A Review on Livelihood Diversification: Dynamics, Measurements and Case Studies in Montane Mainland Southeast Asia

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ABSTRACT

The subject of livelihood dynamics in montane mainland Southeast Asia has been widely discussed by many researchers. Globalization that takes place through changes in the political system has most impacts on the diversity of livelihoods of rural communities. However, there are few studies of diversity in the field, and most focus on sectoral shifts and financial activities. We conducted an overview of the historical dynamics of rural livelihoods and its diversification, and used various indices to measure diversification. To reveal the complex diversity of rural livelihoods it is necessary to understand the general situation and patterns of livelihood diversification. This article highlights the diverse livelihood dynamics from two viewpoints of livelihood diversification; distress and progressive diversification, and case studies that can support these dynamics to illustrate the process of livelihood diversification and discuss the direction of the pattern of diversification to provide information for future research. This study suggested intensified focus on livelihood diversification to promote sustainable development in this region.

Keywords
diversification, globalization, livelihood, mainland southeast Asia

1. Introduction

Montane mainland Southeast Asia (MMSEA) is a remote inland area and comprises the mountainous areas of Cambodia, Laos, Myanmar, Thailand and Vietnam; sometimes southern China is included. Livelihoods in MMSEA are often characterized by subsistence-based mountain agriculture with less practice and management of modern technologies and tend to have low productivity [1], especially shifting cultivation with upland rice as the staple food, on steep slopes and incorporating various kinds of livelihood activities [2]. Although shifting cultivation has been the principal activity in local livelihood systems [3, 4], market-oriented non-agricultural activities – as well as subsistence-based agricultural activities – have also been carried out. Combining these activities is the norm in rural livelihoods in MMSEA [5, 6], and capturing and understanding livelihood diversity and its dynamics (and especially that of “livelihood diversification”) is key to the sustainable development of this area.

Many studies have been carried out on livelihood diversification, especially in Sub-Saharan Africa (SSA) [6, 7]. Previous studies of SSA have analyzed the basic dynamics of diversification of assets, activities and income sources commonly observed in rural households experiencing economic development [8]. However, many studies focus too heavily on income diversification and often just count sectors (agricultural, industrial and service) or nonfarm, off-farm and on-farm activities (and their combinations), and previous livelihood diversification studies have been oversimplified. Subsistence-based agricultural activities are still carried out in many rural areas, and their
diversity has often been neglected in previous studies, which have mainly focused on the shift in the deagrarianization process [8, 9, 10]. Influential studies of this subject have revealed that an important part of the rural economy in respect of livelihood diversification to non-agricultural activities is from subsistence activities [6]. A holistic understanding of livelihood dynamics is insufficient, however, especially in MMSEA where there have been few studies of livelihood diversification and subsistence activities are still widely found [6, 11]. There has been a dramatic change in livelihoods in MMSEA as a result of rapid globalization under the influence of surrounding countries such as China [3, 12].

In addition, massive road development in the area also has been the major agent in globalization context. The numerous roads have linked local livelihoods in remote area to local, to regional and even to global markets [13]. Various people such as traders, merchants, and businessmen have become to visit rural areas and bring great economic impacts on local livelihoods, and then the road development has induced changes in agricultural land use and its surrounding environment [14, 15]. The change in livelihoods is the result of not only present conditions, but also historical context, and the trajectory of livelihood diversification and more sustainable development in MMSEA needs to be understood from both of these perspectives.

We examined the historical social dynamics with respect to globalization and the political background, and the general livelihoods dynamics in MMSEA. The concept and history of livelihood studies were reviewed to understand the relationship between globalization and the livelihoods dynamics. We then discuss the gaps in livelihood diversification in a number of case studies, and also how to measure the livelihood diversity and diversification. Our summary examines the direction of livelihood diversification in MMSEA, based on these studies, focuses on the lack of current studies and provides a foundation for further research.

2. General historical dynamics of society and livelihoods, and its diversification

2.1 Globalization, political background, and related livelihood changes in MMSEA

Many workers have researched livelihoods and agriculture in MMSEA and one of the classic topics has been that of shifting cultivation which is well known as traditional agricultural system that has long been widely practiced [2]. Livelihood changes in MMSEA in recent decades can basically be understood through the changes from shifting cultivation to permanent agricultural fields (e.g., coffee, maize, rubber, sugarcane) and non-agricultural land uses (e.g., construction of transportation networks, houses, hydropower dams, factories) [3, 13]. Drastic changes at the country level have taken place in MMSEA for around 50 years and they have exerted considerable influence on the livelihoods of local people [2, 3].

