

## Interim survey report on livelihood transition studies in Pursat province, Cambodia

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**Abstract:** Rural livelihoods around the world drive and reflect changing environmental regimes and political economic transformations. In Southeast Asia where rural small holders are densely habited, livelihood systems of these populations are mostly based on the operational interface between the environment and society. Presently, rural livelihoods in Southeast Asia are rapidly changing basically from subsistence-oriented to market-oriented system, and shifting from on-farm to off-farm sectors to generate more cash income. This study is to figure out how the benefit of market- and industry-driven economic development spread into rural people and how to mitigate its adverse impacts on rural society. The study was conducted in Pursat Province, Cambodia as it is a rich diversity in the biophysical environment, and comparatively, it has a rather short development history. The results present the diversity of livelihood in the whole province which is reasonably classified into seven zones-lake zone, coastal zone, coastal low land zone, low land zone, low land upland complex zone, mountain zone and upland zone. In addition, the density of population in the area has been changing back and forth within the seven zones. However, it is not very clear what socio-demographic characteristics differentiate groups of household, so the detail finding will be identified in the next survey.

**Key words:** Livelihood transition, diversity in livelihood option, further studies.

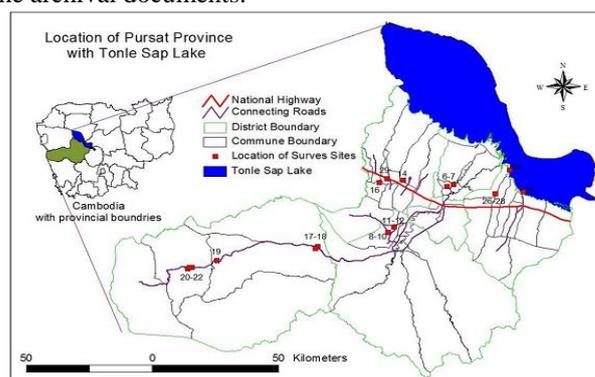
### Introduction

Rural livelihoods around the world drive and reflect changing environmental regimes and political economic transformations. In Southeast Asia where rural small holders are densely habited, livelihood systems of these populations are mostly based on the operational interface between the environment and society. The livelihood systems play substantial roles in achieving natural resources-dependent sustainable development when self-ordered livelihood systems with the supports of good governance well function, and this mechanism does not properly works once either self-ordered livelihood systems or good governance collapse (Saphangthong and Kono, 2010). Rural livelihoods in Southeast Asia are rapidly changing basically from subsistence-oriented to market-oriented system. Subsistence crop production has been replacing by commercial crops and labor allocation of rural household is shifting from the on-farm to off-farm sectors to generate more cash income.

This study is a part of a broader study of livelihood transition in rural Southeast Asia. Broader study focuses livelihood transition in rural Southeast Asia, aiming at examining the form, process and consequences of livelihood transition particularly from the viewpoints of natural resource management and social dynamism. One of the remarkable points of this study is the scope of livelihood transition study. So far, many studies focus on changes in livelihood and examine the opportunities and risks that rural household are facing (Kono *et al.*, 2009, Doppler *et al.*, 2006). These studies figure out how the benefits of market- and industry-driven economic development spread into rural people and how to mitigate its adverse impacts on rural society. It is also true, however, that the on-going changes of rural societies in Southeast Asia are much more holistic and are not limited to the economic activities only. Social domain is widened from local-based to global-based and people's career development depends more on public institutions rather than family network. These social changes are undoubtedly closely connected to changes in economic activities and affect the form, process and consequences of livelihood transition. The livelihood transition in this study covers the overall changes in livelihood systems.

