Chapter 12

Environmental and Social Considerations

12.1 Action Plans Composing in the Master Plan

Action plans which compose in the Master Plan are described in Chapter 11 and listed in the following table (Table 12.1.1).

Sector	Program	Lai Chau (LC)	Dien Bien (DB)	Son La (SL)	Hoa Binh (HB)
1. Market- Oriented Agricultural	1.1 Industrial Crop Production Improvement Program	Quality and Yield Improvement of Tea	Quality and Yield Improvement of Tea (1 1DB T)	Quality and Yield Improvement of Tea	Quality and Yield Improvement of Tea (1 1HB)
Promotion			Quality Improvement of Coffee (1 1DB C)	Quality Improvement of Coffee (1.1SL, C)	
	1.2 Agribusiness Promotion Program	Production and Marketing of Rubber (1.2LC_R) Production and Marketing of Mushroom (1.2LC_M)	Quality Improvement and Marketing of Dien Bien Rice (1.2DB)	Production and Marketing of High Quality Dairy Products (1.2SL)	Farm Equipment and Implements Manufacturing (1.2HB)
	1.3 Safe Crop Production Program	Production of Clean Fruits (1.3LC)	Establishment of Clean Vegetable Center (CVC) (1.3DB)	Establishment of Clean Vegetable Center (CVC) (1.3SL)	Establishment of Clean Vegetable Center (CVC) (1.3HB)
	1.4 Border Trade Promotion Program	Infrastructure Development in Border Area (1.4LC)	Infrastructure Development in Border Area (1.4DB)	Infrastructure Development in Border Area (1.4SL)	
2. Food Security Improvement	2.1 Remote Area Food Crop Production Program	Rice Production Improvement in Remote Areas (2.1LC)	Rice Production Improvement in Remote Areas (2.1DB)	Maize Production Improvement in Remote Areas (2.1SL)	Rice Production Improvement in Remote Areas (2.1HB)
	2.2 Animal Health and	Animal Health Contro	ol in the Northwestern	Region (2.2NW)	
	Production Improvement Program	Community Dairy Farm Development (2.2LC)	Community Dairy Farm Development (2.2DB)		Introduction of Improved Water Buffalo Breed (2.2HB)
	2.3 Inland Fishery Supporting Program	Rice Field Aquaculture Pilot Project (2.2LC)	Pond Aquaculture Pilot Project (2.2DB)		Fishery Resource Management in the Hoa Binh Dam Reservoir (2.2HB)
3. Revitalization and Diversification	3.1 NTFP Promotion Program	Integrated NTFP Management (3.1LC)	Introduction of Medicinal Plants (3.1DB)	Integrated NTFP Management (3.1SL)	Promotion of Multi-Purpose Trees and Medicinal Plants (3.1HB)
of Income Sources	3.2 Handicraft and Cottage Industry Promotion Program	Promotion of Handicraft and Food Processing at CLC (3.2LC)	Community-based Handicrafts and Food Industry (3.2DB)	Promotion of Specialty Products (3.2SL)	Roadside Stations Sales Promotion Campaign (3.2HB)
	3.3 Rural Tourism Program	Green Tourism Promotion (3.3LC)	Tourism Village Promotion (3.3DB)	Tourism Village Promotion (3.3SL)	Tourism Village Promotion (3.3HB)
4. Environmental	4.1 Da River Watershed Management Program	Afforestation with Ru	bber and Other Useful	Trees and Agroforestr	y Promotion (4.1NW)
Conservation and Biomass	4.2 Natural Forest Conservation Program	est Management of Special-Use Forests and Establishment of New Nature Reserves (4 2NW)			ture Reserves
Energy Development	4.3 Biomass Energy Promotion Program	Introduction of Biomass Energy Production (4.3NW)			
5. Irrigation and Water	5.1 Water User Organization Strengthening Program	a Water Use's Organization (WUO) Strengthening Pilot Project (5.1NW)			
Supply Development	5.2 Mountain Stream Water Use Program	Mountain Stream Multipurpose Use Pilot Project (5.2NW)			
6. Rural Road Development	6.1 Rural Road Maintenance Program	Rural Road Operation and Maintenance Pilot Project (6.1NW)			
7. Rural Electrification	7.1 Reusable Energy Rural Electrification Program	Renewable Energy Development Pilot Project (7.1NW)			
8. Capacity Building	8.1 Provincial Staff Training for 5 Year Plan Preparation	Formulation of 5-Yea	r Agriculture and Rura	l Development Plan (8	.1NW)
	8.2 Rural Information Database Establishment Program	Northwestern Region	GIS Establishment Pro	oject (8.2NW)	

Table 12.1.1	List of the Action Plans

12.2 Assumable Problems and Countermeasures on the Environmental and Social Considerations for the Action Plans

12.2.1 Assumable Problems and Countermeasures on the Environmental and Social Considerations by Items

Assumable problems based on the environmental and social considerations and their countermeasures for each Action Plan by items are summarized as below, in accordance with JICA Guidelines for Environmental and Social Considerations (April, 2004).

Ratings for each item are as follows in accordance with JICA Guidelines for Environmental and Social Considerations (April, 2004): A: Serious impact is expected, B: Some impact is expected, C: Extent of impact is unknown (Examination is needed. Impacts may become clear as study progresses), and D: No impact is expected, and IEE/EIA is not necessary. Numerals and symbols in the columns of "Target Program" indicate the numerals and symbols for the proposed projects by the Master Plan as shown in Table 12.1.1.

< Social Environment >

(1) Involuntary Resettlement

Kaung, C

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Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Involuntary resettlement is likely to happen, when the construction of processing facilities, basic infrastructures (electricity, road, etc.), agricultural infrastructures (agricultural fields, agricultural roads, irrigation facilities, village electricity, schools, clinics, communication lines, etc.), forests, leisure-related facilities, and so on.	In case of the construction of facilities, infrastructures, agricultural fields, and so on, those locations shall be considered to avoid the current residential areas as much as possible.	1.2(LC_R, LC_M, DB, SL, HB), 1.4(LC, DB, SL), 3.1(LC, DB, SL, HB), 3.3(LC, DB, SL, HB), 4.2(NW), 4.3(NW)
Involuntary resettlement is likely to happen, when the lands are used as different ways, which have been defined in the Land Use Plan in those areas. Especially, involuntary resettlement is likely to happen from inside the special-use forests to the outside of them in Action Plan 4.2.	In case of the different usages of the lands, measures to change activities there and not to expand those areas shall be considered. Especially, as involuntary resettlement from inside of the special-use forests are to be conducted by the instructions of the PPC, conditions and situations of the resettled areas should be confirmed and considered carefully.	4.1(NW), 4.2(NW)

(2) Local Economy such as Employment and Livelihood, etc.

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Kating:	U

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Overall positive impacts on local economies would be expected		-
Negative impacts on regional economies would be expected in case that the lands are used as different ways, which have been defined in the Land Use Plan in those areas.	In case of the different usages of the lands, measures to change activities there and not to expand those areas shall be considered. Not only technical aspects but also structures of local societies should be considered when selection of the target villages/communes/districts.	1.1(LC, DB_T, DB_C, SL_T, SL_C, HB), 1.2(LC_R, LC_M, DB, SL), 1.3(LC, DB, SL, HB), 3.1(LC, DB, SL, HB), 4.1(NW), 4.2(NW), 4.3(NW)
Implementation of the programs is to be conductive to economic differentiation within regions and professional communities, and oppression against the private sectors.	Not only technical aspects but also structures of local societies should be considered when selection of the target villages/communes/districts. Transparency should be striven in selecting farmers and traders/workers.	1.1(LC, DB_T, DB_C, SL_T, SL_C, HB), 1.2(LC_R, LC_M, DB, SL, HB), 1.3(LC, DB, SL, HB), 2.2(LC, DB, HB)

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Some troubles are expected when dealing foreign currencies.	The ways and methods of dealing foreign currencies shall be widely known.	1.4(LC, DB, SL)
Negative impacts on regional economies would be expected in case of different usages of the epidemic prevention guideline.	In case of the different usages of the epidemic prevention guideline, measures to change activities shall be considered.	2.2(NW)

(3) Land Use and Utilization of Local Resource

Rating: C-B

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Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Current land uses would be transformed to other land uses, in case the construction of facilities, basic infrastructures, rural-area infrastructure, agricultural fields and forests, and so on.	In case the construction of facilities, infrastructures, agricultural fields, and so on, those locations shall be considered to avoid the changes of current land uses at those areas as much as possible.	1.1(LC, DB_T, DB_C, SL_T, SL_C, HB), 1.2(LC_R, LC_M, DB, SL, HB), 1.3(LC, DB, SL, HB), 1.4(LC, DB, SL), 2.2(NW), 2.3(DB), 3.1(LC, DB, SL, HB), 3.2(LC), 3.3(LC, DB, SL, HB), 4.1(NW), 4.2(NW), 4.3(NW), 5.1(NW), 7.1(NW)
Negative impacts on land use would be expected in case that the lands are used as different ways, which have been defined in the Land Use Plan in those areas; i.e. agricultural fields on the steep slopes.	In case the different usages of the lands, measures not to expand those areas shall be considered.	1.2(LC_R, LC_M, DB, SL), 1.3(LC, DB, SL, HB), 2.1(LC, DB, SL, HB), 3.2(LC), 4.1(NW), 4.2(NW), 4.3(NW)
Negative impacts on the herd would be expected in case of mismatch between supplying capacity of feedstuff and number of animals in some extent.	Transformation from the idle lands to pasture land, and rotation grazing by using electric fences are to be considered.	2.2(LC, DB, SL, HB)

(4) Social Institutions such as social infrastructure and local decision-making institutions

- Rating: C-B

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Some negative impacts on social institutions would be expected in case of incomings and outgoings of outsiders, such as entrepreneurs, importers/exporters, foreign nationals, and so on.	Explanation of the plans and instructions/trainings of necessary techniques are to be conducted.	1.3(LC, DB, SL, HB), 1.4(LC, DB, SL), 3.2(LC, DB, SL, HB), 3.3(LC, DB, SL, HB), 4.3(NW)
Some negative impacts on social institutions would be expected in case of transformation of the current land uses.	In case the different usages of the lands, measures not to expand those areas shall be considered. Explanation of the plans and instructions/trainings of necessary techniques are to be conducted.	1.2(LC_R, LC_M, DB, SL), 2.1(LC, DB, SL, HB), 3.1(LC, DB, SL, HB), 3.3(LC, DB, SL, HB), 4.2(NW)
Potential oppositionists are expected in case of introduction of new varieties and new techniques.	Adequate plans are to be formulated by sufficient studies on current traditions, techniques and rights. Explanation of the plans and instructions/trainings of necessary techniques are to be conducted.	1.1(DB_C), 2.1(LC, DB, SL, HB), 2.2(LC, DB, HB), 3.2(LC, DB, SL, HB), 4.1(NW), 4.3(NW), 5.2(NW), 7.1(NW)
Negative impacts would be expected in case of miss-leading of activities, when low-interest loan are to be promoted.	Explanation and extension on low-interest loan should be conducted to villagers before implementation of the projects.	1.2(LC_R, LC_M, DB, SL, HB)

(5) Existing Social Infrastructures and Services such as Traffic / Existing Public Facilities

- Rating: D

As sizes of facilities to be constructed are relatively small in each Action Plan, no negative impacts are expected. Positive impacts are expected in Action Plan 2.1 and Action Plan 7.1 by new construction and renovation of social infrastructures.

(6) The Poor, Indigenous and Ethnic People

- Rating: B

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Overall positive impacts on social vulnerable groups such as the poor, indigenous and ethnic peoples are expected.	-	-
Current land uses would be transformed to other land uses, in case the construction of facilities, basic infrastructures, rural-area infrastructure, agricultural fields and forests, and so on.	In case the construction of facilities, infrastructures, agricultural fields, and so on, those locations shall be considered to avoid the changes of current land uses at those areas as much as possible.	1.2(LC_R, LC_M, DB, SL, HB), 1.3(LC, DB, SL, HB), 1.4(LC, DB, SL), 3.3(LC, DB, SL, HB), 4.2(NW), 4.3(NW)
Negative impacts on land use would be expected in case that the lands are used as different ways, which have been defined in the Land Use Plan in those areas; i.e. agricultural fields on the steep slopes.	In case the different usages of the lands, measures not to expand those areas shall be considered.	1.2(LC_R, LC_M, DB, SL), 1.3(LC, DB, SL, HB), 2.1(LC, DB, SL, HB), 4.1(NW), 4.2(NW), 4.3(NW)
Benefits would not be equally distributed especially to the ethnic people living in mountainous areas unless thorough extension.	Equal distribution of benefits shall be considered, regardless the differences of sex, ethnic groups, residential areas, having experiences / knowledge, unionized / non-unionized persons, and so on.	1.1(LC, DB_T, DB_C, SL_T, SL_C, HB), 1.2(LC_R, LC_M, DB, SL, HB), 1.3(LC, DB, SL, HB), 1.4(LC, DB, SL), 2.1(LC, DB, SL, HB), 2.2(LC, DB, HB, NW), 2.3(LC, DB, HB), 3.1(LC, DB, SL, HB), 3.2(LC, DB, SL, HB), 3.3(LC, DB, SL, HB), 4.1(NW), 4.2(NW), 4.3(NW), 5.2(NW), 6.1(NW), 7.1(NW), 8.1(NW)
Negative impacts on social vulnerable groups would be expected by influx of people from outside in spite of improved accessibility.	Equal distribution of benefits shall be considered, regardless the differences of sex, ethnic groups, residential areas, having experiences / knowledge, unionized / non-unionized persons, and so on.	1.4(LC, DB, SL), 3.3(LC), 6.1(NW)
Negative impacts would be expected especially for the non-unionized persons.	Participation to the unions shall be promoted to the non-unionized persons.	5.1(NW)
Adequate income would not be obtained in sustainable manner in case that production would be commenced without securing the sustainable market and reasonable prices on products would not be settled.	Administrative supports shall be needed for cultivation of market and supervision of settlement of reasonable prices of the products.	1.2(LC_M, SL)

(7) Misdistribution of Benefit and Damage

Rating: B

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Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
There could be inequality on the benefit distribution between the beneficiaries and project-affected people, especially women and ethnic peoples living in the mountainous areas.	Equal distribution of benefits shall be considered, regardless the differences of ethnic groups, residential areas, and so on. Provision of compensation and assistance to project affected people and cost allocation to beneficiaries shall be considered.	1.1(LC, DB_T, DB_C, SL_T, SL_C, HB), 1.2(LC_R, LC_M, DB, SL, HB), 1.3(LC, DB, SL, HB), 1.4(LC, DB, SL), 2.1(LC, DB, SL, HB), 2.2(LC, DB, HB, NW), 2.3(LC, DB, HB), 3.1(LC, DB, SL, HB), 3.2(LC, DB, SL, HB), 3.3(LC, DB, SL, HB), 4.1(NW), 4.2(NW), 4.3(NW), 5.1(NW), 5.2(NW), 6.1(NW), 7.1(NW), 8.1(NW)

(8) Cultural Heritage

- Rating: C

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Negative impacts on cultural heritages would be expected in case the construction of facilities, basic infrastructures, rural-area infrastructures, agricultural fields/forests, and so on.	All the facilities, infrastructures, and so on, shall be constructed to avoid the significant cultural heritages.	1.4(LC, DB, SL), 2.3(LC, DB), 3.1(LC, DB, SL, HB), 3.2(LC), 3.3(LC, DB, SL, HB), 4.1(NW), 4.2(NW), 4.3(NW), 5.2(NW)
Negative impacts would be expected in case of involuntary resettlement to the resettled areas.	Resettlement areas shall be arranged to avoid the significant cultural heritages.	4.2(NW)

(9) Local Conflicts of Interests

- Rating: B

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
There could be conflicts on interests between the beneficiaries and project affected persons, especially women, ethnic peoples living in the mountainous areas, non-unionized persons, and so on.	Equal distribution of benefits shall be considered, regardless the differences of sex, ethnic groups, residential areas, having experiences / knowledge, unionized / non-unionized persons, and so on. Provision of compensation and assistance to project affected people and cost allocation to beneficiaries shall be considered	1.1(LC, DB_T, DB_C, SL_T, SL_C, HB), 1.2(LC_R, LC_M, DB, SL, HB), 1.3(LC, DB, SL, HB), 1.4(LC, DB, SL), 2.1(LC, DB, SL, HB), 2.2(LC, DB, HB, NW), 2.3(LC, DB, HB), 3.1(LC, DB, SL, HB), 3.2(LC, DB, SL, HB), 3.3(LC, DB, SL, HB), 4.1(NW), 4.2(NW), 4.3(NW), 5.1(NW), 5.2(NW), 6.1(NW), 7.1(NW), 8.1(NW)
Some conflicts would be expected in case of involuntary resettlement with villagers at resettled areas.	As involuntary resettlement from inside of the special-use forests are to be conducted by the instructions of the PPC, conditions and situations of the resettled areas and equal distribution of benefits should be confirmed and considered carefully. Provision of compensation and assistance to project affected people and cost allocation to beneficiaries shall be considered.	4.2(NW)

(10) Water Usage or Water Rights and Rights of Common

- Rating: C

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Negative impacts on water usage or water rights would be expected in some extent in case that water would be used for agriculture production, aquaculture and operation of facilities. Potential oppositionists are expected in case of introduction of new techniques and equalization of water resource distribution, and against tradition on water usages.	Adequate water use planning would be considered. Provision of compensation and assistance to project affected people and cost allocation to beneficiaries shall be considered	1.1(DB_C, SL_C), 1.2(LC_R, LC_M, DB), 1.3(LC, DB, SL, HB), 2.1(LC, DB, SL, HB), 2.3(LC, DB), 3.2(LC), 4.1(NW), 4.3(NW), 5.1(NW), 5.2(NW), 7.1(NW)
Water drainage would cause water pollution.	Adequate water drainage planning would be considered, taking current water rights and water utilization into consideration. Provision of compensation and assistance to project affected people and cost allocation to beneficiaries shall be considered	1.3(LC, DB, SL, HB), 2.1(LC, DB, SL, HB)
Some conflicts on fishery rights would be expected for fisheries on the dam reservoirs.	Adequate water usage planning would be considered, taking current fishery rights and water utilization into consideration. Provision of compensation and assistance to project affected people and cost allocation to beneficiaries shall be considered	2.3(HB)

(11) Sanitation

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Rating: C-B

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Negative impacts on sanitation would be expected in some extent in case of newly constructed labor camps for the construction of the facilities and infrastructures.	Health check and education for labors shall be conducted.	1.2(LC_R, LC_M, DB, SL, HB), 1.4(LC, DB, SL), 2.2(LC, DB, NW), 2.3(LC, DB), 3.1(LC, DB, SL, HB), 3.2(LC, DB, SL, HB), 3.3(LC, DB, SL, HB), 4.1(NW), 4.2(NW), 4.3(NW)
Negative impacts on sanitation would be expected in some extent in case of inadequate treatment of discharged water during operation of facilities.	Adequate discharge water treatment for each facility shall be implemented.	2.3(LC, DB), 3.1(LC, DB, SL, HB), 3.3(LC, DB, SL, HB), 4.1(NW), 4.3(NW)
Negative impacts on sanitation would be expected in some extent in case of inadequate management and maintenance of water intake and water supply facilities.	Adequate maintenance of water intake and water supply facilities shall be implemented.	5.2(NW)

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Negative impacts on sanitation would be expected in some extent by inadequate usage chemical fertilizers and pesticides, in case of inadequate irrigation farming.	Adequate and safe usages of chemical fertilizers and pesticides should be extended to farmers.	1.1(LC, DB_T, DB_C, SL_T, SL_C, HB), 1.3(LC, DB, SL, HB), 2.1(LC, DB, SL, HB)
Negative impacts on sanitation would be expected in some extent by organic waste during assembling / arrangement of agricultural products and fish, faces and urine of cattle and remaining of feedstock, and inadequate treatment of solid waste.	Appropriate disposal of waste shall be conducted. Making organic fertilizers by using organic wastes should be promoted.	1.3(LC, DB, SL, HB), 2.2(LC, DB), 3.2(LC, DB, SL, HB)
Careful treatment would be needed when expression of milk to prevent from interfusion of bacteria.	Trainings on milk-expression techniques and breeding techniques of diary breeds should be conducted to the farmers to improve their techniques.	1.2(SL), 2.2(HB)
Negative impacts on sanitation would be expected in some extent in case of inadequate management of remained feedstock and chemicals when culturing fish in ponds.	Adequate feeding and administration of chemicals should be conducted to fish ponds.	2.3(LC, DB), 3.2(LC)
Negative impacts on sanitation would be expected through material flow by activation of commerce between foreign countries and interaction with foreign people with different lifestyle habits.	Adequate system to supervise sanitation conditions of human and animals and to supervise to prevent from invasion/incoming of drugs, residual pesticides, exotic flora and fauna, and chemical pollution should be considered.	1.4(LC, DB, SL)
Negative impacts on sanitation would be expected in some extent for the living conditions of the resettled areas in case of involuntary resettlement.	As involuntary resettlement from inside of the special-use forests are to be conducted by the instructions of the PPC, sanitary conditions and situations of the resettled areas should be confirmed and considered carefully.	4.2(NW)

(12) Hazard (Risk) Infectious Diseases such as HIV/AIDS

- Rating: C-B

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Negative impacts on diseases would be expected in some extent in case of influx of labors who have infectious diseases for construction of facilities and infrastructures.	Health check and education for labors shall be conducted. Labors inside regions would be employed as much as possible.	1.2(LC_R, LC_M, DB, SL, HB), 1.3(DB, SL, HB), 1.4(LC, DB, SL), 2.3(LC, DB), 3.1(LC, DB, SL, HB), 3.3(LC, DB, SL, HB), 4.1(NW), 4.2(NW), 4.3(NW)
Negative impacts on diseases would be expected in some extent in case of influx of outsiders and foreign peoples who have infectious diseases.	Adequate systems to supervise invasion and infection of diseases should be established.	1.4(LC, DB, SL)
Diseases caused by water would be spread accompanying with development of irrigation facilities.	Adequate maintenance of water intake facilities and water supply facilities shall be implemented. Clinics / clinic functions for diseases by water would be installed at each village.	2.1(LC, DB, SL, HB), 5.2(NW)
Negative impacts on diseases would be expected in some extent in case of epidemic diseases from introduced animal husbandries and fish fries.	Appropriate treatment on diseased livestock and fish fries shall be done. In case of occurrence of diseases, adequate measures, such as disposal and burnout of diseased ones, should be conducted.	1.2(SL), 2.3(LC, DB)
Incomings and invasion of flora and fauna would be expected by improvement of accessibility, together with material flows and human interaction.	Adequate system to supervise to prevent from invasion of exotic flora and fauna should be considered.	1.1(LC, DB_T, DB_C, SL_T, SL_C, HB), 1.3(LC, DB, SL, HB)
As the foot-and-mouth diseases have been reported in the Region, disease would be easily spread out unless adequate epidemic prevention systems.	Epidemic prevention system should be conducted without any exception. Healthy livestock should be introduced with epidemic prevention measures. In case of occurrence of diseases, those animals should be isolated and quarantined in a moment.	1.2(SL), 2.2(LC, DB, HB, NW), 3.2(LC)
Disease would occur by inadequate treatment of faces and urines of cattle.	Adequate treatment of faces and urines of cattle should be conducted.	1.2(SL), 2.2(LC, DB, SL, HB), 3.2(LC)
Epidemic diseases would spread out depending the living conditions of resettled areas in case of involuntary resettlement.	As involuntary resettlement from inside of the special-use forests are to be conducted by the instructions of the PPC, sanitary conditions and situations of the resettled areas should be confirmed and considered carefully to prevent from epidemic diseases.	4.2(NW)

< Natural Environment >

(13) Topography and Geographical Features

- Rating: D

As sizes of facilities to be constructed are relatively small in each Action Plan, no negative impacts are expected.

(14) Soil Erosion

- Rating: D-C

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Soil erosion could happen in some extent in case of the constructions of facilities and infrastructures in the mountainous areas.	Implementation of prevention measure against occurrence of sediment discharge and soil erosion shall be considered.	1.4(LC, DB, SL), 3.3(LC, DB)
Soil erosion could happen in some extent in case of farm land consolidation and forestation on the slope areas.	Implementation of prevention measure against occurrence of sediment discharge and soil erosion shall be considered. Especially for utilization of mountainous slopes to agricultural fields, such measures as establishment of terraced fields and green belts, prevention measures against discharge of surface soils and soil erosion, should be considered.	1.1(LC, DB_T, DB_C, SL_T, SL_C, HB), 1.3(LC, DB, SL, HB), 2.1(LC, DB, SL, HB), 3.1(LC, DB, SL, HB), 3.2(LC), 4.1(NW), 4.3(NW)

(15) Groundwater

- Rating: C

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Negative impacts on groundwater would be expected in case that the facilities would use lots of groundwater.	Adequate uses of groundwater shall be considered.	1.3(DB, SL, HB), 2.3(LC, DB), 3.1(LC, DB, SL, HB), 3.3(DB), 4.1(NW), 4.2(NW), 4.3(NW), 5.2(NW)
Negative impacts on groundwater quality would be expected in case of surplus usage of water for cleaning of livestock barns.	Utilization of faces and urine of cattle, such as making organic fertilizer, would be considered and extended.	1.2(SL), 2.2(LC, DB, HB), 3.2(LC)

(16) Hydrological Situation

- Rating: C-B

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Negative impacts on hydrological situations would be expected by means of soil erosion in construction stage by large machineries.	Implementation of adequate prevention measure against soil erosion, such as erosion prevention sheets, shall be considered.	1.4(LC, DB, SL), 2.1(LC, DB, SL, HB), 3.1(LC, DB, SL, HB), 3.2(DB, SL, HB), 3.3(LC, DB, SL, HB), 4.3(NW)
Negative impacts on hydrological situations would be expected by means of inadequate discharge water in operation stage.	Implementation of adequate prevention measure against wastewater shall be considered.	1.1(LC, DB_T, DB_C, SL_T, SL_C, HB), 1.4(LC, DB, SL), 2.3(LC, DB), 3.1(LC, DB, SL, HB), 3.2(DB, SL, HB), 3.3(LC, DB, SL, HB), 4.1(NW), 4.2(NW), 4.3(NW)
Negative impacts on hydrological situations would be expected by inadequate usage of chemical fertilizers and pesticides, in case of inadequate irrigation farming.	Adequate and safe usages of chemical fertilizers and pesticides should be extended to farmers.	1.1(LC, DB_T, DB_C, SL_T, SL_C, HB), 1.2(LC_R, LC_M, DB), 5.2(NW)
Groundwater pollution would occur in case of surplus usage of water for cleaning of livestock barns.	Utilization of faces and urine of cattle, such as making organic fertilizer, would be considered and extended.	1.2(SL), 2.2(LC, DB, HB), 3.2(LC)
Water pollution would occur in case of production of organic fertilizer by inadequate treatment of wastewater.	Prevention measures against water pollution shall be implemented.	1.3(LC, DB, SL, HB)

(17) Coastal Zone

- Rating: D

As the target areas are inland areas and far from the coastal zones, no negative impacts are expected.

(18) Fauna, Flora and Biodiversity

- Rating: C-B

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Negative impacts on fauna, flora and biodiversity in some extent would be expected in case of construction of facilities and infrastructure.	Measures to decline negative impacts on fauna, flora and biodiversity would be considered.	1.2(LC_R, LC_M, DB, HB), 1.4(LC, DB, SL), 3.1(LC, DB, SL, HB), 3.2(LC), 3.3(LC, DB, SL, HB), 4.2(NW), 5.2(NW)
Negative impacts on fauna, flora and biodiversity in some extent would be expected in case of introduction of exotic species.	Adequate treatment on exotic species shall be conducted in order not to spreading out.	2.3(LC, DB), 3.1(LC, DB, SL, HB), 3.2(LC), 4.1(NW), 4.2(NW), 4.3(NW)
Negative impacts on aquatic fauna would be expected by inadequate fishing and resource management in the dam reservoirs.	Adequate and legal fishing methods should be promoted to fishermen. Adequate resource management of fish should be conducted by suitable fishing plan.	2.3(HB)
Incomings and invasion of flora and fauna would be expected by improvement of accessibility, together with material flows and human interaction.	Adequate system to supervise to prevent from invasion of exotic flora and fauna should be considered.	1.4(LC, DB, SL), 6.1(NW)
Negative impacts on fauna, flora and biodiversity in some extent would be expected in case of usage of chemicals and pesticides.	Adequate measures for dispersal of chemicals and pesticides and weeding shall be considered in the process if introduction of new cultivation methods.	1.1(LC, DB, SL, HB), 1.3(LC, DB, SL, HB), 2.1(LC, DB, SL, HB)
Surplus collection of firewood from the surrounding forests would be expected in case of usage of firewood for drying agricultural products and NTFPs.	Adequate measures should be taken for not to exploit forests for firewood; collection of firewood from the assigned forests, establishment of specific forests for firewood.	1.2(LC_M), 3.1(LC, DB, SL, HB)
Bird strike onto windmill would be expected in case of wind power generation.	As windmill for wind power generation is quite small, there would be no risk on bird strike onto the windmill.	7.1(NW)

(19) Meteorology

- Rating: D

As sizes of facilities to be constructed are relatively small in each Action Plan, no negative impacts are expected.