The changes have mainly been influenced by external factors such as the regime in each country, government policy and development of transportation networks [7]. MMSEA has experienced major social changes and their chronology is shown in Table 1 [16]. In the 1970s, after the Second Indochina War, Laos and Vietnam became established as socialist nations. The Khmer Rouge formed ‘Democratic Kampuchea’ in 1975. Although Myanmar was not a communist country, it implemented a planned economy like other countries, during the Ne Win administration. Under this planned economy, farmers had to provide paddy rice to government. In the period of planned economy, shifting cultivation temporarily increased on slope land because temporary shortages in rice production meant there was insufficient rice for local people. Although political regime of Thailand was stable, Thai government started to establish national park for forest conservation. Establishment of the Doi Inthanon National Park resulted in prohibition of shifting cultivation by local Karen people, who constituted the majority of the ethnic minorities in Thailand, and they were forced to change their livelihoods.
Table 1: Chronology of changes in political systems in Montane Mainland Southeast Asia

| Years       | Vietnam                           | Laos                              | Cambodia                        | Thailand                        | Myanmar                                      |
|-------------|-----------------------------------|-----------------------------------|---------------------------------|---------------------------------|----------------------------------------------|
| 1970–1979   | 1975 Second Indochina End of war  | 1975 Lao People’s Democratic Republic established | 1975 Democratic Cambodia established | 1972 Doi Inthanon National Park established | 1975 Implementation of planned economy by Ne Win administration* |
|             | 1976 Vietnam Socialism Republic established* |                                |                                 |                                 |                                              |
| 1980–1989   | 1981 Decree 100                   | 1986 Chintanakaan Mai (New Thinking)** | 1986 Slash and burn regulations*** |                                 | 1987 Abolition of rice procurement and distribution system** |
|             | 1986 Doi Moi (Renovation)**       |                                 |                                 |                                 |                                              |
|             | 1988 Resolution No. 10            |                                 |                                 |                                 |                                              |
| 1990–1999   | 1992 Program 327***               | 1990 Initiation of community forestry*** |                                 |                                 |                                              |
|             | 1993 Land Law***                  |                                 |                                 |                                 |                                              |

Source: Adopted from Hirota [16]

*Starting of communistic system
**Starting of capitalistic system
***Reinforcement of official management of land and forest

Generally, socialism and planned economies were found widely in MMSEA until the middle of 1970s. However, around the 1980s, planned economies gradually collapsed and governments introduced free economies. One example was the policy of *Doi Moi* (renewal) in Vietnam and the *Chintanakaan Mai* (new thinking) in Laos. These policies promoted commercial activities in rural as well as in urban areas. Many cash crops were introduced and biological resources became commercialized. In Vietnam, the objective of Resolution No. 10 was to allocate land for each household to cultivate and sell crops without government control. In Myanmar the collective system ended with the collapse of the Ne Win administration and its planned economy. Social confusion in Cambodia led to a slight delay in the opening of the economy compared with other countries.

Policies for forest conservation and land law in Cambodia, Laos and Vietnam were implemented around the 1990s, and available land for shifting cultivation became limited. Community forestry was introduced into Cambodia, and the use of forest resources was subject to participatory management by residents and local organizations. In Vietnam, land law had three main purposes: stabilizing shifting cultivators; increasing agricultural production by giving incentives to farmers to plant perennial crops; and conserving forest resources. As a result of these policies, people began to rely economically on forests and to become engaged in income-generating activities [17].

In addition, instead of political background, road development is one of factors to increase in new livelihood activities in highland. Two large development projects began at the start of the 21st century. One was the Great Mekong Sub-Region (GMS) program, initiated by the Asian Development Bank (ADB), and the other was the One Belt One Road (OBOR) initiated by China. In 2015 about 5,700 km of road development projects were started with...
the purpose of connecting all countries in MMSEA, resulting in considerable impact to isolated villages near borders [18]. Land concessions also influenced the changes in livelihood strategy choices and outcomes in rural communities [19]. Globalization may continue to impact the livelihoods of rural communities in MMSEA.

