OVERVIEW
of Protection Forest in Vietnam
and Basis for Identifying Land for Establishment of Protection Forest in the Project Area of
Ha Tinh, Quang Binh, Quang Tri Provinces

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This study was carried out on the basis of requests made by the Director and the CTA of the Project: Forest plantation in Ha Tinh, Quang Binh and Quang Tri. That is to systemize current regulations and laws that would influence the management and protection of the remaining planted and protection forests, to recommend criteria that could be used for selecting land for establishment of protection forest in the project area and to give recommendations that could help to make the project planting activity correctly targeted, effective and sustainable utilised. The report, as resulted of field investigation and research, will consist of following contents:

- Current policies and judicial basis on the use of forestry and agricultural lands.
- Current laws and regulations on protection forest.
- Policy impact on the management and protection of forest resource and the use of vacant land area.
- Basis and criteria for identifying land in the project area for establishment of protection forest.
- Conclusions and recommendations for implementation.

The period of field study and report writing is May and June 1998.

This report will also be used as foundation for discussion in the coming workshop on questions related to the management and use of products harvested from the production and protection forests in the project area.

During the period of study and report writing, the author has received great and effective support of the project management boards from the central to the grassroot levels as well as the local people. On this occasion, the author would like to express his deep gratitude to organisations and individuals that he has got the honour to work with. The author gives his special thank to Professor/Doctor Nguyen Ngoc Lung, the Project Director, Mr. Georg Arendt, the Project CTA and Doctor Pham Quang Minh, the Project Co-ordinator for all their contributions to complete this report.
PART 1: AN OVERVIEW OF PROTECTION FOREST IN VIETNAM

This part gives a brief on agricultural and forest land policies in applied the renewal process and current regulations on management of protection forests in Vietnam as well as the analyses of impact of these policies and regulations on management and utilisation of the existing natural forest and plantation.

The results revealed from the master study of the macro policies and regulations provide an important basis for solutions toward land use planning for protection forest development under the Ha Tinh, Quang Binh, Quang Tri Reforestation Project.

1. Current policy and legal context for agricultural and forestry lands in Vietnam

The Constitution and the Land Law are two legal documents of extreme importance which clearly indicate the attitude of any political system towards land use.

Due to social and historical changes the first Constitution of Vietnam established in 1946 has been revised three times in 1959, 1980 and 1992. In conformity with the Constitution for each period, also the land policy has been changed and adjusted until the Land Law was issued in 1988 and revised in 1993.

1.1 The Constitution of 1980

The Constitution of 1980 was established when Vietnam had been completely reunified after 20 years of division and the united Vietnam took its way towards socialism. The Constitution of 1980 passed the National Assembly at 18 December 1980 on the 7th session of the IVth National Assembly. It is the constitution of the transition to socialism on a nation wide scale indicating a central and subsidised State-managed economy.

In order to develop the national economy, the Constitution of 1980 recognised two economic sectors: The State-run economic sector under the ownership of the entire people, and the co-operatives sector belonging to collective ownership. It did not yet recognise land use rights of non-state economic entities.

1.2 The Constitution of 1992

The constitution of 1992 was approved by the VIIIth National Assembly on its 11th Session at 14 April 1992. The revised Constitution of 1992 is the result of the economic renovation process of the Party and the Government.

In contrast to the Constitution of 1980, the Constitution of 1992 confirmed the existence of the multi-sectoral commodity economy under a State-managed and Socialist-oriented market mechanism. The multi-sectoral economy is based on ownership of the entire people and collective ownership, but first recognises also private ownership (Article 15).

The objective of the economic policy under the Constitution of 1992 can be seen as "to satisfy material and spiritual requirements, based on the liberation of all productive capacities, mobilising all potentials of State, collective, individual, private and State capitalist sectors under various forms, urging the establishment of the material and technical basis for expanding the economic, scientific and technical co-operation in relation with the world market" (Article 16). All organisations and individuals have the right to set up business enterprises of unlimited size and operational area. All enterprises of all economic sectors are equal before the Law (Article 22).

With regard to land management and land use, the Constitution of 1992 regulates as follows: Land belongs to the entire people (Article 17), only the State is entitled to manage the whole land in accordance with planning and the Law ensuring correct and effective land use. The State allocates land to all organisations and individuals for long term and permanent use (Article 18).

Hence, through the Constitution of 1992, the State recognised and protected the existence and development of individual land ownership for productive purposes beside the two other forms of ownership. This was the key to development of the national economy at this stage. The three above-mentioned economic sectors are...
allowed to develop equally, independently, jointly, co-operatively and competitively before the Law in their production and business activities.

In the Constitution of 1992, the right to own land is seen as follows: The land belongs to the entire people and can only be managed by the State according to planning and the Law, ensuring correct and effective land use. The State allocates the land to different organisations, households, individuals for long term and permanent use. The State protects the rights and legal benefits of the land users. The land user has the right to transfer the land to others.

In due course, allocation of agricultural land to co-operatives has been abolished, and this land was quickly allocated to farmers for management and use. Regarding forest land, the Government plans to allocate 7 million ha of land, previously managed by State enterprises, now stepwise to non-State units and family households.

1.3 The Land Law 1993 and the Land Law 1988

The Land Law of 1993 was promulgated right after the Constitution of 1992. The regulation for use of different types of land is one of the important aspects of the Land Law, reflecting the on-going reform of different land policies by the Government and the Party.

To reflect the political and economic structure as well as the economic policy of the Constitution of 1992, the first article of the Land Law 1993 regulates that the land belongs to the entire population and is managed by the State (Article 1). This regulation clearly indicates the socialist system of Vietnam. At the same time, the Land Law institutionalises the new line of the Party towards economic development with a multi-sectoral market economy under State management. Compared with the Land Law of 1988, regulations and rules for land use in the Land Law of 1993 have been added and amended to fit the Constitution of 1992. The following changes were made:

- To ensure sustainable development, the new Land Law defines that those who use the land in a sustainable way, in accordance with Law and without disputes will receive land use certificates (Red Book). The State does not recognise the withdrawal of land which has already been allocated to other users. The State policy is to ensure those who engage in agriculture and forestry to obtain land for production (Article 3).

- The State protects the legal rights and benefits of the land user. Family households and individuals with land allocated by the State have the right to transfer, exchange, lease, inherit the land use right and use it as a collateral in accordance with the regulations of the Law (Article 3).

- The State encourages land users to invest labour, material, capital and to apply scientific and technical methods aiming at effective use of land (Article 5). On the other hand, the State strictly forbids encroachment, illegal transfer, misuse and deterioration of the land (Article 6).

While in 1988 the Land Law explicitly listed "agricultural and forest enterprises, co-operatives, agricultural production teams, people's armed forces, State bodies, social organisations and individuals" as land users, the Land Law of 1993 defined only three types of land users: organisations, family households and individuals. By doing so it indicates each entity in a more generalised and clear way, avoiding duplication or missing, and making the definition more suitable for the dynamic character of the market economy. For the first time in Vietnam the concept of "family household" was put into the Law as an entity of land users, reflecting the views and approach of the State of Vietnam to regard the family household as an independent economic unit.

The Land Law of 1988 defined three forms of land allocation: land allocation for long term and permanent use, land allocation for time-fixed term use, and land allocation for temporary use. The Land Law of 1993 retains only one form of land allocation, i.e. land allocation for long term and permanent use. At the same time, the State allowed land lease as a new form under which land can be leased by organisations and individuals, including foreign organisations and individuals.

Thus, the Land Law of 1993 has paved the way for forming two kinds of land: land for allocation and land for lease. While land for allocation is essential to create permanent use of land, land for lease aims at regulating land use to suit each period and to encourage investment from domestic resources and from abroad.

Under the Land Law of 1993, for the first time, the land user has five rights: the right to exchange, transfer,
lease, inherit, and to use land use certificates as collateral. However, with each type of soil and each kind of land user, these principles may be applied in a different way.

Also for the first time in the Land Law of 1993, the State defines different soil types as a basis for tax and other charges, for transfer of land use rights, for allocation or lease of land, for assessing the land value for compensation of damages or for withdrawal of land. The Government regulates the price frame for all kind of soils, for each region and each period of time (Article 12).

Thus, the Government concretised the fact that "land has its own price". It allows the change of land use thus making land management suitable for conditions of the market economy. The price of land is an economic instrument for the land managers and users to get access to the market, while it also is the basis for assessing the equity of land distribution according to planning and the Law. The land price is also a means to assess the value of land use rights for exchange, transfer, lease, heritage and use as collateral.

1.4 Current policy on agricultural and forest land and the practice

1.4.1 The need to revise the Land Law

The Land Law of 1993 has dealt with the requirements of daily life and of the multi-sectoral economy, based on the entire population's ownership, collective ownership and individual ownership, as the Constitution of 1992 has defined. However, as the Socialist-oriented market economy started, there was not yet enough experience on practical matters. The fast development of the economic and social situation now clearly reveals some weaknesses in the Land Law of 1993, as expressed below:

- The Law contains many general regulations which cause confusion for the various sectors and levels in implementation. The National Assembly, the Standing Committee of the National Assembly, the Government, Ministers and other governmental bodies have promulgated more than 40 legal documents for implementing the Law, but this still appears to be insufficient.