(20) Landscape

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Rating: C

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Negative impacts on landscape would be expected in case of construction of facilities, basic infrastructures and rural-area infrastructures.	Plantation of trees and fencing around the facilities shall be considered. Finishing works should be conducted.	1.2(LC_R, LC_M, DB, HB), 1.3(DB, SL, HB), 1.4(LC, DB, SL), 2.2(NW), 2.3(LC, DB), 3.1(LC, DB, SL, HB), 3.2(LC), 3.3(LC, DB, SL, HB), 4.1(NW), 4.2(NW), 4.3(NW), 5.2(NW)
Negative impacts on landscape would be expected in case of large equipment installation.	Small-size equipment should be considered to supplement for large-size equipment. Fencing around the equipment should be considered to hide from the outside.	7.1(NW)
Negative impacts on landscape would be expected in case of large-area plantation of single tree species.	Mixed plantation with plural tree species should be considered.	4.3(NW)

(21) Global Warming

- Rating: C

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	r	Target Pı	ogram	s
Construction/ operation of large-scale facilities would facilitate CO ₂ emission.	Measures to reduce emission of CO_2 shall be considered and conducted. Planting trees along the roads and around the facilities shall be considered to absorb CO_2 .	3.3(DB), 4	4.3(NW)		
Overall CO_2 emission would increased by the increased cars, households, etc. in the future by improvement of accessibility.	Measures to reduce emission of CO_2 shall be considered and conducted. Planting trees along the roads and around the facilities shall be considered to absorb CO_2 .	1.4(LC, 6.1(NW)	DB,	SL),	3.3(LC),

< Pollution >

(22) Air Pollution

- Rating: C

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Negative impacts on air pollution would be expected caused by the construction machineries during construction period.	Sprinkling water on tires of construction vehicles and in construction site and roads near the construction site, covering the trucks by sheet during transportation of the construction materials or residue soil/waste, and usage of large-scale equipment with exhaust treatment shall be considered during the construction phase.	1.4(LC, DB, SL), 2.2(NW), 2.3(LC, DB), 3.1(LC, DB, SL, HB), 3.3(LC, DB), 4.1(NW), 4.2(NW), 4.3(NW), 5.2(NW), 6.1(NW)
Negative impacts on air pollution would be expected caused by gas emissions from the generators of each facility.	Adequate treatment not to exhaust polluted air shall be installed.	3.3(DB), 4.1(NW), 4.3(NW)
Negative impacts on air pollution would be expected caused by increased vehicles after renovation of roads and construction of new roads.	Vegetation buffer shall be established along the truck roads.	1.4(LC, DB, SL), 3.3(LC), 6.1(NW)

(23) Water Pollution

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Rating: C-B

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs										
Water pollution would occur by inadequate wastewater disposal during construction phase.	Prevention measures against water pollution shall be implemented.	1.4(LC, DB, SL), 2.1(LC, DB, SL, HB), 2.2(NW), 2.3(LC, DB), 3.1(LC, DB, SL, HB), 3.3(LC, DB), 4.1(NW), 4.2(NW), 4.3(NW), 5.1(NW), 5.2(NW), 6.1(NW)										
Water pollution would occur by inadequate wastewater disposal from the constructed facilities, especially facilities that use chemicals and feedstock.	Prevention measures against water pollution shall be implemented. Wastewater, especially wastewater with oil, chemicals, and feedstock, shall be disposed at adequate disposal methods.	1.1(LC, DB_T, DB_C, SL_T, SL_C, HB), 1.2(LC_R, LC_M, DB, SL, HB), 1.3(DB, SL, HB), 1.4(LC, DB, SL), 2.2(NW), 2.3(LC, DB), 3.1(LC, DB, SL, HB), 3.2(LC, DB, SL, HB), 3.3(LC, DB, SL, HB), 4.1(NW), 4.2(NW), 4.3(NW)										
Water pollution would occur by inadequate usage chemical fertilizers and pesticides, in case of inadequate irrigation farming.	Prevention measures against water pollution shall be implemented. Wastewater, especially wastewater with chemicals and feedstock, shall be disposed at adequate disposal methods.	5.1(NW), 5.2(NW)										
Water pollution would occur by inadequate road drainages.	Adequate prevention measures against water pollution, such as setting separating collection chamber, shall be implemented.	1.4(LC, DB, SL), 3.3(LC), 6.1(NW)										

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Water pollution would occur in case of inadequate usage and volume of feedstock and chemicals for pond aquaculture, and inadequate wastewater treatment.	Prevention measures against water pollution shall be implemented. Usage of low-fat feedstock, and conduction of low-waste aquaculture methods, such as VAC system, would be considered. Adequate wastewater treatment should be conducted for wastewater from the facilities, especially wastewater with chemicals and feedstock.	2.3(LC, DB), 3.2(LC)
Water pollution would occur in case of surplus usage of water for cleaning of livestock barns.	Utilization of faces and urine of cattle, such as making organic fertilizer, would be considered and extended.	1.2(SL), 2.2(LC, DB, HB), 3.2(LC)
Water pollution would occur in case of production of organic fertilizer by inadequate treatment of wastewater.	Prevention measures against water pollution shall be implemented.	1.3(LC, DB, SL, HB)

(24) Soil Contamination

- Rating: C

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Soil contamination would occur by wastewater and solid waste during construction stage.	Adequate treatment on wastewater and solid waste shall be conducted.	1.2(LC_R., LC_M, DB, SL, HB), 1.4(LC, DB, SL), 2.1(LC, DB, SL, HB), 2.3(LC, DB), 3.1(LC, DB, SL, HB), 3.3(DB), 4.3(NW), 5.2(NW)
There would be risk for oil spilling from the machineries during construction of facilities and infrastructure.	Adequate measures, such as accident prevention manuals during construction phase and preparation of oil-spill mats,, shall be conducted.	1.2(LC_R, LC_M, DB, SL, HB), 1.4(LC, DB, SL), 2.2(NW), 3.1(LC, DB, SL, HB), 3.3(LC, DB, SL, HB), 4.1(NW), 4.2(NW), 4.3(NW)
Soil contamination would occur by wastewater and solid waste from constructed facilities. Excessive use of chemical fertilizers would also cause soil contamination.	Adequate treatment on wastewater and solid waste shall be conducted. Chemical fertilizers shall not be used excessively.	1.2(LC_R, LC_M, DB, SL, HB), 2.3(LC, DB), 3.1(LC, DB, SL, HB), 3.3(LC, DB), 4.1(NW), 4.2(NW), 4.3(NW), 5.2(NW)
Soil contamination would occur in case of inadequate treatment of organic wastes from assembling / arrangement of agricultural products and fish.	Appropriate disposal of waste shall be conducted. Making organic fertilizers by using organic wastes should be promoted.	1.3(LC, DB, SL, HB)
Soil contamination would occur in case of surplus usage of water for cleaning of livestock barns.	Utilization of faces and urine of cattle, such as making organic fertilizer, would be considered and extended.	1.2(SL), 2.2(LC, DB, HB), 3.2(LC)
Soil contamination would occur in case of production of organic fertilizer by inadequate treatment of wastewater.	Prevention measures against water pollution shall be implemented.	1.3(LC, DB, SL, HB)
Soil contamination would occur by inadequate road drainages.	Adequate treatment on wastewater shall be conducted.	1.4(LC, DB, SL)

(25) Waste

- Rating: C-B

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Waste would be increased during construction of facilities and infrastructures.	Appropriate disposal of waste shall be conducted.	1.2(LC_R, LC_M, DB, SL, HB), 1.4(LC, DB, SL), 2.2(NW), 2.3(LC, DB), 3.1(LC, DB, SL, HB), 3.3(LC, DB, SL, HB), 4.1(NW), 4.2(NW), 4.3(NW), 5.2(NW), 7.1(NW)
Waste would be increased during operation of facilities and infrastructures.	Appropriate disposal of waste shall be conducted. Illegal disposal shall be banned.	1.1(LC, DB_T, DB_C, SL_T, SL_C, HB), 1.2(LC_R, LC_M, DB, SL, HB), 1.3(LC, DB, SL, HB), 1.4(LC, DB, SL), 2.2(NW), 2.3(LC, DB), 3.1(LC, DB, SL, HB), 3.2(LC, DB, SL, HB), 3.3(LC, DB, SL, HB), 4.1(NW), 4.2(NW), 4.3(NW), 7.1(NW)

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs							
Improved accessibility by road renovation would cause waste disposals from outside the areas.	Illegal disposal shall be banned.	1.4(LC, DB, SL), 3.3(LC), 6.1(NW)							
Organic waste would be increased during assembling / arrangement of agricultural products and fish. Faces and urine of cattle and remaining of feedstock would be collected by cleaning of livestock barns.	Appropriate disposal of waste shall be conducted. Making organic fertilizers by using organic wastes should be promoted.	1.1(LC, DB_T, DB_C, SL_T, SL_C, HB), 1.2(LC_R, LC_M, DB, SL), 1.3(LC, DB, SL, HB), 2.1(LC, DB, SL, HB), 2.2(LC, DB, HB), 2.3(LC, DB, HB), 3.2(LC, DB, SL, HB), 4.1(NW)							

(26) Noise and Vibration

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Rating: C

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Noise and vibration would be expected by construction machineries and generators for construction of facilities and infrastructures.	Low-noise construction machineries and generators shall be used. Heavy equipment shall be restricted to use during night time. Tree buffer zones shall be established along the roads and around the facilities with tree planting strips.	1.4(LC, DB, SL), 2.2(NW), 2.3(LC, DB), 3.1(LC, DB, SL, HB), 3.3(LC, DB), 4.1(NW), 4.2(NW), 4.3(NW), 5.2(NW)
Noise and vibration would be expected by generators for operation of facilities and infrastructures.	Low-noise generators shall be used.	1.2(LC_R, LC_M, DB, SL, HB), 1.4(LC, DB, SL), 2.3(LC, DB), 3.1(LC, DB, SL, HB), 3.3(DB, SL, HB), 4.1(NW), 4.2(NW), 4.3(NW)
Noise and vibration would be expected by increased vehicles on newly constructed roads, renovated roads and existing roads.	Tree buffer zones shall be established along the roads and around the facilities with tree planting strips.	1.4(LC, DB, SL), 3.3(LC), 6.1(NW)
Noise would be expected by using boats with engines for fishing.	Low-noise engines shall be used for boats.	2.3(HB)

(27) Ground Subsidence

- Rating: D

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
There would be ground subsidence in the large facility areas, especially in the leisure facilities. No negative impacts would be expected for the areas of other small facilities.	Adequate prevention measures against occurrence of ground subsidence shall be conducted.	3.3(DB), 4.3(NW)

(28) Offensive Odor

- Rating: C-B

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs
Offensive odor would occur by wastewater and waste from the processed products, depending on the processing methods.	Adequate processing methods shall be conducted to reduce offensive odor. Tree buffer zones shall be established around the facilities to prevent from spreading offensive odor. Making organic fertilizers from the wastes should be promoted.	1.1(LC, DB_T, DB_C, SL_T, LC_C, HB), 1.2(LC_R, LC_M, DB, SL), 1.3(LC, DB, SL, HB), 2.3(LC, DB, HB), 3.1(LC, DB, SL, HB), 3.2(LC, DB, SL, HB), 4.1(NW), 4.3(NW)
Offensive odor would occur by wastewater and waste from the facilities.	Adequate processing methods shall be conducted to reduce offensive odor. Tree buffer zones shall be established around the facilities to prevent from spreading offensive odor.	1.2(HB), 1.4(LC, DB, SL), 2.2(NW), 3.3(LC, DB, SL, HB), 4.2(NW)
Offensive odor would occur from the farming places of cattle and fish.	Making organic fertilizers from the faces and urine of cattle and wastes would be promoted. Spraying hydrated lime shall be conducted to reduce offensive odor for cattle barn.	1.2(SL), 2.2(LC, DB, HB), 2.3(LC, DB), 3.2(LC)
Offensive odor would occur by wastewater and waste along the process of making organic fertilizers.	Adequate processing methods shall be conducted to reduce offensive odor. Tree buffer zones shall be established around the facilities to prevent from spreading offensive odor.	1.3(LC, DB, SL, HB)

(29) Bottom Sediment

- Rating: D

As sizes of facilities to be constructed are relatively small in each Action Plan, no negative impacts are expected.

- (30) Accidents
 - Rating: C-B

Assumable Problems (Negative Impacts)	Assumable Mitigation Measures	Target Programs							
Accidents would be expected during construction of facilities, basic infrastructures, rural-area infrastructure, agricultural fields and forests.	Adequate measures, such as accident prevention manuals during construction phase, shall be conducted.	1.2(LC_R, LC_M, DB, SL, HB). 1.3(DB, SL, HB), 1.4(LC, DB, SL), 2.2(NW), 2.3(LC, DB). 3.1(LC, DB, SL, HB), 3.2(LC, DB, SL, HB), 3.3(LC, DB, SL, HB). 4.1(NW), 4.2(NW), 4.3(NW) 5.1(NW), 7.1(NW)							
Accidents would be expected especially during construction of agricultural fields, forests and soil-erosion prevention works on the steep slopes.	Adequate measures, such as accident prevention manuals during construction phase, shall be conducted through trainings on agricultural techniques.	1.3(LC), 2.1(LC, DB, SL, HB)							
Traffic accidents would increase due to increased number of vehicles by improvement of accessibility.	Adequate measures for traffic accidents, such as installation of sign boards, safety education, shall be implemented.	1.4(LC, DB, SL), 3.3(LC), 6.1(NW)							
Dispersal of chemicals onto people may occur in case of chemical dispersal along the trunk roads.	In case of using chemical and vaccines, appropriate treatment and management shall be done.	2.2(NW)							
Accidents would be expected in case of managing and breeding large animals.	Manuals to treat large animals with examples of accidents would be prepared and distributed to the farmers.	1.2(SL), 2.2(LC, DB), 3.2(LC)							
Accidents by boats would be expected during fishing by boats.	Adequate measures, such as accident prevention manuals during construction phase, shall be conducted through trainings on agricultural techniques.	2.3(HB)							
Conflicts on borderlines would be expected	Adequate system to supervise sanitation conditions of human and animals and to supervise to prevent from invasion/incoming of drugs, residual pesticides, exotic flora and fauna, and chemical pollution should be considered.	1.4(LC, DB, SL)							
Fire by the extracted diesel would be expected during the operation of oil-extracting facilities.	Adequate measures, such as accident prevention manuals during construction phase, shall be conducted.	4.3(NW)							
Flood would occur by washout of water storage.	Adequate measures, such as accident prevention manuals during construction phase and monitoring system, shall be conducted.	5.2(NW)							

12.2.2 Considered Items and Programs on the Environmental and Social Considerations by Items

Ratings by items and by Action Plan are shown in the following table (Table 12.2.1).

Items which should be especially considered on the environmental and social considerations on the occasion with implementation of the Action Plan are as follows:

- 6: The Poor, Indigenous and Ethnic People
- 7: Misdistribution of Benefit and Damage
- 9: Local Conflicts of Interests
- 11: Sanitation

Scoping on the Environmental and Social Considerations for Each Action Plan Table 12.2.1

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Source: JICA Study Team Rating: A: Serious impact is expected, B: Some impact is expected, C: Extent of impact is unknown (Examination is needed. Impacts may become clear as study progresses), and D: No impact is expected, and IEE/EIA is not necessary.

- 23: Water Pollution
- 25: Waste

Action `Plans which should be especially considered on the environmental and social considerations on the occasion with implementation of the Action Plan are as follows:

- 1.2: Agribusiness Promotion Program (LC_R, LC_M, DB, SL)
- 1.3: Safe Crop Production Program (DB, SL, HB)
- 1.4: Border Trade Promotion Program (LC, DB, SL, HB)
- 3.3: Rural Tourism Program (LC, DB, SL, HB)
- 4.2: Natural Forest Conservation Program (NW)
- 4.3: Biomass Energy Promotion Program (NW)

12.3 Kinds of Projects (Action Plans) Necessary for the Environmental Impacts Assessment

Among the 162 kinds with 20 groups in 7 categories of projects listed in Table 6.3.2 in Chapter 6 and Attachment 6.1, those projects which are relevant to the Action Plans formulated in the Master Plan and are necessary to be assessed by the Environmental Impacts Assessment are listed in Table 12.3.1. Those EIA reports shall be prepared in concurrence with the preparation of the F/S reports for those Action Plans relevant to nature and size of programs as shown in the following table. In case that nature and size of the Action Plan were not categorized into those in the following table, the Environment Protection Commitments should be prepared (refer to Clause 6.3.1).

Table 12.3.1Natures and Sizes of the Projects which are Relevant to the Action PlansFormulated in the Master Plan with Necessity of the EIA Reports

SN	Nature of Projects	Size	Target Program
2	Projects using part or the whole of land areas of nature conservation zones, national parks, historical-cultural relic areas, world heritages, biosphere reserves, and famous scenic places, ranked or not yet ranked, which are protected under decisions of provincial/municipal People's Committees	All	3.3(LC, DB), 4.2(NW)
3	Projects involving risks of directly and badly affecting water sources in river basins, coastal areas and areas having protected eco-systems	All	3.3(LC), 4.1(NW), 4.2(NW), 4.3(NW)
4	Projects to build infrastructures in urban centers or residential areas	Covering 50 ha or more	1.2(LC_R, LC_M, DB, SL, HB), 1.4 LC, DB, SL)
10	Projects to build tourist and entertainment resorts	Covering 10 ha or more	3.3(LC, DB, SL, HB)
26	Projects to build, renovate and upgrade motorways, and roads of grades I to III	50 km or more in length	1.4(LC, DB, SL)
27	Projects to build grade-IV roads	100 km or more in length	1.4(LC, DB, SL)
53	Projects on irrigation works	Covering 200 ha or more	1.2(LC_R, LC_M, DB, SL, HB), 5.1(NW)
56	Projects involving exploitation or conversion of use purposes of headwater protection forests, breakwater forests or special-purpose forests	Covering 5 ha or more	4.1(NW), 4.2(NW), 4.3(NW)
57	Projects involving exploitation or conversion of use purposes of natural forests	Covering 20 ha or more	4.1(NW), 4.2(NW), 4.3(NW)

SN	Nature of Projects	Size	Target Program
58	Forestation and forest exploitation projects	Forestation of 1,000 ha or more; exploitation of forests of 200 ha or	4.1(NW), 4.3(NW)
59	Projects to build consolidated rubber, cassava, sugarcane, coffee, cocoa, tea and pepper growing areas	Covering 100 ha or more	1.1(LC, DB_T, DB_C, SL_T, SL_C, HB), 1.2(LC_R), 4.1(NW)
60	Projects to build consolidated vegetable and flower growing areas	Covering 100 ha or more	1.2(LC_M, DB, SL, HB), 1.3(LC, DB, SL, HB), 2.1(LC, DB, SL, HB)
94	Timber processing projects	Design capacity of 5,000 m ³ or more per year	3.2(LC), 4.1(NW)
96	Household woodwork manufacture projects	Design capacity of 10,000 or more products per year	3.2(LC), 4.1(NW)
102	Food processing projects	Design capacity of 5,000 tons or more of products per year	1.2(LC_R, LC_M, DB, SL), 1.3(LC, DB, SL, HB), 3.2(LC, DB, SL, HB)
103	Cattle and poultry slaughter projects	Design capacity of 1,000 cattle or 10,000 poultry or more per day	2.2(LC, DB, HB), 3.2(LC)
109	Milk processing projects	Design capacity of 10,000 tons or more of products per year	2.2(SL, HB), 3.2(LC)
110	Edible oil processing projects	Design capacity of 10,000 tons or more of products per year	3.2(LC), 4.1 (NW)
115	Cereals processing projects	Design capacity of 10,000 tons or more of products per year	1.2(DB), 2.1(LC, DB)
116	Rice grinding and processing projects	Design capacity of 20,000 tons or more of products per year	1.2(DB), 2.1(LC, DB)
119	Tea processing projects	Design capacity of 10,000 tons or more of products per year	1.1(LC, DB_T, SL_T, HB)
120	Coffee processing projects	Design capacity of 5,000 tons or more of products per year, for the wet processing method; 10,000 tons or more of products per year, for the dry processing method; 1,000 tons or more of products per year, for processing coffee powder and instant coffee	1.1(DB_C, SL_C)
121	Cattle, poultry and aquatic animal feed processing projects	Design capacity of 5,000 tons or more of products per year	2.2(LC, DB, HB), 3.2(LC)
122	Projects to process aquatic by-products	Design capacity of 1,000 tons or more of products per year	2.3(LC, DB, HB), 3.2(LC)
126	Projects on aquaculture on sand	All	2.3(LC, DB, HB), 3.2(LC)
127	Large-scale cattle raising projects	1,000 cattle heads or more	2.2(LC, DB)
128	Large-scale poultry raising projects	20,000 poultry heads or more; 200 or more for ostriches; 100,000 or more for quails	2.2(LC, DB, HB), 3.2(LC)
133	Projects to produce organic fertilizers and micro-fertilizers	Design capacity of 1,000 tons or more of products per year	1.2(LC_R, LC_M, DB, SL), 1.3(LC, DB, SL, HB), 2.2(LC, DB, HB, NW), 2.3(LC, DB, HB, HB), 3.1(LC, DB, SL, HB), 3.2(LC), 3.3(LC, DB, SL, HB), 4.1(NW), 4.3(NW)
135	Projects to produce vaccines	All Design constitut of 50 (2.2(NW)
136	Projects to produce veterinary medicines	of products per year	2.2(NW)
148	rojects on dyeing textiles	АП	3.3(LC, DB, SL, HB), 3.3(LC, DB, SL, HB)

SN	Nature of Projects	Size	Target Program
149	Projects on non-dyeing textiles	Capacity of 10 million m or more	3.2(LC, DB, SL, HB),
		of fabric per year	3.3(LC, DB, SL, HB)
154	Projects on rubber latex processing plants	Design capacity of 5,000 tons or	1.2(LC_R), 4.1(NW)
		more of products per year	
155	Projects on rubber processing plants	Design capacity of 1,000 tons or	1.2(LC_R), 4.1(NW)
		more of products per year	
162	Other projects on renovation, upgrade and	Of a nature, size and capacity	-
	expansion	equivalent to projects numbered 1	
		to 161, except for projects	
		numbered 25 and 26 of this	
		Appendix	

Source: Decree No.21/2008/ND-CP Appendix. Serial numbers (SNs) in the table above are concurrent with those in the Appendix of the Decree.

12.4 Analysis of Alternative Plans (including a "Without Project" Situation)

12.4.1 Examination of the Condition without the Project

The following table shows the comparison of potential impacts between with and without the Project (Table 12.4.1). It was assumed that the whole the contents of the Master Plan will not be implemented in the "without the Project" condition.

Table 12.4.1	Comparison	between	With and	Without	the Project
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No	Potential Impacts	With Project	Without Project	Remarks
	Social Environment			
1	Involuntary Resettlement	/B	*	Involuntary resettlement will be expected partially (w/).
2	Local Economy such as Employment and Livelihood, etc.	++/A	=/B	Overall positive impacts on local economies would be expected by implementing the Project (w/).
3	Land Use and Utilization of Local Resource	/B	/B	Land use would be changed partially (w/).
4	Social Institutions such as social infrastructure and local decision-making institutions	/B	=/B	Overall positive impacts on local economies would be expected by implementing the Project (w/).
5	Existing Social Infrastructures and Services	++/B	/B	Overall positive impacts on local economies would be expected by implementing the Project (w/). Maintenance of the infrastructure would not be conducted continuously (w/o).
6	The Poor, Indigenous and Ethnic People	++/A	/B	Overall positive impacts on local economies would be expected by implementing the Project (w/).
7	Misdistribution of Benefit and Damage	++/C	/B	Overall positive impacts on local economies would be expected by implementing the Project (w/).
8	Cultural Heritage	/C	*	Negative impacts on cultural heritage would be expected, but quite small (w/).
9	Local Conflicts of Interests	/C	/B	Negative impacts on local conflicts expected by implementing the Project would be reduced by conducting mitigation measures (w/).
10	Water Usage or Water Rights and Rights of Common	/C	/B	Equalization of water usage would be expected (w/).

No	Potential Impacts	With Project	Without Project	Remarks
11	Sanitation	/C	=/B	Negative impacts on sanitation expected during
				operation of the facilities would be reduced by
				conducting the mitigation measures (w/).
12	Hazard (Risk)	/C	*	Negative impacts on hazard infectious diseases
	Infectious			expected during construction of the facilities would
	Diseases such as			be reduced by conducting the mitigation measures
	HIV/AIDS			(w/).
	Natural Environment	t		
13	Topography and	*	*	Impacts would be quite small in magnitude, because
	Geographical			of small size and quantity of the facilities and
	Features			infrastructure.
14	Soil Erosion	/C	/B	Soil erosion would be expected at the time of
				establishing terrace field and terraced paddy fields on
				the slopes (w/). Soil erosion would be continuously
				expected by the constant activities of cultivation on
				the slopes (w/o).
15	Groundwater	/C	=/B	Negative impacts on groundwater expected by
				implementing the Project would be reduced by
				conducting the mitigation measures (w/).
16	Hydrological	/C	/B	Negative impacts on hydrological situation expected
	Situation			by implementing the Project would be reduced by
				conducting the mitigation measures (w/).
17	Coastal Zone	*	*	As the target areas are inland areas and far from the
				coastal zones, no negative impacts are expected.
18	Fauna, Flora and	/C	/A	Negative impacts on fauna, flora and biodiversity
	Biodiversity			would be expected by construction of new facilities
				and infrastructures (w/). On the contrary,
				degradation of qualities in fauna, flora and
				biodiversity would be expected without the Project in
				case of illegal logging, extensive collection of
				firewood and wild plants, illegal hunting of wild
				animals, and so on (w/o).
19	Meteorology	*	*	Impacts would be quite small in magnitude, because
				of small size and quantity of the facilities and
				infrastructure.
20	Landscape	/C	=/B	Negative impacts on landscape would be expected
- 21		19	19	partially, but quite small in magnitude (w/).
21	Global Warming	/C	=/C	Negative impacts on global warming would be
	D-11-+-			expected partially, but quite small in magnitude (w/).
22	Pollution	10	/C	Nanating importants on air collection and the
22	Air Pollution	/C	=/C	implementing the project would be reduced by
				conducting the mitigation measures $(w/)$
22	Watan Dallution		_/ D	Nagative imposts on water pollution expected by
23	water Pollution	/C	=/ D	implementing the Project would be reduced by
				conducting the mitigation measures (w/)
24	Soil		-/C	Negative impacts on soil arcsion expected by
24	Contamination	/C	-/C	implementing the Project would be reduced by
	Contamination			conducting the mitigation measures $(w/)$
25	Wasta		_/ D	Negative impacts on waste expected by
25	waste	/C	—/ D	implementing the Project would be reduced by
				conducting the mitigation measures $(w/)$
26	Noise and		-/C	Negative impacts on noise and vibration expected by
20	Vibration	/C	-/C	implementing the Project would be reduced by
	VIDIAUOII			conducting the mitigation measures (w) Or the
				contrary noise would be increased by increment of
				traffic volume $(w/)$
27	Ground	/ C	*	Negative impacts on ground subsidence expected by
<i></i> ′	Subsidence	/ C		implementing the Project would be reduced by
	Subsidelite			conducting the mitigation measures (w/)
L			<u> </u>	conducting the integation incastics (w/).

No	Potential Impacts	With Project	Without Project	Remarks
28	Offensive Odor	/C	/C	Negative impacts on offensive odor expected by
				implementing the Project would be reduced by
				conducting the mitigation measures (w/).
29	Bottom Sediment	*	*	Impacts would be quite small in magnitude, because
				of small size and quantity of the facilities and
				infrastructure.
30	Accidents	/B	*	Negative impacts would be reduced by considering
				the accidents during construction of facilities (w/).
				Traffic accidents would be increased by increment of
				traffic volume (w/).

Note: --/B: left-hand side of each cell represents the direction of the impact; right-hand side represents the magnitude of the impact. ++: Positive impact, --: Negative Impact, =: Neutral Impact, A: relatively significant impact, B: relatively medium-sized impact, C: relatively small impact, *: No impact or no corresponding impact, w/: with the Project, w/o: without the Project

As a result of the comparison, it is expected that the Master Plan will raise or increase positive impacts related to social environment, such as local economy, the poor/indigenous/ethnic people, misdistribution of benefit and damage, taking the mitigation measures considered in Section 12.2.1 into consideration. In addition, although some negative impacts on natural environment and pollution would be expected in the case of "With the Project" condition, those impacts would be reduced and decreased by conducting mitigation measures considered in Section 12.2.1. On the other hands, under the "without the Project" condition, not only social environment, such as local economy, the poor/ indigenous/ ethnic people, misdistribution of benefit and damage, would be negatively impacted accordingly, but also natural environment, especially fauna, flora and biodiversity, would be impacted negatively by continuous conduction of disorderly utilization of the natural environment.

12.4.2 Examination of the Condition without Environmental Considerations

In the process of formation of the Action Plan in the Master Plan, a series of environmental and social considerations were investigated and mitigation measures were examined in order to implement the Action Plans in socially and environmentally friendly and sustainable manner as mentioned in Section 12.2.1. In order to examine the effectiveness and validity of the Action Plan from the viewpoints of the social and environmental aspects, those environmental and social considerations were evaluated by comparing the condition "with environmental and social considerations" with the condition "without environmental and social considerations" with the condition impacts between with and without environmental and social considerations (Table 12.4.2).