### Table 2: Livelihood dynamics of a rural village in northern Laos

| Year | Social events | Infrastructure | Commercial crops | Commercial forest products | Swidden and paddy practice |
|------|--------------|----------------|------------------|----------------------------|----------------------------|
| 1975 | Road construction (1973-74) | Cucumber (from ancient to the present) | Benzoin, cardammon and Khi sii (resin of Depterocarpaceous trees) (from ancient to the present) | Using hands for harvest (from ancient to 1990s) |
| 1975-2000 | End of civil war (1975) | Opening access to market in Pak Mong and Nam Thoam village (1975) | Bamboo shoots and rattan | | |
| | Pavement or road (1977) | | | | |
| | Health facility (1984) | | | | |
| | Chintanakaan Mai (New Thinking) (1986) | | | | |
| | Land and Forest Allocation Program (LFAP) (1994) | Electricity by generator (1990s) | | | |
| | Land Law (1997) | | | | |
| 2000- | Water supply (2001) Primary school to fifth year (2004) | Electricity (2007) | | | |
| | Tea (about 10 households) (around 2005) Castor oil plant (about 20 households) (around 2008) Tung-oil tree (near future) | | | | |
| | Gle (Alpinia sp.), konjak (Amorphophallus sp1.), yaa hua (Amorphophallus sp2.) (from 2010 to the present) | | | | |
| | Land reclamation for paddy (from 2006 to the present) | | | | |

Source: Adopted from Hirota et al. [20]

To know the rural livelihood dynamics of MMSEA in village level, a case study in northern Laos (see Table 2), which illustrates historical transition and relationships between livelihood and several factors, is introduced in following part [20]. In the studied village (Kachet village, Luang Phabang province, northern Laos) before 1975, the village was isolated and local people lived in subsistent condition. Farming practices were traditional and they
maintained the production system to meet their basic needs. Despite their isolation, they were already familiar with commercial products to be historically distributed to kings of Luang Phabang such as Benzoin, cardamom and khii sii (resin of Depterocarpaceous trees). With the end of civil war after 1975, the opening access to rural market, and paving road, bamboo shoots and rattan trade had become commonplace. Subsequently, other commercial forest products also had become diversified such as peuak meuak (*Boehmeria malabarica*), paper mulberry, broom grass from early 1990s and Gle (*Alpinia* sp.), konjak (*Amorphophallus* sp1.), and yaa hua (*Amorphophallus* sp2.) from 2010. All the products were sold to Chinese and Vietnamese merchants, and they played a key role of commercialization of forest products through direct visit to the village.

In the beginning of 21st century, crops plantation was introduced to local people by Chinese and Laotian company such as tea, castor oil plant, and tung-oil tree. However, due to the sudden termination of contract with company, price of commercial crops became unstable. This kind of poor-organized economic system is common in rural MMSEA and this increases vulnerability of local livelihoods in globalization context. Along with the commercialized crops, local people also has tried to intensify their total agricultural system. Land reclamation for paddy is an example of intensified utilization of land, and consequently people become to be engaged in diverse livelihood activities.

### 2.2 General livelihood dynamics in MMSEA

Many researchers have discussed the dynamics of livelihoods in MMSEA for a considerable time, revealing that livelihoods in rural areas are complex and dynamic [6, 21, 22, 23]. Generally, a well-known previous research [24] pointed out that “a livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets both now and in the future”. Globalization following changes in a political system has had considerable impact on agricultural practices, land use and livelihoods in MMSEA [25, 26, 27, 28], where shifting cultivation has been the major agricultural system, providing livelihood choices such as collecting non-timber forest products (NTFPs). At the household level, NTFPs are important sources of income when the household is in a rice deficit. In previous studies, income from NTFPs was found to account for more than 40% of total household income in Laos and represented the greatest contribution to total household income, providing “income smoothing” in years when food supplies were inadequate [29, 30]. This indicates that households depend not only on agricultural production activities but also on collection of natural resources, including NTFPs, in fallow forests in shifting cultivation systems. At the national level, NTFPs also play a key role in international trade and market chains among the countries in mainland Southeast Asia [31].

The number of farmers who still engage in shifting cultivation in MMSEA is estimated to be more than 200 million [32]. However, Mertz et al. [3] have claimed that the real number is probably much less than 50 million. In fact, shifting cultivation is disappearing in many parts of mainland Southeast Asia, and a decline has been reported over a period of 25 years, from 1990 to 2015 [22, 33]. This decline was followed by an increase in permanent agricultural activities and non-agricultural activities to generate income, and livelihoods shifted from subsistence to market-oriented ones [28, 34]. Permanent agriculture in MMSEA is often associated with a boom in cash crop cultivation. Many cash crops are grown on slope land after the change from shifting cultivation, and Schmidt-vogt *et al.* [35] reported the introduction of cash crops such as coffee, vegetables, oil palm, fruit trees, timber, maize, paddy, sugarcane and tea in MMSEA as a result of the change. A previous study has reported that this change also had negative impacts on rural livelihoods. Fox [36] pointed out the change was of long-term disadvantage to farmers, especially in respect of price fluctuations for cash crops, connecting to a more competitive global market, decreasing
self-sufficiency and increasing environmental vulnerability. Diversifying livelihood activities can enhance the security of farmers.