- The Land Law of 1993 has clarified policies and regulations for the use of agricultural land, thus contributing to the stability and development of agriculture. Allocation of agricultural land to farmers has been tackled in a satisfactory way. However, forest land has not yet been clearly defined. The concrete question is how to cope with about 14 million ha of bare land. According to the land classification by the General Department of Land Administration, this is unused land. But in practice, the people have used and are using this land for different purposes, without being real owners of it as according to the regulations of the Land Law. This is a gap in the present land use policy and a serious problem which needs to be resolved.

- State administration and management of land has been comprehensively and strictly defined in the Law in terms of contents, authorities and implementing arrangements. But the Law has not yet concretely regulated the State management of land concerning the requirements of the market economy. So there is still no clear legal context for operating real assets, for which the land price becomes significant, e.g. in land conversion.

- The existing regulations of the Law are not sufficient to address many practical matters, such as assessment of the land price in the market economy, e.g. for transfer of land use rights, using land as collateral, solving conflicts over land.

These are the reasons why the Land Law of 1993 should be revised and updated. This matter is presently being studied by the Ministry of Agriculture and Rural Development and other concerned agencies.

1.4.2 Allocation of agricultural land

a-In order to solve the matter of land use with real and legal ownership, presently the State plans to follow the previous land management system, i.e. to allocate agricultural land according to Decree No.64/CP. Allocation of agricultural land under the Decree 64/CP is much easier than its allocation based on existing agricultural land and on available agricultural maps prepared according to Directive 299/TTg during 1980-1995. Farmers have a big and urgent demand of land for food production. In the Northern provinces and in Central Coastal areas, land allocation to farmers was mostly done based on results during the period of implementing the Decision 10 of the Politburo. This is in line with Decree 64/CP, based on which other localities just only announce the duration of land use, the benefits and obligations of the land users according to the Land Law of 1993 without much adjustment. In the provinces of the Highlands and the South, agricultural land allocation is
mainly based on the present status of land use in order to confirm and issue land use certificates down to each individual household.

Until now, nearly 8,000 communes (out of 10,050 communes in the whole country) are in the process of allocation of agricultural land in order to ensure long term and permanent land use to 7.8 million farmers (out of 10.2 million households) covering a total land area of 5.73 million ha. Land tenure certificates have been issued to 4,150 communes, so far, representing 42.3% of the total households (5.1 million households) accounting at 47% of the total agricultural land in the country.

Allocation of agricultural land is handled by the General Department of Land Management. It is expected that allocation of agricultural land will take several more years to consolidate as foundation for long term development.

Some households are not yet holding Red Books, and, therefore, cannot perform the five rights as stipulated in the Land Law of 1993. But in reality are using the land and have settled their production.

b- At present, total agricultural land has been defined including rice fields, crop land and long rotation industrial crop land. However, shifting cultivation on slopes has not yet been defined in the land classification, neither on maps, nor in statistical data and not even on the ground. This land use in reality occupies a relatively large area which has not yet been defined in quantity and is not yet been properly managed in line with relevant policies.

1.4.3 Allocation of forest land

- In contrast to the practice for agricultural land, land use rights have not yet been given for the forest land. So, how to settle it? During 1960-1980, the State declared that forest land should be managed and used by State-owned forest enterprises, which were established to cover almost the entire forest land of a district. So the people who live in the forest areas and practice cultivation of land in one or the other way are in reality occupying and using agricultural land managed by the forest enterprise. Facing this fact, and in line with the recent changes in the economy, the State has promulgated the policy to review and to reallocate part of the enterprises' land to local people for management and use. At the same time, land and forest should be allocated to people for long term use in accordance with the Land Law 1993.

- Land allocation to households and individuals under Decree 02/CP is still facing many difficulties. Planning and use of forest land for the three types of forests (production forest, protection forest and special use forest) in the provinces has not yet been finalised or updated. The conflict between agricultural and forest land use has not yet been settled in a satisfactory way. Food supply in the mountainous and hilly areas is still not sufficient, leading to shifting cultivation practice, even across province borders. So, land allocation under Decree 02/CP has not yet met the present urgent demand for land. According to the statistics of the Forest Protection Department, Within 3 years (1994-1996), an area of 6,060,000 ha has been allocated as follows:

1. Allocation to 327 State-run units: 4,462,000 ha
2. Allocation to 1,677 non-State collective units 536,000 ha
3. Allocation to 334,446 families and individuals 1,060,000 ha

- Present management and use of forest land shows that, according to the stipulations of the Forestry Sector, forest land is the forested land (natural forest and plantation forest) and non-forested land which is planned for tree planting. Bare land which is not to be used for forestry purposes and not yet used for agricultural production should be considered as unused land. In this context, the following question should be answered: How large is the actual area of this kind of land, where is it located, and how is it presently used and managed? This question needs to be urgently tackled in order to remove a big gap in knowledge on land use and management.

- What criteria should be used for defining such land which was previously forest land covered with forest, but which after shifting agriculture or converting forests to illegal industrial crop plantations, became agricultural land at present? If this is recognised as agricultural land then it is obvious that the principle of land use planning and correct use as stipulated in the Land Law 1993 is not guaranteed.
2. Existing laws and regulations on protection forest

The concept Protection Forest appeared and has been used long before in Viet Nam. But until 1996, the Ministry of Forest issued a regulation on management of production forest, protection forest and special use forest that followed by the Decision No 1171 LN/QD dated on 30/12/1986. Only since then, a judicial basis for establishment, management and protection of all the three types of forest namely production, protection and special use ones was created. After a long period, its effective implementation result has created a ground for issuing the Law on Protection and Development of Forest (1991), the Land Law (1993) and the Circular No 02 (1994) on forest land allocation and other related policies.

Below is a summary of the main contents of the current laws and regulations that related to the protection forest with regard to the technical procedures for management. Their impact on the planted and the remaining protection forest will also be analysed as well.

2.1 Summary of current laws and policies that related to protection forest.

So far, there have been many judicial documents issued by the central and local authorities in forms of law, circular, decision that related to protection forest. However in this part, only centrally issued documents which are being legitimately valid for implementation are summarised. These documents listed in the table below:

<table>
<thead>
<tr>
<th>No</th>
<th>Name of document</th>
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<th>Issued date</th>
<th>Type of document</th>
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<td>Law on development and protection of forest</td>
<td>1991</td>
<td>19/08/91</td>
<td>Law</td>
<td>National Assembly</td>
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<td>2</td>
<td>Circular on the application of the Law on development and protection of forest</td>
<td>17/HDBT</td>
<td>17/01/92</td>
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<td>Government</td>
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<td>3</td>
<td>Regulation on management of production, protection and special use forest</td>
<td>1171 LN/QD</td>
<td>30/12/86</td>
<td>Decision</td>
<td>Ministry of Forest</td>
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<td>4</td>
<td>Technical procedures on establishment of protection forest</td>
<td>134 QD/KT</td>
<td>04/04/91</td>
<td>Decision</td>
<td>Ministry of Forest</td>
</tr>
<tr>
<td>5</td>
<td>Circular on the allocation of forest land</td>
<td>02/CP</td>
<td>15/01/94</td>
<td>Circular</td>
<td>Government</td>
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<td>6</td>
<td>Circular on the contracting forest land</td>
<td>01/CP</td>
<td>04/01/95</td>
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<td>Government</td>
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<td>7</td>
<td>The 327 program</td>
<td>327-CT</td>
<td>15/09/92</td>
<td>Decision</td>
<td>Government</td>
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<tr>
<td>8</td>
<td>Law on environment conservation</td>
<td>1994</td>
<td>10/01/94</td>
<td>Law</td>
<td>National Assembly</td>
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2.2 Technical procedure, organisation and management structure for protection forest

2.2.1 Introduction of concepts

Following official concepts and definitions are being used:

(a/ Forestry land: Forestry land is one of the six types of land as defined in Article 11 of the Law on Land (1993). They are: i) Agricultural land; ii) Forestry land; iii) Land for rural residential areas; iv) Urban land; v) Specialised land; and vi) Unused land.

Forestry land is any land identified as being intended primarily for production activity in forestry which include natural forest land, land under afforestation and land used for forest purposes such as afforestation, forest
nurture, forest protection for natural restoration, forest enrichment and including experimental research on forestry.

b/ Forest: This consists of natural forest and plantation on forestry land including forest vegetation, animal and the natural features relating to the forest. (Article 1, Law on Forest Protection and Development).

Forestry land consists of:

- Land of forest cover.
- Land of no forest cover planned for afforestation.

c/ Protection forest: This consists of forest and forestry land which are used to limit harmful climate factors in order to protect the environment and to balance the ecosystem. (Regulation on the management of production, protection and special use forests, 1986)

2.2.2 Purpose, classification and functions of protection forest

a/ Purpose: Protection forest is mainly used to protect the water source, land, to prevent soil erosion, to restrict natural calamity, to regulate the climate in order to contribute to protect the ecological environment.

b/ Classification: The protection forest is classified into following categories:

1. Watershed protection forest
2. Wind-break and anti-sandmoving forest.
3. Wave-break and anti-sea encroaching forest. And,
4. Ecological environment protection forest.

c/ Function: The function of each category of protection forest is stipulated in Article 4 of the Regulations on management of production, protection and special use forests (1986):

- **Watershed protection forest**: To regulate the water flow to limit flooding; to supply water during the dry season; to anti soil erosion for soil conservation, and; to prevent deposition on rivers and lakes.