Table 12.4.2 Potential Impacts with and without Environmental Considerations

No	Potential Impacts	Without Considerations	With Considerations
	Social Environmen	t	
1	Involuntary Resettlement	Living conditions at the resettled areas would be gotten worsen.	Living conditions at the resettled areas would be gotten better compared with those of the original villages.
2	Local Economy such as Employment and Livelihood, etc.	Implementation of the programs is to be conductive to economic differentiation within regions and professional communities, and oppression against the private sectors.	Economic differentiation within regions and professional communities would be redressed with mitigation measures.
4	Social Institutions such as social infrastructure and local decision-making institutions	Potential oppositionists are expected in case of introduction of new varieties and new techniques.	New varieties and new techniques would be introduced and extended even to potential oppositionists of new varieties and new techniques.
6 7	ThePoor,IndigenousandEthnic PeopleMisdistributionofBenefit	Benefits would not be equally distributed especially to the ethnic people living in mountainous areas unless thorough extension. There could be inequality on the benefit distribution between the beneficiaries and	Even the ethnic people living in mountainous areas and the poor could receive the benefit with the mitigation measures. Inequality on the benefit distribution between the beneficiaries and project-affected people
	Damage	project-affected people, especially women and ethnic peoples living in the mountainous areas.	would be alleviated by the mitigation measures.
11	Sanitation	Negative impacts on sanitation would be expected in some extent in case of newly constructed labor camps for the construction of the facilities and infrastructures.	Negative impacts would not be expected in case of construction of facilities and infrastructures with the mitigation measures.
12	Hazard (Risk) Infectious Diseases such as HIV/AIDS	Negative impacts on diseases would be expected in case of influx of outsiders and material flows.	Negative impacts on diseases would be reduced even though the increment of influx of people and material flows.
	Natural Environme	nt	
16	Hydrological Situation	Negative impacts on hydrological situations would be expected by means of inadequate discharge water from the facilities in operation stage and inadequate usage of chemical fertilizers and pesticides, in case of inadequate irrigation farming	Negative impacts on hydrological situation would be reduced and alleviated by adequate discharge water and usage of pesticides.
18	Fauna, Flora and Biodiversity	Negative impacts on fauna, flora and biodiversity in some extent would be expected in case of inadequate resource management and introduction of exotic species.	Negative impacts on fauna, flora and biodiversity would be reduced and alleviated by adequate resource management and management of introduced exotic species.
22	Pollution Water Pollution	Water pollution would occur by indepute	Negative impacts on water pollution would be
23	water Ponution	water pollution would occur by inadequate wastewater disposal from the facilities during operation phase and inadequate usage chemical fertilizers and pesticides, in case of inadequate irrigation farming.	reduced and alleviated by adequate discharge water and usage of pesticides
25	Waste	Waste would be increased during construction and operation of the facilities.	Negative impacts on waste would be reduced and alleviated by appropriate disposal of waste and thorough prohibition of illegal disposal.
28	Offensive Odor	Offensive odor would occur by wastewater and waste from the facilities and residues.	Offensive odor would be reduced and alleviated by adequate processing methods and promotion of making of organic fertilizers.
30	Accidents	Accidents during construction stage would be increased.	Number of accidents during construction stage would be decreased by the mitigation measures

The main differences in the impacts between with and without considerations are social environment, such as local economy, the poor/indigenous/ethnic people, misdistribution of benefit and damage, and so on. In addition, negative impacts on natural environment, such as hydrological situation, and fauna, flora and biodiversity and so on, and those on pollution, as water pollution, waste, offensive odor, and so on, could be reduced and alleviated by examination and consideration of environmental and social considerations. As a result, it would be clear that those considerations might be effective and valid for the social conditions directly and for the natural environment.

12.4.3 Conclusion

The environmental and social considerations for conducting of Action Plans would be concluded as follows:

- 1) As a whole, the Action Plans would be evaluated to be acceptable from the social viewpoints if the adequate mitigation measures mentioned in Section 12.2.1 would be undertaken,
- 2) According to the regional features as of high portion of ethnic people in the Region, the thorough conduction of introduction and extension of the projects to the people living in the remote and mountainous areas should be conducted for the people there to receive and enjoy the benefit and supports from the projects, and
- 3) Negative impacts would be expected on natural environment and pollution in some extent by implementation of the Action Plans. However, those negative impacts could be reduced and alleviated by thorough considerations and conduction of mitigation measures mentioned in Section 12.2.1.

12.5 Draft Study Items and Implementation Schedule of SEA for the Master Plan

According to the officials in the competent department on EIA of MONRE (Department of EIA and Appraisal), the SEA study should be conducted for this Master Plan when getting approval by the Government as same as the other Master Plans pursuant to the Law on Environmental Protection. Although almost contents for the SEA study can be collected from the Master Plan Report, some additional surveys are to be conducted to finalize the SEA study. The SEA study is to be conducted by ICD (MARD) and NIAPP as C/P organization.

The SEA study consists in following items:

- 1) Collection and review of relevant current environmental and social conditions through secondary information and field reconnaissance
- 2) Impact identification and assessment: to provide information on potential impacts of the project and the characteristics of the impacts, magnitude, distribution, affected people, and their duration,
- 3) Propose of general directions and mitigation measures for solving environmental and social problems by implementation of the project,
- 4) Preparation of the SEA report, and

5) Preparation of Terms of Reference for EIA Studies and necessary environmental procedures in the future stages of the Project.

Contents of the SEA Report are to be included as follows:

Table of Contents incl. list of tables, figures, and abbreviations

Executive Summary (Summary results of SEA study for the Master Plan)

- Chapter 1 Objectives and Scope of the SEA Study and SEA System in Vietnam
- Chapter 2 General Introduction about the Master Plan
- Chapter 3 General description of natural, socio-economic and environmental conditions related to the project
- Chapter 4 Prediction of possible negative environmental impacts during the project implementation process (sources of impacts, objects and scale of impacts; environmental changes, assessment of the views and aims of the project in accordance with the environmental protection objectives)
- Chapter 5 Guidance on sources of statistics, data and assessment methods
- Chapter 6 Proposal on general direction, solution to environmental problems during the project implementation

Conclusions and Recommendations

List of References

Appendices

The draft implementation schedule of SEA study is shown in the following figure.

Item	Details					2008						2009	
	(Activities, Meetings, Reports)	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Master Plan				-									
Study	Steering Committee					Δ							
	Final report												
SEA Study						_							
	SEA Report												
Application													
and Evaluation	Document Examination												
of the SEA	Establishment of Appraisal								-				
Report	Council												
	Appraisement of the SEA report								_	_			
	Reporting results of appraisal									-			
	Appraisal Results and Minutes of												
	Meetings												

Figure 12.5.1 Draft Implementation Schedule of the SEA Study

12.6 Consultations with Local Stakeholders

12.6.1 Outline of Stakeholder Meetings

Purposes of the Stakeholder Meetings are to inform the outcome of the current study and planning, to

exchange information and opinions amongst the C/P organizations, JICA Study Team, and other stakeholders. Outline of the stakeholder meetings are shown in Table 12.6.1.

No.	Phase	Main Subjects	Approximate Period	Location	No. of Participants
1	Coordination between Related Organizations	• Explanation and confirmation on purposes of the Study and methods of surveys to the central government bodies and PPCs	13 th Feb 2007	Hanoi	45 persons
2	Examination of Approach for Development	 Explanation and confirmation on purposes of the Study and methods of surveys to the provincial government bodies and PPCs, including CEMA and WUs. Explanation and discussion on the development scenarios (Conducted as the Kick-Off Seminars) 	7 th Mar. 2007 in Dien Bien 8 th Mat. 2007 in Lai Chau 9 th Mar. 2007 in Son La 10 th Mar. 2007 in Hoa Binh	Hoa Binh, Son La, Lai Chau, Dien Bien	120 persons in total
3	Explanation of Approach for Development to Advisory Group	• Explanation of study summary and draft approach for development to the Advisory Group for the Study	6 th Sep, 2008	Hanoi	10 persons
4	Explanation and Discussion of Draft Development Scenarios	• Explanation and discussion of draft development scenarios to ICD/MARD and PPCs (Conducted as the Steering Committee on PR-1)	7 th Sep. 2007	Hanoi	31 persons
5	Discussion on Development Scenarios	• Explanation on development scenarios to DARDs and collection of their comments	29^{th} Oct 2007 in Hoa Binh 29^{st} Oct 2007 in Son La 30^{th} Oct 2007 in Lai Chau 31^{st} Oct 2007 in Dien Bien	Lai Chau, Dien Bien, Son La, Hoa Binh	12 persons in total
6	Preparation of Draft Master Plan (Draft Programs)	 Explanation and discussion of the draft Master Plan to the provinces and districts Review workshops on CDP 	24 th and 25 th Jan. 2008 in Hoa Binh 21 st Feb. 2008 in Lai Chau 25 th and 26 th Feb, 2008 in Dien Bien Meeting in Son La was cancelled by their reasons	Hoa Binh, Lai Chau, Dien Bien	170 persons in total
7	Explanation and Discussion on Draft Master Plan	• Explanation and discussion on the draft Master Plan to ICD/MARD and PPCs (Conducted as the Steering Committee for IT/R)	7 th Mar 2008	Hanoi	24 persons
8	Explanation of Action Plans	 Information dissemination of the draft Master Plan Information dissemination of the draft Action Plans 	15 th Jul, 2008	Hanoi (Participants from Hoa Binh, Son La, Lai Chau, Dien Bien)	27 persons in total

Table 12.6.1 Outlines and Schedule of the Stakeholder Meetings

No.	Phase		Main Subjects	Approximate Period	Location	No. of
						Participants
9	Explanation	of	• Information dissemination of	26 th Aug, 2008	Hanoi	30 persons
	Action Plans		the Master Plan		(Participants	in total
			• Information dissemination of		from Hoa	
			the Action Plans		Binh, Son La,	
			• Collection of feedbacks from		Lai Chau,	
			participants		Dien Bien)	
			(Conducted as the Steering			
			Committee)			

Source: JICA Study Team

Participants at the meetings include: C/P organizations, Provincial People's Committees, provincial DARDs, other departments/sub-departments in the provinces, representatives from districts and communes other stakeholders, such as universities, research centers, and so on. Details of the participants are shown in the following table (Table 12.6.2).

Table 12.6.2 Details of the Participants at Each Stakeholder Meeting

No.	Phase	Period				Details	of the Part	ticipants				Total
			MARD	DARD	PPC	DPI	District	JST	C/P	JICA	Others	
1	Coordination	Feb.,	5	5	4	3	-	8	14	2	4	45
	between Related	2007										
2	Organizations	Man		12 ¹)	12 ¹⁾	01)	co 1)	o 1)	0 ¹⁾	1 ¹)		120 ¹)
2	Approach for	Mar.,	-	15	12 '	9 /	00	0	9 '	1 '	-	120
	Development 101	2007										
3	Explanation of	Sep.,	-	-	-	-	-	2	1	3	4	10
	Approach for	2007										
	Development to											
	Advisory Group											
4	Explanation and	Sep.,	3	6	3	3	-	7	4	3	2	31
	Discussion of Draft	2007										
	Development											
~	Scenarios	0.1		10								10
5	Discussion on	Oct.,	-	12	-	-	-	-	-	-	-	12
	Scenarios	2007										
6	Preparation of Draft	Ian to	_	21 ²⁾	9 ²⁾	8 ²⁾	61 ²⁾	27 ²⁾	32 ²⁾	12 ²⁾	_	170^{2}
0	Master Plan (Draft	Feb		21		0	01	27	52	12		170
	Programs)	2008										
7	Explanation and	Mar.,	2	7	-	-	-	5	6	3	1	24
	Discussion on Draft	2008										
	Master Plan											
8	Explanation of	Jul.,	-	7	2	2	-	5	11	-	-	27
	Action Plans	2008										
9	Explanation of	Aug.,	3	5	1	3	-	2	10	5	1	30
	Action Plans	2008										

Note:

1) Aggregated numbers of participants at the four meetings at four provinces.

2) Aggregated numbers of participants at the three meetings at three provinces except for Son La province

12.6.2 Results of the Meetings and Reflection to the Master Plan

Results of the stakeholder meetings mentioned above and reflection to the Master Plan are as followings:

- (1) Coordination between Related Organizations (Feb., 2007)
 - 1) Main results of the meeting
 - · Explanation and confirmation on purposes of the Study and methods of surveys to the central

government bodies, such as MPI and MARD, and PPCs

- · Collection of comments from provincial governments and discussions
- 2) Reflection to the Master Plan
 - It was confirmed that the SEDP would be considered as the upper-level plan,
 - Provincial governments pointed out the urgent needs of improvement of livelihood and income and intensions on activation of rural economies by border trading. These issues were reflected to the development scenarios.
 - It was confirmed that the Pre-Feasible Study (Pre F/S) for the priority projects mentioned in the S/W would be conducted in accordance with the laws and guidances in Vietnam
 - The Master Plan would be composed in the Provincial Master Plan and Regional Master Plan.
- (2) Examination of Approach for Development (Kick-off seminar on Mar., 2007)
 - 1) Main results of the meeting
 - · Reports on the Steering Committee held on 13th February 2007
 - Common understandings between the JICA Study Team (JST) and local governments on current situations of agriculture and rural development in the Region and problem structures and development needs
 - Explanation and discussion on the study schedule and methods mentioned in the Inception Report
 - Explanation on purposes and methods of CDP formulation and request for cooperation on conduction of CDP formulation to each province and district
 - 2) Reflection to the Master Plan
 - Current conditions on SEDP and positions of development of rural infrastructure were clarified
 - The necessity of the survey on the development program considering the ethnic tribes, especially for handicraft, were confirmed, hence additional assignment of handicraft for the 2nd year was decided.
 - Additional assignment on social consideration for the 2nd year was decided to grasp the current situations of Son La Resettlement Program and clarify the position of that program onto the Master Plan.
 - The implementation methods of CDP study was confirmed for verification of the bottom-up approach; hence the CDP studies would be conducted for all the 32 districts in the Region, taking the ethnic diversity and regional characteristics into consideration.
- (3) Explanation of Approach for Development to Advisory Group (Advisory Group Meeting on Sep., 2007)
 - 1) Main results of the meeting
 - Explanation on the study purposes and methods mentioned in the Progress Report (1) (PR-1)

and study progress

- · Positions and important notices of the development of the Region to Vietnam
- · Brief explanation on the draft development scenarios
- 2) Reflection to the Master Plan
 - Current situations and problems on the Poverty Reduction Program were examined and importance on pre-planning studies and monitoring were confirmed. Importance of monitoring would be verified by conducting the rural infrastructure surveys for those infrastructures constructed by the Poverty Reduction Program in four communes in four districts. Furthermore, the monitoring program was added to the Master Plan.
 - As the importance on the ethnic tribes and environmental protection in the Region were confirmed, those programs to contribute to diversification of the income resources and environmental protection would be formulated in the Master Plan.
- (4) Explanation and Discussion of Draft Development Scenarios (Steering committee on Sep., 2007 in Hanoi)
 - 1) Main results of the meeting
 - JICA Study Team (JST) explained the summary of the Progress Report (1) and the development scenarios proposed by the JST.
 - ✓ Capacity development programs are required to enhance management and technical skills of local staffs at districts and communes. Although methods of CDP formulation which were conducted on the bottom-up approach would seem to be effective and efficient, capacity of extension staffs of communities should be carefully considered and improved.
 - \checkmark Two issues on education and healthcare should be included in the Study.
 - ✓ The Study will attach higher priority to the projects which will contribute to large portions of the regional people and the socio-economy rather than the projects which will benefit to the limited extent.
 - 2) Reflection to the Master Plan
 - Capacity development programs to the local staff of provinces, districts and communes will be formulated and included in the Master Plan.
 - Although education and healthcare issues are very important, it is recommended to concentrate more on issues mentioned in the PR-1, due to the large scale of this Master Plan Study.
 - Some programs aim at some specific areas, such as districts/communes, at the time of selection of priority projects. However, the priority projects were selected and formulated on the basis that the project would contribute to large amounts of the regional people and the socio-economy rather than the projects which would benefit to the limited extent.

- (5) Discussion on Development Scenarios (on Oct., 2007 in the Region)
 - 1) Main results of the meeting
 - Explanation of the development scenarios and discussions on them were conducted with each provincial DARD in order to reflect their intensions into the development scenarios.
 - ✓ Safety food security was the most prioritized task to the Region. Furthermore, extension and promotion of cash crops, such as industrial crops, with high value would also be important.
 - ✓ High priority would be set on the capacity development program to the local administration, especially for the improvement of planning capacity in the district and community level.
 - ✓ Ethnic tribes should be taken into consideration and adequate investment should be made.
 - ✓ High priority should be given to rural road development in the field of rural infrastructure development. The necessity to establish the development methods of small-scale infrastructures was agreed in common in the irrigation sector.
 - ✓ Development and tending of the production forests would be important and rubber tree plantation would be promoted in the Region. NTFPs would also be promoted in the Region.
 - ✓ Animal husbandry and aquaculture were also important development components.
 - 2) Reflection to the Master Plan
 - High priority was put to the agriculture development programs to promote food security and improvement of farmers' income in the Master Plan.
 - Capacity development program on the staff in the provinces, districts and communes would be formulated in the Master Plan
 - Programs on rural road development and small-scale irrigation would be proposed in the Master Plan
 - Programs on forestry, animal husbandry and aquaculture would be proposed.
- (6) Preparation of Draft Master Plan (Jan. to Feb., 2008 in three provinces, except for Son La)
 - 1) Main results of the meeting
 - The draft Master Plan were explained to each district in the province and discussions were conducted as follows:
 - ✓ Contents of the 19 kinds of Action Plans composed in the Master Plan and progress to formulate those plans
 - Preliminary evaluation on the implementation effect of each Action Plan in accordance with the 14 numbers of the evaluation aspects which were set by the JST
 - Review results of the CDP formulation were presented by each district.
 - \checkmark High priority would be given to rural road development in the field of rural

infrastructure development. The development methods of small-scale infrastructures would be established in the irrigation sector.

- ✓ Development and tending of the production forests would be important and rubber tree plantation would be promoted in the Region. NTFPs would also be promoted in the Region.
- ✓ Animal husbandry and aquaculture were also important development components.
- High priorities were put to the rural infrastructure development by the results of the CDP formulation in each district. The JST explained that the formulation of the agriculture and rural development plan was conducted insufficiently which should be conducted in cooperation with the local communities.
- 2) Reflection to the Master Plan
 - As all the 19 Action Plans proposed by the JST were agreed by the central and local governments, the detailed examination and materialization of the Action Plans were conducted on the basis of the draft Master Plan.
 - Development programs on the rural road, irrigation, water supply and rural electrification were formulated in the rural infrastructure sector to which the CDP formulation put high priority.
 - Training programs to the participatory development experts were formulated in the capacity building program by experiences and lessons learned through the CDP studies.
- (7) Explanation of Draft Master Plan (Steering Committee on Mar., 2008 in Hanoi)
 - 1) Main results of the meeting
 - Explanation on the Draft Master Plan was conducted to the central government and local governments and discussions on the draft Master Plan was conducted as follows:
 - ✓ Contents of 19 numbers of the Action Plans which composed in the Master Plan
 - ✓ Preliminary evaluation on the implementation effect of each Action Plan in accordance with the 14 numbers of the evaluation aspects set by the JST
 - \checkmark Explanation on approach for development and formulation methods of the Action Plans
 - 2) Reflection to the Master Plan
 - As all the 19 Action Plans which were proposed by the JST were agreed by the central and local governments, the Master Plan was settled and would be finalized.
 - It was confirmed that formulation of detailed Action Plans, which were proposed in the Master Plan, would be more adapted to and adequate for the study purpose rather than prioritization of the plans and implementation of the Pre F/S on the Action Plans.
 - It was confirmed that five to ten numbers of Action Plans would be formulated for each province.

- (8) Explanation of Action Plans (Staff meeting on Jul., 2008 in Hanoi)
 - 1) Main results of the meeting
 - Opinions and comments on the draft Master Plan and Action Plans were presented by the provincial DARDs.
 - The JST explained that opinions and comments on the draft Master Plan and Action Plans which were acceptable would be reflected into the Master Plan and Action Plans, and accounted for reasons not to reflect their opinions and comments which were hard to accept.
 - 2) Reflection to the Master Plan
 - Opinions and comments on the draft Master Plan and Action Plans by the provincial DARDs which were acceptable to be included were reflected into the Master Plan and Action Plans.
- (9) Explanation of Action Plans (Steering committee on Aug., 2008 in Hanoi)
 - 1) Main results of the meeting
 - Opinions and comments on the DfR were presented by the provincial DARDs and agreed by the Committee as follows:
 - ✓ As the food security is utmost important issues in the Region, the assistances on food crop production in the border areas would be important and necessary issues. Simultaneously, the crop diversification has to be promoted for improvement of farmers' incomes in the Region.
 - ✓ Either forest or watershed protection on the Da river basin should be taken into consideration as the regional issues to be achieved by joint efforts by the four provinces. Therefore, rubber plantation will be promising in the Region in viewpoints of income resource diversification and income improvement. Plantation of Jatropha should be conducted on the trial basis by referring to the experiences through the on-going trial in Lai Chau province.
 - ✓ As the quality improvement of cash crops is an important issue in the agricultural sector, it is appraisable that the quality improvement of tea leaves would be focused in the Master Plan. Some other districts in the Region would be requested to be included in the Action Plan as one of the candidate areas.
 - ✓ The Region often suffers from the natural disasters. Although the Steering Committee agreed that the more attention should be paid to resettlement of local residents from disaster susceptible areas, this issue should be added in the Report as recommendation of the Study.
 - ✓ All the four provinces appreciated and agreed to include the promotion programs on NTFP and handicraft industry under the Master Plan.
 - ✓ As the infrastructure development is one the key issues in the Region, more investment should be allocated to further installation of these facilities under the on-going poverty reduction programs.

- ✓ The capacity development of the government staff, especially for districts and communes, is urgently required for smooth project operations from plan formulation to monitoring and evaluation.
- 2) Reflection to the Master Plan
 - The followings were reflected into the Master Plan.
 - ✓ Some districts were appointed as the candidate areas additionally based on the results of examinations.
 - ✓ Resettlement of local residents from disaster susceptible areas would be added in the Report as one of recommendations of the Study.

Chapter 13

Evaluation of Master Plan

13.1 Preliminary Assessment of Programs

13.1.1 Criteria for Assessment

The following 14 aspects were taken into consideration for the assessment.

- 1. Contribution to Regional Economy
- 2. Investors' Incentives
- 3. Contribution to Poverty Reduction
- 4. Urgency among rural communities
- 5. Adaptability to Development Needs among Farmers
- 6. Adaptability to DARD's Mandate
- 7. Adaptability to Other Agencies' Mandate
- 8. Technical Capacity of Farmers
- 9. Fund Requirement
- 10. Cost Performance
- 11. Time Requirement
- 12. Benefits to Ethnic Minorities in Higher Mountainous Areas
- 13. Social Impacts
- 14. Environmental Impacts

13.1.2 Results of Assessment

The results of preliminary assessment for each of 19 programs are stipulated in Table 13.1.1 and summarized below.

(1) Programs Prioritized from Viewpoint of Regional Economic Development

Favorable economic impacts to the regional economy are expected through implementation of the following three programs under the Market-Oriented Agricultural Promotion Plan.

- 1.2 Agribusiness Promotion Program
- 1.3 Safe Crops Production Program
- 1.4 Border Trade Promotion Program

They are followed by the following four programs.

- 1.1 Local Industrial Crop Production Improvement Program
- 3.1 Non-Timber Forest Products (NTFP) Promotion Program
- 4.1 Da River Watershed Conservation Program
- 4.3 Biomass Energy Development Program

1. Scores are not quantitative but qualitative on the basis of the study results. 2. Higher marks are given to the programs by which social and environmental impacts are lower.

Note:

(2) Programs Prioritized from Viewpoint of Private Investors

The above-mentioned seven programs will motivate the private sectors. The private investors will be encouraged to finance the agribusiness for food processing and the safe crops production under the concept of food safety in the Region. In addition, the private investors will also recognize their business chance in jatropha production through the Biomass Energy Development Program (4.3).

Apart form agricultural production, the following two programs will also be interested by the private investors in future.

- 3.2 Handicraft and Cottage Industry Promotion Program
- 3.3 Rural Tourism Program

(3) Programs Prioritized from Viewpoint of Poverty Reduction

Poverty reduction in the Region should be promoted from both approaches of food security and income generation of rural farmers. The Mater Plan proposes increased food production mainly for home consumption under the Regional Food Security Improvement Plan and improvement of farm household income under the Market-Oriented Agricultural Promotion Plan. To achieve both goals the following programs are the key.

- 2.1 Remote Area Food Crop Production Program
- 1.4 Border Trade Promotion Program
- 1.2 Agribusiness Promotion Program
- 1.3 Safe Crops Production Program

Beside Remote Area Food Crop Production Program (2.1), Animal Health and Disease Control Program (2.2) can be prioritized for implementation. Both programs are important for ethnic minorities living in higher mountain areas. Inland Fishery Supporting Program (2.3) somewhat limits its target areas where water resources are available throughout the year. Although Inland Fishery Supporting Program (2.3), in this regard, can be less prioritized than Animal Health and Disease Control Program (2.2), it is still one of the most important programs from view point of food security.

Poverty reduction will also be highly promoted by Economic Activity Diversification Plan consisting three programs and Da River Watershed Conservation Program (4.1) as well as Biomass Energy Development Program (4.3).

(4) Programs Prioritized from Viewpoint of Improvement of Rural Living Conditions

The study for Commune Development Program verified that development priority in the all four provinces is given to four infrastructural components such as irrigation, rural roads, water supply and rural electrification in almost all of districts of the Region. The on-going poverty reduction programs especially for SPL of JBIC attach the highest priorities to these components. It is expected that infrastructural development in the Region is realized for implementation as soon as possible.

The Master Plan proposes Irrigation and Domestic Water Supply, Rural Road Development and Rural Electrification Plans in order to make the on-going poverty reduction programs more sustainable and to supplement them. The following four (4) programs were proposed.

- 5.1 Water Users Organization (WUO) Strengthening Program
- 5.2 Mountain Stream Multipurpose Use Program
- 6.1 Rural Road Maintenance Program
- 7.1 Renewable Energy Development for Rural Electrification Program

The programs for roads (6.1) and electrifications (7.1) are ranked higher than the programs for irrigation development. Although the development needs of irrigation are always high, potential social risk as a result of the irrigation development is not negligible. That is, irrigated paddy production is limitedly practiced by some groups of ethnic minorities and irrigation project tends to limit its beneficiaries resulting in exacerbation of income gap in rural areas. The road development requires huge investment for its implementation. Among the rural infrastructure components, rural electrification is ranked at slightly higher position. Small-scale electric power supply systems are often suitable for isolated villages in the sparsely populated areas such as Northwestern Region, where the extension of the national grid need huge investment.

(5) Programs Prioritized from Viewpoints of Fund Requirement and Cost Performance

Fund requirement are relatively lower for the programs under the Market-Oriented Agriculture Promotion Plan and Non-Timber Forest Products (NTFP) Promotion Program (3.1) since large facilities are not required. Their cost performance or benefit-cost ratio is also higher than others. In contrast, cost implication of Border Trade Promotion Program (1.4) and Remote Area Food Crop Production Program (2.1) tends to be large due to higher transportation cost through insufficient access particularly in the Northwestern Region. Rural Tourism Program (3.3) is favorable in terms of the cost performance but it requires greater investment.

(6) Programs Prioritized from Viewpoints of Environmental Impacts

It is important to formulate the programs so as to minimize negative environment impacts on the Region. Social consideration is also prerequisite. Such considerations are required not only for Environmental Conservation and Biomass Energy Development Plan but also for Market-Oriented Agricultural Promotion Plan, Regional Food Security Improvement Plan, and Economic Activity Diversification Plan.

Each of 23 ethnic minorities in the Region has their own traditional habits and livelihoods. The Study carried out field survey on the present monitoring conditions for the poverty reduction programs in the selected four communes. The survey verified variation among their living-styles. Needs for electrification among ethnic minorities in higher mountain areas are generally higher, while ones for

irrigation are higher in lowland areas, where paddy is the main crop. Ethnic minorities in higher mountain areas are most likely to be excluded from major beneficiaries of irrigation project. Although this assessment does not refer to specific examples for such exclusions, it can be concluded that irrigation development potentially undertakes social risk, since it requires special attentions for potentially expanded income gap.

Natural Forest Preservation Program (4.2) under Environmental Conservation and Biomass Energy Development Plan is important in terms of ecological conservation. The resource management is highly important and should be implemented through the top-down approach by the government initiatives. It is also important to facilitate farmers to understand that environmental conservation has long term efficiency in sustainable and stable agricultural development.

Resource management is one of the primary tasks of the government. Therefore, environmental conservation and social consideration should be included as one of the most important training items in Capacity Building Plan

(7) Programs Prioritized from Viewpoints of Capacity Building among Local Government Staff

Two capacity building programs, namely, Capacity Building Program on Rural Development Management (8.1) and Monitoring and Evaluation Capacity Building Program (8.2) are effective in terms of environmental and social impacts consideration. These programs will introduce systematic training programs for participatory development from project planning to implementation and operation and maintenance.

Capacity Building Program on Rural Development Management (8.1) can be carried out within the framework of other related program. Monitoring and Evaluation Capacity Building Program (8.2) aims at strengthening administrative capacity for democratic project management. This program includes establishment of GIS database and training on its application capacity, which will be required for accountability of executing agencies to the government and donors.

13.2 Assessment of Program Impacts on Farm Income

13.2.1 Objectives and Methodology

In order to assess project benefits, impacts on farm income are assessed for the following programs among 19 programs, which are expected to contribute increase of farm income.

- 1.1 Local Industrial Crop Production Improvement Program
- 1.2 Agribusiness Promotion Program
- 1.3 Safe Crops Production Program
- 2.1 Remote Area Food Crop Production Program
- 2.2 Animal Health and Disease Control Program

2.3 Inland Fishery Supporting Program

5-6

4-6

60%

10%

Cultivation Farm in Lower

Lowland Paddy Cultivation

Mountain Area

Farm

- 3.2 Handicraft and Cottage Industry Promotion Program
- 5.2 Mountain Stream Multipurpose Use Program

Based on the existing data on land use, agriculture production, and socio-economic conditions in the Region, typical farm households can be estimated and classified into the following types.

Tuno	Family	%	Tunical Forming Dottoms	Irrigation	Туре
Туре	Size	Share	Typical Farming Fatterns	Facilities	No.
Swidden / Upland			Consider and onland configuration in share land	N-4	
Cultivation Farms in	5-7	30%	Swidden and upland cultivation in slope land	INOL	1
Higher Mountain Area			areas	Available	
Terrace / Upland			Disc termony and unland area sultivation in lawar	Not	
		6001	Rice terrace and upland crop cultivation in lower	INOL	•

mountain areas(one crop of paddy or upland rice)

Lowland paddy and upland crop cultivation

Lowland paddy and upland crop cultivation

Typical Farm Household Types in Northwestern Region Table13.2.1

2

3

4

Available

Available

Limitedly

Available

Based on the above typical farms, assessment conditions are classified according to the typical action plans under the corresponding programs as shown below.