In some MMSEA countries non-agricultural activities such as rural wage labor has become more ubiquitous as the main means of survival [7]. In Thailand, the role of forests in livelihoods has gradually decreased, and non-agricultural activities such as working in textile factories, construction, “entertainment”, food processing and domestic work have become the main source of income [37]. A similar increase in non-agricultural activities was also found in Laos and Cambodia, although agriculture remains a key component of local livelihoods and welfare [6, 19]. Increasing dependence on non-agricultural activities reflects their importance in local livelihoods, particularly in strengthening resilience and reducing risks in adapting to globalization. In Myanmar, for example, dependence on agriculture is not associated with greater probabilities of food security [38]. When households meet their food and nutrition requirements at an acceptable level, the capacity for more engagement in non-agricultural activities becomes more important for food security and dietary diversity. Although engaging in non-agricultural activities is a common livelihood strategy for local people in MMSEA, not all households can take part in high-return livelihood activities, and some are still engaged in low-return livelihood activities from necessity and not from choice [39].

3. Approach to studying livelihood diversification

3.1 Concept of livelihood diversification

The definition of “livelihood” has been developed by many researchers in livelihood studies. In their most cited paper, Chambers and Conway [24] proposed that livelihood comprises the activities, assets (including material and social resources) and capabilities required as a means of living. At the beginning of the 1990s more attention began to be paid in development studies to the analysis of entire rural livelihoods, rather than just focusing on economic or agricultural activities: an holistic perspective often known as the sustainable livelihood approach (SLA). It became more important in development practice [40] and was strongly promoted by the Department for International Development (DFID), the British state development cooperation agency [41]. Livelihoods are considered to be sustainable if households can recover from “stress and shocks”, but they must also be able to maintain and enhance various activities and assets into the future [42]. In this sense, the diversification of elements comprising “livelihood” can be regarded as one of solutions in resistance to stress and shocks and, therefore, livelihood diversification has often been discussed in livelihood studies.

Between the 1990s and the present, an influential framework for analyzing livelihood diversification from an holistic viewpoint was proposed by Ellis [7]. Livelihood diversification has been known as the process by which households construct a diverse portfolio of activities and social support capabilities for survival and to improve their standard of living. In the past, diversification was seen as a result of the growth of agricultural output, thus creating many opportunities in the rural economy. In fact, many poor households, even in regions where agricultural techniques had improved dramatically, failed to maintain their livelihoods, and the assumption is no longer considered to be tenable.

Diversification of livelihoods in rural areas can be more clearly understood from agricultural and non-agricultural viewpoints, which together provide a variety of procurement strategies for subsistence and income to a household. Start and Johnson [40] stated that the term “diversification” can refer either to increasing the diversity of activities, or to a tendency to shift away from traditional rural sectors such as agriculture to non-traditional activities in either rural or urban areas. Loison [43] considered that components of livelihood diversification were commonly divided into three classifications: sector (agricultural or non-agricultural), function (wage employment or self-
employment) and location (on-farm or off-farm), and this has been useful in large-scale analyses. However, these kinds of classifications are too simplified, and sometimes confusing, and fail to capture the diversification of rural livelihoods. For example, local people in MMSEA commonly collect NTFPs, and the types of commercial NTFPs are varied. Since each product is also seasonal, it is difficult to capture each activity (such as collection, processing and trading of NTFPs) from a sectoral perspective. Sectoral groupings may be useful if agriculture is more developed and where local people no longer rely on subsistence economic activities and have shifted to market-oriented economic activities. Nielsen et al. [10], however, have pointed out that sectoral grouping is problematic owing to the changeable nature of income, which risks over- or under-valuing certain income sources. They proposed the quantitative activity choice approach, which is based on the identification of activities, and its combinations better represent the diversity of the livelihood portfolio in rural societies. Perz et al. [44] also considered that the number of activities and their relative importance described livelihood diversity in a household.