- **Wind-break and anti-sandmoving forest**: To lessen bad effect of the wind blowing and typhoon; to prevent sand moving to safeguard villages, agricultural land and transportation network.

- **Wave-break and anti-sea encroaching forest**: To stop the waves to shelter construction works on the sea-coast; to stable the alluvium to create new land...

- **Ecological environment protection forest**: To regulate the climate, to prevent pollution in the populated, urban and industry areas.

2.2.3 Ranking protection forest

Ranking according to its critical levels:

To define the critical levels of the watershed protection forest, it is stipulated in Article 5 of the Technical Regulation for Establishment of Protection Forest in the Watershed Area (1991), that the protected watershed area is ranked into three levels according to their need for protection:

- **Level I**: Very critical. This includes areas close to the water source and the river banks, where are endangered by serious erosion, or highly demanded for water regulation and urgently needed for protection. Such areas must be reserved for establishment of protection forest in order to ensure a vegetation coverage of more than 70%.

- **Level II**: Critical. This includes areas where the demand for water regulation is moderate; the soil
erosion lower; the conditions for developing agroforestry production available; the need for soil conservation high. In such areas, production-and-protection combined plantation should be established in order to achieve a vegetation coverage of at least 50%.

- **Level III:** Less critical. This includes regions where the soil erosion is very low; There are potential and need for developing agroforestry production; Need for soil conservation and sustainable land management. In such areas, production-and-protection combined plantation should be established according to agroforestry direction in order to achieve a vegetation coverage of at least 30%.

**b. Ranking method**

- To define the critical level of the protection area, there are eight factors (criteria) to be based on. They are relative altitude, slope, length of slope, distance from the lake or river bank, thickness of the soil layer, soil physical structure, rainfall and raining intensity.

- Each of the above factors have been graded into three degrees corresponding to their destructive impact on the protection. i.e. very dangerous, dangerous and less dangerous. These will match the three protection levels: Very critical, critical and less critical.

- When overlapping these component maps as described above, a map showing different protection areas according to its demanding levels will be achieved.

**2.2.4 Organisation structure for management of protection forest**

**a. Levels of competence for approving the area of protection forest**

The competent authorities for area approval is stipulated by Article 2 of the Circular No 02/CP on Forestry Land Allocation. It says:

- The Council of Ministers (now called the Government) is competent to decide upon areas of more than 50,000 ha, or smaller if it is specially significant to the national benefit or encompasses territory of many provinces.

- The Minister of the Ministry of Forestry (now the MARD) is competent to decide on areas between 10,000 and 50,000 ha and areas within the industry-forestry unions or forest enterprises that belong to the Ministry.

- Chairmen of Provincial People's Committees decide on areas from 5.00 - 10.000 ha or protection forests that encompass territory of many districts.

- Chairmen of District People's Committees decide approve area less than 5.000 ha within the boundary of his or her district.

**b. Management of protection forest**

The organisation of the management board of protection forest is defined as follow:

- For area of protection forest approved by the Government, a Management Board will be established and placed under the authority of the Ministry.

- For area of protection forest approved by the Minister or provincial chairmen, a Management Station established and placed under the provincial Forestry Department.

- Protection areas within Union or Forest Enterprise will be responsible by the corresponding leaders in terms of protection, management and development according to the approved project proposal.

- Protection area within the commune boundary will be responsible by the commune chairman in terms of protection, management and development in accordance with technical advice provided by the local district Forest Protection Unit.
c Allocating forestry land for management of protection forest

Regarding the allocation of forestry land for management of protection forest, it was stipulated by Article 7 of the Circular 02/CP as follows:

- The Management Boards of the protection forest zones, which are instituted in accordance with decision made by the Premier (or Chairmen of provinces and cities directly under the Central Government), are delegated to protect and to develop them according to the approved designs and plans.

- Regarding forest areas which have been handed over to economical units (forestry, agricultural or armed forces...), the leaders of these units are responsible to organise the management, protection and construction of those according to the designs and plans approved by the competent authorities.

- Regarding small forest protection areas within the boundary of a commune or a village, which are not yet designated to any concrete user, the concerned commune chairman is responsible to organise villagers to manage, to protect and to build up them according to technical instruction provided by the State management organisations of forestry in the local area.

- The State allocates afforestation land to organisations, households, or individuals to create protection forest, to enrich or to protect the existing vegetative cover. Besides, the latter are allowed to combine commercial production activities in forestry, agriculture and fishery in the following:
  - Less critical watershed areas.
  - Wind-break and anti-sand moving areas.
  - Wave-break and anti-sea encroaching areas where the alluvial soil is stable.
  - Ecological environment protection areas.

2.2.5 Technical structures

In 1986, the Ministry of Forestry issued the Management Regulation for the three-type forests. However, until 1991, it enforced a Technical Regulation for establishment of protection forest in the watershed area. For the rest three categories: Wind-break and anti-sand moving forest, Wave-break and anti-sea encroaching forest, Ecological environment protection forest, there is no guidelines for implementation until now (1998).

In principle, the Technical Regulation for establishment of protection forest in the watershed area provides general technical guidelines so that other provinces can apply them in-line with their concrete conditions, i.e. to base on it in order to work out technical procedures which are suitable to the management levels as described before.

Therefore, to present and to discuss in this report the technical structures on watershed protection forest (as in Article 8 of the above mentioned regulation) seemed to be suitable and relevant to the need of the Afforestation Project of Ha Tinh, Quang Binh and Quang Tri.

a. For protection forest in the very critical watershed area (Zone I)

- Protection forest in the very critical watershed areas is a ultimate protection forest which is multi-storey and densely structured by many tree species. Its shading coverage is more than 60%. Under the canopy, there is a humus layer and a green vegetation covering the soil. Trees are evenly distributed over the whole area.

- Artificial or natural regeneration is to be promoted in order to restore the status of natural vegetation from class Ib (area covered by small bushes and few trees) to class IV (unharvested mature forest and bamboo forest).

- Planting trees on areas of Ia (bare hills, grassland...) Where possible, it is permissible to plant trees on Ib area. The selected tree species must be site matching. Planting indigenous tree species, thick crown species, long commercial rotation species in combination with fast growing, soil improved and special
b. For protection forest in the critical area (Zone II)

- Protection forest in the critical watershed area is a system of protection forest combined with production. The structure of this must consist of tree species possessing both protective and economical values. Its shading coverage is at least 50% and equally distributed over the whole watershed area.

- Protection is to be promoted in order to naturally restore the status of natural vegetation from class Ic (area with trees scatteredly distributed; the shading coverage is less than 30%; or there are more than 1,000 potentially regenerated trees on one ha) to class IV (unharvested mature forest and bamboo forest) in regions where the natural and socio-economical conditions are less possible.

- Artificial enrichment for the above described area is encouraged in regions where the natural and socio-economical conditions are less possible. Technical solution for enrichment is: Clear the climbing plants; do not clear the green bushes; do not reduce the shading canopy to less than 60%; in areas where trees are unevenly distributed, artificial enrichment should be applied along strips; do not burn the cut vegetation.

- Planting trees on areas of Ia and Ib (bare hills, grassland... area with trees scatteredly distributed...) Technical solution must include selecting site-matching species. Due attention must be paid to selecting species which possess both protective and economical values.

- Forest utilisation: It is permissible to utilise thinning material and other forest products but do not destroy the canopy structure; try to conserve the green vegetation to promote regeneration for protection and production purpose.

- It is permissible to apply selective harvesting of main forest products in matured stands. For planted forest, clear cutting is applied along strips. Replanting is a must right after harvesting.

c. For protection forest in the less critical area (Zone III)

- Protection forest in the less critical watershed area is a system of production forest combined with protection. Its structure consists of tree species planted mainly for economical value and with some protection function; The shading canopy must be at least 30% and equally distributed over the whole area.

- For all operations such as protection, enrichment, harvesting and replanting, the technical solution for production forest is applied.

3. Practical significance of policies on protection forest

Until now, there is no study or complete evaluation of the impact of these regulation and policy upon the protection, management and utilisation of the remaining natural and artificial forests. However in practical, this impact is clear and great with regard to the followings:

3.1 For the Law on Forest Protection and Development

The Law on Forest Protection and Development promulgated in 1991 to replace the Order on Protection of Forest (1972) has manifested a complete and reasonable concern of our Party and Government to the cause

product species is encouraged. Trees must be planted in a mixture and along the contours.

- For the ecologically matured natural forest, harvesting is permissible but this has to be carried out in accordance with the harvesting designs approved by the competent authority. An insurance for possibly natural regeneration after harvesting is a must.