### Materials and Methods

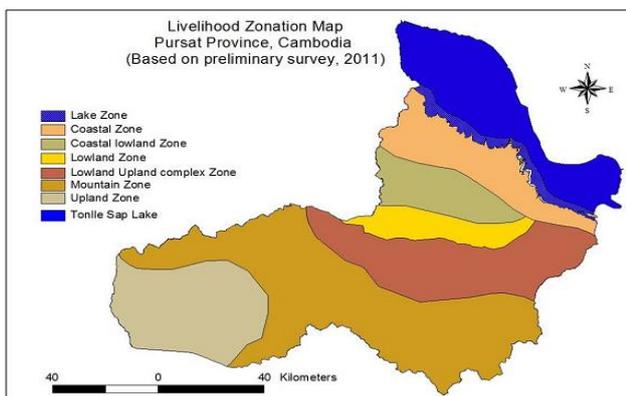
**Study area:** After the preliminary surveys in December 2010 and March 2011, Pursat Province/river basin of the Cambodia has been selected as the study region. Pursat Province is located from 11.84° to 13.01° north latitude and from 102.70° to 104.40° east longitude from Tonle Sap Lake from the Northeast to boarder of Thailand towards the Southwest (Fig. 1). The provincial head quarter Pursat city is connected to the Capital of the country Phnom Penh through national highway no. 5 and southern end of the Veal Veng town and Thai border can be accessed with the newly constructed earthen road. The main reason for selecting this area is because of appropriateness of the area as a good representative of rural Southeast Asia for the study of rural livelihood transition. The area is very suitable for carrying a livelihood transition study because of the two main reasons. First, the area has a rich diversity in the biophysical environment including the lakeside coastal area, lowland and mountainous area. Second, comparatively, it has a rather short development history. The population density of the area at the beginning of the 20th century was less than 20 persons/km<sup>2</sup> (Delvert, 1958). Most of the area was covered with dense forest until the 1960s. Currently various types of livelihood activities are going on and rapidly changing within very short period. So for all these reasons this area is very suitable for exploring the whole process of development depending on the memory of people in addition to utilizing the archival documents.



**Fig. 1.** Location map of Pursat Province, Cambodia

## Results and Discussion

**General description of the Province:** Population is concentrated in the coastal and lowland zones reflecting longer settlement history and better access to market and road network. The family size is smaller in the upland and mountainous zones. This probably suggests the dominance of newly married family. The percentage of house with tile roof is higher in the coastal lowland, lowland and lowland/upland complex zones, while the percentage of house with zinc roof is higher in the coastal and upland zones. Tenant and small-scale rice-grower is rather popular in Krakor district where farmer cum fishermen has been a main livelihood system. Aquaculture is popular in the lake and coastal zones. The elementary and junior high school attendance is 80% or more, but some communes in the lake, coastal, upland and mountain zones shows lower attendance. The percentage of women who delivered a baby by service of midwife shows a big difference among the communes, less than 10% in some and more than 80% in others, and comparatively high in the coastal lowland and lowland zones and low in the lake, coastal, upland and mountain zones. The percentage of children aged 9 to 12 months who have received full immunization is more than 80% at almost all communes. Work away is most popular in the coastal lowland zone, followed by the coastal and lowland zones. In-migration is popular in the upland and mountain zones, while out-migration is popular in the lake, coastal, coastal lowland zones. The rainy season rice yields do not significantly different between zones. They are higher along the mainstream of the Pursat River, around 3 t/ha, and lower in Krakor district, around 1.5 t/ha. Dry season rice growing is practiced only in the coastal lowland and lowland zones. The spatial difference of dry season rice yield is similar to that of wet season rice yield.



**Fig. 2.** Draft livelihood zoning map of Pursat province, Cambodia based on preliminary survey

**Diversity in livelihood options/strategies:** Based on the spatial differences in biophysical setup from Tonle Sap Lake to the mountain region, different farming and fishing activities with various ways of livelihood patterns can be seen. Currently adopted livelihood strategies also have gone through various ways of transformation in the past. Thus from this point of view, whole province can be roughly divided into seven zones (Fig. 2) based on the available natural resources, their accessibilities, currently

adopted livelihood strategies and the process of transformation to date. Brief descriptions of each zone are as follows.

**Lake zone:** This is completely water-based zone. This zone is located on Lake (Fig. 3). Fishermen are living in this zone on floating houses. Major livelihood activities are fishery, aquaculture and fish processing. Fish catch has decreased during the last 10 years. Fish processing including prahok, p'ok and dry fish (treng ngiet) making declined more sharply because of selling fresh fish become popular. The people in this zone seem very mobile, both inward and outward migration. Some rich households have recently shifted their livelihood to land-based systems.



**Fig. 3.** Lake zone

**Coastal zone:** This zone is immediate next to the pure water based zone (Fig. 4). People in this zone generally live on land but their livelihood activities are based on both land and water systems. People in this zone adopted farmer cum fishermen livelihood though they gradually have been shifted their livelihood more on farm-based. Rice productivity is still low and fish catch is declining. Working away at Thailand and Phnom Penh emerged as the popular job for the young generation.