Various motives may drive the diversification of assets, income and activities [45], and they may be negative or positive. Barret et al. [8] called the negative motives “push factors” and positive motives “pull factors”. Negative motives are closely related to need: for example, if people experience some kind of environmental degradation, they will need to change their livelihoods and reduce risks [46, 47]. These processes diversify livelihoods by “pushing” people into engagement in low-return activities. However, positive motives are closely related to better choices. If people have comparative advantages, such as special knowledge, skills or better market access, they can positively turn better activities into profitable jobs. These external and internal factors can “pull” people to be engaged in relatively high-return activities, and their livelihoods become progressively more diversified.

In addition, since motives for diversification of activities, assets and income sources are varied, livelihood diversification in rural areas should be seen from a holistic viewpoint. In previous studies, however, livelihood diversification in rural areas was often regarded as being associated with an increase in non-agricultural activities, which tend to lead deagrarianization [9, 39, 48], and the non-agricultural income was often linked to the welfare of rural households [5, 8]. These analyses mainly discussed “sectoral dynamics”, which placed too much focus on sectoral shifts to non-agricultural sector. For example, studies in African countries found positive relationships between non-agricultural income and household “welfare” indicators such as household income, agricultural land, livestock, commodity consumption and dietary level [7, 8, 49, 50]. Using this style of analysis can make it difficult to understand the holistic livelihood dynamics, but it can support our understanding of sectoral dynamics as providing background information on livelihood dynamics and diversification. Loison [43] outlined five patterns of sectoral dynamics: negative pattern; positive pattern; U-shaped pattern; inverted U-shaped pattern; or otherwise, with no clear relationship. A negative pattern is observed when total household income increases and the share of non-agricultural income declines. The second, positive pattern is observed when total household income increases and the share of non-agricultural income also increases. The third, a U-shaped pattern, is observed when relatively poor and relatively rich households have a higher share of non-agricultural income. The inverted U-shaped pattern is observed when middle-income households have a higher share of non-agricultural income. The fifth pattern is found when there is no clear relationship between the non-agricultural income and total household income. In the context of livelihood diversification, there has often been most focus on the U-shaped pattern. In MMSEA there are many low-return and labor-intensive activities with low entry barriers for relatively poor people, and there are capital-intensive activities for relatively richer people with more assets to invest [6, 43, 50]. Although various subsistence activities have been overlooked in many previous studies on livelihood diversification, this kind of information on sectoral dynamics is helpful in promoting, to some extent, our understanding of total livelihood dynamics.
### 3.2 Measurement of livelihood diversity

Previous studies from various disciplines have discussed the measurement of livelihood diversity [51, 52, 53]. Conceptually, “diversity” has two components: structural diversity and relative distribution, and this concept can be applied to studies of livelihood diversification [54]. Structural diversity refers to a number of categories, such as types of livelihood activities or of agricultural products. The livelihood of a household is more structurally diverse if a household carries out more types of activities and produces more (and different) products. Distributive diversity refers to the relative distribution of units among the categories (i.e., amount, dominance or evenness of each product generated from each activity). The livelihood of a household is more diverse if the household produces similar quantities of many products from different activities.

Indices to measure livelihood diversity are summarized in Table 3. The Herfindahl index and the Simpson index are popular indices mainly from economic and ecological research, respectively, for measurement of diversity and these two are inverse indices. Although all indices can capture structural and distributional diversity, the characteristics of each are different. The M6 index, proposed by Gibbs and Poston [51] is the most sensitive to distributional diversity among these indices. The entropy index and modified entropy index are also common indices