- For planted forest. After the whole planned area is afforested, it is permissible to harvest on the whole area according to harvesting design. It is also allowed to cut trees by strips in the matured plantation according to the approved harvesting design. Replanting right after harvesting is a must.
of protection and development of forest. It is possible to affirm that this Law has been integrated into the people's life and has made an important contribution to the protection of the existing forest resource. Following is cited from a report, of the People's Committee of Ha Tinh Province on 11/05/1998, on the result of implementing this Law during 5 years (1992-1997):

- Increasing the forest cover: Total planned area of forestry land in the province is 368.440 ha (56% of the natural area). Of which, according to inventory figures in 1997, the area with forest is 205.304 ha compared with 189.033 ha (inventory figure in 1990), there is an increase of 8% or 16.271 ha mainly by artificial planting. Therefore, the forest cover has increased from 31% (in 1990) to 34% (in 1997).

- Strengthening the awareness of the people and authority at different levels: The Law on Forest Protection and Development has produced deep awareness on different levels and sectors. Part of the population has been aware of their responsibility to the cause of forest protection. They understood the significant role of forest in their daily life as well as for the whole community and nation. Although the need for forest product is increasing, illegal harvesting, forest fires have reduced. The area of forest is gradually increasing; land is more and more covered by the green colour of forest; the forest coverage is also enlarging. Forestry activity has been and is developing among the people. The system of State forest enterprises is being renovated and strengthened to matching with the present economy situation. The results of land and forest allocation are being promoted. Money is concentratedly invested and reaching households who are planting forest trees. The result of afforestation is becoming better.

- Limiting negative impact on forest: Logging is being tightly controlled, especially with regard to rare and precious timbers and wild animals, from felling to selling. Forest fire is suppressed. Loss of forest area because fire is significantly decreased every year.

Example:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of forest fire</td>
<td>111</td>
<td>279</td>
<td>23</td>
<td>20</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>Area of forest destroyed</td>
<td>80</td>
<td>302</td>
<td>32</td>
<td>23</td>
<td>8</td>
<td>3</td>
</tr>
<tr>
<td>Area of forest destroyed by insects</td>
<td>2,304</td>
<td>1,651</td>
<td>200</td>
<td>837</td>
<td>200</td>
<td>918</td>
</tr>
</tbody>
</table>

- The special forest protection system is being improved.
- The inspection on forestry is being paid with more attention by many sectors and levels. This has resulted in better protection of forest against illegal harvesting. The number of violations on the Law on Forest protection and Development is decreasing. More employment and higher income are created as resulted from the land and forest allocation process.

However, the report also mentioned a number of problems arising from the implementation of the Law:

- There is an overlapping and confusing between the State management function and the Law execution function as defined by the Ministry within the province area.
- There is no clear definition of responsibility of the forest owners, especially the State enterprises.
- The function of State management on forestry of different levels and sectors has not been well executed.
- A number of instructions on law implementation are not unified; overlapping does exist.
- The organisation system in forestry from the Central down to the grassroot levels is not quite clear. The division of State management at different levels is not very concrete.
- The situation in which, the timber traders are rich and the people living near forest are poor still exists. There is no solution that will help foresters and local people increase their income.
3.2 For the Circular on forestry land allocation

- The allocation of forestry land is a just and correct strategy of the Party and Government. This decision was made long before. However, since the emergence of the Law on Land (1993) and the Circular 02/CP (1994), forestry land allocation has been pushed forward and produced distinct results over the whole country. Report of the Forest Protection Department shows that during the last three years (1994-1996), in the whole country, 6.060.000 ha of forestry land have been allocated to:

  - State organisation, 327 units 4.462.000 ha
  - Non-state collective organisations, 1.677 units 536.000 ha
  - Individuals, 334.446 families: 1.060.000 ha

- In Ha Tinh province, of the total area of forestry land 368.440 ha, 295.048 ha have been allocated to:

  - 12 State forest enterprises: 160.000 ha
  - 2 management boards of forest conservation area: 84.235 ha
  - 5 military units: 7.500 ha
  - Co-operatives: 3.938 ha
  - 9.743 families: 39.651 ha

- In Ha Tinh province, after receiving forest and land as stipulated by the Circular 02/CP, these State organisations in their turns have contracted 3.394 farmer families to protect and manage 78.506 ha. As due attention was paid to protect pine plantation, until now 14.000 out of 17.300 ha of pine plantation have been contracted to 2.812 households for protection and management. After contracting, the forest owners have displayed their responsibility and mastership awareness in order to better performing the protection and management work.

- While achieving the above mentioned success, the implementation of the Circular 02/CP also exposes certain shortcomming as discussed in paragraph 1.4.3. For the three provinces involved in this Afforestation Project, there exists a great obstacle. i.e. the boundary of protection forest has not been clearly identified both on the map and in the field. Practically, there is a confusion of forestry land for protection and for production. Hence, when allocating forestry land, the land users do not what type of land they have received and for which purposes. Consequently, there is no policy for investment and neither for benefit sharing from these forest. Thus, people are not eager to receive protection land and forest.

3.3 For the 327 Program

The Decision No 327/CT, is also called the 327 Program, dated on 15/9/1992 of the Council of Ministers (now is the Prime Minister) has been implemented since 1993. During the last 4 years (1993-1996), this program has been adjusted several times with regard to objectives, scopes and target groups. With the Decision No 556-TTg (1996), it has been re-confirmed that this is a long-term national program mainly targeting at restoration and protection of protection and special use forests and focusing to create protection forest by new planting and promoting natural regeneration.

a. Impact of the Program 327 in the whole country

According to evaluation report No 6777/BKH-NN of the 327 Program made by the Ministry of Planning and Investment on 23/12/1996, after four-year implementation, over the country, following results have been achieved:

  - Protection of forest: 1.6 million ha per year.
  - Regeneration: 139.000 ha per year.
- Afforestation (4 years) 397,000 ha or 82.2% of the plan
- Planting industrial and fruit trees: 81,600 ha
- Household garden: 39,230 ha
- Establishment of pasture area: 58,940 ha
- Moving people to project areas: 88,690 ha
- Infrastructure construction
  - Civil road: 4,356 km
  - Classroom, health-care station 99,370 m²
- Land reclaim and improvement 27,000 ha

Total investment to this program is 1,835,358 billions VND, of which:

- Forestry 926,096 billions = 50.5%
- Agriculture 359,284 billions = 19.6%
- Infrastructures 373,323 billions = 20.3%
- Moving people 85,213 billions = 4.6%
- Project management 91,440 billions = 5%

From these figures, it is observed that:

1. Forest area has been better protected. Where forest was allocated and contracted, there was neither illegal cutting nor slash-and-burnt for cropping as there are owners of forest.

2. The area of new plantation is considerably increased. More and more indigenous tree species have been introduced in the plantation.

3. Individual household is an important factor and has become a driving force to successful establishment of protection forest.

b. Impact of the 327 Program in project provinces

Followings area cited from the evaluation report on the implementation of program 327 in Quang Tri province:

Achievements:

- Protection of forest: 5,370 ha
- Regeneration: 2,000 ha
- Afforestation: 6,573 ha
- Industry tree plantation: 1,938 ha
- Garden 140 ha

Total investment during 4 years: 31,015 billions VND, of which,
- Forestry 18.400 billions
- Agriculture 12.615 billions

Efforts have been made to improve seedlings and to introduce indigenous tree species into the composition of planting material. Although it is not very popular and the quality of seedling is not very good but in some projects, reasonable planting composition has been defined, which was suitable to the concrete conditions in the project area. (planting *tarrietia cochinchinesis* in Ben Hai Forest Enterprise or *tectona grandis* in Huong Hoa Forest Enterprise). The project holders have contracted individual household to planting industry species such as rubber and coffee. These plantations have been well managed, thus insuring return from the investment.

On the coastal sandy area: Tree species (*acacia* and *tephrosia*) have been well defined for the 327 program. The survival rate is more than 70%. Although in this region, there exist things for consideration, the program has been effectively executed.

Different patterns for allocating and contracting land and forest to people to protect and to plant trees have been employed. Many farmer families have well implemented the contract. The survival rate of their plantation is 90-95%. The possibility for their plantation to become forest is up to 90%. In working with the people, the project holders have allocated land and forest to the very grassroot level, especially the ethnic peoples, and have paid them as enough as regulated. This has enable people to make more active contribution to the cause of forest protection and development.

There are enough technical designs in all projects. Forestry land and forest have been managed in accordance with the approved site designs. Field inspection and payment have been well carried out.

**Shortcoming of the project implementation:**

- As the ownership of the land was not made clear and there was no concrete policy, there was no persons to protect and manage the trees after planting, plantation were destroyed by cattle and that has called for replanting several times. Afforestation becomes more expensive.

- As concentrated protection area have not been established, afforestation has been scatterredly implemented in a prolonged duration. Species was not diversified. Less attention was paid to indigenous species.

3.4 For the Regulation on Management of Three Types of Forest and the Technical Procedures on Establishment of Protection Forest in the Watershed Area

3.4.1 For the Regulation on Management of Three Types of Forest

- **At the Central level**

To implement this Regulation, right from 1990 over the whole country, three types of forest: Production forest, protection forest and special use forest have been planned.

