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主 論 文 の 要 旨

論文題目

The Hidden Value of Non-Timber Forest Products towards Poverty Alleviation and Forest Conservation: A Case of Phnom Prich Wildlife Sanctuary, Mondulhiri Province, Cambodia.

(貧困削減と森林保全に向けた非木材林産物の隠された価値:カンボジアにおけるモンドゥルキリ県プノンプリチ自然保護区の事例)

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論 文 内 容 の 要 旨

As long as assessed by conventional methods, part of the value of non-timber forest products (NTFPs) could be missed, with the result that policymakers would regard forests as being less important. This study clarifies the hidden value of NTFPs from the viewpoint of poverty alleviation and forest conservation. This dissertation organizes to reach four objectives as follows: (1) to explore current utilization and management of NTFPs in Phnom Prich Wildlife Sanctuary, Cambodia; (2) to classify NTFPs in household livelihood strategies and its determinants; (3) to clarify how economically important NTFPs are to rural poverty alleviation and households' vulnerability to poverty; and (4) to estimate the value of NTFPs' incentives for forest conservation. However, this dissertation is organized into eight chapters.

Chapter 1 introduces the background of the study, Cambodia context, problem statements, research objectives, and significance of the study.

Chapter 2 introduces the concepts and theoretical framework according to the study's objectives. The justification of this study is that it reveals the hidden value of NTFPs from perspectives of poverty alleviation and incentives for forest conservation. Evidence from other empirical studies is used to identify the key questions of the study. Methodologies and approaches from different scholars are reviewed.

Chapter 3 explains the overall methods and data collection related to this study. The reasons for selecting Phnom Prich Wildlife Sanctuary to carry out this study are described. Furthermore, the procedures for selecting sample households are explained. Interview quality control and enumerator management are similarly explained. Likewise, the approaches to analysis are illustrated according to the study's objectives.

Chapter 4 explores the current utilization and institutional management of NTFPs in Phnom Prich Wildlife Sanctuary, Cambodia. This study found that rural households living in Phnom Prich Wildlife Sanctuary highly depend on forest resources for their livelihoods. Indeed, many NTFPs provide vital benefits to local livelihood, especially during the off-season when local people are free from farming. Even there are more than 900 types of NTFPs listed in the declaration of the Ministry of Agriculture, Forestry, and Fishery (MAFF-Cambodia), this study identified fuel wood, bamboo shoots, prich leaves (*Melientha suavis* Pierre), solid resin, bamboo poles, liquid resin, wild honey, and orchids as the most important NTFPs in PPWS for local livelihoods. Many NTFPs were self-sufficiently collected and consumed by sample households. Also, NTFPs provide cash savings to many households. People sell NTFPs only the markets and local traders are available at their locations. Regarding the institutional management of NTFPs, the local institutions play greatest role to achieve the management of more NTFPs, since the external institutions are interested only a few NTFPs. Thus, utilization of NTFPs is not sufficiently considered when developing policies or management plans. Considering the importance of NTFPs in the livelihood and well-being of local people, it is a serious mistake that NTFPs have not yet received attention from the government and from international donors for their national policies and development agendas.

Chapter 5 aims to classify NTFPs in household livelihood strategies and its determinants. This study identifies four different household livelihood strategies of NTFPs such as subsistence strategy, supplementary strategy, diversified strategy, and specialized strategy. This study reveals that sample households use fuel wood as a subsistence strategy. Many sample households collect prich leaves and bamboo shoots as a subsistence strategy and as a supplementary strategy for others. Bamboo poles were used as a subsistence strategy for many sample households, and as a diversified strategy for a few other households. Orchid flowers were only used as a diversified strategy. Solid resin was used as a supplementary strategy for many sample households and as a diversified strategy for some households. Liquid resin was used as a diversified strategy for many sample households and as a specialized strategy for a few other households. Wild honey was used as a diversified strategy for many sample households and as a supplementary strategy and specialized strategy for a few other households. Overall, geographic status, household capital, and households' characteristics were found to be the most important factors when determining NTFP's use and management style for a household livelihood strategy.