(two crop of paddy)

(one crop of paddy)

Program	Typical Action Plan	Assessment Classification	
1.1 Local Industrial Crop Production Improvement Program	Tea Quality and Yield Improvement Project	Based on the estimation of typical farm households, project impacts on the farm income are assessed. In this analysis, subsidiary benefits are not considered but for direct benefits such as sales of agricultural products.	
1.2 Agribusiness Promotion Program	High Quality Dien Bien Rice Production and Marketing Support Project		
1.3 Safe Crops Production Program	Establishment of Clean Vegetable Center in Dien Bien Province		
2.1 Remote Area Food Crop Production Program	Food Crop Production Support Project		
5.2 Mountain Stream Multipurpose Use Program	Mountain Stream Multipurpose Rural Water Supply Pilot Project		
2.2 Animal Health and Disease Control Program	Dairy Buffalo Extension Project	Assuming new entries for income generation activities, incremental cash income for typical farm households are assessed.	
2.3 Inland Fishery Supporting Program	Pond Aquaculture Pilot Project		
3.2 Handicraft and Cottage Industry Promotion Program	Handicraft and Food Processing Promotion at CLC in Lai Chau Province		

Table13.2.2 Classification of Program Assessment

Using existing statistic data, site survey results, typical farm households are estimated according to type of farming patterns. Project benefit analyses at the household level are conducted and impacts by the eight programs / projects are assessed.

13.2.2 Results of Impact Assessment

(1) Local Industrial Crop Production Improvement Program (1.1)

Tea is intensively produced in Son La, Lai Chau and Hoa Binh Provinces. Roughly 12,000ha are under tea production areas in these provinces, while it is necessary to improve quality of tea leaves in order to secure tea market and increase tea farmers' income. This program aims at improving tea yield and quality targeting at the Type 2 farmers, who cultivate small-scale tea farms.

In general, tea price is coupled with its quality. In case of Hoa Binh Province, the factory procures tea leaves based on prices according to the following tea quality standard.

Grade	А	В	С	D	Е	
Mix rate of old leaves (MARD Quality	<100/	10%≤	$20\% \leq$	30%≤	100/ <	
Standard)	<10%	<20%	<30%	<40%	40%≤	
Prices (VND/kg)	3,400	2,900	2,600	2,300	-	
Recent procurement performance of the	50% (combined both A and B)		400/	100/	None	
Factory			40%	10%	inone	
Source: Hearing at Son Boi Tea Farm and Factory Lac Thuy District Hoa Binh Province June 2008						

Table13.2.3Tea Leaves Prices of Tea Factory

Source: Hearing at Son Boi Tea Farm and Factory, Lac Thuy District, Hoa Binh Province, June 2008

Quality of tea leaves is determined by mix rate of old leaves among the top three young leaves. 50% of the procured tea leaves are Grade A and B, while the remaining 50% are below Grade C. In the benefit analysis, it is assumed for typical tea farm household that grade of tea leaves improved to above Grade B for the first plucking and improved planting method increases unit yield. The following conditions are applied.

Table13.2.4Assessment Conditions for Local Industrial Crop Production Improvement

FIUGIAIII

Item	Without Project	With Project		
Tea Planting Area	0.2 ha	No Change		
Unit Yield	1.2ton/ha (First Plucking)	1.2ton/ha (First Plucking)	1.5ton/ha (First Plucking)	
Selling Price	2,600VND/kg (Grade C)	2,900VND/kg (Grade B)		
		3,400VND/kg (Grade A)		
Gross Income from	624 000VND	696,000VND (Grade B)	870,000VND (Grade B)	
First Plucking	024,000 V IND	816,000VND (Grade A)	1,020,000VND (Grade A)	

Typical tea farm size is 0.2ha obtaining 240kg of tea harvest at unit yield 1.2ton/ha. Holding the same unit yield level, quality improvement from Grade C to B will 11% increase of income from 624,000VND to 696,000VND. When unit yield increase to 1.5ton/ha and the quality is graded up to A by the implementation of Action Plan, farm income will be raised to 1,020,000VND or 60% increase from without-project condition.

Generally, improvement of tea quality is in inverse proportion to unit yield. That is, as mix rate of old leaves becomes lower, or tea grade gets higher, amount of tea harvest with relatively young leaves becomes smaller. This implies that drastic increase of tea yield is likely to be difficult. However, quality improvement is achieved for the second and third plucking, farm income will be expected to increase more.
Moreover, if overall production of high quality tea leaves increases, regional labor demand will increase coupled with increased tea plucking volumes or increased factory operation rate. Thus, increased employment opportunity will raise overall wage income in the region and indirectly push up cash income of other type of farmers.

(2) Agribusiness Promotion Program (1.2)

Impact assessment is conducted at household level for implementation of High Quality Dien Bien Rice Production and Marketing Support Project. Improvement of post-harvest treatment and paddy quality are unlikely to promise drastic increase of paddy production. In addition, since paddy and upland rice are cultivated for self consumption for many of farmers, only those who produce surplus paddy for sale are most likely to obtain project benefit.

Based on the above, it is assessed how income will change for the farm household of Type 3 with 0.8ha of cultivation land with the following conditions.

Table13.2.5	Assessment Condition for Agribusiness Promoti	on Program
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Item	Without Project	With Project
Paddy Area	0.6ha	No change
Upland Area	0.2ha (Maize, Soybean, Vegetables)	No change
Yield of W-S Paddy	4.5ton/ha	4.7ton/ha
Yield of S-A Paddy	4.6ton/ha	4.8ton/ha
Farm Gate Price of Paddy	2,500VND/kg	3,000VND/kg (assumed 1.2 times of normal paddy price)

Assessment result is presented in Figure 13.2.1. The project implementation will increase annual farm income by about 3 million VND per household. Quality improvement of paddy will generate direct increase of cash income for those who practice two crops of paddy with sufficient irrigation water.

Price of Dien Bien rice is said to be 1.6 times higher than the normal rice. The applied price in the analysis is set lower at 1.2 times and there is still much possibility to improve quality thereby more value-added for income increase.

On the other hand, project impact is considered to be much lower for those who need to consume all paddy harvest. It is estimated that a household with 6 family members





needs to consume 1.5-1.7ton of paddy annually. It implies that those who cultivate one crop of rain-fed paddy in 0.5-0.8ha scale need to produce at least 4.0ton/ha of unit yield in order to end up with sufficient surplus paddy. Therefore, for the best results of the program, increasing cropping intensity and unit yield are the essential conditions. Thus, it will be a key to realize joint-implementation of the programs to

develop irrigation facilities for double cropping and to introduce improved rice varieties and farming methods.

(3) Safe Crops Production Program (1.3)

Impact assessment is conducted at household level for implementation of Establishment of Clean Vegetable Center in Dien Bien Province. This program is expected to bring a broad range of benefits that various farm households will be trained for organic farming technique and provided with organic fertilizers for the purpose of extension for not only organic vegetable production but also other food and horticultural productions. The analysis assumes that the Type 2 farmers (Terrace / Upland Cultivation Farm in Lower Mountain Area) are the major beneficiaries under the program with the following conditions.

Table 13.2.6 Assessment Conditions for Safe Crops Production Program

Item	Without Project	With Project
Paddy Area	0.6ha of rain-fed paddy	No Change
Upland Crop Area	0.15ha (Maize and Soybean)	No Change
	0.05ha (Cassava)	0.05ha of Vegetable (assuming Cabbage)
Yield of Vegetable		10ton/ha
Farm Gate Price of Vegetable		5,000VND/kg

Average farm size of the target household will be 0.6ha of rain-fed paddy and 0.2ha of upland crop cultivation. Although most of the harvests are for self consumption, farm income can be valued at about 6.7 million VND. In the analysis, impact of organic vegetable production is assessed for farm income change, if 0.05ha of cassava is converted to vegetable and 0.5ton are harvested. The result is shown in Figure 13.2.2.

If only 10% of total harvest or 50kg are sold, it gives farm income more than that of without-project condition. As the amount of





sales increases by 20%, 0.5 million VND will be added to cash income for the farm household. Since in the analysis, however, production costs are not taken consideration, it will be necessary to analyze breakeven points for each vegetable. Generally, breakeven points are lower for organic vegetable production, since the associated farming practices are rather labor intensive and farm inputs are relatively limited thereby lowering cash outflow for the production. While the analysis assumes cabbage production to be sold at 5,000VND/kg, organic vegetable production will be more favored if more value-added vegetables such as asparagus, green soybean are produced and marketed successfully.

While acquiring organic farming and obtaining homogenous quality of vegetable are dependent on farmers' efforts, risk with vegetable production is relatively low for the farmers. That is, in this case, farmers will

be able to continue the same cultivation for food crops and obtain the harvests for their self consumption, while conversion of small part of their cultivation land (less than $500m^2$) to vegetable production will bring about greater impacts on increase of cash income. On the other hand, formulation and development of market where buyers can offer stable prices, marketing promotion for regionally produced vegetables, and improvement of access to remote areas should be supported by the government side.

(4) Remote Area Food Crop Production Program (2.1)

For this program, impact assessment is conducted for Type 1 farm household in case of implementation of Maize-based Food Crop Production Support Project in Son La Province. The two cases are examined for Case 1: Increased yield without crop conversion, Case 2: Crop conversion from upland rice to maize, under the following conditions:

Itom	Type 1 Farm Household			
Itelli	Without Project	With Project (Case 1)	With Project (Case 2)	
Upland Paddy Area	0.5ha	No Change	Oha	
Upland Crop Area	0.05ha of Maize 0.05ha of others	No Change	0.55ha of Maize 0.05ha of Others	
Upland Paddy Yield	1.1ton/ha	1.3ton/ha	No production	
Maize Yield	2.0ton/ha	3.0ton/ha	3.0ton/ha	
Farm Gate Prices	Paddy: 2,500VND/kg Maize: 2,500VND/kg	No Change	No Change	

Table13.2.7 Assessment Conditions for Remote Area Food Crop Production Program

Result of the analysis is presented in Figure 13.2.3. Case 1 gives incremental farm income of 400,000VND annually through yield increases of upland paddy and maize. Case 1 gives production increase of upland paddy from 550kg to 650kg, which is equivalent to 423kg of rice (after milled). This is worth of amount level where five family members can be catered annually for rice consumption.

On the other hand, Case 2 gives incremental income of 2.5 million VND annually. However, in Case 2, the farmer will need to buy rice for their all consumptions,

and the incremental income of 2.5 million VND will give only 227kg of rice (at 11,000VND/kg). This is equivalent to less than half of annual necessary rice amount for five family members.



Figure 13.2.3 Farm Income Change for Type 1 Farmer

It is important to convert less productive upland paddy to maize in terms of soil conservation. However, from the view point of food security at household level, production of upland paddy is also necessary at

minimum level to secure paddy for self consumption. Indeed, introduction of industrial and horticultural crops should be considered for more value-added for cash income.

(5) Mountain Stream Multipurpose Use Program (5.2)

In case where small-scale irrigation facilities are developed as multipurpose water utilization, the project impacts on Type 2, 3, and 4 households are assessed. Assuming the typical farmers cultivating 0.8ha, the following conditions are applied.

Itom	Without Project			With Project			
nem	Type 2	Type 3	Type 4	Type 2	Type 3	Type 4	
Paddy Area		0.6ha			No Change		
Upland Area	0.2ha of N	0.2ha of Maize, Soybean and others			No Change		
Rain-fed Paddy Yield	3.5ton/ha						
W-S Paddy Yield		4.5ton/ha	4.0ton/ha	4.0ton/ha	4.7ton/ha	4.2ton/ha	
S-A Paddy Yield		4.6ton/ha		4.2ton/ha	4.8ton/ha	4.5ton/ha	
Cropping Intensity	119%	194%	119%	194%	194%	194%	

Table 13.2.8 Assessment Conditions for Mountain Stream Multipurpose Use Program

Result of the analysis is presented in Figure 13.2.4. Type 2 and Type 4 are expected to have drastic increase of farm income by increasing cropping intensity (from single paddy to double paddy). Especially, the project impact is greater for farmers in unfavorable cultivation condition such as rain-fed terrace cultivation. On the other hand, the impacts on the Type 3, which are already under irrigated condition, are very small. All types of farm household seem to achieve more than 2.0 ton of paddy production at present and provide sufficient rice for six family members. This



Figure 13.2.4 Farm Income Change by Mountain Stream Irrigation Project

implies that incremental paddy production directly becomes a source of cash income.

If this project targets at those Type 2-4 farm households, the above mentioned High Quality Dien Bien Rice Production and Marketing Support Project, and Food Crop Production Support Project should jointly be implemented for multiple project effects

(6) Animal Health and Disease Control Program (2.2)

This program is assessed focusing on the assumed typical dairy farmer in the Dairy Buffalo Extension Project. At present, fresh buffalo milk is not utilized for dairy use, while it is more value-added than dairy cow milk in terms of is nutrition components. The analysis is based on the condition that the market for fresh buffalo milk will be formulated by the project. Assessment conditions for dairy farmer are as follows.

Item	Conditions	Remarks
(1) Number of heads owned	5	2 bulls, 1 cow, 1 calf, 1 disuse cow
(2) Number of dairy buffalo	1	Introducing new dairy buffalo and selling disuse cow
(3) Lactation amount of the dairy buffalo	1,000kg	Normally 1~2ton / annum
(4) Price of fresh buffalo milk	8,000VND/kg	Same price of cow milk
(5) Lifetime milking period	10 years	

 Table13.2.9
 Assessment Conditions for Animal Health and Disease Control Program

Under the above conditions, the dairy farm household is expected to get 8million VND annually from the newly introduced dairy buffalo for next 10 years. This is equivalent to incremental cash income of 130,000VND/person/month for the case of five family members. Considering the poverty line in rural areas set by MOLISA is 200,000VND/person/month, the project impact on poverty reduction will be very large.

Price of a head of buffalo is 20-22 million VND and it should be replaced for 5-10 years cycle. Therefore, the farmers need to accumulate sufficient fund for the replacement. If a farmer procures a head of the dairy buffalo at 22 million VND through application of long term bank loan (7.8% of annual interest rate) repaying 80% of annual income or 6.4 million VND from fresh milk sale, he will be able to complete repayment in 6th year. Animal husbandry always comes with relatively higher risk. In particular, disease control and prevention will be a key to success. Therefore, extensive assistance to the dairy farmers will be necessary by the government.

(7) Inland Fishery Supporting Program (2.3)

This program can be assessed through implementation of Pond Aquaculture Pilot Project assuming farm household with 5 family members practicing pond aquaculture. Typical pond area per household can be assumed at $300m^2$ and other conditions for assessment are as follows.

Item	Conditions	Remarks	
(1) Pond Area	300m ²		
(2) Annual Production Cost	350,000VND	Costs for fry fish and feed	
(3) Annual Income from Fish Sale	1,000,000VND	40kg x 25,000VND	
(4) Annual Net Income from Fish Sale	650,000VND	(3)-(2)	

Table 13.2.10 Assessment Conditions for Inland Fishery Supporting Program

As a result, the fish farmer will receive incremental cash income of 650,000VND annually from fish pond. Assuming the annual per capita fish intake is targeted at 4kg, five family members will consume 20kg, while remaining net income from fish sale will be 150,000VND.

In pond construction, excavation of 1m³ normally requires 25,000VND for casual labor or 1 man-day of labor force. Assuming 300m³ excavations at depth of 1.4 m, 420 man-day of labor force or 10.5 million VND will be required as an initial investment for pond aquaculture. In fact, such excavation is conducted by family labor and there is no cash outflow from the household. If five family members start excavations

during agricultural off-season, it will take about three month to complete fish pond excavations. On the other hand, if the household borrow 10.5 million VND from VBSP long term loan at 7.8% annual interest rate, they will be in excess debt and not able to repay from the fish sale income. Thus, in implementation of the project, government assistance on initial investment or mechanical equipment will be necessary for extension of the fish pond aquaculture. Moreover, since the highest risk concerning pond aquaculture is an outbreak of fish disease, extension service and technical training for pond aquaculture and disease control will be essential assistance for farmers.

(8) Handicraft and Cottage Industry Promotion Program (3.2)

This program is assessed through implementation of Handicraft and Food Processing Promotion Project, assuming a typical handicraft household. As referred in Table 4.13.3 in Chapter 4, average monthly income in handicraft villages located nationwide are 246,000VND for male and 116,000VND for female.

It is assumed that the project will enhance production activities in the Region and promote the current handicraft products to be sold at market with introduction of more sophisticated technique and efficiency. Assessment under the following conditions estimates 912,000VND as annual incremental cash income.

Table 13.2.11 Assessment Conditions for Handicraft and Cottage Industry Promotion

Program

Item	Conditions	Remarks
(1) No. of family members involved in the activities	3 persons	1 male, 2 female
(2) Annual working period	4 months	During agricultural off-season
(3) Annual production costs	1,000,000VND	250,000VND/month
(4) Annual income from the activities	1,912,000VND	
(5) Annual net income from the activities	912,000VND	(4)-(3)

Handicraft production is potentially effective for poverty reduction to greater extent, since it requires relatively less initial investment. It is easier for farmers to entry in handicraft production, since they can utilize off-season of farming and other free time. Introduction of machines and equipment for the activities, sufficient electricity supply enabling night time working, and improvement of rural road network for better access to market will generate multiple effects of the project outputs. Moreover, joint-implementation with tourism and NTFP development projects will be more promising for multiple effects and impacts on household income.

Attachments

Attachment 1.1	Scope of Work
Attachment 1.2	Minutes of Meeting of the Steering Committee (February 13,S2007)
Attachment 1.3	Minutes of Meeting of the Steering Committee (September 7, 2007)
Attachment 1.4	Minutes of Meeting of the Steering Committee (March 7, 2008)
Attachment 1.5	Minutes of Meeting of the Steering Committee (August 26,2008)
Attachment 4.1	Ethnic Minorities in the North-Western Region
Attachment 4.2	Ethnic Population by District in the North-Western Region
Attachment 4.3	Typical Cropping Patterns in the North-Western Region
Attachment 4.4	Forest Areas by Land Categories and Forest Functions in Four Provinces in 2005
Attachment 4.5	Cases Studies on Handicraft Industries in Vietnam
Attachment 4.6	Cases Studies on Rural Area Tourism
Attachment 5.1	Rural Road Development Program
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Attachment 5.3	Rural Water Supply Development Program
Attachment 5.4	Rural Electrification
Attachment 6.1	Lists of Projects Subject to Making of Environmental Impact Assessment Reports and Inter-Ministry and Inter-Provincial Projects with Environmental Assessment Reports to be Appraised and Approved by the Ministry of Natural Resources and Environment
Attachment 6.2	Structure and Requirements for the Contents of the Report on Strategic Environmental Assessment
Attachment 6.3	Structure and Requirements for the Contents of the Report on Environmental Impact Assessment

SCOPE OF WORK

FOR

MASTER PLAN STUDY ON IMPROVEMENT OF RURAL LIVING CONDITIONS IN NORTH-WESTERN MOUNTAINOUS REGION IN VIETNAM

AGREED UPON BETWEEN

MINISTRY OF AGRICULTURE AND RURAL DEVELOPMENT

AND

JAPAN INTERNATIONAL COOPERATION AGENCY

Mr. HIROAKI NAKA GAWA Resident Representative Vietnam Office Japan International Cooperation Agency Japan

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Mr. NGUYEN XUAN TIEN Deputy Director General Foreign Economic Relations Department Ministry of Planning and Investment The Socialist Republic of Vietnam

Hanoi, 2nd November, 2006

Mr. VU NANG DUNG Director National Institute of Agricultural Planning and Projection Ministry of Agriculture and Rural Development The Socialist Republic of Vietnam

Ms. HOANG THI DUNG Deputy Director General International Cooperation Department Ministry of Agriculture and Rural Development The Socialist Republic of Vietnam

I. INTRODUCTION

In response to the request from the Government of the Socialist Republic of Vietnam (GOV), the Government of Japan (GOJ) has decided to conduct a Master Plan Study on Improvement of Rural Living Conditions in North-western Mountainous Region in Vietnam (hereinafter referred to as "the Study") together with the GOV in accordance with the relevant laws and regulations in force in Japan.

The Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency responsible for the implementation of the technical cooperation programmes of the GOJ, will undertake the Study, in close cooperation with the relevant authorities concerned of the GOV.

The present document sets forth the Scope of Work with regard to the Study.

II. OBJECTIVES OF THE STUDY

The overall goal of the Study is to improve rural living conditions in North-western Mountainous Region in Vietnam in order to contribute to poverty reduction.

The objectives of the Study are as follows:

- (1) To formulate provincial Master Plans (M/P) for rural development in four (4) provinces which are Dien Bien, Lai Chau, Son La and Hoa Binh;
- (2) To formulate regional M/P for rural development in the North-western Mountainous Region;
- (3) To conduct Feasibility Study for prioritized projects identified in the Master Plan; and
- (4) To carry out capacity development of Vietnamese counterpart personnel as well as of the officials concerned in the course of the Study

III. SCOPE OF THE STUDY

1. Study Area

The study area of the M/P is as follows:

- (1) Lai Chau Province
- (2) Dien Bien Province
- (3) Son La Province
- (4) Hoa Binh Province,

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2. Scope of the Study

Target year of the Study is year 2020. The Study will consist of the two phases as below:

Phase I: Formulation of Provincial M/Ps and Regional M/P

- (1) To collect and analyze relevant data and information from the Study area and at the national level;
- (2) To review and analyze the existing development plan(s) and project(s) relevant to the Study;
- (3) To conduct field surveys in the Study area;
- (4) To identify major constraints, development needs and development potential in the Study area;
- (5) To conduct environmental and social impact assessment;
- (6) To formulate draft M/P;
- (7) To formulate action plan; and
- (8) To identify prioritized projects.

Phase II: Implementation of Feasibility Study (F/S)

- (1) To conduct preliminary design and cost estimation;
- (2) To conduct financial analysis; and
- (3) To conduct social and environmental impact assessment.

IV. STUDY SCHEDULE

The Study will be carried out in accordance with the tentative work schedule attached in Annex 1.

V. REPORTS

JICA shall prepare and submit the following reports in both English and Vietnamese to GOV.

- (1) Inception Report: Twenty (20) copies
- (2) Interim Report: Twenty (20) copies
- (3) Progress Report(s): Twenty (20) copies of each
- (4) Draft Final Report: Twenty (20) copies at the end of the field work;

GOV will provide JICA with its comments on the Draft Final Report within one (1) month of the receipt of the Draft Final Report. φ

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(5) Final Report: Forty (40) copies within two (2) months of the receipt of comments of GOV on the Draft Final Report.

VI. UNDERTAKING OF THE GOVERNMENT OF THE SOCIALIST REPUBLIC OF VIETNAM

- 1. To facilitate the smooth conduct of the Study, GOV shall take the following necessary measures:
 - To permit the members of the Study Team to enter, leave and sojourn in Vietnam for the duration of their assignments therein and exempt them from foreign registration requirements and consular fees;
 - (2) To exempt the members of the Study Team from taxes, duties and any other charges on equipment, machinery and other material brought into and out of Vietnam for the implementation of the Study;
 - (3) To exempt the members of the Study Team from income tax and charges of any kind imposed on or in connection with any emoluments or allowances paid to the members of the Study Team for their services in connection with the implementation of the Study; and
 - (4) To provide necessary facilities to the Study Team for the remittance as well as utilization of the funds introduced into Vietnam from Japan in connection with the implementation of the Study.
- 2. GOV shall bear claims, if any arise, against the members of the Study Team resulting from, occurring in the course of, or otherwise connected with, the discharge of their duties in the implementation of the Study, except when such claims arise from gross negligence or willful misconduct on the part of the Study Team.
- 3. The Ministry of Agriculture and Rural Development (MARD), National Institute of Agricultural Planning and Projection (NIAPP) and the Department of Agriculture and Rural Development in the 4 provinces shall act as counterpart agencies to the Study Team.
- 4. MARD shall, at its own expense, where necessary, provide the Study Team with the following, in cooperation with other organizations concerned:
 - (1) Security and safety of the Study Team and the relevant information;
 - (2) Information as well as assistance in obtaining medical service;
 - (3) Available data (including maps and photographs) and information related to the Study;
 - (4) Counterpart personnel;
 - (5) Suitable office/working space with basic furniture; and
 - (6) Credentials or identification cards \mathcal{A}

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VII. UNDERTAKING OF JICA

For the implementation of the Study, JICA shall take the following measures:

- (1) To dispatch, at its own expense, the JICA Study Team to Vietnam; and
- (2) To pursue training in technical skills/knowledge of the Vietnam counterpart personnel in the course of the Study.

VIII. CONSULTATION

The GOV and JICA shall consult with each other in respect to any matters that may arise from or in connection with the Study. q

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Minutes of Meeting on Inception Report for Master Plan Study on

Improvement of Rural Living Conditions in Northwestern Mountainous Region in Vietnam

Hanoi, 25th February 2007

Mr. Nguyen Van Chinh Deputy Director National Institute of Agricultural Planning and Projection (NIAPP) Ministry of Agriculture and Rural Development (MARD) The Socialist Republic of Vietnam

Mr. Masayuki Koyama Team Leader Study Team Japan International Cooperation Agency (JICA)

Witnessed by

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Mrs. Hoang Thi Dung Deputy Director General International Cooperation Department (ICD) Ministry of Agriculture and Rural Development (MARD) The Socialist Republic of Vietnam

Mr-Hiroaki Nakagawa)

Mr. Hiroaki Nakagawa) Resident Representative Japan International Cooperation Agency (JICA), Vietnam Office In accordance with the Scope of Work (hereinafter referred as "the S/W") for Master Plan Study on Improvement of Rural Living Conditions in Northwestern Mountainous Region in Viet Nam (the Study), the Government of Japan dispatched through Japan International Cooperation Agency (JICA) the Study Team headed by Mr. Masayuki Koyama for the implementation of the Study to the Socialist Republic of Vietnam. At commencement of the Study, the JICA Study Team officially submitted thirty (30) copies of the Inception Report to Ministry of Agriculture and Rural Development (MARD). The Steering Committee Meeting was started at 9:00 a.m. on 13th February 2007 at MARD in due course. The list of attendants is presented in ANNEX.

The Steering Committee Meeting was officially opened by Mrs. Hoang Thi Dzung, Deputy General Director of International Cooperation Department (ICD) of MARD. She introduced the background and organizational set-up of the Study.

Mr. Hiroaki Nakagawa, Resident Representative of JICA Vietnam Office, delivered the opening address to the Steering Committee with emphasis on the particular importance of the Study not only for the Northwestern Mountainous Region but also Vietnam as a whole.

Mr. Masayuki Koyama, the Team Leader for the JICA Study Team, presented the observation results during the first field visits to the Northwestern Mountainous Region made from 6th to 10th February and study methodologies in reference to the Inception Report.

All the participants of the meeting confirmed that the Inception Report was prepared in compliance with the conditions set forth in the S/W and agreed to commence the Study in accordance with the methodology and schedule stipulated in the Inception Report. The following issues were discussed and agreed upon in the meeting.

(1) Dien Bien Province

Mr. Bui Viet Binh, Vice Chairman of Dien Bien Provincial People's Committee stated that he fully agreed with the Inception Report and the presentation by the Team Leader, and that Dien Bien Province is one of the poorest provinces in Vietnam with 44% of poverty incidence (2006) and Master Plan is in line with the provincial strategy for socio-economic development. Poverty alleviation is prioritized among ten provincial target programs to be achieved by 2010. The Province is given much attention and supports from the central government in implementing the poverty alleviation program. Projects under the poverty alleviation program are follows:

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- 1) Project on animal husbandry of buffalo and cow for exports.
- 2) Project on infrastructure development, irrigation, transportation, etc.
- 3) Project on agricultural and forestry extension, scientific and technology application, etc.

The provincial master plan has not been implemented yet so that this is a good opportunity for the Province to formulate a better and sustainable development plan. The province hopes that through the master plan it can find key sectors to accelerate socio-economic development in the Province.

(2) Lai Chau Province

Mr. Ngyuyen Dang Dao, Vice Chairman of Lai Chau Provincial People's Committee highly appreciated the result of Inception Report, and agreed to provide full supports to the Study. The Government has approved the Master Plan on Socio-Economic Development by 2020 and Socio-Economic Development Plan (SEDP) by 2010 of the Province. The Study is timely started to reinforce both on-going development plans of the Province. The Province highly appreciates that the JICA Study Team has accurately evaluated the actual situation as well as development needs, orientations of the province in coming period in very short time of the initial stage of the Study.

Major features of the northwestern provinces are represented by forest, cattle husbandry and industrial crop production, in which the Province gives more attention to the development of cattle husbandry.

The Province will continue to receive support by the Government in implementing large-scale hydropower projects. In addition, development of infrastructure, school and healthcare should also be given a priority in the Province. Poverty incidence of the Province in 2006 was 54%. The Province will closely associate with JICA and related agencies to successfully implement the Study.

(3) Son La Province

Mr. Cam Van Doan, Vice Chairman of Son La Provincial People's Committee, agreed with the objective, contents and study methodologies of the Study. The Study has an advantage since it can use the document, statistic data of the survey on Agriculture, Rural and Fishery carried out on 1^{st} July 2006. In this regard, the data in the Inception Report are incorrect so these figures should be revised during the study period, e.g. the provincial area of 14,125 km², etc.

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The Study should take additional review and assessment on the surrounding areas of the Northwestern region such as economic corridors connecting Yun Nan (China), Lao Cai, and Ha Noi, or as well as Yen Bai and Hai Prong, etc., since these areas are closely related to the Northwestern region. The Study also needs to research about the economic development corridor of Mekong riparian countries in long term, especially Lao PDR and Thailand. The Study should extend its attention not only to the economic development corridor along the National Road No 6 but also the economic development conditions of the project provinces in relation to other provinces along the Da River.

