Picture: Using Poverty Maps to Design Better Policies and Interventions*. Washington DC: The World Bank. p. 241-260.
- Sompong Chevasun. 1988. *Effects of highland roads in Northern Thailand*. Chiang Mai: Social Research Institute, Chiang Mai University. [in Thai]
- Sunderlin, William D., Huynh Thu Ba. 2005. *Poverty Alleviation and Forests in Vietnam*. Bogor: Center for International Forestry Research [CIFOR]. 73 p.
- Swart, R., P. Raskin, and J. Robinson. 2004. The problem of the future: sustainability science and scenario analysis. *Global Environmental Change* 14: 137-146.
- Swinkels, Rob, Carrie Turk. 2007. 'Poverty Mapping: The Experience of Vietnam.' Chapter 14 in: T. Bedi, A. Coudouel, K. Simler [eds] *More than a Pretty Picture: Using Poverty Maps to Design Better Policies and Interventions*. Washington DC: The World Bank. p. 261-286.
- Tansiri, B. and Kamron, Saifak. 1999. *Land Evaluation Manual*. Land Development Department. Bangkok. [In Thai]
- Thanapakpawin, P, J. Richey, D. Thomas, S. Rodda, B. Campbell and M. Logsdon. 2007. 'Effects of landuse change on the hydrologic regime of the Mae Chaem river basin, NW Thailand'. *Journal of Hydrology* 334(1-2): 215-230.
- Thomas, David E. 2002. Montane mainland southeast Asia - a brief spatial overview. In: Xu Jianchu, and S. Mikesell, editors. *Landscapes of Biodiversity*. Yunnan Science and Technology Press, Kunming. p 25-40.
- Thomas, David E., Pornchai Preechapanya, and Pornwilai Saipothong. 2002. Landscape agroforestry in upper tributary watersheds of northern Thailand. *Journal of Agriculture [Thailand]* 18 [Supplement 1]: S255-S302.
- Thomas, David E., Pornchai Preechapanya, and Pornwilai Saipothong. 2004. *Landscape agroforestry in northern Thailand: Impacts of changing land use in an upper tributary watershed of montane mainland Southeast Asia*. ASB-Thailand synthesis report 1996-2004. Chiang Mai: World Agroforestry Centre. 184 p.

- Thomas, David E., Pornchai Preechapanya, Pornwilai Saipothong. 2004. *Developing Science-Based Tools for Participatory Watershed Management in Montane Mainland Southeast Asia*. Report to the Rockefeller Foundation. Chiang Mai: World Agroforestry Centre [ICRAF]. 103 p.
- Thomas, David E. 2005. *Developing Watershed Management Organizations in Pilot Sub-Basins of the Ping River Basin*. Office of Natural Resources and Environmental Policy and Planning, Ministry of Natural Resources and Environment. 288 p.
- Thomas, David E. 2006. *Participatory Watershed Management for the Ping River Basin. Final Project Report*. Bangkok: Office of Natural Resources and Environmental Policy and Planning, Ministry of Natural Resources and Environment. 161 p.
- Thongchai Winichakul. 1994. *Siam Mapped: A History of the Geo-body of a Nation*. Chiang Mai: Silkworm Books.
- Thongmanivong, S. and T. Vongvisouk. 2006. Impacts of Cash Crops on Rural Livelihoods: A Case Study from Muang Sing, Luang Namtha Province, Northern Lao PDR. In: S. Mahanty, Jefferson Fox, Michael Nurse, Peter Stephen and L. McLees. *Hanging in the Balance: Equity in Community-Based Natural Resource Management in Asia*. Bangkok: Regional Community Forestry Training Center and East-West Center. p 106-121.
- Thongmanivong, Sithong, Yayoi Fujita. 2006. Recent Land Use and Livelihood Transitions in Northern Laos. *Mountain Research and Development* 26(3) [August 2006]: 237-244.
- Tieng Pardthaisong. 1986. *Factors in the achievement of below-replacement fertility in Chiang Mai, Thailand*. Paper No. 96. East-West Population Institute. Honolulu: East-West Center.
- Tourism Authority of Thailand. 2000. *Tourism Statistical Highlights 1999: Chiang Mai*. Tourism Authority of Thailand, Chiang Mai.
- UNSD. 2005. *Handbook on Poverty Statistics: Concepts, Methods and Policy Use*. Special Project on Poverty Statistics. New York: United Nations Statistical Division. 405 p.
- Uraivan Tan-kim-yong. 1983. *Resource mobilization in traditional irrigation systems of northern Thailand: a comparison between the lowland and the upland communities*. Ph.D dissertation. Cornell University, New York.
- Uraivan Tan-kim-yong, P. C. Bruns, and B. R. Bruns. 2005. The emergence of polycentric water governance in northern Thailand. In: G. P. Shivakoti, D. L. Vermillion, W.-F. Lam, E. Ostrom, U. Pradhan, and R. Yoder, editors. *Asian Irrigation in transition: responding to challenges*. London: Sage Publications. p 226-252.
- Van der Weide, Roy. 2004. *How poverty came on the map in Lao PDR*. Washington DC: The World Bank.
- van Notten, P. W. F., J. Rotmans, M. B. A. van Asselt, and D. S. Rothman. 2003. An updated scenario typology. *Futures* 35: 423-443.
- Vandergeest, P. 2003. Racialization and citizenship in Thai forest politics. *Society and Natural Resources* 16: 19-37.

