



# Contribution of Forest Resources to Rural Livelihood of Local Community in Protected Areas of Vietnam - Case of Thuong Tien Nature Reserve, Kim Boi District, Hoa Binh Province

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## 1. Introduction and objectives:

The limited knowledge on livelihood and importance of forest to residents in Protected Areas is the reason why forest management practice has not yet achieved conservation and development objectives. It even sometimes causes conflicts between the Protected Areas and local communities. The research on contribution of forest resources to rural livelihood of the communities living inside or around Thuong Tien Nature Reserve, Kim Boi district, Hoa Binh province bases two criteria: distance to forest (from household's house to forest) and household economics types.



Fig. 1. Communities living inside Thuong Tien Nature Reserve

## 2. Study location:



Fig. 2. Thuong Tien Nature Reserve satellite image

Thuong Tien Nature Reserve covers an area of 7,300 hectares located in 3 communes including Thuong Tien and Kim Tien communes of Kim Boi district, Quy Hoa commune of Lac Son district. It provides water for downstream areas of Lac Thuy and Kim Boi district, Hoa Binh province. The buffer zone of Thuong Tien Nature Reserve covers 4,308 ha. A total of 8,149 people live inside the buffer zone, and a further number of 2,416 people live inside the nature reserve itself (Nguyen Hong Quan, 2003). The inhabitants of the nature reserve and buffer zone belong to the Kinh and Muong ethnic groups, and practice both wet rice and shifting cultivation.

## 3. Methodology:

The applied methods in the research include analysis of secondary data and survey using Participatory Rural Appraisal (PRA) tools: household survey (one hundred sixteen households), group discussion and expert interview.

## 4. Result and Discussion:

The research results show that the major livelihood source of residents living inside or around the Nature Reserve is forest resources exploitation, namely timber, fuel-wood, bamboo and medicinal plants collection as well as raising animals in forest.



Fig. 3. Timber extraction and fuel wood extraction



Fig. 4. Bamboo shoot extraction and Castle grazing

Table 1. The Correlative equation on the dependence on the forest regarding the position and household economy

No	Position from the NR	R <sup>2</sup>	Correlative equation	No	Household economy	R <sup>2</sup>	Correlative equation
1	Strictly protected area	0,787	LnY=3,489+0,698LnX	1	Households of good living standard	0,375	LnY=6,578+0,404LnX
2	Rehabilitation zone	0,739	LnY=4,071+0,636LnX	2	Households of medium living standard	0,474	LnY=6,601+0,378LnX
3	Buffer zone	0,492	LnY=4,453+0,605LnX	3	Poor household	0,560	LnY=1,158+0,913LnX

The analysis of contribution of forest resources to total income of those households relates distance to forest and household economics types through finding out the correlative equation between total income of surveyed households and incomes from forest and forest land.

The statistical results show that the correlation between total income of surveyed households and incomes from forest and forest land is from relatively strong to very strong with coefficient R<sup>2</sup> which ranges from 0.375 to 0.787. This means from 37.5% to 78.7% of total income fluctuation of households is explained by income from forest and forest land. The research findings also reveal that the nearer people live to forest the more important forest resources are to total income, especially poor households.

## 5. Recommendation:

Recommendation for solution packages is given with the aim of helping the Nature Reserve and local communities to promote the implementation of both conservation and livelihood development objectives in the research area.

Table 2. Solutions of Win - Lose model

Win - Win Household economy development and effective management of forest resources	Win - Lose Household economy development but not effective management of forest resources
<ul style="list-style-type: none"> <li>❖ Develop biogas models</li> <li>❖ Encourage forest plantations, forest protection</li> <li>❖ Grass plantation for husbandry</li> <li>❖ Develop the model of planting rattan under forest coverage.</li> <li>❖ Plant <i>Chukrasia tabularis</i> tree</li> </ul>	<ul style="list-style-type: none"> <li>❖ Training on sustainable bamboo shoot extraction.</li> <li>❖ Develop forest plantations</li> <li>❖ Develop ecotourism</li> <li>❖ Use fuel - efficient stoves</li> </ul>
Lose - Win Effective forest resource management but household economy isn't developed	Lose - Lose Household economy is not developed and forest resources is reduced at the same time
<ul style="list-style-type: none"> <li>❖ Plan castle grazing areas</li> <li>❖ Use concrete houses instead of wood houses</li> </ul>	

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