**Fig. 4.** Coastal zone



**Fig. 5.** Coastal lowland zone

**Coastal lowland zone (intensive and commercialized rice zone):** This zone is immediate next to the coastal zone (Fig. 5). This is pure land based system. This zone has the longest history of human settlement in this province. Most of the areas of this zone located near to the Pursat market center. The main livelihood activities have been rice growing supplemented by fishery and sugar palm collection in the past, which have been replaced by livestock and aquaculture recently. Rice yield increased owing to the spread of new rice cultivars and chemical

fertilizer, and rice growing has been commercialized in recent days. Working away at Thailand and Phnom Penh as wedged laborer is also popular in this zone.

**Lowland zone:** This zone is similar to the zone number three in many regards. However, in regards to the development history this zone has relatively shorter history than to the zone number three. Beside the development history, another difference is that people living in this zone did not generally do fishing activities in the past too. This zone was reclaimed in the 1950s and 60s. Rice growing has been the predominant livelihood activities since then. Owing to large farm size, there has been surplus production. The innovation of rice trading network in the 2000s further commercialized rice growing in this zone (Fig. 6). They introduced marketable cultivars and farm machinery. Working away at Thailand and Phnom Penh emerged as the popular job for the young generation.



Fig. 6. Lowland zone in Cambodia

**Lowland upland complex zone:** This zone is a transitional zone between lowland and upland system (Fig. 7). Both lowland production systems such as rice growing and upland activities such as maize production can be found in this zone of transition. People in this zone depend both on lowland and upland farming for their livelihood strategies. Upland farming shows drastic changes. It was small-scale and subsistence until the 1980s. In 1990s when the trading channels were established, they expanded upland field and started to grow commercial crops such as groundnut and watermelon. Recently cassava growing has been in practiced because of an animal feed factory was established and a big market of cassava emerged. A few young people go to work at Thailand and Phnom Penh.



Fig. 7. Lowland upland complex zone in Cambodia

**Upland zone:** Rural livelihood in this zone area based on pure upland farming system. This zone is on the way of reclamation (Fig. 8). Inward migration mostly from densely populated areas such as Kampong Cham and Kampong Chhnang provinces continues. The major crops are maize, soybean and mungbean.



Fig. 8. Upland zone in Cambodia

**Mountain zone:** This zone is located on the high altitude areas of the province towards the mountainous region (Fig. 9). This zone is very scarcely populated. Both indigenous and recently migrants people from other part of the province as well and other part of the country are living here. However, survey team was able to meet recent migrants only. People's livelihood in this zone mainly depends on forest products and very recently started to grow upland crops such as upland rice, maize and some varieties of beans.



Fig. 9. Mountain zone in Cambodia

**Process of livelihood transition:** The process of livelihood transition also has a wide range of diversity.

In the lake and coastal zones, decline in fish resource and strict regulations of fishing activities such as restriction of many fishing gears seem to be the major driver of livelihood transition. Many fishermen seem to be started to shift their livelihood from lake-based to land-based systems.

In the coastal lowland and lowland zones, the major driver of livelihood transition is the innovation of rice trading network. Rice market shifted from domestic to international markets. This triggered changes not only in rice trading but also in rice production. Rice traders pay more attention to the quality of rice. Farmers widely adopted rice cultivars that are high-valued at the international market. In order to meet the demands and criteria of international market, the whole steps of rice production, processing and trading are on the way of innovation.

In the lowland/upland complex and upland zones, the major driver is upland crop production for agro-industry. Their crop choice totally depends on the market requirement. For the example of cassava cultivation, the operation of the cassava processing factory of the Pheapimex Company in Krakor district since the end of 2010 determined the trend in the research area (the Pheapimex Company got a land concession with the central government in November 2003 that covers more than 315,000 hectares of land in six districts of Pursat and Kampong Chhnang provinces).

Another prevailing driver is work away at Thailand and Phnom Penh. It is more popular in the coastal lowland and

lowland zones, which have the best transportation condition.

**Social dynamism:** Based on the changing biophysical condition of each zone, socioeconomic conditions such as household assets, farm family incomes of people are changing from zone to zone. Nevertheless as discussed above livelihood systems have been changing throughout the province. This suggests besides the changing environmental regimes and political economic transformations there might be underlying social dynamism shared by wider areas behind the ongoing livelihood transition.