- Total forestry land: 19.654.900 ha. Of which
  - Area of land with forest: 9.302.200 ha
    - Natural forest: 8.252.500 ha
    - Plantation: 1.049.700 ha
  - Area of land without forest: 10.352.700 ha

Then it was planned as follows:

- Area of land for protection forest: 3.748.700 ha
• Area of land for production forest: 4,925,200 ha

• Area of land for special use forest: 898,300 ha

Together with planning for these three types of forest, the Ministry of Forest (now is the Ministry of Agriculture and Rural Development) and provinces have decided to establish Management Boards of either Protection Forest or Special Use Forest, in line with the division of management levels as highlighted in 1.4.3. Until now, 10 zones of special use forest have been defined and 23 protection forest Management Boards have been established.

• In the three project provinces

Basing on the Ministry's General Guidelines, three provinces of the project have prepared their overall plans for forest development.

Following is an example of Quang Tri province:

Since 1993, Quang Tri has made his Overall Plan for Forest Development until Year 2000 in which, three types of forest have been identified. This Overall Plan has been approved by the Ministry of Forest.

The total area of forestry land in Quang Tri, 306,400 ha has been planned for developing the above mentioned three types of forest.

• Protection forest: 144,500 ha, of which
  
  Natural forest: 50,700 ha
  Plantation: 3,500 ha
  Area planned for afforestation: 81,500 ha
  Others: 8,800 ha

• Production forest: 159,940 ha, of which
  
  Natural forest: 30,500 ha
  Plantation: 8,200 ha
  Area of land without forest: 110,860 ha
  Others: 10,380 ha

• Special use forest: 1,960 ha, of which
  
  Area of land with forest: 300 ha
  Area planned for afforestation: 1,510 ha
  Others: 120 ha

Observation!

• No concentrated zones of very critical and critical protection have been identified in the province. There is only an overall plan. The boundaries planned of area are not accurate and have not been defined in the field. Therefore, every district and commune in the province have nothing to base on in order to decide areas of very critical, critical and less critical for development.

• When discussing with the project management boards of the three provinces, it was agreed that the
national criteria can not be used to classify protection forest within the provinces. Neither the criteria set by the Forest Inventory and Planning Institute for 327 planning.

- When doing the feasibility study of the Afforestation Project in three provinces, this matter was not considered. Therefore, it is now not possible to make village and commune plans while this should have been carried at the same time with land use planning for every commune.

- It was suggested that the Project should, as soon as possible, carry out research to define criteria suitable with the concrete conditions in the project area so that land use planning at commune level should include also area for protection purpose.

3.4.2 For the Technical Procedures on establishment of protection forest in watershed areas

Basing on this Technical Procedures, some provinces such as Hoa Binh, Lai Chau and Son La have interpreted it into concrete implementation procedures for their own provinces. Others have not. This leads to following observation:

- Protection forests established in provinces do not meet standard requirements. There is no composition of reasonable tree species for planting as regulated in the Ministry’s guidelines.

- Regarding research to identify composition of tree species suitable to every ecological zone, there is no concrete instruction made for every province. Therefore, during the past period, they have selected just the species available. Some provinces even established pure stands with existing species such acacia, pine, styrax and **aleurites montana**...

- Technical regulations for management of production forest that was issued by the Ministry in the past is suitable only for the outmoded State Forest Enterprise. It does not suitable for establishing protection forest. So it is observed that until now, within the Forestry Sector, there is no regulation for establishment of protection forest, with satisfactory tree species. Therefore, it is not possible to decide appropriate amount of investment for creating protection forest. The investment today is just based on an **gestimation** and used as an average for the whole country. This is the reason why every province always choose the most easy species to plant on the easy sites first. Therefore, requirements of mixed plantation in the very critical and critical protection areas are not met.

- Plantations so far are not concentrated in the critical areas. This means that the area of plantation in more sloping land is limited. Moreover, suitable tree species and suitable management methodology are not existing.

**PART II: BASE TO IDENTIFY LAND FOR ESTABLISHMENT OF PROTECTION FOREST**

1. Project information related to establishment of protection forest

1.1 Project objectives and activities

The Afforestation Project in Ha Tinh, Quang Binh and Quang Tri (from now called the Project) is funded by the Government of Germany. This is an aid channelled through the German Bank for Reconstruction (KfW). The Project is implemented by GFA in co-operation with the Vietnamese Ministry of Agriculture and Rural Development. The project was approved by the Government by his Decision No 435/TTg on 16/6/1997. The Project implementation period is 54 months (form 6/1997 to 12/2001). After signing, the Project has commenced from July 1997. The aid recipient, and at the same time, the project holder is the Forest Development Department as delegated by the Ministry of Agriculture and Rural Development. The implementing agency is the Department of Agriculture and Rural Developments as delegated by the People's Committees of the three provinces, namely Ha Tinh, Quang Binh and Quang Tri.

a. Project area

The Project covers 32 communes of 10 districts in these three provinces. The total natural area of these 32 communes is 107.776 ha. The area planned for afforestation with project support is 21.00 ha. About 1.000 household with 17.000 persons will participate and get direct benefit from the Project.
b. Project objectives

The Project aims to improve the environmental living condition; to contribute to soil conservation; to improve water supply to reservoirs; to use forest products in a sustainable way as far as ecological and socio-economic efficiency is concerned.

The Project concrete objective is to create 21,000 ha of production and protection forest (half of this area is protection forest and to practice sustainable management of the plantation. Thus, the Project will contribute to increase the forest cover in the project area from 10-12% to 26-28% by the year 2001. To realise this objective, the Project will create employment for about 17,000 local persons. This will help improving the living condition for part of the population in the Project area.

c. Project main activities

To ensure a successful afforestation of 21,000 ha, following activities have been planned:

- To carry out land use planning according to participatory approach.
- To assist the extension network in seed selection, nursery management, plantation management, cattle grazing, farm establishment, credit, monitoring and evaluation.
- To provide inputs such as fertiliser, insecticide, tools... for nursery and afforestation activities.
- To upgrade the infrastructures for afforestation purpose (construct new and improve existing forestry roads).
- To set up a saving fund for farmer households to plant and manage the plantation.
- To establish a credit program for planting perennial and fruit trees.
- To elaborate project approach.

The Project will ensure that plantation will be made by the people themselves. First of all, forestry land will be allocated to farmers. Red book certificate issued for them for long term and sustainable use as stipulated in the Law on Land (1993) the Circular No 02/CP. They will receive seed and other planting material during the first 3-4 years. They will also receive about 2 million VND (equivalent to 625 kg of rice) as payment for their labour input to produce seedling, to prepare soil, to plant trees and to manage plantation during the initial two years.

The Project's target groups are farmers who have been given the land-use right (with red book certificate) to create protection forest. The Project pays due attention to women participation. Each family will receive an average area of 1.5-2 ha. The Project wishes to have 9,820 ha protection forest out of 21,000 ha plantation. To be equal, every household will receive investment for afforestation of not more than 2 ha. This fund will be released during 8 years through the credit and saving system.

The area of land planned for production forest (7,780 ha) will be allocated (not contract as for protection land) to farmers by a period of 50 years. The land recipients will have 5 rights: i) The right to exchange the land with others; ii) The right to 'sell' the land-use right to others; iii) The right to lease the land to others; iv) The right to inherit the land to their successors and v) the right to use the land as collateral for loan. Factors such as the distance between the village to the planting site, the terrain and the tree species will be put into consideration when deciding the payment to farmers' labour.

1.2 Initial implementation results

According to the Project report on project implementation in the second half of 1997, following activities have been carried out:

- Establishing the Project management system from the Central to district and commune levels and select field extension staff.
- Providing training on land use planning and land allocation at micro level for the field staff and on
financial management for the management staff.

- Reforestation on 115 ha (with *acacia auriculiformis*, *pinus merkussii* and *cassia sp.*) according to the Project management methodology.

- Supplying seedlings for reforestation on 115 ha. Establishing commune nurseries and preparing enough seedlings for afforestation of 2,000-3,000 ha in 1998.

- Land-use planning at village level: Until 20/5/1998, land-use planning at commune level have been carried out in all 10 communes within the project area. Area planned for afforestation with project support is also identified. However, the land-use plans have been appraised and approved just by the commune and district authorities. It is not submitted to the Project management boards at the provincial and the Central levels for approval. The consultant has got land-use planning figures as in the following table.

### Table: Land-Use Planning Figures

<table>
<thead>
<tr>
<th>Province</th>
<th>District</th>
<th>Commune</th>
<th>Existing area of vacant land (ha)</th>
<th>Area planned for afforestation (ha)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ha tinh</td>
<td>Kí anh</td>
<td>Kí trinh</td>
<td>1.063</td>
<td>311</td>
</tr>
<tr>
<td></td>
<td>Huong son</td>
<td>Son mai</td>
<td>426</td>
<td>327</td>
</tr>
<tr>
<td></td>
<td>Duc tho</td>
<td>Duc lien</td>
<td>1.563</td>
<td>505</td>
</tr>
<tr>
<td>Quang binh</td>
<td>Quang trach</td>
<td>Quang lien</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bo trach</td>
<td>Bac trach</td>
<td>386</td>
<td>317</td>
</tr>
<tr>
<td></td>
<td>Le thuy</td>
<td>Thai thuy</td>
<td>2.777</td>
<td>700</td>
</tr>
<tr>
<td>Quang tri</td>
<td>Cam lo</td>
<td>Cam chinh</td>
<td>3.353</td>
<td>564</td>
</tr>
<tr>
<td></td>
<td>Hai lang</td>
<td>Hai chanh</td>
<td>2.657</td>
<td>790</td>
</tr>
<tr>
<td></td>
<td>Vinh linh</td>
<td>Vinh chap</td>
<td>870</td>
<td>650</td>
</tr>
<tr>
<td></td>
<td>Gio linh</td>
<td>Trung son</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td></td>
<td><strong>13,095</strong></td>
<td><strong>4,151</strong></td>
</tr>
</tbody>
</table>

For Quang lien and Trung son, figures are not available.

