Research article

Assessment of Local Livelihood of Forest-Dependent Communities in Cambodia

KOY RA
The University of Hyogo, Kobe, Japan
Email: rarua03@yahoo.com

NOPHEA SASAKI*
The University of Hyogo, Kobe, Japan
Email: nop.kankyo@ai.u-hyogo.ac.jp

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Abstract Forests are important sources of ecosystem goods and services to billion people around the world. As tropical forests are gradually disappearing while population is increasing, the livelihood of forest-dependent communities is being threatened. Cambodia's forest subsector contributed 8.4% to agricultural GDP over the period from 1999 to 2008. Although this figure provides an indication of the importance of forest resources in national development, assessment of the detailed contribution of forest goods and services at the local level is urgently needed so that appropriate intervention and development policies could be introduced. The objectives of this study are to better understand the contribution of forest resources to household livelihood by classifying such contribution to four main forest and non-forest products and to propose a policy recommendation. Questionnaires were developed to interview 600 households in three communes, namely the Takaen, Sangke Satob, and Tumring in Kampot, Kampong Spoeu, and Kampong Thom provinces, respectively. The interviews were performed quarterly throughout the year so as to increase the accuracy of the responses from the households. Our analysis found that forest income contributed 76,892±8,160 riel or 13% of the total household incomes in the first quarter. However, forest income increased to 24% (142,645±17,540 riel), 33% (146,422±16,967 riel), and 31% (122,512±9,693 Riel) in the second, third and fourth quarters, respectively. Other sources of household incomes were agriculture, outside forest, and other income, all together, contributing 87%, 76%, 67% and 69% of the total incomes in the first, second, third, and fourth quarters, respectively. These findings suggest that forest resources are important sources for the survival of forest-dependent communities. It is recommended that incorporating forest resources into the development planning with the active participation of local people could contribute to sustainable development while protecting the forests.

Keywords forest income, dependence, livelihood, ecosystem

INTRODUCTION

Forests are important sources of ecosystem goods and services to billion people around the world. As tropical forests are gradually disappearing while population is increasing, the livelihood of forest-dependent communities is being threatened. Foreseeing the urgent needs for forest protection, roles of tropical forests for climate change mitigation and sustainable development have been increasingly recognized by world leaders through their efforts to reducing deforestation and forest degradation. The Copenhagen Accord of the United Nations Framework Convention on Climate Change (UNFCCC) recognized a new scheme, the REDD+ or reducing emissions from deforestation and forest degradation, conservation of forest carbon stocks, sustainable management of forests, and enhancement of forest carbon stocks as cost-effective measures for climate change mitigation and sustainable development (Sasaki and Yoshimoto, 2010). At the 16th and 17th Conference of the Parties to the UNFCCC, biodiversity and socio-economic safeguards was one of

the major components of the REDD+ negotiations because it is an important component for achieving the REDD+ objectives.

Extreme weather such as storm, floods, and droughts resulted from the impact of climate change has resulted in decline of agricultural productivities compared to that in the normal year (Heng and Pech, 2009). The decline in agricultural productivities causes more poverty to local people. In order to cope with these natural disasters as well as to improve their livelihood, local people adopted many strategies including increasing their activities for collecting various products from forests and nearby. Activities of local people for collecting various products occur differently throughout the year. For instance, in Kupe, the South of Cameroon, local people increased their activities for collecting forest and non-forest products during the rainy season after crop cultivation because there was little work in the farms except waiting for food crops to mature (Ngane et al., 2012). The situation is not different from local people in Cambodia where about 85% of the total population are farmers. Forests are also important for local livelihood in Cambodia. In addition to providing services, forests are important sources of food, medicine, construction material, and firewood for household consumptions and income generation in Cambodia. Cambodia's forest subsector contributed 8.4% to agricultural GDP over the period from 1999 to 2008 (Theng and Koy, 2011). Unfortunately, rapid deforestation and forest degradation driven by rapid economic development and growing population have put pressure on the resource availability and therefore assessment of the dependency of local people and how their activities for collecting forest and non-forest products is required so that appropriate policy interventions could be adopted.

OBJECTIVES

The objectives of this study are to assess the contribution of forest resources to household livelihood and seasonal variation of this contribution throughout the year.

METHODOLOGIES

Study site: In order to reduce biases in our assessment, study sites were carefully selected taking into account such factors as deforestation rate, threats from industrial cultivation, and distance of local people to the forests. The three selected communes are Takaen, Tumring, and Sangke Satonin Kampot, Kampong Thom, and Kampong Spoeu provinces, respectively (Fig. 1). It was observed that a large rubber plantation has emerged in the site selected in Kampong Thom province while no rubber plantations were found during field survey in other two sites. Based on forest cover changes published by Forestry Administration (FA, 2011), annual deforestation rates in the three provinces from 2006 to 2010 were 0.8%, 0.7%, and 0.3%, respectively. In Tumring commune, some of forest area was converted into rubber plantation.