- Vanpen Surarerks. 1986. *Historical Development and Management of Irrigation System[s] in Northern Thailand*. Department of Geography, Faculty of Social Sciences, Chiang Mai University. Bangkok: Chareonwit Printing Ltd. 492 p.
- Verdin, K.L. and J.P. Verdin. 1999. A topological system for delineation and codification of the Earth's river basins. *Journal of Hydrology* 218: 1-12.
- Vongkhamor, S., K. Phimmasen, B. Silapeth, E. Petterson and Y. Fujita. 2007. *Key Issues in Smallholder Rubber Planting in Oudomxay and Luang Prabang Provinces, Lao PDR*. Vientiane: Upland Research and Capacity Development Programme, National Agriculture and Forestry Research Institute. 40 p.
- Walker, A. 2004. Seeing farmers for the trees: community forestry and the arborealisation of agriculture in northern Thailand. *Asia Pacific Viewpoint* 45:311-324.
- Walker, A. 2006. Community forests in the uplands: Good for forests, but what about farmers? In: L. Lebel, J. Xu, and A. Contreras, editors. *Institutional dynamics and stasis: How crises alter the way common pool resources are perceived*. Regional Centre for Social Science and Sustainable Development (RCSD), Chiang Mai University, Chiang Mai.
- Wang F-L. 2004. Reformed migration control and new targeted people: China's hukou system in the 2000s. *China Quarterly* 177: 115-132.
- Warr, Peter. 2004. 'Globalization, Growth, and Poverty Reduction in Thailand.' *ASEAN Economic Bulletin* 21[1] [2004]: 1-18.
- Weaver, D. 2002. Asian ecotourism: patterns and themes. *Tourism Geographies* 4:153-172.
- Weiyi Shi. 2008. *Rubber boom in Luang Namtha: A transnational perspective*. Report prepared for GTZ Rural Development in Mountain Areas. Vientiane: GTZ RDMA. 86 p.
- Wollenberg, E., D. Edmunds, and L. Buck. 2000. Using scenarios to make decisions about the future: anticipatory learning for the adaptive co-management of community forests. *Landscape and Urban Planning* 47: 65-77.
- World Bank. 1959. *A Public Development Program for Thailand*. Report of a mission organized by the International Bank for Reconstruction and Development at the request of the government of Thailand. Baltimore: Johns Hopkins Press. 301 p.
- World Bank. 1999. *A Synthesis of Participatory Poverty Assessments from Four Sites in Vietnam: Lao Cai, Ha Tinh, Tra Vinh, and Ho Chi Minh City*. Submission to the WDR 2000 by Vietnam-Sweden Mountain Rural Development Program, ActionAid, Save the Children Fund [UK] and Oxfam [GB]. Hanoi: World Bank Resident Mission in Viet Nam.
- World Bank. 1999. *Vietnam Development Report 2000 – Attacking poverty*. Country Economic Memorandum. Report no: 19914-VN. Washington DC: World Bank.
- World Bank. 2001. *Thailand Social Monitor: Poverty and Public Policy*. Report No. 23147-TH. Washington DC: The World Bank. 91 p.
- World Bank. 2001. *World Development Report 2000/2001: Attacking Poverty*. Washington DC: The World Bank and Oxford University Press.

- World Bank. 2004. *Lao PDR Poverty Reduction Strategy Paper and Joint Staff Advisory Note. Report No. 29966*. Washington DC: The World Bank. 260 p.
- World Bank. 2006a. *Poverty Environment Nexus: Sustainable approaches to poverty reduction in Cambodia, Lao PDR and Vietnam*. Draft Conference Edition. Washington, DC: The World Bank. 202 pp.
- World Bank. 2006b. *Lao PDR Poverty Assessment Report: From Valleys to Hilltops – 15 Years of Poverty Reduction*. Volume II: Main Report. Report No. 38083-LA. Washington DC: The World Bank. 144 p.
- World Bank. 2006c. *Cambodia: Halving Poverty by 2015? Poverty Assessment 2006*. Report No. 35213-KH. Washington DC: The World Bank. 249 p.
- World Bank. 2006d. *Labor Migration in the Greater Mekong Sub-region. Synthesis Report Phase I*. East Asia and Pacific Working Paper 40773. Washington DC: The World Bank. 80 p.
- World Bank. 2007. *East Asia & Pacific Update April 2007: 10 years after the Crisis: Special Focus: Sustainable Development in East Asia's Urban Fringe*. East Asia and Pacific Region. Washington DC: The World Bank.
- WWF. 2006. *Terrestrial Ecoregions Base Global Dataset*. World Wildlife Fund. Request on-line at: <http://www.worldwildlife.org/science/terrecobase.cfm>
- Wyatt, David K. 2003. *Thailand: A Short History*. Second edition. Chiang Mai: Silkworm Books.
- Zhang M. 2003. *China's poor regions: Rural-urban migration, poverty, economic reform, and urbanization*. London and New York: Routledge Curzon.