The Study should do more detailed research not only in animal husbandry, agricultural, fishery, etc., but also in the sustainable cultivation model on sloping land (SALT model).

(4) Hoa Binh Province

Mr. Nguyen Huu Duyet, Vice Chairman of Hoa Binh Provincial People's Committee, fully agrees with the presentation on objective, contents, and study methodologies of the JICA Study Team. Among the three (3) objectives of the Study, the most important one is improvement of living conditions of people through poverty alleviation. Major characteristics of the Northwestern Mountainous Region is high poverty rate, low education standard, therefore a study compatible to economic development conditions of the region is required.

Hoa Binh province has large forestry area, therefore the Study should emphasize forest development. Forest production development for generating income should given priority in order to increase the share of the forestry sector among agricultural proportion. The development direction of the Province consists of cattle rearing at household level, fresh fish aquaculture and afforestation.

(5) Department of Finance, MARD

Mr. Ha, Department of Finance, MARD, fully agreed with comments made by other participants. Although Inception Report was carefully prepared, he has some comments to the Inception Report as follows.

- 1) Regarding basic approaches, opportunities and constraints in the region should be considered more. (see page 4 of the Inception Report Vietnamese version)
- 2) Development strategies should be fit with the vision of local people. (page 8)
- 3) Education level of the people in the region is low, however, the Study does not mention

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any activity on capacity building and education for local people. (page 11)

- 4) Rural credit system should be included and studied. (page 13)
- 5) Income from forestry, especially NTFP, an important income source of people, should be studied. (page 16).

(6) ICD-MARD

Mr. Nguyen Anh Minh, Senior Officer of ICD, MARD, pointed out that the JICA Study Team would take responsibility for the preparation of the Feasibility Study report, which will be the basic information for the Vietnamese side to prepare investment preparation report for the Government of Vietnam for her approval. Topographic maps are very necessary and pre-requisite for preparation of any plan and study, thus local line agencies should take care of it and provide such maps at the request by the Study Team. The JICA Study Team should refer to the Government's Decree No. 16/2005/ND-CP on management of investment projects in construction.

The JICA Study Team clarified that the definition of pre-F/S is not clear and further discussion would be required for demarcation of responsibility in preparation of F/S under the Study. Otherwise the JICA Study Team appreciated all the comments and would reflect these comments in the Study.

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The Steering Committee finished at noon of the same day.

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List of Participants

Viet	<u>namese side:</u>	
Mini	istry of Planning and Inves	stment (MPI)
(1)	Department of Local Eco	onomy
	Mr. Nguyen Tuan	Senior Expert
(2)	Department of Trade and	Service
	Mr. Vu Dai Thang	Senior Expert
Mini	stry of Agriculture and Ru	ral Development (MARD)
(1)	International Cooperatio	n Department (ICD)
	Ms. Hoang Thi Dung	Deputy Director General (the Chair Person of the Meeting)
	Mr. Nguyen Anh Minh	Senior Expert, Project Officer
(2)	Department of Finance	
	Mr. Nguyen Van Ha	Deputy Director
	Mr. Hoang Quoc Chinh	Senior Expert
(3)	Department of Planning	
	Mr. Vu Ngoc Tan	Senior Expert
(3)	National Institute of Agri	cultural Planning and Projection (NIAPP)
	Mr. Nguyen Van Chinh	Deputy Director
	Mr. Vu Cong Lan	Head, Division of International Cooperation and Project
		Management
	Mrs. Vu Thi Ngoc Tran	Vice Head, Div. of International Coop. & Project
		Management
	Mr. Nguyen Ha Hue	Expert, Div. of Int' Cooperation and Project Management
	Mrs. Vuong Thuc Tran	Ditto
	Mrs.Nguyen Le Bich Hang	Ditto
	Mrs. Nguyen Kim Thinh	Ditto
	Mr. Lai Ngoc Thanh	Ditto
	Mr. Hoa Thanh Ngoc	Expert, Division of Designing
	Mr. Tran Viet Dung	Expert, Division of Planning
	Mr. Nguyen Xuan Thanh	Deputy Head of Environment and Natural Resources
		Center
	Mr. Tran Mau Tan	Senior expert, Division of Soil Research
	Mr. Nguyen Ngoc Khanh	Deputy Head, Planning Team I
	Mr. Tran Van Ngoi	Senior Expert, Advanced Technology Application and

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Transfer Center

Hoa Binh Province

(1) Hoa Binh Provincial People's Committee

Mr. Nguyen Huu Duyet Vice Chairman

(2) Hoa Binh Provincial Department of Agriculture and Rural Development (DARD)

Mr. Tran Bao Toan Deputy Director General, DARD

Mr. Nguyen The Hach Head of Planning and Investment Division, DARD

(3) Hoa Binh Provincial Department of Planning and Investment (DPI)

Mr. Nguyen Duc Minh Deputy Director General

(4) Hoa Binh Provincial Department of Finance (DOF)

Mr. Bui Van Khanh Senior Expert

Son La Province

(1) Son La Provincial People's Committee

Mr. Cam Van Doan Vice Chairman

(2) Son La Provincial Department of Agriculture and Rural Development (DARD)

Mr. Le Xuan Director Mr. Cao Viet Thinh Deputy Head of Project Investment and Construction Board

(3) Son La Provincial Department of Planning and Investment (DARD)

Mr. Le Minh Phong Deputy Director General

Dien Bien Province

(1) Dien Bien Provincial People's Committee

Mr. Bui Viet Binh Vice Chairman

(2) Dien Bien Provincial Department of Planning and Investment (DPI) Mr. Le Van Bien

Deputy Director General

Lai Chau Province

- (1) Lai Chau Provincial People's Committee Mr. Nguyen Dang Dao Vice Chairman
- (2) Lai Chau Provincial Department of Agriculture and Rural Development (DARD)

Mr. Dao Ngoc Huong Deputy Director General

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(3) Lai Chau Provincial Department of Planning and Investment (DPI)

Mr. Nguyen Huu Mai Deputy Director General

Japanese side:

The Study Team

Mr. Masayuki Koyama	Team Leader
Ms. Naomi Morikawa	Deputy Leader, Participatory Development
Mr. Susumu Honma	Agricultural Planner
Mr. Kenjiro Yatabe	Senior Irrigation and Drainage Engineer
Mr. Teruhisa Aoki	Agro-industry and Marketing
Mr. Atsuro Takaoka	Watershed Management and Disaster Prevention Expert
Dr. Hajime Ishihara	Inland Fishery Expert
Mr. Hiromu Akutsu	Livestock Expert

JICA Vietnam Office

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Mr. Hiroaki Nakagwa	Resident Representative
Mr. Junichi Imai	In chage of the Study

JBIC Representative Office in Hanoi

Ms. Nguyen Thi Van Anh Officer, Representative Office in Hanoi

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Attachment 1.3

Minutes of Meeting on Progress Report (1) for Master Plan Study

on

Improvement of Rural Living Conditions in North-western Mountainous Region in Vietnam

Hanoi, 7th September2007

Dr. Vu Nang Dung Director National Institute of Agricultural Planning and Projection (NIAPP) Ministry of Agriculture and Rural Development (MARD) The Socialist Republic of Vietnam

Mr. Masayuki Koyama Team Leader Study Team Japan International Cooperation Agency (JICA)

Witnessed by

Mrs. Hoang Thi Dung Deputy Director General International Cooperation Department (ICD) Ministry of Agriculture and Rural Development (MARD) The Socialist Republic of Vietnam

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Mr. Yasuhiro Tojo Senior Deputy Resident Representative Japan International Cooperation Agency (JICA), Vietnam Office

In accordance with the Scope of Work (hereinafter referred as "the S/W") for Master Plan Study on Improvement of Rural Living Conditions in Northwestern Mountainous Region in Viet Nam (the Study), the JICA Study Team officially submitted thirty (30) copies of Progress Report (1) to NIAPP of MARD. The Steering Committee Meeting was held on 7th September 2007 at NIAPP in order to confirm the work progress and discuss the interim study results stipulated in Progress Report (1). The list of attendants is presented in ANNEX.

The Steering Committee Meeting was opened by Dr. Vu Nang Dung, Director of NIAPP, the chairperson of the Meeting. He summarized the current position of the Study and the objectives of the Steering Committee Meeting.

Mr. Yasuhiro Tojo, Senior Deputy Representative of JICA Vietnam Office, delivered the opening address to the Steering Committee.

Mr. Masayuki Koyama, the Team Leader for the JICA Study Team, presented the summary of Progress Report (1).

All the participants of the Meeting confirmed that Progress Report (1) was prepared in compliance with the conditions set forth in the S/W and agreed to proceed to further steps of the Study in accordance with the methodology and schedule stipulated in Progress Report (1). In the Meeting, the following comments were arisen from the stakeholders of the Study.

- 1. Mr. Quach Tu Hai, Deputy General Director of the Department of Agriculture and Rural Development (DARD), Hoa Binh Province
 - The Report provides a wide range of information about the current conditions of the study area. The local authorities fully agree with analytical results of constraints and possible solutions mentioned in the Report.
 - Education and health care issues are needed to be included in the Report.
 - Bottom-up approach as presented by the JICA Study Team is highly feasible.
 - Local counterparts should be involved more in the study activities and provided more information by keeping closed coordination between the JICA Study Team and the local authorities.
 - NIAPP is requested to send an official letter to Hoa Binh PPC to assign a local agency responsible for day-to-day operation of the Study and to work with the JICA Study Team.
- 2. Mr. Cam Van Chinh, Vice Chairman of PPC, Son La Province
 - The Province highly appreciates the Report in terms of preparation, methodology,

and organization, addressing local constraints, potentialities, counter-measures and orientation.

- Impacts of Son La Hydropower Project should be further studied in terms of living conditions of inhabitants, re-allocation of labor forces, production areas, and linkages with programs to be proposed under Master Plan.
- Capacity building programs are required to enhance management and technical skills of local counterparts at both district and commune levels.
- The Study should provide guidance in selecting trial communes and procedures of implementation of the Commune Development Plan.
- Data and information required for the Study should be informed in written form and sent to PPC later.
- It is necessary to clarify in advance components of the prioritized projects as well as their estimates.
- PPC gives strong commitment for further collaboration and cooperation with the JICA Study Team, NIAPP and other line agencies, etc. for the success of the Study.
- 3. Mr. Nguyen Van Chua, Vice Director of DARD, Dien Bien Province
 - The Report is well prepared even in short time. DARD appreciates the coordination
 - between the JICA Study Team and local line agencies.
 - There is a discrepancy between the S/W in the MARD's Decision N1047 and the Progress Report in terms of duration (18 months and 21 months, respectively).
 - Data used in the Report are mainly relied on the Statistical Yearbook 2005, thus the JICA Study Team should update the new data of the period 2006 2007.
 - In the Report, the assessment of existing conditions focuses mainly on negative aspects, not positive and advantage aspects of the study area.
 - Rural infrastructures are not utilized effectively because of poor management, limited fund allocation and poor managerial skills.
 - The JICA Study Team should extend more cooperation with local line agencies.
 - The field survey plan should be sent to the local agencies 10 15 days in advance for their proper preparation and arrangement.
 - The JICA Study Team should organize a conclusive meeting by the end of each field visit so that local sides could be informed the progress and achievement.
- 4. Mr. Hoang Van Hoi, Director of DARD, Lai Chau Province
 - Two issues of education and health care should be included in the Report.
 - Desertification and its counter measures should be taken into consideration.
 - Apart from the Son La Hydropower Plant there are two other ones, Huoi Quang and Ban Chat, thus the JICA Study Team should consider their impacts in the area and

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region as well.

- The conclusion of the Report it should further address the problem of accessibility in dry season, especially in the remote and isolated villages.
- Capacity building for the selected commune staff should be prioritized and implemented well for their better participation and implementation.
- 5. Mrs. Hoang Thi Dung, Vice Director of ICD, MARD
 - All comments and ideas from the participants on the Report are highly appreciated. All these are noted and considered carefully by the JICA Study Team.
 - Special thanks for JICA Office, the JICA Study Team and NIAPP in the implementation of the Study, and collaboration and cooperation of local authorities and people in the study area.
 - Update of new data and information in the Report is needed.
- 6. Dr. Vu Nang Dung, Director of NIAPP:
 - The JICA Study Team is highly appreciated for their implementation of the Study, organization of meetings with the stakeholders and preparation of the Inception and Progress Reports as well.
 - Data in the Report should be updated with use of the latest statistics.
 - The selection of trial communes and the work procedure for the Commune Development Plan as presented by the JICA Study Team are agreed.
 - Bottom-up approach is appropriate in formulation of Commune Development Plan but capacity of local grassroots staff should be carefully considered and improved.
 - Strongly commitment for collaboration and cooperation among JICA Study Team, NIAPP, local line agencies and people for better implementation of the Study.
 - Comments by local authorities in preparing agenda and field survey, etc. will be noted and considered by MARD and NIAPP.
 - Special thanks for MARD/ICD, JICA Office, JICA Study Team and all local participants for their cooperation and collaboration in the implementation of the Master Plan Study.
- 7. Mr. Junichi Imai, JICA Vietnam Office
 - All the comments and commitment given by local authorities are highly appreciated.
 - The JICA Study Team spent a lot on problem analysis, while they could shed more light on positive potentials of the Northwest for their future development in their preparation and study of the Study.
 - Education and health care issues are important but due to large-scale study of this Master Plan, it is recommended to concentrate more on issues as mentioned in the

presentation of Mr. Koyama, Team Leader.

- The time for the study would be costing one more year, therefore the JICA Study Team is looking for strong cooperation with the Vietnamese sides, especially the local line agencies in the study area.
- 8 Mr. Masayuki Koyama, Leader for the JICA Study Team
 - Further ideas and comments from the Vietnamese sides are highly appreciated. Their collaboration of all the participants is also appreciated as well.
 - The JICA Study Team will continue in-depth study to get insight of the local conditions and situations of the study area.
 - Priority projects will be carefully selected among the Master Plan. The Study will attach higher priority to the projects which will contribute to large portions of the regional people and the socio-economy more than the projects which will benefit to the limited extent. In other words, a sort of detailed action plans for successful implementation of the Master Plan would be more important than the limited number of the feasibility study.

Conclusion

- 1) Further coordination should be maintained among all the stakeholders of the Study so as to formulate the Master Plan as expected.
- The proposed participatory approach for preparation of Commune Development Plan (CDP) is accepted. MARD and PPC will provide necessary assistance to the Study.
- 3) More emphases should be placed on capacity building for the local staff of provinces and districts through the study activities.

The Steering Committee officially closed at noon of the same day.

List of Participants

Vietnamese side:

Lai

Ministry of Agriculture and Rural Development (MARD)

(1) International Cooperation Department (ICD)

Ms. Hoang Thi Dung	Deputy Director General					
Mr. Nguyen Anh Minh	Senior Expert, Project Officer					
Mr. Takashi Shino	ЛСА	Expert,	Integrated	Agriculture	and	Rural
	Develo	opment				

(2) National Institute of Agricultural Planning and Projection (NIAPP)

Mr. Vu Nang Dzung	General Director (the Chair Person of the Meeting)
Mr. Vu Cong Lan	Head of Division, International Cooperation and Project
	Management Division
Ms. Vu Thi Ngoc Tran	Deputy Head, International Coop. & Project Management
	Division
Mr. Lai Ngoc Thanh	Expert, International Coop. & Project Management
	Division
Hoa Binh Province	
Mr. Quach Tu Hai	Deputy General Director, DARD
Mr. Nguyen The Hach	Head of Division, Planning and Investment Division,
	DARD
Mr. Nguyen Duc Minh	Expert, Planning and Investment (DPI)
Son La Province	
Mr. Cam Van Chinh	Vice Chairman, Provincial People's Committee (PPC)
Mr. Le Xuan	General Director, DARD
Mr. Ho Van Chinh	Expert, PPC office
Mr. Vu Tien Ta	Expert, DPI
Mr. Nguyen Van Thinh	Director, PMU under DARD
Dien Bien Province	
Mr. Nguyen Van Chua	Deputy General Director, DARD
Mr. Hoang Tien Dung	Deputy General Director, DPI
Mr. Bui Van Hai	Expert, PPC office
Lai Chau Province	
Mr. Hoang Van Hoi	General Director, DARD

Japanese side:

The Study Team

Mr. Masayuki Koyama	Team Leader
Mr. Kenjiro Yatabe	Irrigation and Drainage
Mr. Fumimichi Obu	Rural Infrastructure
Mr. Yuki Ishikawa	Economic and Financial Analysis
Mr. Koji Morio	Resettlement
Ms. Kyoko Usuda	Monitoring and GIS Database
Ms. Sachiho Otowa	Coordination and Handicraft
JICA Vietnam Office	
Mr. Yasuhiro Tojo	Senior Deputy Resident Representative

Mr. Yasuhiro Tojo	Senior Deputy Resident Representative
Mr. Junichi Imai	Project Formulation Advisor (In charge of the Study)
Ms. Nguyen Thi Mai Khanh	Assistant Program Officer

JBIC Representative Office in Hanoi

Ms. Nguyen Thi Van Anh	Officer, Representative Office in Hanoi
Ms. Sachiko Kondo	Consultant

Minutes of Meeting on Interim Report for Master Plan Study

on

Improvement of Rural Living Conditions in North-western Mountainous Region in Vietnam

Hanoi, 7th March 2008

Dr. Vu Nang Dung Director National Institute of Agricultural Planning and Projection (NIAPP) Ministry of Agriculture and Rural Development (MARD) The Socialist Republic of Vietnam

Mr. Masayuki Koyama Team Leader Study Team Japan International Cooperation Agency (JICA)

Witnessed by

. .

Mrs. Hoang Thi Dung Deputy Director General International Cooperation Department (ICD) Ministry of Agriculture and Rural Development (MARD) The Socialist Republic of Vietnam

Mr. Hiroaki Nakagawa

Resident Representative Japan International Cooperation Agency (JICA), Vietnam Office

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In accordance with the Scope of Work (hereinafter referred as "S/W") for Master Plan Study on Improvement of Rural Living Conditions in Northwestern Mountainous Region in Vietnam (the Study), the JICA Study Team officially submitted forty (40) copies of Interim Report to MARD through NIAPP. The Steering Committee Meeting was held on 7th March 2008 at NIAPP in order to confirm the work progress and discuss the study results presented in Interim Report. The list of attendants is presented in ANNEX.

The Steering Committee Meeting was opened by Dr. Vu Nang Dung, Director of NIAPP, the Chairperson of the Meeting. He summarized the current positions of the Study and the objectives of the Steering Committee Meeting.

Mr. Hiroaki Nakagawa, Resident Representative of JICA Vietnam Office, delivered the opening address to the Steering Committee.

Mr. Masayuki Koyama, Team Leader of the JICA Study Team, presented the summary of Interim Report focusing upon Chapter 3 on Regional Vision, Chapter 11 on Draft Master Plan and Chapter 12 on Basic Consideration for Action Plan.

All the participants of the Meeting confirmed that Interim Report was prepared in compliance with the conditions set forth in the S/W and agreed to proceed to further steps of the Study in accordance with the methodology and schedule mentioned in Interim Report. The following issues are discussed and agreed in the Meeting.

- (1) Dien Bien Province selected seven (7) programs as priority ones for the Province, namely (1.4) Border Trade Supporting Program, (2.1) Remote Areas Food Crop Production Program, (2.2) Animal Health and Disease Control Program, (3.3) Culture Villages and Green Tourism Program, (4.3) Biomass Energy Development Program, (6.1) Rural Road Management Program and (8.1) Capacity Building Program of District and Commune Officers for Implementation of Development Projects. The Province attached the highest priority to Program 8.1 in order to set up the institutional capacity for smooth and efficient implementation of on-going projects in the Province.
- (2) Son La Province prioritized three (3) programs i.e. (1.2) Agribusiness Development Program, (2.1) Remote Areas Food Crop Production Program and (2.3) Fish Pond Culture Extension Program. The Province requested the JICA Study Team to pay more attention to (i) post-harvest and processing of both soybeans and maize under Program 1.2, (ii) soil conservation by construction of terraced fields and micro-irrigation with small reservoirs on higher mountainous lands and steep slopes under Program 2.1 and (iii) researches on reservoir fish culture in addition to Program 2.3 especially for Son La Province where two large-scale dam reservoirs provide development opportunities for inland fishery. Dr. Dung added his comments on technical difficulties on the reservoir fish culture in the Da River, i.e. high turbidity of river water and low water temperature.
- (3) Hoa Binh Province requested to make more study on such aspects as (i) post-harvest and storage under (1.2) Agribusiness Development Program, (ii) irrigation, crop diversification and animal husbandry for food security under (2.1) Remote Areas Food

Crop Production Program, (iii) introduction of medical trees for (3.1) Non-Timber Forest Products (NTFP) Promotion Program and (iv) use of groundwater under (5.2) Mountain Stream Multipurpose Rural Water Supply Program. The JICA Study Team basically agreed to make further study pointed out by the Province as far as reliable data and information are available. The Province also requested to add two (2) programs for road construction and re-arrangement of residential areas of the resettlement area.

- (4) Lai Chau Province firstly requested clarification why education and health sectors are not covered by the Master Plan and requested the JICA Study Team to take into consideration (i) post-harvest and storage for (2.1) Remote Areas Food Crop Production Program and reservoirs for (2.3) Fish Pond Culture Extension Program., (ii) addition of production forest development program particularly with rubber trees plantation, (iii) addition of road construction and (iv) addition of biogas for (7.1) Renewable Energy Development Program.
- (5) ICD comments on importance of market-oriented agriculture from both regional economy and farm family income points of view and requested the JICA Study Team to incorporate the research activities for organic vegetables into Action Plan. ICD advised to pay more attentions to (i) not only food crops but also other foodstuffs for regional food security to meet widely ranged agricultural conditions of the Region and (ii) capacity building for organization and implementation of the development activities of the Region.
- (6) Further study will be made taking the above-mentioned comments and requests into consideration. In this regard, it is confirmed in the Meeting that the Master Plan aims at preparation of new programs to support and/or supplement the on-going programs without duplication with the preceding projects such as road construction, drinking water supply by using groundwater resources, and production forest development with rubber plantation.
- (7) Both education and medical services are important aspects for improvement of rural living conditions but the study efforts are directed more to development of the agricultural sector of the Region as previously agreed.
- (8) ICD raised the issue of sub-contracted study, called "Social impact of resettlements by Son La Hydropower plant". The JICA Study Team explained that the study results so far worked out are presented in Progress Report 1 and will reflect those items of which Vietnamese sides agree on the contents in the Draft Final Report.

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ANNEX

List of Participants

Vietnamese side:

Ministry of Agriculture and Rural Development (MARD)

International Cooperation Department (ICD)

Mr. Nguyen Anh Minh Senior Expert, Project Officer Mr. Sigeo Karimata ЛСА Expert, Integrated Agriculture and Rural Development

National Institute of Agricultural Planning and Projection (NIAPP)

Mr. Vu Nang Dung Mr. Nguyen Van Chinh Mr. Vu Cong Lan

General Director (the Chair Person of the Meeting) Vice Director Head of Division, International Cooperation and Project

Management Division (ICPMD)

Vice General Director, DARD

Ms. Vu Thi Ngoc Tran Ms. Nguyen Le Bich Hang Ms. Vuong Thuc Tran

Deputy Head, ICPMD Expert, ICPMD Expert, ICPMD

Hoa Binh Province

Mr. Quach Tu Hai

Son La Province

Mr. Cam Van Lam Mr. Tran Tuan Dat

Director, DARD Vice Director, DARD

Vice Chairman, PPC

Vice Director, DARD

Office, DPI

Dien Bien Province

Mr. Huong Van Nhan Mr. Nguyen Van Chua Ms. Le Thi Thao

Lai Chau Province

Mr. Dao Ngoc Hoang

Vice Director, DARD

Japanese side:

Embassy of Japan

Mr. Rinya Yutani

Second Secretary

JICA Vietnam Office

Mr. Hiroaki Nakagawa Mr. Masao Watanabe Mr. Toru Arai

Resident Representative Deputy Resident Representative ЛСА Expert

The Study Team

Mr. Masayuki Koyama Mr. Kenjiro Yatabe Mr. Fumimichi Obu Mr. Akihito Sakurai Ms. Sachiho Otowa

Team Leader Irrigation and Drainage Rural Infrastructure Forest Conservation Coordination and Handicraft

Minutes of Meeting on Draft Final Report for Master Plan Study

on

Improvement of Rural Living Conditions in Northwestern Mountainous Region in Vietnam

Hanoi, 26th August 2008

Dr. Vu Nang Dung Director National Institute of Agricultural Planning and Projection (NIAPP) Ministry of Agriculture and Rural Development (MARD) The Socialist Republic of Vietnam

Mr. Masayuki Koyama Team Leader Study Team Japan International Cooperation Agency (JICA)

Witnessed by

Mrs. Hoang Thi Dung Deputy Director General International Cooperation Department (ICD) Ministry of Agriculture and Rural Development (MARD) The Socialist Republic of Vietnam

Mr. Hiroaki Nakagawa Resident Representative Japan International Cooperation Agency (JICA), Vietnam Office

In accordance with the Scope of Work (hereinafter referred as "S/W") for the Master Plan Study on Improvement of Rural Living Conditions in Northwestern Mountainous Region in Vietnam (the Study), the JICA Study Team officially submitted twenty (20) copies of Draft Final Report (the Report) to MARD through NIAPP. The Steering Committee Meeting was held on 26th August 2008 (9:00 AM) at NIAPP in order to share and discuss the contents of Report. The list of attendants is presented in ANNEX.

The Steering Committee Meeting was opened by Dr. Vu Nang Dung, Director of NIAPP, the Chairperson of the Meeting. He summarized the current positions of the Study and the objectives of the Steering Committee Meeting.

Mr. Hiroaki Nakagawa, Resident Representative of the JICA Vietnam Office, delivered the opening address to the Steering Committee.

Mr. Masayuki Koyama, Team Leader of the JICA Study Team, presented the summary of Report focusing upon Chapter 3 on Regional Visions, Chapter 10 on Master Plan and Chapter 11 on Action Plan.

All the attendants of the Meeting confirmed that the Report was prepared in compliance with the conditions set forth in the S/W. The Master Plan and the Action Plan were fully agreed by all the attendants. The following issues were discussed and agreed in the Meeting.

- (1) The food security is utmost important issue in the Northwestern Region (the Region). Crop production especially in the border areas needs the government assistances. In parallel, as mentioned in the Report, the crop diversification has to be promoted for improvement of farm family incomes in the Region. The Dien Bien DARD placed the emphasis on further assistance for the promotion of export-oriented commodities including safe vegetables. The Son La DARD also pointed out the high potentials of the Moc Chau District for safe vegetable production under the favorable natural conditions similar to ones of Da Lat city of Lam Dong Province.
- (2) Either forests or watershed protection of the Da river basin should be taken into consideration as a regional issue to be achieved by joint efforts by the four Provinces. In this regard, rubber plantation will be promising as proposed in the Report. The PPC Lai Chau reported that the rubber trees currently cover 800 ha of Sin Ho District and will be continuously planted with the target area of 2,000ha toward 2015. In addition, the Master Plan proposes to introduce Jatropha not only for watershed protection but also for promotion of bio-diesel production. The Jatropha plantation should be carried out on trial basis.
- (3) The quality improvement of cash crops is an important issue of the agricultural sector of Vietnam. The Master Plan focuses on quality improvement of tea leaves, which are the leading foreign exchange earner among the agricultural products in the Region. In this connection, the Dien Bien DPI requested the JICA Study Team to add the Action Plan for the tea industry for the Dien Bien Province.

- (4) The Region often suffers from natural disasters. Recent damages in the North Vietnam caused by strong storm was cited by Son La representative and resettlement from disaster-prone areas was raised as one of emergent issues to the Northwest provinces. The Steering Committee agreed that more attention should be paid to resettlement of local residents from disaster susceptible areas in the Report. Although it will not be taken up as additional program for the Mater Plan, the Son La DPI suggested that this issue should be one of the recommendations of the Study.
- (5) The Son La DARD requested the JICA Study Team to review the proposal for introduction of water buffaloes. The JICA Study Team suggested the introduction of the improved breed of water buffaloes on experimental basis by referring to their good performance in Ha Tay Province. It was agreed that NIAPP will discuss with the Son La DARD whether or not the relevant proposal will be sustained in the Report. Also, the Study Team was encouraged to share with relevant stakeholders the most updated information about new breeds of buffaloes, in consultation with National Institute of Animal Husbandry (NIAH).
- (6) The four Provinces appreciated the promotion programs for NTFP and handicraft industry under the Master Plan. The Son La DARD commented that both lac and oil trees (trung) as NTFP are not suitable for the Province and requested the JICA Study Team had better not specify NTFP suitable for the Province.
- (7) The infrastructure development is one of the key issues in the Region. The priority is attached to the establishment of rural access networks and development of small-scale irrigation. More investment should be allocated to further installation of these facilities under the on-going poverty reduction programs. In this regard, the JICA Study Team submitted the additional documents, in which both existing and proposed small-scale irrigation and water supply facilities identified though the Study are listed up.
- (8) The capacity building of the government staff especially for districts and communes is urgently required for smooth project operations from plan formulation to monitoring and evaluation. In this regard, NIAPP will be able to contribute to the coordination of the monitoring and evaluation activities of the agricultural and rural development programs at both central and provincial levels.
- (9) All the official comments would be submitted to JICA Vietnam and the JICA Study Team through NIAPP by 10th September 2008. The JICA Study Team will direct every effort to incorporate these comments as possible. Final Report will be submitted to MARD through NIAPP by 30th September 2008.

