

## Chapter V

### Attributes of Common Pool Forest Resource in Van Tien Village

As discussed in Chapter 2 and described in the conceptual framework, the attribute of the common forests is a component that gives incentives to co-users in using and managing them. In this chapter, the status of the forest base and its management of the locality will be generally described. Also, some attributes of the forests relating to the forest management practices by the village will be analyzed such as subtractability, excludability, size, proximity and scarcity.

#### 5.1 The status of the local forest

The total forestland of the commune is 2991.9 ha. Of that, natural forest area is 1537.7 ha; afforestation area is 559.2 ha; barren hill area is 895.2 ha. The natural forest occupies biggest area, however, almost is poor secondary forest. The complex of animal and tree of the forests includes popular species shown Table 3 below.

Table 3. Popular animal and plant species of the forests and their functions

Species		Ecological function	Economic function
Local name	Scientific name		
<b>Tree</b>			
De nep	<i>Castanopsis boisii</i>	Good natural germination, pioneer tree after clear cutting	House construction, edible seeds, firewood
Den	<i>Xylopiya vielana</i>	Well germinated under secondary forest.	Ordinary tools, firewood
Binh linh da	<i>Vitex piereana</i>	Soil protection	Medical plants, firewood
Muong chan	<i>Zenia insignis</i>	Improved soil fertility	Fodder, firewood
Cha dam	<i>Homalium sp.</i>	Soil protection, soil fertility improvement	Firewood
Boi loi	<i>Litsea glutinosa</i>	Pioneer tree, well	Essential oil for medicine,

		germinated by seed and brunch	industry
Thong nhua	<i>Pinus merkusii</i>	Soil protection, esp. in high acidity and dry soil	Resin for industry, painting, colophon
Bach dan	<i>Eucalyptus</i> sp.	Cover on barren land, soil protection	Pulp production, fiber and firewood
Truong vai	<i>Nephelium mellipherum</i>	Dry and bad soil tolerance, soil protection	Firewood, fodder
Thau Tau	<i>Aporosa sphaerosperma</i>	Pioneer, greenbelt in forest fire	Small timber, firewood
Sen		Swamp plants, indicator plant	High nutrition in seeds, create good environment for water livings
<b>Medical plants</b>			
Thach xuong bo	<i>Acorus gramineus</i>	Indicator for river bank or humid soil	Medicine for headache, sore throw
Cu mai	<i>Dioscorea persimilis</i>	Light demanded, found in natural secondary forest	Edible flour, good medicine
Ha thu o	<i>Polugonum multiflorum</i>	Viner in barren land, dry condition of soil	Making white hair to black hair
Lau	<i>Psycotica rubra</i>	Swamp indicator plants	
<b>Animal</b>			
Mang TS	<i>Muntiacus truongsoneis</i>	New species discovered in Truong Son range, VN	Meat, horn, skin and medicine
Soc den	<i>Ratufa bicolor</i>	Living in big trees forest, lime mountain, seed distribution	Skin, hair and valuable food.
Ga loi lam mao trang	<i>Lophura edwardsi</i>	Central Vietnam	Endemic species of VN, high value in scientific research and conservation.
Ga ri	<i>Gallus galus</i>	Normally found in forest	Food, medicine
Bim bip	<i>Centropus sinensis</i>	Found in shrub, secondary forest	Medicine, food
Ran cap nong	<i>Bungarus fasciatus</i>	Living in savan or stream bank, garden	Medicine, skin in commerce
Lon Rung	<i>Sus scrofa</i>	Living in various types of forest, net on the ground	Food, skin, hair in industry

The dominant species of the natural forest is *Castanopsis boisii*. It occupies over 90 percent of the forest and is secondary tree. Most of it is at ages below 10 years old with average breast diameter of below 20 centimeter. The plantation forest, most is at 3-year old, consist of the only two species such as *pinus merkusii* and *eucalyptus sp.*

In general, the economic value of animal and tree species of the forests is quite low. Last thirty years, the forests had some specious wood species with high economic value namely *Erythrophloeum fordii*, *Nephelium mellipherum* and *Aporosa sphaerosperma* but these species presently disappear because of overexploitation. The village still expected that in the future these species would appear again one the forests would be well protected.

Like other regions, the forests here have been heavily deforested by some reasons, in which war and overexploitation are dominant ones. This is shown through change in forest area over time as follows.