It is also interesting that, though there seems to be substantial differences in household income, particularly in terms of cash income, between zones and households, the dissemination of education services in the study area does not reflect these differences. The proportion of pupil go to junior high school is over 70% except some communes in the lake and mountain zones, though the proportion of receiving a service of midwife for delivery is significantly higher in the coastal lowland, lowland and lowland/upland complex zones.

**Research topics for further studies (Potential for further studies):** Environmental and economic transformations in turn affect resources (land, water, fish) management regimes and decision-makers. In particular, changing environmental regimes on the one hand, and political economic transformations on the other have affect the rural livelihoods across a region or country. Rural smallholding households are often the focus of development and conservation intervention; because their responses to variable biophysical and socioeconomic contexts drive resource use and management, and therefore future strategies of local development and landscape change. Many other transformations accelerate the incorporation of rural smallholders into global economies, as both producers of goods and commodities, and as labor. As this intensified incorporation also occurs in Pursat Province of Cambodia smallholders can be expected to adjust their in-place livelihood strategies.

This preliminary survey indicates that livelihood strategies in the Pursat Province have changed a lot over the period, there are increasing proportions of households pursuing two divergent adjustment paths: one of withdrawal of the fishing business and one of agricultural intensification and commercialization. However it is not very clear what socio-demographic characteristics differentiate the groups of household's following distinct livelihood strategies. Additionally this preliminary findings point to the possibility of simultaneous land change, reduction of fish catch situation and infrastructure development are some of the drivers that attracts and/or forced the smallholders to adjust in different ways to their intensified incorporation into global economies.

#### **Potential research questions for further research**

- What types of households are adjusting their livelihood systems and what extend?
- How are households adjusting their livelihood agricultural (farming/fishing) strategies in this globalizing frontier?

- What socio-demographic characteristics differentiate the groups of household's following distinct livelihood strategies?
- Is this adjustment unfolding uniformly or along different trajectories?
- And if the latter is the case, can it be distinguished among households moving in different directions?
- Finally, how these changes may affect the local landscape in the region?

#### **Some specific research topics of this study:**

- 1) Innovation in rainfed rice production and trading
  - Shift of rice market from domestic to international and its consequences
  - Technology and productivity of rainfed rice growing
  - Impacts on farmers' livelihood
- 2) Challenges and potentials of livelihood development
  - Zoning with two spatial direction one from urban center towards the Lake and other from urban center towards the mountain
  - Development process of production/farming and fishing system
  - Challenges and future potential to be developed in the future with different types of livelihood option
- 3) Transformation of trading goods and network in the region
  - Traditional trading route/ means of productions: paddy rice, crops, timber and
  - NTFP etc.
  - trading network of basic goods for living: salt, prahok, oil and so on.
  - Creation of the linkage with outsiders.

The results present the diversity of livelihood in the whole province which is reasonably classified into seven zones-lake zone, coastal zone, coastal lowland zone, lowland zone, lowland upland complex zone, mountain zone and upland zone. In addition, the density of population in the area has been changing inward and outward within the seven zones. However, it is not very clear what socio-demographic characteristics differentiate groups of household, so the detail finding will be identified in the next survey.

#### **References**

- Delvert, Jean. 1958. *Le Paysan Cambodgien*, Mouton Paris. 邦訳は及川浩吉訳. 2002. *カンボジアの農民* (風響社)
- Saphangthong, T. and Kono, Y. 2010. Continuity and discontinuity in land use changes: A case study in Northern Lao villages, *Southeast Asian Studies* 47(4):263-286.
- Kono, Y., Badenoch, N., Tomita, S., Douangsavanh, L. and Nonaka, K. (eds.), 2009. Agency, opportunity and risk: Commercialization and the human-nature relationships in Laos, *Special Issue of Southeast Asian Studies* 47.
- Doppler, W., Praneetvatakul, S., Munkung, N., Sattarasart, A., Kitchaicharoen, J., Thongthap, C., Lentos, P., Tai, D., Gruening, M. and Weber, K. 2006. Resources and livelihood in mountain areas of South East Asia. *Farming and rural systems in a changing environment*. Margraf Publishers, 499p.