Closed at 12:20 PM
List of Participants

Vietnamese side:

Ministry of Agriculture and Rural Development (MARD)

International Cooperation Department (ICD)

Ms. Hoang Thi Dung	Deput	y Director	General			
Mr. Nguyen Anh Minh	Head of	of Bilatera	l Cooperation	n Division		
Mr. Shigeo Karimata	ЛСА	Expert,	Integrated	Agriculture	and	Rural
	Develo	pment				

National Institute of Agricultural Planning and Projection (NIAPP)

Dr. Vu Nang Dung	General Director (the Chairperson of the Meeting)
Mr. Nguyen Van Chinh	Deputy Director
Mr. Vu Cong Lan, MBA	Head of Division, International Cooperation and Project
	Management Division (ICPMD)
Dr. Vu Thi Ngoc Tran	Deputy Head, ICPMD
Ms. Vuong Thuc Tran	Interpreter, ICPMD
Mr. Nguyen Ha Hue	Expert, ICPMD
Ms. Nguyen Le Bich Ha	ing Expert, ICPMD
Ms. Nguyen Thi Kim Tl	ninh Officer, ICPMD
Mr. Lai Ngoc Thanh	Officer, ICPMD
Mr. Bui Hai Nam	Officer, ICPMD
Hoa Binh Province	
Mr. Quach Tu Hai	Vice Director, DARD
Mr. Nguyen Anh Hong	Infrastructure PMB Deputy Head, DARD
Son La Province	
Mr. Luong Van Thiet	Director, DARD
Mr. Vu Tien Ta	Head of Planning Division, DPI
Dien Bien Province	
Mr. Nguyen Van Chua	Vice Director, DARD
Mr. Le Van Bien	Vice Director, DPI
Lai Chau Province	
Mr. Nguyen Dang Dao	Vice Chairman, PPC
Mr. Vu Manh Hung	Director, DPI
Mr. Le Xuan Cuong	Vice Director, DARD

Japanese side:

Embassy of JapanMr. Rinya YutaniSecond SecretaryJICA Vietnam OfficeSecond SecretaryJICA Vietnam OfficeSecond SecretaryMr. Hiroaki NakagawaResident RepresentativeMr. Yasuhiro TojoSenior Deputy Resident RepresentativeMr. Toru AraiExpert on Aid CoordinationMr. Junichi ImaiProject Formulation AdvisorMs. Nguyen Mai KhanhProgram Officer

The Study Team

Mr. Masayuki Koyama	Team Leader
Ms. Sachiho Otowa	Local Industry Development Expert

A4.1 Ethnic Minorities in the North-Western Region

Thai

Demography and Ethnic Classifi- cation	The Thai are the second largest ethnic minority group next to the Tay, with 1.7% (about 1.33 million people) of Vietnam's population. In the North-West their population is the largest among all the ethnic groups (about one third of the whole population). Together with the Nhang, Nung, San Chay, Lao, Lu and Bo Y, the Thai belong to the Tai language group and can communicate with these ethnic groups rather easily. In Viet Nam it is spelled as Thai, but outside Viet Nam in general, Thai refers the nation/kingdom as well as people of Thailand and their language. In reference to the ethnic group, it is spelled as Tai. The Thai have their own written scripts, but in Viet Nam only a few old people can read or write them.
Sub-Groups	Black Thai, Red Thai, Blue Thai, White Thai, White Thai, Phu Thai
Ethnic Distribution and History	The Thai are said to have originated in China, and moved southward to South-East Asia. They are widespread in China, Viet Nam, Laos, Thai, Myanmar and India. In the 10 th century A.D. they established chiefdoms in valleys which are currently in northern Viet Nam. Nowadays, the Thai live in Lai Chau, Son La, Hoa Binh, Nghe An, Lang Son, Lao Cai, Yen Bai, Thanh Hoa and Lam Dong Provinces. In the North-West, they are considered to be the indigenous peoples of Son La, Lai Chau, and Dien Bien.
Housing	House on stilts
Agriculture	The Thai are sedentary with sophisticated knowledge and experience of paddy rice agriculture with irrigation. In Viet Nam, they originally lived on lowland near rivers and streams and engaged in paddy rice agriculture. With increasing population and land scarcity, many of them moved to mid- or to up-land, and grow corn and other upland crops.
Food	Originally, their staple food was glutinous rice. Because glutinous rice has lower yield per hectare than non-glutinous rice, and the Thai lifestyles are becoming more and more like the Kinh's, many Thai eat non-glutinous rice. Despite the changes in rice, the Thai still prefer to eat hot and spicy food with lots of chili peppers.
Women	Thai women wear black sarongs and blouses with rows of silver or metal buttons (hooks). A married woman coils her hair in a topknot (a bun), covering it with a black turban embroidered with multicolored thread. Inside the topknot is a hairpiece to make it bigger. She does her hair every morning, and wears a bun even when she sleeps. As long as her husband is alive, she keeps wearing the bun. In Son La where more than half of the population is Thai, it is not against the traffic rule for a Thai woman with a bun and a turban to ride a motorcycle without a helmet. At the time of wedding, the Thai bride receives from the groom's family a hairpiece, a hair pin, earrings, etc. The bride family presents a turban to each female member of the grooms' family. The turbans are usually made by the mother of the bride, but nowadays Thai turbans are sold in stores. Some people seem to buy the turbans instead of making all of them by hand.
	Being the majority ethnic group, the Thai are thought by many people in Viet Nam to be "psychologically developed" just like the Kinh and the Muong. Gender ratio of those who go to higher education is said to be well balanced among the Thai with considerably large number of women in schools.
Handicraft	The Thai, especially the Lu, are famous for their skill for weaving. They used to spin silk and cotton thread, but these days threads are purchased in stores. Thai textiles, including women's turbans, baby carriers, etc. can be also bought in stores so that weaving is no longer popular. Women weave during the off-agricultural season to make mattress covers, shoulder bags, and other things their families use.
	Mosquito nets of the Thai are famous. It is made of black fabric and decorated with Thai weaving. They are still used in the North-West. The Thai weave bamboo baskets such as the one they use to store cooked glutinous rice.
	I neir baskets are for their household use also.
Belief/ Religion	inside and outside their houses. Black Thais bury a dead body in a grave, but they never go back to the grave to pray.
Festival	In China, Thailand and Laos, the water festival (songklan) in mid-April is famous as the new year festival of the Thai. In Vietnam, songklan is no longer practiced.

Demography and Ethnic Classifi- cation	The Muong are the fifth largest ethnic minority group in Viet Nam (1.15 million people; 1.5% of the whole population) They are the largest ethnic group in Hoa Binh Province with 63% of the provincial population. Together with Kinh, the Muong language belongs to Annam-Muong Language Group. In terms of culture and language, the Muong are closest to the Kinh and considered as the Kinh's brother ethnic group. They do not have their own written scripts or characters.
Sub-Groups	They are sometimes called Mol, Mual, Moi, Moi Bi, Au Ta, Au To by other ethnic groups or call themselves with such names. Whether these names represent their sub-groups is not clear.
Ethnic Distribution and History	The Muong are the original inhabitants of Hoa Binh and Thanh Hoa Provinces. Many live in Ginh Phuc, Yen Bai, Son La, and Ninh Binh Provinces also. The Muong and the Kinh are said to have the same ancestor, that they were one and the same ethnic group in the past. When China started to influence Viet Nam, the Muong are said to have escaped to the mountains while the Kinh remained in lowland to accept Chinese culture and lifestyles. According to another source, the separation of the Kinh and the Muong has taken place after the invasion by the Han Dynasty in 111 B.C. Perhaps due to the fact that the Kinh accepted many Chinese words into their language, the Kinh cannot understand the Muong language at present. Culturally speaking, the Muong are closer to the Thai culture than to the Kinh, but with the fast pace of development, the Muong are known to be no longer different from the Kinh.
Housing	Traditionally the Muong lived in houses on stilts. With development and modernization, Muong houses on stilts have been decreasing in number, especially in urban areas.
Agriculture	Originally they lived in highlands and engaged in wet rice and upland rice cultivation. Nowadays, many live on lowland and/or collect non-timber forest products such as mushrooms, resin, cinnamon, honey, etc.
Food	The Muong used to be glutinous rice eaters, but now eat a lot of non-glutinous rice. Many people say that Muong food is the same as Kinh food, but there are Muong food restaurants in Hoa Binh.
Women	Women's traditional costume includes a white turban, a long black skirt, a colorful belt, and short blouse which is open in front. Nowadays, it is old women who wear such costumes.
Handicraft	Traditionally, the Muong raised silkworm and grew cotton, spin them into threads, and weaved. The number of women who spin and weave is declining. The Muong also do basket weaving with bamboo. Baskets are mostly used for the households.
Belief / Religion	The Muong worship ancestors and believe in spirit.
Other	In a traditional Muong society, several villages constituted a Muong (nation) which was ruled by a feudal lord. The ancestor of the lord was believed to be the guardian deity of the Muong and each lord succeeded a drum from the previous lord as a symbol of power.

Muong

Dao

Demography and Ethnic Classifi- cation	The Dao are the 8 th largest ethnic minority in Viet Nam with 0.8% of the total population; 620,000 people. Their language belongs to Hmong-Yao Language group, but the Dao language cannot be understood by the Hmong or vice versa. Outside Viet Nam, the Dao are called the Yao. In Chinese, it is written as "瑶族". The Dao do not have their own written scripts or characters, but widely used Chinese characters. In Viet Nam, a small number of old Dao men can read and write the Chinese characters and some Dao households have worship/religious books written in Chinese.
	Although the Dao and the Hmong are often considered to be one and the same, the Dao culture seems to have received more Chinese influences.
Sub-Groups	Black Dao, Red Dao, Dao Tien (Money Dao), Lanten, White Trouser Dao, Blue Dress Dao, Indigo Dao, Narrow Trouser Dao, etc. They call themselves "Mien". The languages vary from sub-group to sub-group. These languages are considered to be different dialects most of which are not very difficult to understand by people of other Dao sub-groups. A few dialects/languages of subgroups cannot be understood by the other sub-groups.
Ethnic Distribution and History	The Dao came from China like the Hmong did, but they came to Viet Nam considerably earlier than the Hmong in 13 th century A.D. Many Dao live in Guangxi Zhuang Autonomous Region, Hunan, Yunan, Guangdong, and Guizhou Provinces in China. In Viet Nam, they live in the mountainous areas in the North-West and the North-East. They can also be found in mountainous regions of northern Thailand and northern Laos. Most Dao in Thailand and Laos are sub-groups called Iu Mien and Lanten and have much smaller number of sub-groups than in Viet Nam. Some Dao in Laos became refugees after the end of the revolution in 1975, and moved to the U.S., France and Australia.
Housing	Dao live in a one-story house built on the ground. Its shape is similar to Hmong house, but the size seems to be bigger than the Hmong house. Traditionally, it had a dirt floor, but nowadays some Dao houses have concrete floors or are built on stilts.
Agriculture	Traditionally the Dao lived in mountain areas slightly lower than where Hmong lived. They moved from mountains to mountains, engaging in swidden agriculture. Like the Hmong, they grew and produced opium, but they are said to have lower rate of opium addiction.
Food	Because of their use of Chinese characters and other influences from China, the Dao are believed to be close to the Han, and the food, tasty.
Women	The Dao have different costumes according to the sub-group, but most of the costumes are characterized by intricate embroidery and silver accessories/ornaments. During the off-agricultural season, Dao women can be seen sitting together outside their houses in a circle on low stools, chatting and embroidering. Different sub-groups have different designs, colors and stitching.
Handicraft	Dao handicrafts are famous for their elaboration, intricacy and beauty. The Dao costumes have beautiful embroideries whose patterns are unique to each sub-group. Some costumes are made of batik with indigo dye. Some other costumes use old silver coins of French Indochina (or their imitations) as ornaments. The Dao was also famous for their silver jewelry such as earrings, neckrings, chains, etc. which was made by Dao silversmith. In the North-West, only a handful of Dao silversmiths seem to remain.
Belief/ Religion	The Dao believe in spirits with much influence from Taoism. Religious leaders use Chinese characters. Old Dao ceremonial paintings (Taoism) are famous, but not many of them seem to exist in Viet Nam.
Other	The Dao believe that 6 sons and 6 daughters of ancient Chinese princess and a dog are the ancestors of 12 Dao clans. This story was first included in a classic Chinese historical series, and then also included in an old Japanese novel. As the ancestor is believed to be a dog, the Dao do not eat dog meat. Although the Dao society is clan- based like the Hmong, their clan solidarity is said to be weaker than that of the Hmong.
	toward them", and "They are good at managing household economy". Some Dao villages in Hoa Binh are located in lowland where people no longer wear

traditional costumes or practice wet-rice agriculture. They were made to move there
from upland during the war for independence from France. Compared to them, the Dao
in Lai Chau seem to keep their traditional culture more intact by living in upland and
growing upland rice.

Hmong

Demography and Ethnic Classifi- cation	The Hmong are the 7 th largest ethnic minority in Viet Nam with 1.0% of the total population; 790,000 people. They belong to the Hmong-Yao Language Group. They are often confused with the Mon ethnic group of the Mon-Khmer Language Group as their names sound similar. In China the Hmong are called Miao; "苗族", while they call themselves Hmong or Mong.
Language/ Writing	Until the 20 th century, the Hmong did not have their own writing systems. At present, several Hmong writing systems exist. They are not standardized as each system carries political or religious connotations such as anti-government movement in Laos, Christian missionary movement, etc. In Viet Nam, the Hmong seem to have their own writing system using Roman alphabets just like the Vietnamese language. Languages of the Hmong subgroups are slightly different, but they are considered as dialects with different words and pronunciation. The dialects do not create much difficulty in communication.
Sub-Groups	Black Hmong, White Hmong, Chinese Hmong (Flowery Hmong), Blue (Green) Hmong, Red Hmong
Ethnic Distribution and History	Some people have said that the Hmong had originated in Siberia, Mongolia, or even Mesopotamia. Presently-accept theory is that they originated in China, and that in 3000 B.C. they established San Miao Nation(三苗国). However, it is not known whether San Miao and the present-day Hmong are the same. The Hmong are called as migrants of the mountains who never had a nation or a king. There are 12 million Hmong throughout the world, of which 8 million live in southern China. They live in mountainous regions of northern Thailand, northern Laos and northern Myanmar as well. The Hmong migration from China to Viet Nam is believed to have started in 18 th century. Many Hmong now live in the North-West and the North-East regions of Viet Nam.
Housing	One-story house built on the ground with a dirt floor. With modernization, some houses came to have concrete floor. Cooking is done inside the house.
Agriculture	The Hmong practice(d) swidden agriculture moving from mountain to mountain. Upland rice and corn are their main agricultural crops. The Hmong are said to be very good at raising livestock, especially pigs, cows and horses. The Hmong have traditionally practiced opium cultivation. For them opium was not only remedy for all diseases, but also the main source of cash income. Many Hmong became addicted as well. Nowadays, many Hmong in China, Thailand. Laos grow and sell coffee, flowers, temperate vegetables, etc, instead of opium. They make and sell handicrafts such as ombroidery, appliqué hatik, silver ornamente ate as well.
Food	Many Hmong prefer to eat upland rice which is not the glutinous kind. They use glutinous rice to make a rice cake during their new year celebration. Hmong food is rather bland, not well-known for their taste.

Women	Each sub-group has a different costume. Some women wear pleated skirts with batik and embroidery while others wear black trousers. Traditionally, unmarried women make their costumes for the new year celebration. These days, machine made pleated skirts with Hmong patterns printed on the fabric have been mass-marketed. They seemed to be made in China.
	women in Sapa who sell their handicrafts to tourists on the street, the Hmong women put their shyness aside and actively go out of their Hmong society when they see a chance for business.
	Hmong embroidery and batik are famous. Each sub-group has their own stitching (reverse appliqué, cross stitching, etc.) and patterns. Traditionally they made fabrics out of flax and dyed them with indigo. For batik, they use beeswax and use a special pen to draw their designs.
	The Hmong are also famous for their basket making. Most Hmong carry basket on their back when they go to agricultural field or to a market.
Handicraft	Hmong men are said to be good blacksmiths, making knives and agricultural tools. Hmong necklaces, earrings, bracelets, and other ornaments are made by silversmiths. In Viet Nam, there seems to be not many silversmiths any more. In a store in Son La, Hmong-style earrings made of aluminum are sold. They seem to be mass-produced in China or in Viet Nam.
	Although the Hmong did not have their writing system until recently, they have made and used papers in religious ceremonies. The papers were made from bamboo. Whether Hmong in Viet Nam make papers is not known.
Belief/ Religion	The Hmong believe in spirits and worship their ancestors. They have shamans who act as a go-between of the spiritual world and this world. Illness is believed to be caused when a good spirit leaves one's body and is lost somewhere. Shaman is to bring back the spirit to the body by his/her prayers. During the prayer by Shaman, a chicken or a pig is often sacrificed, and paper is burned. This paper is considered to be money which is used by the ancestors in the spirit world.
	Lai Chau has some Hmong villages in which all the residents are Christians. Hmong Christian household does not have a small shrine / spirit house inside the house nor offer sacrifices.
Society	The Hmong are divided into about 20 different clans such as Vang, Yang, Thao, Vue, Xiong, Lee, Her, etc. and make up clan-based societies. Traditionally, a village was made up of one clan. Nowadays, a village is made up of several clans. While each clan maintains strong solidarity, this means that the solidarity or cohesiveness of a multi-clan village is rather weak due to clan sectionalism.
Marriage	Hmong man and woman of the same clan cannot marry each other. If they marry, they are to be ostracized and stop being Hmong. Sometimes a young Hmong man with help from his relatives and friends kidnaps a woman to marry her. This practice is often considered "barbaric" by other ethnic groups. Fear of kidnapping for marriage makes some parents not let their young daughters go outside by themselves.
	Traditionally, a Hmong groom pays brideprice to the bride's family in the forms of silver bars and livestock. Hmong men are culturally allowed to have more than one wife. It is usually wealthy men who have several wives. Wives of a man tend not to get along well. Whether Hmong in Viet Nam practices such polygamy is not clear.
Other	The Hmong are said to live on the highest part of the mountains, thus in the most remote area. In Viet Nam, many people seem to picture the Hmong in a negative way, believing that the Hmong "have low awareness", "do not have up-to-date information", "are not clever", etc. Despite such beliefs, the Hmong are famous (in other parts of the world) that they adapt to other cultures and society easily and master a new language fast because, throughout their history, they moved from mountain to mountain as an ethnic minority, having relationship with the majority groups.

A4.2 Ethnic Population by District in the North-Western Region

		Lai Chau	Dien Bien	Son La	Hoa Binh	Total	%
1	Thai	113,897	173,061	482,985	29,438	799,381	33.38
2	Muong	167	296	71,906	479,197	551,566	23.03
3	Kinh	41,056	87,206	153,646	209,852	491,760	20.53
4	Hmong	70,777	133,749	114,578	3,962	323,066	13.49
5	Dao	38,315	3,512	16,088	13,128	71,043	2.97
6	Kho Mu	5,939	15,243	9,950		31,132	1.30
7	Tay	397	1,260	807	20,537	23,001	0.96
8	Hanhi	16,565	3,299	-	-	19,864	0.83
9	Xinh Mun	-	1,494	16,654	-	18,148	0.76
10	Lao	6,003	4,549	4,455	-	15,007	0.63
11	Khang	425	3,748	6,541	-	10,714	0.45
12	La Hu	9,373	-	-	-	9,373	0.39
13	Giay	8,121	-	-	-	8,121	0.34
14	Lu	5,013	-	-	-	5,013	0.21
15	Ноа	1,096	2,320	147	-	3,563	0.15
16	Mang	3,288	-	-	-	3,288	0.14
17	Laha	-	-	3,134	-	3,134	0.13
18	Cong	1,054	737	-	-	1,791	0.07
19	Lo Lo	773	-	-	-	773	0.03
20	Nung	45	724	-	-	769	0.03
21	Si La	458	184	-	-	642	0.03
22	Tho		357	-	-	357	0.01
23	Phu La	28	200	-	_	228	0.01
24	San Chi	_	133	_	_	133	0.01
	Others	875	560	1,186	599	3,220	0.13
	Total	323,665	432,632	882,077	756,713	2,395,087	100.00

Ethnic Group Population in NW

1	AL	%	35.19	21.87	12.68	11.84	5.12	2.90	2.51	1.85	1.83	1.55	1.02	0.34	0.33	0.24	0.14	0.13	0.12	0.05	0.01	0.01	0.27	100.00
TOT	101	Pop	113,897	70,777	41,056	38,315	16,565	9,373	8,121	6,003	5,939	5,013	3,288	1,096	1,054	773	458	425	397	167	45	28	875	323,665
Jyen	(%	63.58	12.86	13.93	2.05	I	ļ	0.45	2.29	4.70	I	I	I		I	1	ı	0.13	0.01	I	ı	0.00	100.00
Than I	(10	Pop	57,921	11,716	12,688	1,866	1	1	410	2,087	4,281	1	1		-			-	119	10			3	91,101
nong	(%	19.02	30.38	13.99	9.81	1	ı	10.42	8.79	0.02	5.36	1	1.21		I	1	0.37	0.17	0.25	0.08	1	0.13	100.00
Tam D	(14	Pop	8,315	13,282	6,118	4,289	1	ı	4,555	3,841	6	2,343	,	530	-	ı		162	73	110	36		56	43,719
Io	(%	30.50	27.81	12.78	15.76	5.23	1	0.47	0.10	1.08	3.51	2.42	0.16	-	1		0.03	0.05	0.03	0.01		0.03	100.00
Sin F	(16	Pop	23,209	21,163	9,722	11,995	3,982	I	360	75	820	2,670	1,844	125	I	I	1	25	41	26	6	1	23	76,089
Tho		%	20.99	25.51	3.45	36.72	7.63	ı	3.60	1	I	I	I	0.46	I	1.55	1	I	ı	I	I	I	0.10	100.00
Phong	(6)	Pop	10,498	12,756	1,725	18,362	3,815	ı	1,801	1	1	1	1	232		773				ı	1		50	50,012
g Te	(%	27.87	16.23	2.44	2.76	19.45	21.14	0.33	1	1.87	I	3.26	0.47	2.38	I	1.03	0.54	0.06	0.04	1	0.06	0.07	100.00
Muang	(17	Pop	12,356	7,196	1,082	1,225	8,623	9,373	148	ı	829	I	1,444	209	1,054	I	458	238	27	16	ı	28	30	44,336
Chau	(%	8.68	25.34	52.81	3.14	0.79	ı	4.60	,	,	,	,	1	-	ı	-		0.74	0.03	,		3.87	100.00
TX Lai	(6)	Pop	1,598	4,664	9,721	578	145	ı	847	1	1	ı	,			ı			137	5	1		713	18,408
			Thai	Hmong	Kinh	Dao	Ha Nhi	La Hu	Giay	Lao	Kho Mu	Lu	Mang	Hoa	Cong	Lo Lo	Si La	Khang	Tay	Muong	Nung	Phu La	Others	TOTAL

Ethnic Population by District (Lai Chau)

Source: Ethnic Committee, Son La (2005)

Attachment 4.2

	TP Dien Bid	en Phu	TX Muon	g Lay	Dien F	3 ien	Dien Bien	Dong	Muong	Cha	Muong I	Nhe	Tua Ch	ua	Tuan G	iao	E	
Groun	(14)		(8)		(11	((7)		(12)		(11)		(8)		(6)		1 0141	
dnorp	Pop	%	Pop	%	Pop	%	Pop	%	Pop	%	Pop	%	Pop	%	Pop	%	Pop	%
Thai	6,675	15.22	3,564	37.41	53,402	53.53	15,644	32.38	17,954	36.46	3,636	10.36	6,713	15.76	65,473	62.80	173,061	40.00
Hmong	680	1.55	39	0.41	8,434	8.45	26,193	54.21	23,902	48.54	23,760	67.71	30,954	72.69	19,787	18.98	133,749	30.92
Kinh	34,194	77.96	5,666	59.48	28,026	28.09	1,195	2.47	3,105	6.31	935	2.66	1,787	4.20	12,298	11.80	87,206	20.16
Kho Mu	786	1.79			5,012	5.02	2,403	4.97	2,326	4.72	445	1.27	346	0.81	3,925	3.76	15,243	3.52
Lao	109	0.25			3,143	3.15	1,297	2.68									4,549	1.05
Khang									836	1.70	578	1.65			2,334	2.24	3,748	0.87
Dao	58	0.13							30	0.06	1,376	3.92	2,048	4.81			3,512	0.81
Hanhi	50	0.11	24	0.25							3,225	9.19					3,299	0.76
Hoa	53	0.12	157	1.65	83	0.08			966	2.03	346	0.99	625	1.47	58	0.06	2,320	0.54
Xinh Mun							1,494	3.09									1,494	0.35
Tay	454	1.04	26	0.27	770	0.77			10	0.02							1,260	0.29
Cong	6	0.02			248	0.25					480	1.37					737	0.17
Nung	251	0.57			473	0.47											724	0.17
Tho	303	0.69	17	0.18					37	0.08							357	0.08
Muong	136	0.31			19	0.02			30	0.06					111	0.11	296	0.07
Phu La													90	0.21	110	0.11	200	0.05
Si La									6	0.02	175	0.50					184	0.04
San Chi											133	0.38					133	0.03
Others	105	0.24	33	0.35	149	0.15	89	0.18	5	0.01			20	0.05	159	0.15	560	0.13
TOTAL	43,863	100.00	9,526	100.00	99,759	100.00	48,315	100.00	49,242	100.00	35,089	100.00	42,583	100.00	104,255	100.00	432,632	100.00

Ethnic Population by District (Dien Bien)

Source: Ethnic Committee, Dien Bien (2004)

(Son La)
District
by
Population
Ethnic

F

L L		%	29.86	11.15	10.37	42.44		6.03	0.00	0.00			0.10	0.04		100.00
Phu Ye	(6)	Pop	28,640	10,698	9,941	40,708		5,783	3	1			92	43		95,909
La		%	75.32	4.22	18.30	0.15	0.00	0.02	0.06	1.89	0.00		0.03	0.01		100.00
Muong	(11)	Pop	48,969	2,741	11,899	95	1	12	40	1,232	2		20	4		65,015
hau	(%	33.49	30.54	13.59	15.64	0.38	6.11	0.17	0.00			0.08	0.01		100.00
Moc C	(10	Pop	43,419	39,594	17,621	20,280	490	7,925	220	2			101	L		129,659
Son	()	%	55.63	27.26	10.93	0.75	3.44	0.02	1.46	0.39	0.01	0.00	0.11	0.01		100.00
Mai S	(12	Pop	62,525	30,632	12,282	843	3,871	17	1,638	440	6	2	123	L		112,389
/en		%	32.61	4.78	38.88	20.16		3.32	0.16				0.09	0.00		100.00
Bac Y	(8)	Pop	14,377	2,105	17,140	8,885		1,463	69				40	2		44,081
Xa	(%	56.63	41.27	0.60	0.81	0.04	0.07	0.05	0.04	0.02	0.02	0.34	0.10		100.00
Thi 2	(12	Pop	37,525	27,351	397	538	24	48	36	29	13	12	226	68		66,267
Ethnio	Eunic	dnoin	Thai	Kinh	Hmong	Muong	Xinh Mun	Dao	Kho Mu	Khang	Lao	Laha	Tay	Hoa	Others	TOTAL

T	%	54.74	17.42	12.99	8.15	1.89	1.82	1.13	0.74	0.51	0.36	0.09	0.02	0.13	100.00
TOTA	Pop	482,985	153,646	114,578	71,906	16,654	16,088	9,950	6,541	4,455	3,134	807	147	1,186	882,077
hau)	%	53.48	21.08	12.78	0.31	11.90	0.01	0.38		00.00	00.00	0.05	0.00		100.00
Yen C (11	Pop	30,570	12,047	7,302	178	6,803	5	220		1	1	28	2		57,157
Chau)	%	76.95	7.51	66.6	0.09	0.00	0.01	1.22	2.01	0.00	2.12	0.07	0.01		100.00
Thuan (12	Pop	113,143	11,049	14,693	135	3	19	1,797	2,950	1	3,119	106	12		147,027
do	%	58.99	0.74	23.05	0.03			6.73		10.42	0.00	0.04			100.00
Sop C (7)	Pop	20,818	261	8,135	10			2,376		3,676		13			35,289
Ma	%	59.83	16.12	14.31	0.21	5.64	0.02	2.63	0.42	0.78		0.05	0.00		100.00
Song (11	Pop	57,944	15,608	13,862	199	5,461	20	2,544	409	753		50	2		96,852
Nhai	%	80.19	4.99	4.18	0.11	0.00	2.55	3.22	4.73			0.03			100.00
Quynh (9)	Pop	25,055	1,560	1,306	35	1	796	1,007	1,478			8			31,246
Ethnic	Group	Thai	Kinh	Hmong	Muong	Xinh Mun	Dao	Kho Mu	Khang	Lao	Laha	Tay	Hoa	Others	TOTAL

Source: Ethnic Committee, Son La

a Binh)
(H02
District
by
Population
Ethnic

y Son Lac Son	(10) (29)	% Pop %	28 66.98 113,328 90.37	30 30.99 11,898 9.49	55 0.09 56 0.0 ²	12 0.16 42 0.03	78 1.70 35 0.03	3 0.00 1 0.00	51 0.07 40 0.03	
X		% Pop	82.86 46,42	14.49 21,48	0.03	0.13 0.11	2.44 1,17	0.00	0.03 5	
Kim Boi	(37)	Pop	110,535	19,330	43	177	3,261	9	45	
ac		%	34.03	11.91	0.49	40.60	12.90		0.07	1 1 1
Da B	(21)	Pop	16,597	5,808	238	19,805	6,293		34	
Ka		%	26.00	71.95	0.46	0.31	1.14	0.03	0.11	
Thi X	(14)	Pop	19,854	54,948	354	236	872	22	83	
	Ethnic Group		Muong	Kinh	Thai	Tay	Dao	Hmong	Others	