Table 4. Changes of forest resource of the commune

Categories	Year					
	1976	1980	1985	1990	1995	2000
Natural forest (ha)	2,986	1,795	597	184	1,010	1,837
Plantation forest (ha)	0	0	0	80	437	794
Total area (ha)	2,986	1,795	597	184	1,447	2,632

Source: Report from the commune office

The pace of deforestation was very rapid before 1990, just within 15 years, 1976-1990, the lost of forest area is 2802 ha. The main causes of deforestation are war, conversion of forestry land to agriculture one for production and overexploitation and incapable management. From 1990 now, thanks to proper management and supports for reforestation from government and foreign organizations, the forest has been step by step recovered.

Stakeholders involving in managing the forest resource on the commune's territory include the state forest enterprise, forest inspection station, commune authority, village community and households. The state forest enterprise has managed their allocated forest areas under the district's control. The commune has managed the rest area of the forests in its territory through its villages and households. In the past, this area was placed under the district administration's management. The commune was allowed to participate in this management as the "tool" of the district without any rights on it. The inspection station is responsible to monitor the enforcement of forestry law and policies of the state in the district's territory, under the control of the General Forest Inspection Department.

Van Tien, one of three villages of the commune, has the largest forestland area (more than 80% of the whole forest area of the commune). According to villagers, forest in the village is grouped into two kinds: the "village" forests (forbidden forest) with 330 ha and the "open" forests with the rest of area. Until 1990, the former was placed under the traditional management of the village community, but the latter, under the management of the government.

The forests of the village, including the open and village forest, are classified as poor forests. Most of the forests are secondary forests with their poor flora and fauna in which chestnut tree occupies over 90 %. Most trees of the forests are in ages below 10 years old with their diameter below 20 centimeters. The rest is plantation forest with trees at ages of 3 years. So far, there has had no estimation of the stock of the forests.

Although the forests remain rather poor and their economic value is not considerable, they have an important role in production of farmers in the village and the whole commune as well.

The hill land resources of the forests are used for cultivation. In 1980s, according to the telling of village elders, almost villagers headed the forests to reclaim the forestland for rice cultivation. Because the small paddy field area with unstable

productivity for inadequate water could not meet the needs of villagers for food. Converting forestland into cultivable land made the forests seriously degraded. Until the early 1990s, this tragedy was limited. Presently, about 300 hectares of hill land are allowed to use for cultivation. The large unused hill land area will be able to meet the increasing needs for land for cultivation when the population increases.

Water source from the forests has a decisive importance to villagers in cultivation because it determines productivity of crops. This was revealed through the improvement of productivity of some main crops of the commune as follows.

Table 5. Annual average productivity of some crops in 1990, 1995 and 2000 (100 kg / ha)

Crop	Year		
	1990	1995	2000
Wet rice	20-27	30-34	40-42
Sweet potato	40-45	60-65	75-80
Cassava	70-75	80-85	90-100
Ground nut	30-34	40-45	45-50

Source: Commune office

All villagers also asserted that the increase in productivity of crops principally owing to the security of water source.

In the period from 1970s to 1980s when the forests were heavy degraded, the water sources were depleted. Although the villagers built dam to keep water, the water was still not enough to supply for cultivation, particularly for rice cropping. The lack of water was the main factor causing failure of crops. Since 1990 when the forests were strictly managed and recovered, the water sources have become plentiful. At present, the water is adequately supplied for cultivation and is the main factor contributing to enhancing productivity of crops in the locality. However, in order to

secure water for cultivation during year, the villagers have themselves organized managing these water sources.

The forests supply unlimited source of green manure for cultivation in the village. Since a long time, most farmers in the village have used the tree leaves to make the green manure for their cultivation. Using the green manure can reduce cost for cultivation, therefore improving effectiveness of production. The green manure has become the indispensable input for farmers' production in the village. In addition, the forests provide materials for making leaf-hat, one of handicrafts of the locality.

Besides, the ecological functions such as keeping microclimate moderate, protection against soil erosion and limitation of natural calamities pay an important role in agricultural production in the village as well as the commune as a whole. According to the villagers, since 1995, the calamities such as drought and flood have less happened compared to before.