**Aspects for considerations**

When judging the method for land-use planning at commune level and the figures in the above table, following observations are attained:

- Land-use planning at commune level is the first main activity of the Project. It aims to select farmers to participate afforestation and, more important, to plan land within the commune for different uses in future. When planning the use of forestry land, it is necessary to identify area with forest, area without forest as well as regions for developing different types of forest i.e. protection, production and special use. For the Project, it is very important to clearly define areas for afforestation of both protection and production forests.

- However, when comparing the results of the recent land-use planning with what is demanded by the Project, although this demand is simple but very essential, it is for sure that the demand is not met. As matter of fact, the land-use planning was carried out just because they want to timely meet the planning requirement. i.e. to form a basis for next activities such as land allocation, credit and extension ... Therefore, areas for establishing protection forest and production forest are not yet identified. When discussing this matter with commune and district technical staff, they all said that they can not do this because they have received no instruction from the Central level.

- As there may be different reasons in land-use planning methodology, no comment or assessment should be made here. But one can clearly see that there is no criteria for classification of protection and production forests within the project area while this is a must in the land-use planning process in order
to form basis for selecting suitable tree species for either protection purpose or production one.

2. Summary of natural and production conditions related to land use planning for establishment of protection forest

2.1 Natural conditions

The project is implemented in a geographical area within the 16°12'-18°46' North latitudes and 30 km from the coastal eastward. Following distinct characteristics of the natural conditions should be considered for they will produce direct impacts on the protection issue in the project area.

2.1.1 Topography

There are two main topographical patterns in the project area.

- The moving and stable sandy coastal area: The average altitude of this area is 10-30 m. This type of topography is mainly concentrated in Quang Binh, Quang Tri, especially in Vinh Linh district (Quang Tri) and Do Linh (Quang Tri). The sandy field has become an obstacle for the lives and production of the local people. There is a great need for anti-sand movement in this coastal area.

- The low hilly area: This covers the most project area. The average altitude of this area is 30-400 m. The topography becomes higher and more sloppy eastward. This is the watershed area of many rivers in the project area. There is a great need for soil and water conservation in these watershed areas. Hence, new afforestation and protection of remaining natural forest in order to contribute to water and soil conservation have become extremely important.

2.1.2 Soil

Soil in the project area is diversified. There are many different types of soil in the project area. But the dominated type of soil is the yellow soil developed on sandy rock. This soil contains the least nutrients. The proportion of sand grains in this soil is very high, therefore, it is very easily eroded and becomes exhausted. Large forestry area consisting of this type of soil is having no forest cover.

The thickness of soil layer in most of project area is very limited. Only 30% of the project area covered by a soil layer with the thickness of more than 50 cm. This is also a problem for reforestation.

Within the coastal area, there are two types of soil, namely the moving sandy area and the stable sandy area. Nearer the sea, it is newly established sandy area, therefore the soil humidity is high and very suitable for planting phi lao (casuarina). The further the eastward, the poorer and drier the soil. There are even places where the soil contain just sand.

2.1.3 Vegetation

- Almost land in the project area is vacant (without forest). There are two main types of vegetation, corresponding to the two main topographical patterns as mentioned. The vegetation on the sandy land is mainly grasses. This vegetation can not stop sand moving. Therefore, it is necessary to create forest on this land for anti-sand moving.

- On the hilly area, the topography is diversified. In Do Linh, Can Lo and Hai Lang (Quang Tri), the land is rather flat and covered by bushes. In Bo Trach, Quang Trach (Quang Binh), the land is steep and had been uncultivated long before. It is very degraded. In Ki Anh, Huong Son, Duc Tho (Ha Tinh), the soil is fertile because it was recently claimed for production 10 years now. The hill tops and sides are covered by secondary forest. The foots of these hills were planted with fruit trees by the local people. In this area, there are favourable condition for planting indigenous broad leave tree species. Where soil was developed from basal rock, it is more fertile and very suitable for agro-forestry production.

2.1.4 River and water reservoir systems

Due to the topographical characteristic in the Central Coast, most rivers area originated from the Truong Son Range (Long Range of Mountains). They are short and narrow. The rivers consist of many falls. In the project area, the river density is high, two km per kilo-meter square. In Quang Tri province, there are 12 rivers which
belong to 3 river systems.

- The Ben Hai river system
- The Thach Han river system, and
- The My Chanh river system.

All rivers flow to the East Sea at two openings: Cua Tung and Cua Viet.

The total area of the watersheds of these three systems is 2,470 km\(^2\) of which, the largest watershed is Thanh Han.

In the project area, there are many natural and artificial water reservoirs. During the recent years, in the three provinces, with the Government investment, many large irrigation works have been constructed such as South Thach Han, Kinh Mon, Ha Thuong and La Nga.

2.2 Socio-economic conditions

- In the project area, beside those special natural conditions that require reforestation to serve both protection and production purposes, there are other social production characteristics that have the same requirements. Local people make their living mainly by planting water rice. Therefore, to maintain the water source of rivers and reservoirs to irrigate paddy fields is very important. Thus, it is necessary to carry out land use planning for establishing protection forest.

- Another urgent need is to supply water to the local population. To solve this problem, forest stands near the villages should be protected and at the same time, more plantations should be created.

In short, all these natural and socio-economic conditions have objectively proved that it is necessary to create protection forests in the watershed areas for anti-soil erosion and for maintaining water supply to rivers, reservoirs and irrigation works in order to provide water for the living and production of the local people and to improve the ecological environment in the region.

3. Summary of planning methods for protection forest

According to the Vietnamese classification of protection forest, there are types of protection forest. They are: i) Watershed protection forest; ii) Wind-break and anti-sand moving forest; iii) Wave-break and anti-sea encroaching forest.; and, iv) Ecological environment protection forest. But in the project area, there is great demand for the first. Therefore, in this chapter, only methods for planning protection forest in the water area is discussed.

3.1 Short description of the methods.

To do planning for protection forest in the watershed areas of rivers, streams and reservoirs, it must be first of all to determine how critical the protection area is. In Vietnam today, this work has been carried out by different methods. It may be possible to introduce four main methods which are being used. Then, an appropriate method could be selected for planning land to establish protection forest at the commune level in the project area.

a-Method of overlapping maps in the Regulation on Establishment of Protection Forests.

First of all, it is necessary to define factors influencing soil erosion and water flow such as relative height, distance from rivers and lakes, thickness of the soil layer, soil physical structure, annual rainfall and rainning intensify. These factors are used to classify the critical level of the watershed area. Each of those factors is divided into three levels of danger. They are: Very dangerous, dangerous and less dangerous which will correspond to very critical, critical and less critical. Then, maps showing the critical levels of these factors are made. After that, these maps are placed overlapping. The result of this overlapping are the boundaries of protection areas of different critical levels.
With this method, the critical levels of protection areas can be defined in an objective way. However, this method presumes that all factors produce the same effect or have the same weight in the classification while few of the do have the decisive role.

- **Remark:** As too many factors (8) are used, a lot of maps will have to be made. For some factors such as soil physical structure, the thickness of soil layer... it is very difficult and time consuming (mainly for field work) to define them. Therefore, this method is not widely used in practice. Some provinces do use this method but they delete some of these factors in order to make it more practical and easier. For instance, in Hoa Binh province, they decide that area within 2 km from the lake is seen as the critical protection area. Others use only three factors such as the rainfall, slope and soil texture. And they add one more factor i.e. the type of forest. Then, they make maps of these factors and overlay them to get the final result.

b-Method of the Mekong River Program, 1993

In this method, marks are given to every watershed area for classification. Total mark is the sum of all contributing factors such as rainfall, slope and altitude. The advantage of this method is that marks are given to these factors in an objective way. Besides, other related factors such as population, people awareness, tradition are also considered.

- **Remark:** This method has used a mathematics model in which, linear relation of influencing factors (xi) such as rainfall, altitude, soil texture... are established to define the critical point (Y):

\[
Y = a + b_1x_1 + b_2x_2 + ... + b_ix_i
\]

To apply this method, the doer must possess certain mathematics knowledge. Officers at the Central and the provincial levels can do while those at the district and commune levels can not. Therefore, this method is not appropriate for applying at the district and commune levels.

c-Method of the Vietnamese Institute of Forest Sciences

This method was developed by the Vietnamese Institute of Forest Sciences on the basis of their research on forest hydrology and soil conservation. This is especially based on the result the research topic at State level No KN-03-09 (Forest hydrology and establishment of forest in the watershed area). The research was carried out by a team headed by Doctor Nguyen Ngoc Lung. Doctor Lung has successfully applied this method in afforestation projects in Dau Tieng (Dong Nai), Nui Coc (Thai Nguyen) and Thac Mo (Binh Phuoc). This method proves to be more appropriate that the two previously mentioned.