| Index name               | Formula                                      | Full concentration | Full diversification | Remarks                                      |
|-------------------------|----------------------------------------------|--------------------|----------------------|----------------------------------------------|
| Herfindahl Index (H.I.) | \[ H.I. = \sum_{i=1}^{N} p_i^2 \]         | 1                  | 0                    | Measures concentration and diversification. It cannot assume theoretical minimum, i.e., zero. |
| Simpson Index (S.I.)   | \[ S.I. = 1 - \sum_{i=1}^{N} p_i^2 \]     | 0                  | 1                    | The most widely used; the inverse of H.I.    |
| M6 Index               | \[ M6 = N \left( 1 - \frac{\sum_{i=1}^{N} \left( p_i - \frac{1}{N} \right)^2}{\sum_{i=1}^{N} p_i} \right) \] | 1                  | Maximum as set by N | Sensitive to distributional diversity.       |
| Entropy Index (E.I.)   | \[ E.I. = -\sum_{i=1}^{N} p_i \log p_i \] | 0                  | \( \log N \)         | Upper limit is based on base of logarithms; does not give standard scale for assessing diversification if sampling population is different. |
| Modified Entropy Index (M.E.I.) | \[ M.E.I. = -\sum_{i=1}^{N} p_i \log \frac{p_i}{N} \] | 0                  | 1                    | Base of logarithm is modified for adjustment of various sizes of sampling population. |
| Composite Entropy Index (C.E.I.) | \[ C.E.I. = M.E.I. \times \left( 1 - \frac{1}{N} \right) \] | 0                  | \( 1 - 1/N \)        | \( \log p_i \) in M.E.I assigns more weight to lower values and less weight to higher values of \( p_i \). |
| Ogive Index (O.I.)     | \[ O.I. = \sum_{i=1}^{N} \left( p_i - \frac{1}{N} \right)^2 \left( \frac{1}{N} \right) \] | Maximum as set by N | 0                    | Sensitive to structural diversity. |

Sources: Modified from Khatun and Roy [57] and Perz et al. [44]. \( p_i \) represents the proportion of the \( i \)-th unit in the total number of units.
modified entropy index puts population size at the base of the logarithm and tries to standardize the population size of samples [55]. The composite entropy index puts more weight on the lower quantity and less weight on the higher quantity to adjust for extreme distribution of population. The Ogive index controls deviation and the calculation comes from the accumulation of difference from equi-proportional values as a benchmark; it is sensitive to structural diversity [56, 57]. The index chosen will depend on the situation.

4. Case studies: pattern of livelihood diversification in MMSEA

Livelihood diversification can be found in many developing countries as a survival strategy for rural households [34]. The motivations of rural people vary widely because of their multiple combinations of livelihood activities (section 4.1), resulting in many different patterns and roles of livelihood diversification. With respect to MMSEA, Martin and Lorenzen [6] pointed out that the major types of diversification pattern can be reduced to two: distress and progressive. They defined distress diversification as a change in the livelihood strategies of households to more difficult ones, from an economic viewpoint, forcing households to “push off” in low-return activities through low entry barriers. Progressive diversification is a change in the livelihood strategies of households to more profitable and risk-taking ones, which motivate households to “pull off” in high-return activities with high entry barriers.

Conceptually, these two types of diversification show a U-shaped relationship between economic level (e.g., major indicators are income, physical assets, savings) and livelihood diversification (Fig.1), and analysis of the pattern is considered to be useful in understanding livelihood dynamics. Many previous researchers, however, have only analyzed “sectoral dynamics”, and not field-level livelihood activities (section 4.1).

Figure 1: Representation of U-shaped relationship in livelihood diversification

The basic livelihoods in rural villages come from agriculture, and there is considerable livelihood diversification. Previous researchers have mainly understood these dynamics of diversification as a strategy from agricultural to non-agricultural activities against the background of village development. However, the motivations of villagers may be varied and the dynamics of livelihood diversification also include its two directions. For example, the non-agricultural activities of environmental resource collection and processing are especially important in

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mountainous areas [58]. Villagers are, however, engaged in these activities from motivations of both distress and progressive diversification. If these two patterns are understood in same analytic framework, the researcher fails to understand the real dynamics of livelihood diversification: it is necessary to separate these two concepts. Studies of livelihood dynamics in MMSEA have also become more important under recent dramatic globalization, but they remain limited. For this reasons we used case studies to illustrate the process of livelihood diversification in this region and to provide information for future research.

4.1 Distress diversification

The market economy has drastically infiltrated montane villages and the economic level of local communities is considerably higher than before this change, and so basically progressive diversification can be observed. However, the drastic change does not always bring sustainable development to these villages because of various factors such as radical policies, government intervention and environmental degradation by intensive agriculture. Our case study from Laos illustrates this kind of dynamics.