## **5.2 Attributes of the local forest**

### **5.2.1 Subtractability**

As mentioned in the Chapter 2, subtractability is the difference between drawn and replenished rate of forest resources. So it is dependent on both the capacity of forest to renew and the degree at which users appropriate. Once the rate of use exceeds that of replenishment, the subtractability of the forest starts. For the huge area of the forest, it, in fact, is difficult to define the threshold point at which the rate of use of forest resource begins to be subtracted. However, evaluation of the degree of subtractability was done in the study based on villagers' view. Much of the local forests have been regenerating at rather slow pace from the areas with forest trees cleared and the complex of vegetation and animals is not yet stable. Therefore it is quite vulnerable to any distortion by users. According to the villagers' view, the local forest resource is highly subtractable. They said that in order to restore the forest of the village, there is no better way than to limit the forest exploitation of the villagers

as much as possible. Facing with situation in which there happened conversion forestland to cultivated land by the villagers in the late 1980s, the commune authority has imposed the strict rules to limit converting forestland to agricultural land since the year 1990. The result has been to prevent almost villagers to encroach into forest, making considerable increase in natural forest area and its stock as well. Then the task to zone for regeneration and to green the barren hill areas has been promoted. Up to now most of the barren hill areas have been planted with financial supports from government and foreign organizations and some areas that previously covered by forest and have potential to regenerate have been zoning for regeneration. At present, the most serious threat to the local forest that causes the subtractability is the charcoal exploitation from the non-villagers from neighboring communes. With the advanced tools such as chain saw machines, they exploit at large scale with tons of charcoal, making the forests harmful. The commune authority has had intervention many time, but not successful. It seems that these externalities exceed its power.

Sine the forest restored, the source of water for cultivation and living activities as well has been more and more plentiful. However, in the years when there is heavy drought, the water is still not enough for villager's use for cultivation. To make water secure for cultivation, the villagers still pay much attention in management of water source armed both to moderate amount of water between rainy and sunny season and to avoid wastage of water. With a completely built irrigation system supported by the government and self-management group of water users, the villagers can manage the water source well. This helps to reduce the subtractability of water resource.

### **5.2.2 Excludability**

Excludability of the commons forests is their ability to exclude users from accessing to them. Their excludability depends not only on their self-natures but also on the co-users' management system. The differences in the natures of the forests, the village and open forest, result the difference in their excludability.

The open forest is rather huge with their total area of over 2000 hectare. Its topography is rather flat and not complicatedly divided by the streams, so that it is easy for people outside the village to access to it. The open forest has border with many settlements of the neighbor communes and many entrances in which people outside the community can easily enter the forests. Its boundary is not clearly delineated. Previously, there were the landmarks erected along the boundary, but now is no longer. Most villagers themselves do not recognize the forest boundary in some places where the forest borders with the forests of other communes. This makes the users of the village difficult to discover the non-villager's access. In addition, this forest is more than 6 km far from the village community and its monitoring is not good enough because of the villagers' a little attention and thin protector group who are responsible to monitor. In sum up, the open forest has the very low excludability.

In the contrast, the village forest has the clear boundary by a three meters width road made by the villagers, so that any people entering the forest is easily discovered. Its area is small with 330 hectare. It is close to the village's residential areas where the villagers clearly know each other. So it is easy for the villagers to monitor. Moreover, the villagers place their more attention on this forest. As such, the village forest has high excludability. From the knowledge of the villagers, the exclusion of non-villagers is almost absolute from the village forest.

### **5.2.3 Size, scarcity and proximity**

These characteristics affect the subtractability and excludability. The large size of forests along with its richness can help to reduce the subtractability. The scarce forest resources can make competitive uses intense. Consequently, free riding and rule breaking incidents tend to increase, which can make the forests being degraded. Proximity of the forest resource can affect the degree of excludability.

As mentioned above, most of the local forests are the young secondary forest and plantation forest so that most forest products are rather scarce. Most of the villagers said that all kinds of forest products, even firewood, are very scarce compared to the



past. In the past, about ten or fifteen year ago, woods for house building in the village was almost taken from the local forest, however, many of these wood species are extinct and the rest has just regenerated and distributed at the top of mountains. Fuelwood becomes scarce, however, still enough for villagers' domestic consumption not much surplus for trading. With present amount of fuelwood consumed at the local market, it indicates that the sellers have to exploit fuelwood by cutting the living trees. The land that can be converted to arable one is also very scarce. The reasons for that are that much of this kind of land available has been owned, some reserved for regeneration and other planted in denuded hill greening program of the state. The poor forest leads non-timber forest source such as forest products as food, medical plants, animal, and etc to be poor.

One most important kind of forest resource for the villagers is water. It is more and more plentiful once the forest is managed well. Not only the source of water is valuable to cultivation of the villagers, does it help keeping the water of wells in the village stable for living activities. Most of respondents feel that the water is not scarce at all.

The village forest is nearby the village community. One third of its boundary interfaces with the village's settlements. Its area is 330 hectare. These characteristics increase the excludability of the village forest as mentioned above. On contrary, the open forest is more than 6 kilometers far from the village community. Its area is over 2000 hectare. These natures result in its low excludability as discussed above. In short, the proximity and size of the forests affect their excludability.