Main characters of this method are: Besides factors such as altitude, rainfall... status of vegetation cover is also considered. At the same time, the author has defined two critical levels. They are:

- **Natural critical level:** is affected by natural factors (i.e. altitude, slope, slope length, soil texture, rainfall...) which can not be controlled by people.

- **Current critical level:** is affected by the protection potential of the existing vegetation.

The natural critical level is objective and less changed. But the people, with his positive or negative impact can destroy the vegetation. Thus, the current critical level will become the natural critical level.

For the natural factors, marks within a range from 1 - 10 will be given. But for the vegetation, minus marks will be given i.e. mark assessing the protection potential of types of vegetation is minus mark. When there is a forest consisting three storeys A1, B1, C1. Its shading cover 0.7 will reach the maximum value and is equal to 100% of the positive mark which is the sum of the highest marks of the natural critical level. The range of minus marks will be set equally to 90%, 80%, 70% of that three-storey forest.

- **Remark:** This method has been tested in Dau Tieng, Nui Coc and Thac Mo. However, due its complexity, the method is suitable for large protection areas (50,000 - 500,000 ha) where national protection areas are to be established. Therefore, this method is not appropriate for planning in commune level, also because the commune and district officers are not competent enough to apply it.

To meet the requirement of the Government Decision No 556/TTg dated on 12-9-1995 regarding the restoration of special use and protection forests, the re-assessment of protection areas for 327 program and the classification of protection areas into very critical, critical and less critical, FIPI has suggested a solution that can be described as follows:

- First of all, define 5 factors that will be used in the classification:
  - Rainfall
  - Slope
  - Relative altitude
  - Wind
  - Soil erosion
- Then, make maps showing the critical levels of these above factors.
- Overlap these maps in order to identify and draw the boundary of these protection plots.
- Check and compare the maps with the field.
- Complete the maps of critical levels of the protection areas.
- Write document to describe the watershed areas.

**Remark:** This is the simplest method in comparison with the above. Its application scale about 50.000 ha, very suitable for re-assessment of 327 program. If this method is applied in Vietnamese-German Projects in which, areas of 500 - 700 ha are normally found, the number of factors seem to be too many while factor like the rainfall does not vary within a limited small area.

The project holders of 327 program have been trained how to apply the method of FIPI. However, by different reasons such as lack of fund and lack of qualified field staff, the method has not been applied.

3.2 Remarks on their practical adaptability

- These methods have been applied and proved to be appropriate for planning at macro level. At present, all three types of forest have been planned over the country. This is an important guidelines for forestry development. Owning to the use of one of these methods, the watershed areas of important lakes such as Dau Tieng, Thac Mo and Nui Coc have been planned. The document of their economical and technical feasibility study have been formulated and approved for implementation.

- However, these methods are suitable only for planning at the macro level. Even the FIPI method is also suitable just for area of about 50,000 ha. Meanwhile in the project area, planning is carried at district and commune levels where, the protection area is much smaller (from 100 - 500 ha). Therefore, these methods are not appropriate for application. Efforts should be made to find out solution suitable with the conditions in the project area and at the same time, not contradict to basic principles highlighted in the Technical Regulation on Establishment of Protection Forest in the Watershed Area.

4. Views on land identification for establishment of protection forest

1. This Afforestation Project is aimed to create both protection and production forests on degraded hills and bare land (around 20.000 ha) which were planned as forestry land in three provinces in order to:
• restore and protect ecological environment,
• manage and use the newly created forest resource in a sustainable way,
• improve the living conditions of the local people.

These objectives are fitting the natural and social needs, especially the aspiration of the local people. This also means out of that 20,000 ha of new plantation, certain area of protection forest have to be established. The question here are where are lands for establishing protection forest? What criteria for selecting these land on the map as well as in the field. Therefore, to draw up methodology and criteria for identifying land to create protection forest is a very urgent task that has to be carried out immediately. This work should be done in early 1998 when the land use planning at commune level was carried out.

2. Due to the natural conditions such as topography, soil, slope, river and dam system and the production activity in the project area, there is an objective need to establish both protection and production forests. The question here is that when doing land use planning, what type of protection forest (out of the four) should be defined?

The result of the analysis of the natural circumstances in three provinces shows that two types of protection forests should be prioritized i.e. the anti-sand moving protection forest and the watershed protection forest.

• Along the coast of Quang Binh province and partly of Quang Tri (Cam Chinh commune), anti-sand moving protection forest should be established. But in these areas, there is an IFAD project that aimed at the same goal. When this project is ended, this question in the coast of Quang Binh will be basically solved. However, the afforestation area of the Vietnamese-German project is not within the sandy coastal area. Therefore, afforestation in the sandy coastal area is beyond the Vietnamese-German project. And it is not necessary to research criteria for identifying protection forest in this sandy area. Never-the-less, when doing land use planning for those communes belong to the Project but situated in the coastal area, technical criteria of the IFAD project should be considered.

• For protection forest in the watershed area: This type of protection land is distributed all over the project area. This will be a very important task of the project during the coming years.

3. When it is confirmed that protection forest in the watershed area should be prioritized i.e. the anti-sand moving protection forest and the watershed protection forest.

According to Article 2 in the Circular 02/CP, national protection areas must be larger than 50,000 ha, or smaller if it is very important to the national security and benefit or it covers several provinces. Such large protection areas must be approved by the Council of Ministers (the Government). For areas from 10,000 to 50,000 ha, approval of the Ministry of Forestry (or the Ministry of Agriculture and Rural Development) will be needed. And areas from 5,000 to 10,000 ha, the provincial People Committee will do.

At national level even it is approved by the Government or the province, the protection level is considered as critical. Until now, 23 Management Boards who are responsible to manage 2,000,000 ha have been established over the whole country. Investment for protection and tree planting in such protection areas will be funded by the State budget. It is worth noted that in three provinces belong to the Project, there is no such protection area.

If the protection area is smaller than 5,000 ha and is situated in a district not ranked into national protection level, it is considered as less critical (Article 2, Circular 02/CP), and will be approved by the Chairman of the district People Committee. According to Article 7 of the same Circular, for small protection areas within a commune or a village, the State will allocate land to household to plant protection forest and they are allowed to develop agroforestry on the allocated land.

Comparing to the Government regulation on grading the protection levels, the project area does not graded into national protection level. It is less critical or in other words, called local protection level.

The local protection forest has following functions:
To regulate and supply water to rivers, lakes and dams in order to serve agricultural production and living condition of the people.

To conserve soil for anti soil erosion.

To maintain water supply to irrigation and power generation works.

4. As it is already decided that within the project area, there is no national protection but local one, it is no more possible to use the grading criteria as stipulated in the Technical Regulation on Establishment of Protection Forest in the Watershed Area for identifying land to plant protection forest in the local watersheds at district and commune levels. On the other hand, it is neither possible to use FIPi method that was recommended for the 327 program. Therefore, it is necessary to find out another method that could be practically applicable in the project area.

This method must meet following requirements:

- Simple, easy to apply and suitable with the knowledge and skill of commune and district field staff.
- Utilise all appropriate points of other methods in order to ensure the practical and scientific demands.
- Utilise all available document, maps and information in order to ensure cost/effective.

5. Method for identifying land for establishment of protection forest

5.1 Operational procedures

To apply the above mentioned viewpoint, land for establishing protection forest within the project area should be identified according to the following three main steps:

**Step 1:** Defining protection area within the commune boundary.

Demarcate on the topographic map following types of land that should be protected:

- Land in the river watershed area limited by the water flowing divided lines.
- Land within the perimeter 300-400 meters from the bank of any lake, dam or irrigation work.

**Step 2:** Defining the area of land within the demarcated zones that need to be protected

Practically, within the watershed area, there are small plots of land which can be used for planting production forest because they do not need to be protected. The method to identify such plots of land is as follow:

Basing on the degrees of danger of the three factors participating in the classification of the protection levels in order to identify on the topographic map the very critical, critical and less critical protection zones. It is noted that these protection levels must go in line with the criteria of the local protection requirements, not that of the national protection ones. So, protection forest will be established on the very critical and critical zones and production forest on the less critical.

(For detail instruction, see paragraph 6.2)

**Step 3:** Draw areas of these two types of land for protection and production forests on the map. Then, record all figures on the table.

Complete the official map and then, write report to describe the planning work.

5.2 Identifying land areas for establishment of production and protection forests in the watershed area
5.2.1 Classification of protection levels according to its critical

a. Defining factors used to classify protection levels in the watershed area

This is a key step in the whole planning process. Factors which give impact on the levels of critical can be used to classify the protection levels within the watershed area. These can be identified by grading the hazard of the relative altitude, the hazard of the slope, the risk of soil erosion because following reasons:

Following three factors are selected to be used for protection classification:

- The hazard of the slope,
- The hazard of the relative altitude, and
- The risk of soil erosion

b. Grading the hazardous levels of the selected factors

- Grading the hazardous impact of the relative altitudes.