The case study was conducted in Nong Hai Kham village, Tulakhom district, Vientiane province [39]. Land in this village was scarce, and the majority of households were in food deficit. In the 1980s the village was self-reliant in food and produced a modest rice surplus for commercial sale. After government policy resulted in resettlement in 2000, households experienced food insecurity and relied on wage laboring to meet their most basic needs. The availability of this wage labor came from a foreign funded irrigation project and from agricultural laboring in neighboring villages and nearby commercial farms, which provided temporary work. In this case, resettlement had adversely affected livelihoods, making households more vulnerable from an economic viewpoint. Since per capita income was insufficient (around USD1.5 per day), local people were very concerned to have high, stable incomes. They also came to realize that lack of education and opportunities for earning were barriers to obtaining profitable jobs. Numerous young people took informal education in English, French and other languages to upgrade their skills. In addition, because productive land was scarce, and their need was great, many households began to engage in various non-agricultural activities. This kind of situation has been found in many areas in Laos [59, 60, 61]. In rural communities, if people can no longer carry out agricultural activities as their main livelihoods through external impacts, they are forced to engage in low-return activities because of their low levels of skill for economic activities. Retaining their subsistence activity and combining activities, even as society changes, supports stable development.

In distress diversification, earlier studies found that low-return activities have often been connected to the collection or use of environmental resources such as wild vegetables, fishing or hunting [17, 62, 63, 64]. In MMSEA, retaining a high level of diversity of livelihood activities is closely related to the use of environmental resources. These low-return activities, however, are not only activities for environmental resources but also for various kinds of activities at a village level. Nguyen et al. [64] analyzed this mixture of various activities in Cambodia. Their case study was conducted in Stung Treng province, northeastern Cambodia, where livelihoods were based on agriculture and extraction of environmental resources from forests and rivers. Households were divided into three groups: group 1 (low-skilled non-permanent wage employment and farming); group 2 (environmental resource extraction and farming); and group 3 (high-skilled or permanent wage employment and farming). The authors tried to identify livelihood strategies in each group. In group 1, low-return agricultural and non-agricultural activities, and use of environmental resources, were the main livelihoods. Low-skilled employment in this group involved plowing, caring for livestock or weeding as agricultural activities; and casual employment such as construction activities as non-agricultural activities. This group was vulnerable to unexpected shocks over 5 years such as floods, storms, droughts and health problems in families, and was in a lower level of income and consumption. However, income from
environmental resources was relatively important for households (22% contribution to household income). Households in groups 2 and 3 also obtained income from environmental resources (50% and 8% contribution, respectively). Although low-return agricultural and non-agricultural activities contributed mainly to group 1 livelihoods, this indicated that environmental resources have the potential to engage a wider range of households than generally imagined. Thus, it is necessary to reconsider the potential of environmental resources in the process of distress diversification in MMSEA.

4.2 Progressive diversification

Although environmental resources are mainly important for low-income households, in the process of progressive diversification they also contribute to the total income of richer households [58]. Several case studies related to this point of view in the MMSEA. In one case study in Myanmar, Aung et al. [63] analyzed household factors to determine their dependency on environmental resources, and especially on forest products in this case. The study was conducted in Ton Nge and Hee Laung village, Chin state, northwestern Myanmar, which is close to Natma Taung National Park. The major livelihood activities were agricultural production, raising livestock, forest products collection and limited off-farm employment. The authors divided the households into three wealth groups: group 1 (better-off), group 2 (medium) and group 3 (poor). The authors considered the value of forest resources not only in commerce, but also as important for subsistence. They tried to estimate the value of forest resources for subsistence use from the substituted price by referencing barter trade with commercial commodities, and so set the value as environmental income or forest income. Forest income was found to be the most important in Ton Nge and Hee Laung village, contributing 55% and 50%, respectively, of the total household annual income including environmental income. Forest income was mainly from fuelwood, wild vegetables and fodder for livestock. In contrast to many previous case studies, households in group 1 received more forest income than those in groups 2 and 3, and absolute income from the forest was also the highest. The influencing factors were family size and livestock. The family size was related to the amount of forest resources collected, and also to the potential of using the environmental resources. In this case, forest resources were strongly related to wealth level and considered to induce progressive diversification for richer people.