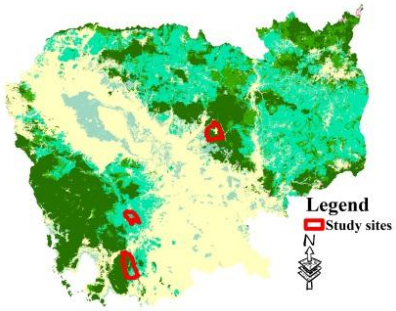

Fig. 1 Map showing study sites

Household selection: National Institute of Statistic (NIS) defined household as a group of persons who commonly live together and take their meals from a commons kitchen unless the exigencies of work prevented any of them from doing so (NIS, 2007). This definition was taken into account for

identifying household for this study. Two hundred households were selected in each study site; and so a total of 600 households were interviewed for this study.

To facilitate the selection of household for survey in each study site, complete lists of household were obtained from village chief prior to carrying out the field work. The first household was randomly drawn from the list while the subsequent households were selected based on the interval of each site.

Interview justification and data collection: Local people in Takaen, Tumring, and Sangke Satob communes have practiced many livelihood activities throughout the year. These activities change seasonally as shown in Fig. 2.

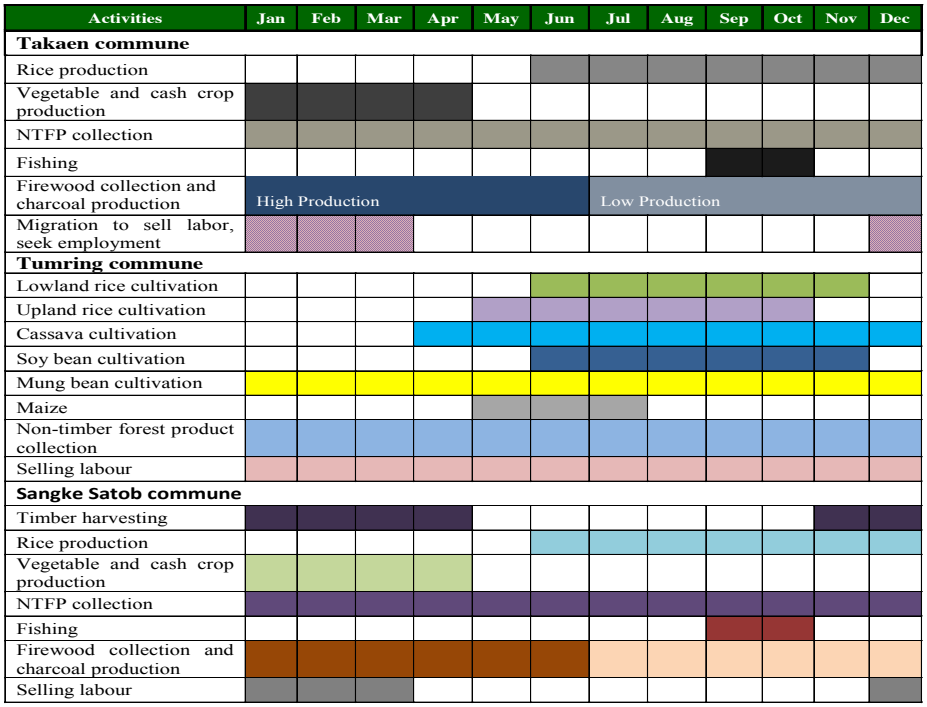

Fig. 2 Livelihood activities in Takaen, Tumring, and SangkeSatob Communes

As livelihood activities change seasonally, data on household income should be collected seasonally. For this study, questionnaire was carefully designed to collect seasonal data of the same household every 3 months (quarterly based interview). Therefore, better data and information were collected. Questionnaire was designed to focus on income generation from four main income sources: i) forest (direct, derived, service payment from forest income); ii) agriculture (crop and livestock); iii) outside forest (fish, aquaculture, and other from non-forest area); and iv) other (wage, own business, and other income). The first data collection was done in January for income generation between October and December, the second, third and fourth interviews were done in late April for income generation from January to March, July for income generation from April to June), and October for income generation from July to September, respectively.

Data analysis: Although 600 households were interviewed in the first round, not all households were interviewed at the subsequent rounds because some of them were not available during the field surveys. For this analysis, only data of households that were interviewed at all four rounds were analyzed. So far, 518 households or 86.3% were interviewed in all quarters.

RESULTS AND DISCUSSION

Income generation in each study site: The study found that the annual average household income