This has to base on the highest altitude and the lowest altitude of the commune (the altitude of the highest peak and that of the bed of the main river or stream in the commune) to classify them into three hazardous levels:

<table>
<thead>
<tr>
<th>Relative altitude</th>
<th>Sign</th>
<th>Hazardous level</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/3 on the high end</td>
<td>C1</td>
<td>Very hazardous</td>
</tr>
<tr>
<td>1/3 in the medium</td>
<td>C2</td>
<td>Hazardous</td>
</tr>
<tr>
<td>1/3 on the low end</td>
<td>C3</td>
<td>Less hazardous</td>
</tr>
</tbody>
</table>

- Grading the hazardous impact of the slopes.

<table>
<thead>
<tr>
<th>Slope</th>
<th>Sign</th>
<th>Hazardous level</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;35°</td>
<td>a 1</td>
<td>Very hazardous</td>
</tr>
<tr>
<td>26 - 35°</td>
<td>a 2</td>
<td>Hazardous</td>
</tr>
<tr>
<td>≤25°</td>
<td>a 3</td>
<td>Less hazardous</td>
</tr>
</tbody>
</table>

To define the slope, a topographic map will have to be used. The distance (mm) between the two contour lines will be based on in order to define the corresponding slope. To facilitate this work, a ready-calculated table is made,

e.g. For topographic map 1/25.000

<table>
<thead>
<tr>
<th>Slope</th>
<th>L (h=10 m)</th>
<th>L (h=20 m)</th>
<th>L (h=40 m)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8°</td>
<td>2,85</td>
<td>5,7</td>
<td>11,4</td>
</tr>
<tr>
<td>9 - 15°</td>
<td>2,53 - 1,49</td>
<td>5,06 - 2,99</td>
<td>10,12 - 5,98</td>
</tr>
<tr>
<td>16 - 25°</td>
<td>1,39 - 0,85</td>
<td>2,79 - 1,71</td>
<td>5,58 - 3,42</td>
</tr>
<tr>
<td>26 - 35°</td>
<td>0,82 - 0,57</td>
<td>1,64 - 1,14</td>
<td>3,28 - 2,28</td>
</tr>
</tbody>
</table>

Where
a: Slope

L: Distance between two contour lines

h: Height between two contour lines

- Grading the hazardous impact of soil erosion.

Soil character, especially its physical structure produce a decisive influence to its erosion possibility. Therefore, it is necessary to classify its physical structure into three groups, i.e., course sandy soil, light loamy soil and clay soil. These will be equivalent to the three hazardous levels.

<table>
<thead>
<tr>
<th>Soil erosion</th>
<th>Sign</th>
<th>Hazard level</th>
<th>Protection level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sandy soil</td>
<td>D1</td>
<td>Very hazardous</td>
<td>Very critical</td>
</tr>
<tr>
<td>Light loamy soil</td>
<td>D2</td>
<td>Hazardous</td>
<td>Critical</td>
</tr>
<tr>
<td>Clay soil</td>
<td>D3</td>
<td>Less hazardous</td>
<td>Less critical</td>
</tr>
</tbody>
</table>

5.2.2 Mapping the hazardous levels of the selected factors

- Mapping the hazardous levels of the relative altitude

From the commune topographic map, the hazardous levels corresponding to the altitudes as grouped before (C1, C2, C3) will marked.

- Mapping the hazardous levels of the slopes

From the distance between the two basic contour lines on the commune topographic map, the slope will be defined. Basing on the slopes, the areas of a 1, a 2 and a 3 will be marked.

- Mapping the hazardous levels of soil erosion

From the described soil textures, areas of D1, D2 and D3 will be defined. This map will show the soil erosion hazard. In commune where a soil map is not available, the name of the soil and its corresponding physical structures can be used to define D1, D2 and D3.

<table>
<thead>
<tr>
<th>Name of soil</th>
<th>Physical structure</th>
<th>Sign</th>
<th>Hazardous level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fe yellow-brown soil</td>
<td>Course sand-light loamy</td>
<td>D1</td>
<td>Very hazardous</td>
</tr>
<tr>
<td>Fe red-yellow or black soil on lime rock</td>
<td>Loamy to light clay</td>
<td>D2</td>
<td>Hazardous</td>
</tr>
<tr>
<td>Basal or light-grey soil</td>
<td>Heavy loamy to clay</td>
<td>D3</td>
<td>Less hazardous</td>
</tr>
</tbody>
</table>

5.2.3 Overlapping the maps

Overlapping these maps in order to define the boundary of the protection areas which are corresponding to the critical levels. To do this, one should step by step transfer the results of the three maps (C1, C2, C3; a 1, a 2, a 3; D1, D2, D3) onto a base map. Then match all the boundary lines to get the final result. That is the map showing protection areas equivalent to three levels: Very critical, critical and less critical as expected.

5.2.4 Identifying land for establishment of protection forest

- Areas which are classified as very critical and critical should be planned for establishing protection forest.

- Areas which are classified as less critical should be planned for creating production forest combined
6. Advantages and challenges

6.1 Advantages

When applying the above described method to identify land for establishing protection forest at the commune level, following advantages are expected:

- Project staff at district and commune levels are able to easily carry out this work. There is no need to hire technicians from any institute, college or the province.

- This work will be carried out by local staff. As they know the local conditions and they can use their local experience, their work is more feasible. The local villagers will also support them and be willingly to implement the project activity.

- As this is a simple method, it does not need sensitive tools. On the other hand, available maps and document (topographic map, soil map, current land use map...) can be used, the implementation will be faster, less time consuming and very cost/effective.

- This work will be carried out simultaneously with the land use planning. The areas of land for planting protection and production forests area shown on the same land use planning map. This will make the monitoring and evaluation more possible.

6.2 Difficulties

Following are obstacles which should be removed when applying this method:

- To insure the accuracy of the method, at least, 1/25.000 scaled topographic map must be used and enlarged into 1/10.000. This work should be assisted by the Central or provincial technicians.

- According to this method, soil erosion is defined by the soil physical structure. To do this, the soil map of the region must be used. This requires action from the Central level so that soil map will be available for participated communes.

- Time will be needed to organise training on this method for district and commune staff.

PART III: CONCLUSIONS AND RECOMMENDATIONS

1. Conclusions

1. The Government's policies on agricultural and forestry lands during the transition from the centralised and subsidy economy to the market oriented one; The existing regulations and circulars on protection forest as well as their active impacts and limitations on the management of remaining plantation and natural forest etc. are summarised in Part I of this report. These are important basis for the project to consider and to apply in its implementation, especially for activities related to land use planning for establishing protection and production forests in order to insure that all project activities will be suitable with the Government's policy and the local people's aspirations. This also help the project realise its objectives and avoid mistakes which were made by the previous programs.

2. All explanations and comments on the current management structure, technical system on protection forest and different methods are important basis for suggesting criteria to select land to establish protection forest in the project area. Current methods are suitable for planning area of more than 20.000 ha. These methods are not possible for land use planning within the project area because the afforestation area per commune is less than 10.000 ha and is dispersedly distributed.
3. The project afforestation area of more than 2000 ha is not planned within the system of protection forest at the national level. Therefore, within these three provinces, there are only small scale protection areas that belong to local protection level. Within the project area, priority should be given to protection of watershed areas. Other types of protection such as anti sand moving, wave break or ecological environment protection forests should be considered as combining elements. Technical solutions to select criteria for land use planning are simple and easy to apply by commune and district field staff. This method is not only technically sound but also suitable with the conditions in the project area.

4. At present, people in the participated provinces still have wrong concept on the management of protection forest and local protection forest. They consider that protection forest must be always managed by the State and not allocated to local people (only contracting). In fact, Article 7 of Circular 02 said that for small protection areas within commune and district, the State allocates these to households (with red certificate) for planting trees and for long term use. This Article suits the project requirement. i.e. to assist with afforestation money only to families who received land with red certificate.

From this viewpoint, after planning land in participated communes for establishing protection forest and having the plans approved by the competent authority, the Project should pay attention to find out a management system that will suit the current regulations, insure the people's benefits and meet the project requirements.

2. Recommendations

1. The proposed method to identify land for establishing protection forest in the project area should be carried out at the same time with land use planning in all participated communes. For the 10 communes whose land use plans were made in the beginning of 1998, land areas for planting protection forest should be defined as a in-time supplement to the original plans.

2. Basing on the proposed method, a detail practical guide book should be elaborated and followed by training courses on how to carry out the work for commune and district field staff.

3. There should be an agreement from the Central down to the grassroot level on a management system in which, benefits for the tree planters are clearly defined. It is proposed that this question should be discussed in the project coming workshop (July, 1998).

References


12. Decision 435 TTg (16-6-1997) of the Premier to approve the Feasibility Study for Afforestation Project in three provinces: Ha Tinh, Quang Binh and Quang Tri.


16. Forestry development plan of Ha Tinh, Quang Binh and Quang Tri provinces.

17. Options for land use planning in seven-project participated communes.