In MMSEA, governments have implemented policies that are targeted to conserve forests by controlling access by rural people, and also to improve their livelihoods at the same time. Although the value of environmental resources is sometimes considerably higher in MMSEA than in other regions, the conservation policies have sometimes impacted rural livelihoods that mainly depended on environmental resources. McElwee [17] reported such impacts in a case study in Vietnam, conducted in rural villages in the buffer zone of Ke Go Nature Reserve (KGNR), located in Ha Tinh province, northern Vietnam. The livelihoods of the villages were mainly agriculture, raising livestock, and collecting NTFPs. In the study villages, lower-income households had received less income from forest products. The forest products in this study were mainly timber, charcoal, fuelwood and NTFPs such as rattan and medicinal plants. Among these, profitable forest products were charcoal, timber and fuelwood, and collecting these products was labor consuming. Generally, lower-income households were engaged in small-scale activities and richer households had enough surplus to expand their activities. In this case, richer households hired labor to exploit forest resources in the KGNR buffer zone, and sometimes within the reserve itself. In addition, one international project aimed at forest conservation and poverty reduction was introduced to the study villages. It targeted lower-income households by promoting new cash crops such as rattan and medicinal plants in their home gardens to produce more income. The aims of the forest conservation policy and the project were also to control the access of local people to the forest resources of the KGNR. The study found, however, that the richer households
exploited forest resources heavily, and it was suggested that both policy and project should target not only lower-income households but also the richer households to conserve the forest. The study found that, although the project and policy aimed to lead to progressive diversification of rural livelihoods by promoting new activities, their targeting was not really effective for their objectives. There are rich environmental resources in many MMSEA regions. To induce progressive diversification when implementing policies for rural livelihoods, attention must be paid to the considerable risk of developing extraordinarily commercially profitable enterprises that destroy the surrounding environment.

Our final case study [65] in this section introduces a characteristic aspect of progressive livelihood diversification associated with the development process in mainland Southeast Asia. Since there are insufficient studies on livelihood diversification and limited sources of literature, we decided not to carry out this case study in a montane area, nor did we focus on subsistence activities but in the dynamics of sectoral shift. The case study was conducted in Nong Ben village, Non Thon sub-district, Khon Khaen province, northeastern Thailand. The majority of households in the study village were engaged in agriculture, raising livestock and self-employment, and in waged work such as salaried employment or as workers for casual hire. The authors divided the households into four groups by household structure: group 1 (nuclear household: single spouse with children); group 2 (extended household: single spouse with children and one or more of parents of one of the spouse); group 3 (skipped generation household: elderly person and one or more of their own or someone else’s grandchildren); and group 4 (truncated households: a widow or widower or an elderly married couple living alone). Although agricultural activities were important, more than two-thirds of total income was from non-agricultural activities at village level. For groups 1, 2 and 3 the share was 87.9%, 73.5% and 84.9%, respectively, whereas the share for group 4 was 66.7%, and the village was considered to be in the process of deagrarianization. The authors analyzed the non-agricultural income to have come mainly from local nonfarm activities, self-employment, remittances and government support and pensions. Among groups 1, 2 and 3, which had high incomes from non-agricultural activities, the non-agricultural incomes of groups 1 and 2 showed a higher share of local nonfarm and self-employment. Group 3 had a relatively high share of remittances. There was no active labor in group 3 households, and the children’s parents migrated to other regions to work in such places as manufactories and electricity power plants, near the central area of Khon Khaen [66]. The field survey showed that 64% of all households were in debt from investments in agriculture, groceries, car and motorbike purchases, and for living expenses such as child education, and needed to obtain income from the non-agricultural sector. Results suggested that the shift seemed to be sectoral and connected to progressive diversification; however, and especially for group 3, they often needed to work in industrial sectors under “distress” conditions. Thus, to understand the dynamics of livelihood diversification we need to observe the dynamics closely, not only from a sectoral perspective, but also by obtaining field-level (e.g. village, household and individual) information through intensive surveys.

5. Conclusion

Livelihood diversification has been understood from various perspectives. Most commonly, the diversification has been reported from sectoral dynamics, such as switching from agricultural to non-agricultural activities. The problem in many previous studies has been that they have failed to capture diversity in the field and have often overlooked subsistence activities that are common in rural villages in MMSEA. They have also mainly focused on financial activities. Actually, in many studies, income diversification is mostly used to measure livelihood diversification [8, 49, 67, 68, 69]. Although there are many methods for measuring livelihood diversity, it is necessary to consider the structure of the society and household carefully. Otherwise, an attempt to obtain a
measurement easily will fail to capture the dynamics, and integrating information from detailed field surveys is indispensable. 

The case studies illustrated that rural people in MMSEA have experienced dramatic changes in recent decades. Throughout these changes, they had to adapt their livelihoods to new situations and to diversify their livelihood activities, even under conditions of distress or progressive diversification. The transportation network in MMSEA has recently become dense and its impacts will be greater in isolated villages that have never experienced sweeping globalization, and it is important to balance rural livelihoods and the surrounding environment. Studies of livelihood dynamics are essential in this situation, and intensified focus on livelihood diversification is needed to promote sustainable development in this region.

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