AL	%	61.18	23.62	3.89	2.71	1.17	0.52	0.07	93.71
TOT	Pop	462,949	178,715	29,405	20,483	13,127	3,961	513	709,153
Thuy ()	%	67.57	32.22	0.02	0.03	0.03		0.13	100.00
Yen T (13	Pop	39,559	18,864	12	15	15		<i>2</i>	58,544
Lac	%	83.53	15.99	0.40	0.03	0.03		0.01	100.00
Tan I (24	Pop	61,522	11,779	295	23	22		10	73,651
hau)	%	14.96	14.10	60.22	0.03	2.11	8.35	0.23	100.00
Mai C (22	Pop	7,032	6,625	28,304	13	066	3,926	110	47,000
Son	%	62.70	36.48	0.05	0.08	0.60	0.00	0.08	100.00
Luong (18	Pop	48,094	27,983	38	60	461	3	61	76,700
huy)	%	34.16	65.47	0.07	0.11	0.00	0.00	0.18	100.00
Lac T1 (13)	Pop	16,248	31,137	33	54	1	1	86	47,560
Ethnic Group		Muong	Kinh	Thai	Tay	Dao	Hmong	Others	TOTAL

Source: Statistical Bureau, Hoa Binh

A4.3 Typical Cropping Patterns in the North-Western Region

Typical Crpping Patterns in Lai Chau Province



TYPICAL CROPPING PATTERN IN LOW-LAND UNDER RAIN-FED CONDITIONS

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
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							Cassava					
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L							100					

TYPICAL CROPPING PATTERN IN LOW-LAND UNDER IRRIGATED CONDITIONS



Typical Crpping Patterns in Dien Bien Province



TYPICAL CROPPING PATTERN IN HIGH LAND UNDER RAIN-FED CONDITIONS

TYPICAL CROPPING PATTERN IN LOW-LYING LAND UNDER RAIN-FED CONDITIONS



TYPICAL CROPPING PATTERN IN LOW-LAND UNDER IRRIGATED CONDITIONS



Typical Crpping Patterns in Son La Province

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
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						(Cassava					
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						_	Cotton	1		\sim		
			\sim			$\overline{}$						
					Maize			So	oybean	\sim		
				$ \frown $	-		\geq			1	\geq	

TYPICAL CROPPING PATTERN IN HIGH-LAND UNDER RAIN-FED CONDITIONS

TYPICAL CROPPING PATTERN IN LOW LAND UNDER RAIN-FED CONDITIONS



TYPICAL CROPPING PATTERN IN LOW LAND UNDER IRRIGATED CONDITIONS



Typical Crpping Patterns in Hoa Binh Province



TYPICAL CROPPING PATTERN IN HIGH-LAND UNDER RAIN-FED CONDITIONS

TYPICAL CROPPING PATTERN IN LOW LAND UNDER RAIN-FED CONDITIONS

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan
			•				Paddv	1				
					Maize		Sweet Potat	toes	Groundr			
							Cassava		1 1			
							Теа	1				
						Fruits						

TYPICAL CROPPING PATTERN UNDER IRRIGATED CONDITIONS



$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Forest and land category	Total	Divi	ided hy functions (ha)		Total		ided by functions (h	a)
		(ha)	Special-use	Protection	Production	(ha)	Special-use	Protection	Production
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		Lai Chau	-	-		Son La	-	a	
$ \begin{array}{ $	Physical area	906,512.3	-	-	-	1,405,500.0	-	-	
A Manuel (rest 25,874) 35,874,1 (Manuel (rest 26,840) 35,874,1 (Manuel (rest 26,840) 35,874,1 (Manuel (rest 26,840) 35,874,1 (Manuel (rest 26,840) 35,874,1 (Manuel (rest 26,840) 35,90,1 (Manuel (rest 26,840) 35,90,1 (Manuel (rest 27,00) 35,90,1 (Manuel (rest 27,00) 36,91,3 (Manuel (rest 27,00) 36,92,3 (Manuel (rest 27,00)	I. Forested land	332,110.6	33,360.1	273,125.9	25,624.6	571,069.0	55,072.1	479,080.6	36,916.3
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	A. Natural forests	315,747.2	33,360.1	260,343.0	22,044.1	550,920.7	55,043.1	466,018.8	29,858.8
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	1. Timber forest	255,888.1	23,720.1	232,168.0		419,555.6	51,378.7	360,028.2	8,148.7
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	2. Bamboo forest	26,068.9		4,024.8	22,044.1	43,414.4	2,700.9	20,574.4	20,139.1
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	3. Mixed forest	26,840.9	4,340.0	22,500.9		10,966.5	561.5	8,834.0	1,571.0
S. Roky: nontrain forest 6.99.3 5.30.0 1.69.3 5.30.0 1.69.3 5.30.0 1.69.3 5.30.0 1.60.3 5.68.2 4.02.0 5.68.2 4.02.0 5.68.2 1.60.3 5.68.2 3.75.2.3 3.70.0 3.75.6.4 1.54.1 1.100.23 3.75.3.2 3.70.0 3.75.6.4 1.54.1 1.100.23 3.75.3.2 3.70.0 3.75.6.4 1.54.1 1.100.23 3.75.3.2 3.70.0 3.75.7.3 3.70.0 3.75.3.3 3.70.0 3.75.3.3 3.70.0 3.75.3.3 3.70.0 3.75.3.3 3.70.0 3.75.3.3 3.70.0 3.75.3.3 3.70.0 3.75.3.3 3.70.0 3.75.3.3 3.70.3.3 3.75.3.3 3.70.3.3 3.75.3.3 3.75.3.3 3.75.3.3 3.75.3.3 3.75.3.3 3.75.3.3 3.75.3.3 3.75.3.3.3 3.75.3.3 3.75.3.3 3.75.3.3 3.75.3.3 3.75.3.3 3.75.3.3 3.75.3.3 3.75.3.3 3.75.3.3 3.75.3.3 3.75.3.3 3.75.3.3 3.75.3.3 3.75.3.3 3.75.3.3 3.75.3.3 3.75.3.3 3.75.3.3.3 </td <td>4. Mangrove forest</td> <td>0.0</td> <td></td> <td></td> <td></td> <td>I</td> <td></td> <td></td> <td></td>	4. Mangrove forest	0.0				I			
B. Planations with volume 15.56.4 (a) (b) (c) (c) (c) (c) (c) (c) (c) (c) (c) (c	5. Rocky mountain forest	6,949.3	5,300.0	1,649.3		76,984.2	402.0	76,582.2	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	B. Plantations	16,363.4	0.0	12,782.9	3,580.5	20,148.3	29.0	13,061.8	7,057.5
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	1. Plantation with volume	3,720.5		3,566.4	154.1	11,602.3		8,795.9	2,806.4
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	2. Plantation without volume	11,584.1		8,577.1	3,007.0	5,188.0	29.0	3,139.3	2,019.7
4. Specialities: 0.0 4. Specialities: 1.7503 3.873 3.8073 1. In digrast, reach and demoted inther, tambooi 83.345 11.5703 43.5340 11.57534 $10.06.8$ 66.3257 2. b (with, statered inther, tambooi 88.3450 11.5190 6.3440 13.3229 51.5037 14.951 21.5525 3. b (with, statered inther, tambooi 88.3450 11.5190 6.3440 13.3229 51.5037 14.951 21.5525 5. h (with, statered inther, tambooi 88.3460 11.5306 53.432 11.5190 63.440 13.3229 51.5037 14.5165 74.952 20.2434 5. h (with, statered inther, tambooi 85.4097 11.5475 97.5166 20.2013 14.1006 86.3257 1. Other land 'ypes 11.0 (her land 'ypes 32.0001 111.24775 23.45617 11.0068 66.3253 1. Forestel land 33.0001 111.24775 23.53512 11.014 22.140 21.0095 1. Forestel land 33.0001	3. Bamboo	1,058.8		639.4	419.4	1,607.7		745.9	861.8
II Bare land cleaned thils 453.40.1 483.90.2 242.01.5 16.5.534.5 16.5.534.5 13.322.5 34.357.8 13.4.357.8 14.4.957.8 14.4.957.8 14.4.957.8 14.4.358.8 14.4.358.8 14.4.358.8 14.4.358.8 14.4.358.8 14.4.358.8 14.4.358.8	4. Specialties	0.0				1,750.3		380.7	1,369.6
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	II. Bare land, denuded hills	453,480.1	48,930.2	242,015.4	162,534.5	342,271.3	25,532.8	184,557.8	132,180.7
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	1. Ia (grass, reed)	289,035.4	30,218.7	118,856.9	139,959.8	115,755.4	10,006.8	66,325.7	39,422.9
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	2. Ib (bush, scattered timber, bamboo)	88,245.9	11,519.0	63,404.0	13,322.9	51,203.7	4,195.1	21,552.5	25,456.1
5. Rocky montain without forest 0.0 11. Other land 20.243.8 25.4 20.243.4 11. Other land year 12.0.921.6 -	3. Ic (regenerated timber)	76,198.8	7,192.5	59,754.5	9,251.8	155,043.4	11,305.5	76,436.2	67,301.7
5. Invaded sandy and mid area 0.0 0.0 1. Cutach land trees 2. Subset of the land trees 2. Ap2, 15, 7 2. Ap3, 2 2. Ap3, 2 <td>4. Rocky mountain without forest</td> <td>0.0</td> <td></td> <td></td> <td></td> <td>20,268.8</td> <td>25.4</td> <td>20,243.4</td> <td></td>	4. Rocky mountain without forest	0.0				20,268.8	25.4	20,243.4	
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	5. Invaded sandy and mud area	0.0							
Model Biole Join Binh Plysical area Join Binh Pysical area S55409.7 I Forestal and S55409.1 I12477.5 S58.5312 I.031.4 202.013 J11.2477.5 S58.5312 I.031.4 202.013 J11.2477.5 S58.532.5 I.11.34.4 202.02.1 J9.589.6 II.9.340.1 1. Timber forest 1.1334.4 2.08.456.7 1.05.14 2.05.69.6 1.19.340.1 2. Binkoo forest 1.9.589.5 1.143.1 18.360.5 9.30.4 436.8 7.980.5 3. Mixed forest 1.9.194.6 1.143.1 18.360.5 9.30.4 436.8 7.980.5 5. Rocky mountain forest 1.143.1 18.340.6 1.031.4 52.350.0 2.16.90.1 7.980.5 8. Rocky mountain forest 1.143.1 18.340.6 1.031.4 52.350.0 2.16.90.1 7.967.6 1. Planations	III. Other land types	120,921.6	-	-	-	492,159.7	-	-	-
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		Dien Bien				Hoa Binh			
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	Physical area	955,409.7				466,253.1		-	
A. Naural forest $360,081.6$ $112,477.5$ $247,604.1$ $ 150,202.1$ $19,589.6$ $119,340.1$ 1. Timber forest $319,791.1$ $111,334.4$ $208,456.7$ $46,793.2$ $8,276.9$ $33,86.9$ 2. Nixed forest $6,562.5$ $114,31.4$ $208,456.7$ $46,793.2$ $8,276.9$ $33,86.9$ 3. Mixed forest $19,533.4$ $1,143.1$ $18,390.3$ $9,151.8$ $9,90.8$ 3. Mixed forest $19,494.6$ $111,334.4$ $208,46.7$ 0.00 21.7 $7,995.5$ 4. Mangrove forest $14,194.6$ $14,194.6$ $14,194.6$ $16,44.1$ $70,562.9$ 5. Rocky mountain forest $14,194.6$ $14,194.6$ $10,971.1$ $10,31.4$ $22,36.0$ 21.7 9. Banations with volume $7,271.0$ $4,469.1$ $7,367.9$ $6,806.4$ 464.6 $22,396.0$ $16,44.1$ $70,562.9$ 9. Shanboo $2.$ Plantation without volume $2,27.9$ $4,69.1$ $2,110.7$ $2,069.0$ 162.4 9. Shanboo $2.$ Plantation without volume $2,29.801.5$ $5,19.0$ $116,24.4$ $70,562.9$ 9. Shanboo $2.$ Plantation without volume $2,29.801.5$ $5,19.0$ $116,24.4$ $70,562.9$ 9. Shanboo $2.$ Plantation without volume $2,19.895.1$ $10,971.4$ $2,19.6$ 162.4 9. Shanboo $2.$ Plantation without volume $2.05.0$ $2.19.895.1$ $10,971.4$ $2.740.1$ $70,502.9$ 9. Shanboo $2.$ Plantation without volume $2.05.0$ $2.19.895.1$ 2.19	I. Forested land	372,030.1	112,477.5	258,521.2	1,031.4	202,666.3	20,201.3	141,019.5	41,445.5
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	A. Natural forests	360,081.6	112,477.5	247,604.1	I	150,202.1	19,589.6	119,340.1	11,272.4
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	1. Timber forest	319,791.1	111,334.4	208,456.7		46,793.2	8,276.9	33,886.9	4,629.4
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	2. Bamboo forest	6,562.5		6,562.5		9,360.4	231.8	6,900.8	2,227.8
4. Mangrove forest - - 0.0	3. Mixed forest	19,533.4	1,143.1	18,390.3		9,151.8	436.8	7,989.5	725.5
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	4. Mangrove forest					0.0			
B. Plantations 11,948.5 - 10,917.1 1,031.4 52,464.2 611.7 21,679.4 1. Plantation with volume 7,271.0 7,371.0 6,806.4 464.6 22,396.0 92.7 7,967.6 2. Plantation with volume 4,469.1 358.4 20,801.5 519.0 13,549.4 3. Bamboo 2. Plantation without volume 4,469.1 358.4 20,801.5 519.0 13,549.4 1. Bare land, denuded hills 1. La (grass, reed) 1. La (grass, reed) 201.8 7,211.4 2740.1 72,069.0 1. La (grass, reed) 1. La (grass, reed) 101,787.8 101,787.8 219,895.1 71,157.2 1,444.4 38,842.1 1. La (grass, reed) 101,787.8 101,787.8 101,787.8 219,405.1 71,157.2 1,444.4 38,842.1 1. I. La (grass, reed) 101,787.8 101,787.8 101,787.8 21,441.4 38,842.1 2. Rocky mountain without forest 5. Rocky mountain without forest 2. Rocky mountain without forest 2. Rocky mountain without forest 2. Rocky mountain without forest <t< td=""><td>5. Rocky mountain forest</td><td>14,194.6</td><td></td><td>14,194.6</td><td></td><td>84,896.7</td><td>10,644.1</td><td>70,562.9</td><td>3,689.7</td></t<>	5. Rocky mountain forest	14,194.6		14,194.6		84,896.7	10,644.1	70,562.9	3,689.7
1. Plantation with volume 7,271.0 6,806.4 464.6 22,396.0 92.7 7,967.6 2. Plantation with volume 4,469.1 358.4 29,801.5 519.0 13,549.4 3. Bamboo 2. Plantation without volume 4,469.1 358.4 29,801.5 519.0 13,549.4 3. Bamboo 4. Specialties 208.4 261.8 219,892.1 162.4 1. Bare land, denuded hills 406,787.2 - 406,787.2 - 124,431.4 2740.1 72,069.0 1. I. la (grass, reed) 1.1 a (grass, reed) 101,787.8 219,895.1 71,157.2 1,444.4 38,842.1 2. Ib (bush, scattered timber, bamboo) 101,787.8 101,787.8 101,787.8 25,353.8 611.1 15,989.0 3. Ic (regenerated timber) 85,104.3 85,104.3 85,104.3 25,353.8 611.1 15,989.0 1. I. Other timber) 85,104.3 85,104.3 85,104.3 25,353.8 611.1 15,989.0 1. I. Other timber) 5. Invaded sand mud area 1 10,662.2 2,331.2 419.6 15,989.0 3. I. Other timber)	B. Plantations	11,948.5	1	10,917.1	1,031.4	52,464.2	611.7	21,679.4	30,173.1
2. Plantation without volume 4,469.1 4,110.7 358.4 29,801.5 519.0 13,549.4 3. Bamboo 208.4 208.4 208.18 519.0 162.4 4. Specialties - 208.4 208.1 208.1 208.1 1. Bare land, denuded hills 406,787.2 - 406,787.2 - 124,431.4 23,842.1 1. Ia (grass, reed) 1.1. Ia (grass, reed) 101,787.8 101,787.8 101,787.8 23,312.2 419.6 15,005.8 3. Ic (regenerated timber, bamboo) 101,787.8 101,787.8 101,787.8 611.1 15,989.0 4. Rocky mountain without forest - 101,787.8 104.3 85,104.3 25,533.8 611.1 15,989.0 5. Invaded sandy and mud area - 101,787.8 104.3 2,740.1 7,1572.2 1,444.4 38,842.1 6. Inthometer - 25,353.8 611.1 15,989.0 2,332.1 15,980.0 7. Into ded sandy and mud area - - - 25,353.8 611.1 15,989.0 2,323.1 7. III. Other land types - -	1. Plantation with volume	7,271.0		6,806.4	464.6	22,396.0	92.7	7,967.6	14,335.7
3. Bamboo 208.4 208.4 261.8 162.4 4. Specialties - 208.4 261.8 162.4 1. Bare land, denuded hills - 4.9 261.8 162.4 1. Bare land, denuded hills - - 406,787.2 - 124,431.4 2,740.1 72,069.0 1. Ia (grass, reed) 1.1a (grass, reed) 101,787.8 219,895.1 71,157.2 1,444.4 38,842.1 2. Ib (bush, scattered timber, bamboo) 101,787.8 101,787.8 101,787.8 161.1 15,005.8 3. Ic (regenerated timber) 85,104.3 85,104.3 85,104.3 25,353.8 611.1 15,989.0 4. Rocky mountain without forest - 101,787.8 25,353.8 611.1 15,989.0 5. Invaded sandy and mud area - 176,592.4 - 2,321.2 2,331.2 2,533.8 611.1 15,989.0 6.0000 - - - - 2,535.3 611.1 15,989.0 7. Invaded sandy and mud area - - - 2,331.2 2,321.1 2,322.1 7. III. Other mat types </td <td>2. Plantation without volume</td> <td>4,469.1</td> <td></td> <td>4,110.7</td> <td>358.4</td> <td>29,801.5</td> <td>519.0</td> <td>13,549.4</td> <td>15,733.1</td>	2. Plantation without volume	4,469.1		4,110.7	358.4	29,801.5	519.0	13,549.4	15,733.1
4. Specialties - - 4.9 - 4.9 -	3. Bamboo	208.4			208.4	261.8		162.4	99.4
II. Bare land, denuded hils 406,787.2 - 406,787.2 - 124,431.4 2,740.1 72,069.0 1. Ia (grass, reed) 2.19,895.1 2.19,895.1 71,157.2 1,444.4 38,842.1 2. Ib (bush, scattered timber, bamboo) 101,787.8 219,895.1 71,157.2 1,444.4 38,842.1 3. Ic (regenerated timber) 85,104.3 85,104.3 23,312.2 419.6 15,005.8 4. Rocky mountain without forest - - 25,535.8 611.1 15,989.0 5. Invaded sandy and mud area - - - - - 265.0 2,232.1 III. Other land types -	4. Specialties	I				4.9			4.9
1. Ia (grass, reed) 219,895.1 219,895.1 71,157.2 1,444.4 38,842.1 2. Ib (bush, scattered timber, bamboo) 101,787.8 101,787.8 23,312.2 419.6 15,005.8 3. Ic (regenerated timber) 85,104.3 85,104.3 25,353.8 611.1 15,989.0 4. Rocky mountain without forest - - 4,608.2 265.0 2,232.1 5. Invaded sandy and mud area - - - 139,155.4 - - Concore MADD / 2006 Errored I and - - - 139,155.4 - - - -	II. Bare land, denuded hills	406,787.2	I	406,787.2	I	124,431.4	2,740.1	72,069.0	49,622.3
2. Ib (bush, scattered timber, bamboo) 101,787.8 101,787.8 23,312.2 419.6 15,005.8 3. Ic (regenerated timber) 85,104.3 85,104.3 25,353.8 611.1 15,989.0 4. Rocky mountain without forest - 85,104.3 85,104.3 25,353.8 611.1 15,989.0 5. Invaded sandy and mud area - - 0.0 2,232.1 2,232.1 III. Other land types 176,592.4 - - 139,155.4 - -	1. Ia (grass, reed)	219,895.1		219,895.1		71,157.2	1,444.4	38,842.1	30,870.7
3. Ic (regenerated timber) 85,104.3 85,104.3 15,989.0 4. Rocky mountain without forest - - 25,353.8 611.1 15,989.0 4. Rocky mountain without forest - - 4,608.2 265.0 2,232.1 5. Invaded sandy and mud area - - 0.0 2,232.1 265.0 2,232.1 III. Other land types 176,592.4 - - 139,155.4 - - -	2. Ib (bush, scattered timber, bamboo)	101,787.8		101,787.8		23,312.2	419.6	15,005.8	7,886.8
4. Rocky mountain without forest - - 265.0 2,232.1 5. Invaded sandy and mud area - - 0.0 2,232.1 III. Other land types 176,592.4 - - 139,155.4 -	3. Ic (regenerated timber)	85,104.3		85,104.3		25,353.8	611.1	15,989.0	8,753.7
5. Invaded sandy and mud area - - 0.0 III. Other land types 176,592.4 - - 139,155.4 - - Source: NADD. (2006) Except Date for and United Land - - 139,155.4 - </td <td>4. Rocky mountain without forest</td> <td>'</td> <td></td> <td></td> <td></td> <td>4,608.2</td> <td>265.0</td> <td>2,232.1</td> <td>2,111.1</td>	4. Rocky mountain without forest	'				4,608.2	265.0	2,232.1	2,111.1
III. Other land types 176,592.4 - 176,592.4 - 139,155.4 - 139,155.4	5. Invaded sandy and mud area	1				0.0			
Sourvoa: MADD/2006) Evraet Dlan for Evraet Area and I Inuced I and	III. Other land types	176,592.4	-		I	139,155.4	1	1	I
JULICE, JULYIND (2000) FUTENT I AN FUTEN FUTEN AND VIEW PARTY FAILS	Source: Source: MARD (2006) Forest Plan for I	Forest Area and Unused	Land						

A4.4 Forest Areas by Land Categories and Forest Functions in Four Provinces

dories and Forest Functions in Four Provinces in 2005 and Cate ac hv Forest Are Table 1 ____

A4.5 Cases Studies on Handicraft Industries in Vietnam

In structuring the field work, three aspects of handicraft industries were investigated in the South, South Central and Northwest regions: 1) management of the enterprises/ organizations and problems; 2) overview of the technical extension system, and 3) the government support. The study team visited private enterprises/ organization, handicraft makers (household), women's group supported by an NGO, CLC and training institutions. In selecting the informants, the study team consulted the NIAPP and Vietnam Handicraft Research and Promotion Center (HRPC), PPC, DARD, and association of cooperatives.

Type of Informants	Offices visited	Data to be collected
Local Government	DAFPPSI of MARD	- Organizational chart, Division of
	(C/P agency during JICA Study, 2004)	duties, Main task
		- Activities in the Region
		- Data concerning local industries
		- Documents concerning technical
		extension on handicraft
Local Consultant	•Craft Link	- Overview of the handicraft sector in
	·Handicraft Research and Promotion Center	Vietnam
	(HRPC)	- Arrangement of the field visits and key
		informant interviews
Preceding Projects	- The study on Artisan Craft Development	- Review of the Reports
	Plan for Rural Industrialization	- Usability of the study findings
	(JICA, Dec, 2004)	i. Database based on the mapping
	- Basic Design Study on the Project for	ii. Handicraft handbook
	Improvement of Rural Bridges in	iii. Website
	Northern Mountainous Provinces (JICA	iv. Establishment of the consulting
	Dec, 2006 – Aug, 2008)	center
	- Project for 1 Village – 1 Product	
	Movement in Northwest Mountainous	
	Rural Community (MARD, 2006)	

Source: JICA Study Team

Table 2	Interview	schedule
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Date/Site	Purpose of field visits	Interviews		
		Enterprises/ Organization		
Aug.6-11	Investigate the current status of	+ Cooperative producing broom, bamboo/rattan		
[Northwest 4 province]	handicraft industries in Northwest	products textile.		
		+ Private enterprise, NGO		
	Investigate the Current condition of	Government Vocational Training Institution		
Aug.22-31	technical extension system of	NGO producing fair trade products		
[South and Central regions]	handicraft	JOCV		
	Market environment in Vietnam	Gift shops in urban area and sightseeing spot (Ho Chi Minh, Nha Trang, Da Nang, Hoi An and Hue)		
Sep.29—Oct.5 [Northwest 3 provinces]	Problem Analysis of handicraft industries in Northwest	Enterprises/ Organization (Cooperative, enterprise, Household), Cooperative Alliance Department of Cooperative, DARD, Ministry of Industry		
(Without Hoi Binh)	Investigate the Current condition of technical extension system of handicraft	DARD, Tam Dongh DPC Ban Bo CLC, Chieng An CLC		

Source: JICA Study Team

Interviews		Province	District	Name	
		Hue	Hue City	Thuan Loc Embroidery	
		Nha Trng	Ninh Hoi	Vinh Phuoc	
		Lai Chau	Tan Phong	All Hmong, in the mountains behind	
			Than Uyen	Than Uyen Brocade	
		Dien Bien	Dien Bien	Bac Ninh Dien Bien	
	Cooperative		Dien Bien	Lao-Na Sang	
Enterprises/	Cooperative		Dien Bien Phu Town	Hong Tan	
Organization		a	Truong An	Sen Xeear Der Treo Caha	
		Son La	Thuan Chau	Vu Du Lich Co Noi	
		Has Dish	Ky Son	Ngoc Minh	
		Hoa Binn	Tan Lac	Tan Tien	
		HCMC	Tan Binh	Mai Handicraft	
	Deissets	Hoi An	Cam Kim	Reaching Out	
enterpri	enterprise etc	Son La	Mai Chau	Ban Lac	
	enterprise, etc		Chien Thang	Hui Cong Nghiep	
		Hoa Binh	Hoa Binh	Hoa Binh 26/3 Joint Stock Company	
Technical extension by NGO		Quang Nam	Nam Giang	Foundation for International Development and	
				Relief (FIDR: NGO, Japan)	
		Hoa Binh	Luong Son	Suoi Co Hamlet	
Support from the Government Offices		НСМС	HCMC	Center for employment services	
			HCMC	Hospitality School for Disadvantaged Children	
			НСМС	Center of Training and Offering Job for the Handicapped	
		L .: Chara	Tam Dongh	DPC, Ban Bo CLC	
				Department of Cooperative	
		Dien Bien	Cooperative Alliance		
		Son La		DARD, Chieng An CLC, Cooperative Alliance, Ministry of Industry	

Table 3 List of Interviews

Source: JICA Study Team

(1) Management of enterprises/ organizations and problems

Enterprises/ Organizations (Cooperative)

1) South Central Coast (Nha Trang): Vinh Phuoc Cooperative producing bamboo and rattan products for export

Vinh Phuoc Cooperative was established in 1976 by the 50 households who were engaged in bamboo products on a part time basis. It was intended to identify market and intensifying production. Currently, the cooperative has 70 members and 400 employees. Sub contracting work is given to 1,000 households. There are 50 cooperative members who are directly involved in the day-to-day management and are computer literate. Four (4) of them could also communicate in English.

Their products include mats, strings and shoes made of bamboo and tree barks. All the products are exported through trading company in the U.S.

The factory has three divisions of material processing, sewing/ assembly, and packing. There are more than 50 sewing machines and their own dying workshops. From the interview and observation, it was clarified that the cooperative has appropriate task allocation and organized production system as well as quality control system. The managerial capacity of the cooperative executives seems to be high.

2) North Central Coast (Hue): Thuan Loc Cooperative producing embroidery products for export

Thuan Loc Cooperative started production of needle works such as tapestry and embroidered clothes for export in 1977 with assistance from the Vietnamese government and France. The cooperative was established to organize women who used to produce such products on individual basis and exported the produces to Europe and Japan (notably they have exported Kimono, traditional Japanese attire, to Japan between 1990 and 1995). The cooperative had 200 workers when the business was booming. In recent years, many of the workers left the cooperative and had joined private tailoring workshops or became independent. Currently, only 20 workers remain with the cooperative.

In recent years, the cooperative also receives orders from Korea and France. These two countries also helped them participate in exhibition in 2002 and 2003. They also give training to the children of poor households at a vocational training center in Hue city. The training institute was established by a church. The training programs offered by the center include beauty care, hand work, and hospitality. Part of the products was sold in France using their own network.

3) Northwestesrn Region (Hoa Binh): Ngoc Minh Cooperative producing broom and rattan products

Ngoc Minh Cooperative was established in 2004 to intensify broom production which was the tradition of the locality. Some of the brooms were exported to Russia in 1985. The cooperative was launched based on the capital from 11 members and credit from the agriculture bank. The initial capital was used to establish facilities and buy raw materials. Currently, 75 workers who are mostly women from the surrounding areas and sub-contracting farm households are engaged in production. This enabled them to produce throughout the year. The semi processed products are exported to China via surface upon reception of the order and the finishing will be done in China. The retail price is unknown. The variation and design of the products were determined by the clients who bring sample or drawings. The highly skilled workers will produce samples and train the workers and sub-contracting households.

The raw material¹ is harvested between November and February and bought from the farm households in the surrounding areas or neighboring districts. The materials are kept in the store. However, the volume of the harvest has been decreasing in the recent years in those areas. This was caused by the over harvesting in the past years and loss of vegetation due to the land conversion after the land tenure reform. This made it difficult for them to maintain their quality which has been only

¹ The raw material is a kind of grass (*Sorghum vulgare*). The plant grows on the slope and is drought resistant. This perennial crop produces raw materials of different qualities depending on the timing of harvesting. Thus, it is critical to select the good quality materials before production. Since the moisture could cause molds on the grass, they should be dried properly and stored in the dry condition.

possible by bulk purchase of the raw material and subcontracting the work to the farm households with supply of raw material. To cope with these problems, the cooperative plans to increase the number of subcontracts with the households which could procure their own material.