Chapter 6 addresses the following three research questions were addressed: (1) How much hidden economic value do NTFPs have?; (2) Does the value of NTFPs contribute to rural poverty alleviation; and (3) How important are NTFPs for responding to household vulnerability to poverty? This study clarifies the hidden economic value of NTFPs from the viewpoint of poverty alleviation. Though limiting to data in 2015, annual cash income per sample household in Phnom Prich Wildlife Sanctuary derived from derived from selling liquid resin, solid resin, wild honey, orchids, bamboo poles, bamboo shoots, prich leaves, and fuel wood was US\$755, US\$296, US\$755, US\$125, US\$47, US\$6, US\$30, and US\$0 respectively. Then, by adding subsistence use value, annual income of respective NTFP increased to US\$768, US\$296, US\$768, US\$126, US\$180, US\$28, US\$98, and US\$343. The role of NTFPs in rural poverty alleviation are as follows: first, though the share of subsistence use is significantly varied from type to type among NTFPs, subsistence use value of NTFPs accounts for 35% of income from NTFPs and 16% of household income on the basis of per capita. Second, for low-income households (33% of sample households), NTFPs collection can prevent the poorest from falling into deeper poverty. For medium-income households (33% of sample households), without assessing subsistence value as contribution of NTFPs, 33% of them will turn close to the poor. Medium-income households will almost turn the poor if income from NTFPs were not included for assessing. Third, NTFPs are important for dealing with multidimensional poverty. Results of this study, it is of interest that a few shocks such as labour force shortage and social exclusion constrain NTFPs collection, while local people could collect more NTFPs to cope with other shocks such as lack human capital, less saving, rising food prices, and natural disasters.

Chapter 7 estimates the value of NTFPs' incentives for forest conservation in PPWS. This chapter responses to three research questions as follows: (1) What are the current forest conservation practices in Phnom Prich Wildlife Sanctuary?; (2) Does extraction of NTFPs incur incentives for forest conservation activities?; and (3) How much is the value of NTFPs from its' incentives for forest conservation activities? This study demonstrates that Government, international organizations, and community-protected area play different roles in forest conservation such as forest maintenance, forest protection, and reforestation. This study found that income from NTFPs creates the incentives for local people's participation towards forest conservation in various ways. Income from NTFPs motivates local people not collect the critical part of the plants that affect the growth or reproduction. Income from NTFPs

motivates local people to join in forest protection and to contribute money for forest patrol. Also, income from NTFPs encourages local people to participate voluntarily in tree planting and weeds removing from natural growth. Additionally, this study found that annual value of NTFPs as incentives for forest conservation was around US\$0.95/ha or US\$95/km² in Phnom Prich Wildlife Sanctuary, Cambodia. Without the encouragement of local livelihood improvement through extraction of NTFPs, government and INGOs are going to pay higher costs to conserve standing forests.

Chapter 8 provides a conclusion, policy recommendation, and limitations and future studies. This chapter concludes that NTFPs are significantly contribute to rural poverty alleviation because rural households can be lifted from poverty or preventing them from slipping into poverty in the future. The decline in NTFPs leads devastating impacts on the lives of rural families, who are living in the forest sanctuary. This study's findings underline the contribution of NTFPs for creating incentives for forest conservation. This dissertation provides some policy recommendations as follows:

- First of all, NTFPs must have a clear position on the policy development agenda. Ministry of Agriculture, Forestry and Fisheries (MAFF-Cambodia) must keep a record inventory about key species and production quantities of NTFPs. Ministry of Environment should develop and implement policies and laws related to NTFPs in the natural resource management on a national level.

- Ministry of Environment should reform the regulation and guidebook on the environmental impact assessment. MoE should include the hidden value of NTFPs from both perspectives of rural poverty alleviation and incentives for forest conservation.

- Relevant ministries and INGOs must promote the extraction of NTFPs with intense management, being intermediate. They can be done in the ways of solving market distance constraint, promoting ability to read, and encouraging community engagement.

- Relevant ministries (Ministry of Environment, Ministry of Agriculture, Forestry and Fisheries, and Ministry of Commerce) and INGOs should consider providing more incentives for forest conservation such as fiscal measure incentives (price support for NTFPs) and technical assistance to enhance the capacity of intensive management.