The estimated production cost is indicated bellow.

Retail Price = 5,500 VND	3,000 VND 1,000VND 500 VND 500 VND 400 VND 100 VND	Raw Material (7,000VND/kg=2.5 brooms) Overhead Utilities Supplementary Material Depreciation Profit
	100 VND	Profit

Enterprises/ Organization (NGO)

4) South Central Coast (Hoi An): Reaching Out producing fair trade products

An individual business school teacher (PC and English) has established the organization in 2001. As the founder himself has disabilities, the organization was aiming at supporting persons with disabilities. The organization produces and markets the handicraft from throughout the country. In recent years, the organization collects the products made by the highly skilled artisans with disabilities and help them market. There are 10 staffs and 28 workers who are all handicapped with temporary assistance from the volunteers from overseas.

No profit was earned during the initial 2 years of establishment. However, the organization made efforts to continue with the business. The credits were provided by the well wishers and artisans were invited as trainers to improve the quality of their products. Such efforts to improve quality and develop new products were continued even after the business began to bear fruits. Specialists on design and marketing were invited as supervisors. Ideas for new products were gathered from consumers and volunteers. The average monthly sales earned through the shops in Vietnam and fair trade shops reaches approximatelyUS\$1,500 in gross.

Their workshop is established with a retail shop in Hoi An city. The tourists and visitors can visit the workshop freely. T hey also communicate detailed information on their organization and founding philosophies through website and newsletters to the donor agencies. In this way, the organization manages to secure financial supports and attract volunteers and customers.

5) Northwest Region (Hoa Binh): Hoa Binh 26/3 Joint Stock Company (Private enterprise) producing wooden furniture, bamboo mat, flooring materials

Hoa Binh Joint Stock Company was established by capitals invested by 10 youth members of the People's Committee. The number of employees is 118 and subcontracting households ranges between 200 and 300. The subcontracting households are trained for three days. The company selects the ones who could produce high quality products. In recent years, the government has instructed them to increase the number of subcontracting households. They are now planning a system to do so. The company also employs an artisan from a village known for its wood work in Tai Bin District and uses new machineries from overseas.

Their products are sold in their own retail shops (20 shops) or through their agent. They are also preparing to enter the U.S. market where the demand of bamboo products is high. However, they still require further information and contacts before doing so. The manager of the company feels that they are lacking appropriate business and language skills and human resources.

Handicraft Making Households

6) Northwestern Region (Lai Chau): Farm households engaged in handicraft in Ma Quai Commune

Ma Quai Commune, with population of 4,000 - 5,000 persons, is 20 km west of Lai Chau provincial center. The commune is located in the steep mountainous areas. The village located at the highest altitude is 1,600 m a.s.l. The poverty rate is 79.6% (DOLISA 2005) and agriculture is the main industry².

The study team also visited a remote village accessible only on foot. The village's main products included hand loomed textile (some household could weave yarns from cotton), indigo dye (including producing Lac and collection of lime stone), alcohol making using rice, embroidery/ tailoring, production of threshing tools.

However, most of the products were produced for the household use. Only the limited number of households sold their produce. This is partly due to the lack of capital and labor for buying materials, long distance from the market and low retail price compared to the cost of production.

(2) Current condition of technical extension system

Technical extension by NGO

1) South Central Coast (Quang Nam): FIDR (International NGO based in Japan)

The study team visited a women's group in Zara village. The group produces traditional hand loomed textile and supported by the Foundation for International Development & Relief (FIDR). FIDR identified the local needs for developing textile production and began supporting their efforts as part of their income generation project^3 (2002 – 2008). Currently 33 women participate in the project. The products are sold in the souvenir shops for tourists in the surrounding areas and responds to the order from the urban areas. The average monthly income of a member is approximately 200,000VND.

FIDR provided the following assistances to the women's group.

- Workshop for men in the village to seek understanding and gain support for women's group activities
- Organize 20 women according to the criteria such as motivation and permission from the family members

² DOLISA (2005) defines the poverty line as 260,000VND/ capita/ month for the urban area and 200,000VND/ capita/ month for the rural area.

³ The beneficiary area of the project includes 17 villages in 2 communes in Nam Zan sub district in Kan Nam District. The project area is located 20-40 km from the border of Laos. Since 2000, infrastructure development (electrification and road construction) was rapidly carried out. A range of programmers are implemented adopting participatory approach in order to achieve self reliance in the rural area.

- Contracting the consulting services to Craft Link⁴ (2-4 times annually)
- Send the members to technical training and train the members in accounting
- Provision of equipments (i.e. sewing machine), construction of workshop space (Since 2005, the members work at the workshop twice a week.)
- Advise on the relevant information and organizational management

The sub-district office has invested in road construction, procurement of equipment and facilities and organized study visits to Mai Chau, an existing tourist village, as a result of good performance of the FIDR project.

Since the project has made such achievements, FIDR has now considering options for the future support

2) Northwestern Region (Hoa Binh): SCEED (Swiss based NGO)

A Swiss based NGO (SCEED)provided assistance to a group, Suoi Co Hamlet, for income improvement. The support was provided for one year and completed in September in 2007 and included provision of facilities, equipments and technical training. The total cost of the project including the overhead was about 60million VND (US\$3,759). The group was organized under the male group leader and comprised of 17 women selected by the SCEED.

The technical training was provided only after the group was organized. The contents of the training included the following.

- Training on hand made mulberry paper (selected 5 members attended one week training in Bak Nin District, the area known for the mulberry paper production.)
- Training by Japanese artisan (2 trainings of 3 days each)

Paper mulberry is used as raw material. The group buys mulberry harvested by men in the village. However, recently, securing the raw material has become difficult. The yield of mulberry is decreasing and it needs to be harvested from the far places.

The project is still at the trial stage. Women received 10,000VND/day/ person from the project. Once the project is completed, HRPC (a Vietnamese NPO) will follow up on marketing and technical guidance. The business deal with Japanese company is under negotiation. However, high cost of transporting goods and complicated procedures has hindered the progress. Some more time is required before the deal is finalized.

An attempt was made to assess the cost and benefit. Currently the retail price is 7,000VND/ cloth and

⁴ Craft Link: It is an Vietnamese organization comprised of two divisions of consulting and marketing. The activities aim at supporting small ethnic groups and preservation of traditional crafts through technical guidance and products development and improving design, provision of equipment. Their products are marketed through their own marketing channel. Since the establishment of the organization in 1996, they have actively involved in handicraft development in north and central regions and won the trust from the government. They also work in collaboration with foreign donor organizations. They are experienced in technical training and have access to affluent market information. They continue to develop well designed products based on their capacity and to attract foreign buyers.

estimated monthly gross profit amounts 5.04 million VND. However, the overhead cost takes 5 million VND per month, which suggests the high likelihood of the business being in deficit. Before the financial assistance from the project ends, the current retail pricing and productivity need to be reviewed.

Technical extension by Community

In Vietnam, CLC⁵ (Community Learning Center) is established in many parts of the country. CLC was initiated by the World Terakoya⁶ Movement of the National Federation of UNESCO Associations in Japan since 1992. CLC plays a role of community center made available to the community members irrespective of age, gender and social status. It is a legally acknowledged educational facility under Education Law. In 1997, some CLCs were established as pilot projects, part of which was funded by the JICA grass roots grant scheme. Some were also funded by other donor organizations. A case of technical transfer through CLC in Region is presented bellow.

3) Northwestern Region (Lai Chau): Ban Bo Community Learning Center (CLC)

Ban Bo Commune is composed of 16 villages of 7 ethnic groups. The total population is 4,077 persons in 707 households. 55.87% of the population is bellow poverty line (DOLISA 2005).

This Ban Bo CLC has been established in April 2001 with assistance from UNICEF Association to contribute to "Adult Literacy Program for Northern Mountainous Region⁷". It is managed by the CLC management unit (CMU) comprised of representative of CPC and village leader, chair persons of public organizations such as youth group, women's union and farmers' union. Currently CMU has 11 executive members with participation of volunteers.

The activities carried out at the Ban Bo CLC include sensitization of policy and political thoughts, training on health, culture, and sports. Further, some technical training on farming and handicraft to improve income has been conducted at CLC. When the interview was conducted by the study team, a technical training on mushroom culture was carried out by an NGO.

Plan of training is developed after the discussion of CMU based on the requests from the model group and learning needs assessment survey. Suggestions from the local administration (i.e. Tam Dongh DPC) and donor agencies also appear to be influential. The achievement of the previous training programs is summarized as follows.

i. Food Security : 4 groups of 105 households (Rice cultivation, inland fisheries, soy and ground nuts production. Maize is under consideration.)

⁵ According to the statistics issued in Feb 2005, 4,783 CLCs were established out of 10,7656 communities which accounts for 45% of the total number of communities. CLC is a legally acknowledged education institution defined in Education Law. The government plans to establish CLC in the remaining communities by 2015 as mentioned in Action Plan for Education for All (approved in Jun 2003).

⁶ A few hundred years ago, Terakoya was established as informal and voluntary schools to educate children in literacy and numeracy, which were mostly found in Buddhist temples throughout Japan.

⁷ Adult Literacy Program for Northern Mountainous Region (March 2000 and April 2003) established a CLC in Thua Chua sub district in Lai Chau District and Phong Tho sub-district in Tien Bin District. In these centers, literacy program of two levels (primary 1-3 levels and primary 4-5 levels) are conducted to improve the literacy in these regions. Under this program, 40 CLCs were established in the whole target area including these two CLCs.

- ii. Education (Literacy) : 22 persons
- iii. Women/ Gender : 46 persons (WU)

The communication between the CLC and the community members takes place through model groups and 17 contact groups which are established in each group.

4) Northwestern Region (Son La): Cheng An CLC

Cheng An CLC is one of the 15 centers established in Son La province. It was established as a model CLC with the financial assistance of 1,180 million VND from JICA as part of Community Learning Center Extension Program for Northern Mountainous Areas⁸. The CMU of this center is comprised of representative of DPC, village leader, chair persons of youth group, women's union, farmers' union, patriotic front, former members of the public security and meets once a month.

This CLC also conducts various activities. The training programs included literacy program in Thai language for cultural conservation; technical training of hand loom for rural women; various study tour; and monitoring after training programs, which are all unique to this CLC.

In planning training programs, CMU conducts learning needs assessment survey for farm households and women's group in partnership with VMC (Village Management Committee). Plan of training requires approval from PPC and Son La town administration. The funds and trainers to carry out training are arranged by the CMU. Trainers of farming and handicraft are mostly government extension workers, local artisan or specialists.

<Examples of training concerning agriculture and income generation (2007)>

Farmers Union (FU):	Prawn culture, Sweet potato cultivation, soil improvement, pasture
	production
Women's Union (WU):	Training on bookkeeping and crystal polishing (required to gain
	opportunities of subcontracting)

(3) Government Support

- 1) Southern Region Ho Chi Minh City (HCMC): Government Vocational Training Institution
- i) Center of Training and Offering Job for the Handicapped

The DOLISA supervises the center and aims at capacity development of persons with disabilities to achieve self reliance. 28 staff members and 40 teachers work with 550 students.

The duration of the training varies between 1 to 2 years. The area of training included mechanical repair (i.e. electronics, vehicle, PC), handicraft (needle work and tailoring), beauty care and barbering (makeup, hair dressing, nail art) and secretarial skills. Secondary level education is also provided in parallel with the vocational training. The school fees are free. The students receive

⁸ Community Learning Center Extension Program for Northern Mountainous Areas (Oct 2003 and Jun 2005) was established through the Adult Literacy Program for the Northern Mountainous Region. The program targeted 8 districts of Son La, Lao Cai, Yen Bai, Ha Giang, Tuyen quang, Cao Bang, Bac Can, and Lang Son). Construction of CLC in the model community, provision of desks, chairs, blackboards, bookshelves and some funds for CLC, and organizing training program on CLC establishment and management for district staff were among the project activities under the program.

150,000VND of stipends. Most of the graduates are employed by the private factories.

ii) Hospitality School for Disadvantaged Children HCMC

The school was established in 2002 with assistance from Lyon city, France aiming at supporting street children and poor households. Since June 2007, HCMC became responsible for its funding. The management was taken over by an NGO affiliated to DOLISA. Currently, 140 students study at the school under the supervision of 22 staff and 8 trainers. Subject areas include cooking (mostly French), bakery, confectionary, catering service, and foreign language skills. The duration of the training is 1 year. Within the school compound, kitchen, restaurant for training and coffee shop where breads and cakes made by the students were sold are established.

Currently, the school is facing challenges in fund procurement and trainers' recruitment to conduct training for Japanese and Korean cooking.

iii)Center for employment services HCM city

The center provides information on recruitment and vocational training institutions based on the list of 98 vocational training institutions (58 district, 16 sub-district and 19 private institutions).

2) Northwestern Region (Son La): Support by the local government

Economic division of PPC and agriculture extension center took an initiative in implementing textile development project which was implemented as part of HEPR-JC (Program 143) or Program 135. The project intended to create employment opportunities. The duration of the project was 4 months from November 2005 targeted 120 persons with funds of 60 million VND. The TOT was carried out in Ha Tai province which is known for textile production. Trainings on skills and maintenance of equipments were given by artisans and specialists.

The government officials were not aware of the benefits of the training program. However, some motivated and skilled participants managed to establish a cooperative (15 members put the capital together and began collective production of textile and embroidered products since March 2006)^{9.} Trainings on bookkeeping, cost estimation, auditing were conducted with financial assistance from the Federation of Cooperatives.

Furthermore, in Son La province, as part of rural traditional technology development project (Program 66) initiated by MARD, trainings on processing of agriculture products, textile, bamboo, rattan and wood works; and assistance for funds and equipments were provided. Lastly, the procincial government also abolished taxes on natural resources and organizations to give incentives to the handicraft industries.

3) Northwestern Region (Dien Bien): Assistance to Community provided by Department of Industry and Trade

⁹Currently, the products are locally marketed. The needs of the traditional hand loomed textile of Thai ethnic group and pillow case and cover sell well as they are essentials for the weddings and funeral ceremony. In the near future, they plan to start production targeting tourists while they are lacking substantial ideas and marketing strategies.

Training program to preserve traditional craft skills was conducted by the MOID in two locations in the district. One of the villages was Noon gung village in Thanh An Commune (84 households). The training on textile making was conducted for young women. 3-4 highly skilled village artisans trained the trainees. The daily allowance of a trainer was 30,000VND/day. The training was carried out during the evenings between July and November when the participants were free after farming. The average number of participants was 60. The cost of training materials was to be provided by the participants. The products were not sold and training on marketing and cost estimation was not conducted.

A4.6 Cases Studies on Rural Area Tourism

(1) Purpose and Survey Methods

Tourism development has been paid attention to activate the non-agriculture sectors and handcraft sector and contribute to diversify the income generating sources in the rural areas. The JICA Study Team visited to the related administrative organizations on tourism and some typical tourist points in Dien Bien province in order to grasp the current conditions and situations of the existing rural area tourism.

The outlines of the survey are shown in the Table 1. The target areas for the survey were selected in collaboration with NIAPP as the C/P organization and Tourism Department of Hanoi University.

Date	Visited Places	Study Contents	
31 st Jan, 2008	 Na Sang II village (Nam Ngam Commune) 	 Product outlines and production systems Product development, market destinations, etc. 	
1 st Feb,	 Trade & Tourism Department Culture & Sports Department 	 Organizations and main works/ projects Linkage between typical local products and tourisms/trades Characteristics and issues on rural area tourism 	
2008	 Pa Khoang lake, relics of command headquarters of Dien Bien Phu Operation, etc. (outskirts of Moung Phang Commune) 	 Tourist facilities on the war ruins Visit to rural area tourisms by Khamun people Visit to the designated Green Tourism areas 	
2 nd Feb, 2008	 Tay Trang gate (national border between Vietnam and Laos) U Va village (rural area tourism spots with source of hot spring) Pa Xo Lao village (rural areas tourism spots nearby the national border) 	 Visit to rural area tourisms by Khamun people Visit to the designated Green Tourism areas 	
	 Dien Bien Phu Museum 		

 Table 1
 Schedule, Visited Places and Study Contents

(2) Rural Cultural Tourist Village and Historical Cultural Tourism Villages

Twelve (12) Rural Cultural Tourist Villages and eight (8) Historical Cultural Tourist Villages have been designated by the Master Plan for Tourism in Dien Bien. Definitions of those villages are as follows:

- Rural Cultural Tourist Villages: Areas with leisure facilities harmonized with nature, and with villages of ethnic tribes to visit at.
- Historical Cultural Tourism Villages: Areas with the historical relics, such as war ruins, etc.

Such kinds of programs as participatory workshops on rural tourism, trainings for leaders, construction of traditional houses, toilets, and so on, were conducted in 2005, in accordance with the Master Plan.

The JICA Study Team visited at three (3) villages in Dien Bien District, as mentioned below. Locations of typical rural cultural tourist villages and historical cultural tourist villages in Dien Bien province are shown in the Figure 1.



Figure 1 Location Map of Typical Rural Cultural Tourist Villages and Historical Cultural Tourist Villages in Dien Bien Province

1) U Va village

- Belongs in Nong Luong Commune with 5,412 people of population and poverty ratio of 61.1%,
- About 30 minute-drive from Dien Bien Phu,
- Located in 20km distance from the Tay Trang National Border Gate¹, and is said to be the special lands related to the roots of the Tay tribe. Tay peoples from Thailand and Laos sometimes visit at this village and the legend-concerning lake,
- The source of hot spring, which was dug out successfully seven years ago, is now under control and management by the affiliated organization of Dien Bien provincial People's Committee,
- The leisure facilities with hot pools, fishing ponds, hot-spring baths, restaurants, accommodations, were constructed by the management organization mentioned above, in accordance with the basic concept for spa-resort areas for traders and tourists,
- Facilities where shows and foods can be served, water supply systems, together with toilet facilities, and so on, have been constructed in the Tay tribe's hamlet adjacent to the above-mentioned facilities in U Va village.

¹ Tay Trang National Border Gate: Newly setting national border to Laos, scheduled to be opened at the end of 2008, located at 30 km distance from the provincial capital, Dien Bien Phu, and at 900 m in altitude. When opening the gate, intercommunication and exchange of materials and tourists would be expected. Many kinds of facilities, such as, duty-free shops, accommodations, and so on, are planned to be constructed in the border management facilities. Therefore, imports of factory products, NTFPs, and raw materials for handicraft making from Thailand and Laos are expected to increase in number, in parallel with the increase of exports of rice and tea from Vietnam.

As only some local residences use the source of hot spring, numbers of the customers to go to and use the leisure facilities near the source of hot spring has not been so much as expected. As facilities in U Va Village seem not to be utilized so much by local residences and tourists, there may be problems in management and operation of the facilities.

Although U Va Village is located nearby the National Road No. 279, it is necessary to take the roundabout routes to get there, because of the river between the road and the village and no access, that is a bridge, to get there directly. Accessibility to U Va Village should be improved and renovated in order to facilitate those facilities.

2) Pa Xa Lao Village

- Belongs in Pa Thom Commune with 953 people of population and poverty ratio of 53.4%,
- About one-hour drive from Dien Bien Phu,
- Located in 10km distance from the Tay Trang National Border Gate,
- · Programs on trainings for tourism were conducted for rural residences in 2005,
- The reasons to be designated as to be the Tourism Rural Village are as follows:
 - i) beautiful sceneries, such as rice terraces, sheer rocky cliffs,
 - ii) Pa Thon cave nearby the village, and
 - iii) activities, such as rafting in Nam Rom river², flowing from U Va Village, cycling on the commune roads to the villages, and so on.
- Agriculture is the main income sources for villagers, with selling agricultural products, such as rice, maize, and livestock, such as buffaloes, pigs, and so on, to the middlemen,
- Home-made textile fabrics at each household, by using textiles bought from the Laotian traders.

Although the training programs on tourism had been conducted for the villagers, tourists rarely visit at the village because of less progress of the activity plans and accessibility problems. Access roads to the commune center from the village are tremendously in bad conditions, and it is quite difficult for vehicles to drive on the muddy roads during the rainy season. Therefore, access roads should be improved in order to convert the selling styles from selling out to the middlemen to the direct selling at the markets.

- 3) Surrounding the Pa Khoang Lake
- Located in Muong Phang Commune,
- Approximately 40-minute drove from Dien Bien Phu,
- Main tourism points are as follows:
 - i) boat rowing in the Pa Khong Lake,
 - ii) relics of command headquarters of Dien Bien Phu Operation in Muong Phang Forest, and

² Nam Rom River: Nam Rom River flows from east to west, very rare in the Northwestern Region, and flows through Laos into Mekong River. Nam Rom River can be expected to be utilized not only as the tourism resources but also as the ways and means of material flows.

iii) visiting to the tourism rural villages,

- Total areas designated as the tourism development are 2,400 ha, in which 600 ha as lake, 1,320 ha as forests, 300 ha as agriculture lands, and 150 ha as basic infrastructures, such as roads,
- The main visiting purpose is to enjoy the natural environment as "Green Tourism"; many kinds of fauna and flora, especially wild orchids and rare water-side plants, can be observed in the newly designated special-use forests,
- Facilities, such as the tourist center, hotels, parks, and so on, are planned to be constructed only around the lake. Construction of some infrastructures, such as roads, bridges, and walkways for strolling has been in progress, ending up to 2020, with the estimated total investment of approximately 100 billion VND (US\$6.25 million).
- Participatory training programs on tourism had been conducted to the villagers in the neighboring villages of ethnic tribes, such as Xom Village, Co Cuog Village, and so on.

Although this development plan could receive the high evaluation as including new concepts as natural environment and landscape conservation, capacities and functions of each facility have not been enough to drive to tempt plentiful numbers of tourists. These areas have been paid high attention from the administrative agencies as the recreation areas combined with historical spots and the rural area tourisms. However, consultation with local residences on the development of these areas seems not to be conducted efficiently and sufficiently.

(3) Comments from the related administrative organizations

1) Department of Industry and Trade:

- It is very important for tourism industry to improve and strengthen the quality of servicing and special local products. Capacities and abilities of such facilities as the vocational schools in Dien Bien Phu, are weak and insufficient in those trainings because of a lack of trainers.
- Trainers and lecturers on services regarding handicraft production and cultures/traditional local arts of ethnic tribes for the training programs at the tourism villages were selected among the local residences in order to preserve and disseminate the their cultures.
- As having recognized the issues on handicraft industry here as insufficient and inefficient production system of raw materials and sales systems of finished products, such as 1) raw materials are imported and products are bought by traders from Thailand, and 2) almost all the raw materials are imported from the foreign countries, such considerations should be taken in implementation of consistent systems from the production of raw materials up to production and selling of products in order to generate and make profits from the handicraft products.
- Prospective tourism sites in Dien Bien District now are Pu Nhi Commune, where the new hydropower generation is under construction, and the tourism development areas around Muong Phang area.

2) Department of Culture & Sports, Tourism

- Cultural activities, such as events, film shows, investigations, and so on, have been conducted, in
 order for the conservation of cultures of ethnic tribes and interchange of culture between the ethnic
 tribes. Such issues as lack of budget, lack of staff, and so on, are the current issues for
 conducting the cultural activities.
- Although the foreign donors are conducting assistance activities for the ethnic tribes in Lai Chau and Sapa, there are no such activities for ethnic tribes in Dien Bien province.
- We would like to associate the tourism here with cultures of ethnic tribes, such as their histories, folk tales, folk music/dances, ceremonies, handicrafts, traditional buildings, local foods, and so on. For example, after setting up what is called "Tay Tribe Day" as there are many Tay tribe people living there, such festivals or campaigns relating to the Tay tribe people could be held in order to facilitate the cultural tourism, accompanying with inviting many guests from China and Thailand.
- Only small changes can be come out in the minds and activities of trainees, that is, ethnic tribes, because of the deficiency of the project budget and lack of continuity. And economic activities by the ethnic tribes are very inactive as lacking information on market conditions. One example: It is said that Thailanders have started to make copies of products from Na Song II in Thailand, after purchasing the originals in Na Song II.
- Enlightening and awareness on the importance of traditional ethnic cultures to tourism industries have been conducted to the ethnic tribe peoples through training programs by showing the pictures and films of the good examples in Sapa and Mai Chau

A5.1 Rural Road Development Program

(1) Viewpoints of Rural Road Development in Vietnam

The Government of Vietnam raises viewpoints of transportation sector development such as road, railway, and waterway and has been notifying relevant organizations to follow them. Among those viewpoints, the followings are deeply linked to orientation toward rural road development of the northwestern region.

- ① To identify selected key points with principles of concentration, finishing as planned, giving priority to hard areas, paying attention to concentrated urban areas, economic zones, especially remote and poor areas. It's necessary to consider economic effectiveness, in combination with ethnic minority and social policies and national security.
- ② Development of infrastructures in the transportation sector needs to be carried out in ahead of the other sectors for serving socio-economic development and national defense security. Particularly, prior investment is dispensable for local transportation networks, mountainous and rural transportation networks to push up agricultural production and shift economic structures, resulting in modernization of rural areas.
- ③ To pay great attention to new technological investment to improve technical quality, fine art and cultural characteristics of structures. Maintenance and preparation works of transportation facilities have to be paid proper attention to reduce costs of rehabilitation investment.
- ④ To diversify resources of investment fund, forms of investment, to make the best of foreign investment sources such as ODA, FDI, BOT etc. at the same time to mobilize all people's contribution and economic components in the province to develop transportation facility. To concentrate on investment for key facility and important transportation project and to avoid investing dispersedly, lasting construction period scheduled.
- (5) The transportation networks have to guarantee favorable and smooth traffic conditions in the whole locality of province, at the same time to connect other regions, throughout country and abroad. The transportation networks consist of national roads, provincial roads, district, commune roads and village road networks, ring roads, patrol roads, border roads favorable for transporting goods from producing places to consumer markets.
- (6) To apply uniform measures for control and minimizing of critical increasing traffic accident and mitigation of adverse impacts of weather and environment such as floods, collapse of rock, land sliding.

(2) Strategy of Rural Road Development

According to the road development plan by 2020 year prepared by the Government of Vietnam, all communes will have auto-roads to its commune center in period 2006-2010. 50% length of district

roads will be improved, becoming asphalt or cement concrete roads. The inter-district and main inter-commune road networks will be applied to Grade IV_{MN} , road basement: 6m, road surface: 3.5 m paved by asphalt. The roads to access remaining communes under difficult topographic conditions will be applied to Class A of Rural Road Standard. Inter-commune and inter-village roads will be developed completely and uniformly. 30% of village roads will become gradation roads.

In period 2011-2020, standardization of district and inter-commune road networks, roads to commune center will achieve Grade VI_{MN} , to be paved by asphalt 100%. 100% of village roads will be improved as gradation road

(3) Rural Road Development in Northeastern Region

Rural road networks in Vietnam consist of district road, commune road, inter-commune road and village road networks. The northwestern area is mostly located in mountainous regions, where rural roads are accessible to the commune center, but these roads can not be used in the rainy season and most of villages become isolated areas, resulting in traffic interception which hamper access to medical care, education and marketing of agricultural product. In addition, the quality of road improvement is low due to deficiency of local fund, in particular bridges requires more budget than roads.

Rural road networks contribute positively to the basic human needs through better linkages to markets, education and health facilities and indirectly to improvement of access to markets located outside isolated areas and also to create job opportunity as well as income generation through formation of favorable conditions to develop rural industries. Therefore, it is necessary to build efficient rural road networks, taking into consideration the following five viewpoints.

- ① To maintain, consolidate and upgrade the existing traffic networks according to the technical standards applicable.
- ② To concentrate on building roads to central to central of communes and communes clusters where no road exists, to agricultural and forestry farms, rural industrial zone.
- ③ To continue building the inter-villages and inter-communes road systems to form synchronous traffic networks to villages and communes.
- (4) To connect the rural transport network with the national transport network and to build the system of approach bridges and flyovers at intersections between express ways, national highways and local roads.
- (5) To develop small-sized motorized transport means suitable with the conditions of rural infrastructure.

At present, 'Master Plan for Transportation Development by 2010 and Orientation by 2020' was prepared by each province and approved by the central government. In this master plan, the

necessity of improvement or new construction for national road, border road, provincial road and rural road were studied in detail and a long - term project list in terms of project scale, construction schedule and project cost was summarized. Regarding rural roads, prioritized projects to be implemented until 2010 has been selected as a short list from the long list. The department of transport plans to procure fund for project implementation based on the short list.

After submitting and getting approval from the department of planning and investment as well as peoples' committee, F/S reports will be prepared for each priority projects and be submitted to the central government for getting approval for financing.

The F/S report submitted by each provincial department of transport will be different, even the preparation method and description. It is necessary to decide the items to be screened, based on selection criteria for evaluation and approval of F/S report by relevant agencies of fund sources.

Concerning selection criteria for priority projects, the following criteria has been prepared by the JICA study team, referring the criteria applied for existing Poverty Reduction Programs called Sector Project Loan (SPL) by JBIC. The department of transport in each province proposed the priority projects based on the criteria as shown in Table 1.

- ① Eligible road shall be limited to provincial, district or inter-commune roads.
- ⁽²⁾ Priority road shall contribute to poverty reduction in the area and induce socio-economic effect on the relevant area by improving rural roads.
- ③ Existing road for prioritized selection shall be impassable in the rainy season.
- ④ Construction cost per subproject shall be not over 40 billion VND.
- ⁽⁵⁾ Maximum length of one road in the subproject shall be 30 km.
- (6) Annual average daily traffic shall be more than 150 puck.
- ⑦ Priority bridge for selection shall be bridge causing traffic bottle neck and unit construction cost shall not be not over 2.5 billion VND/km for road.
- ⑧ Number of subproject in one district shall be one.

Province	Name of Project	Length	Grade	Project Cost (billion
		(km)		VND)
Lai Chau 1	PA VAY SU—SI LO LAU	23.5		50.8(39.8)*
2	THEN SIN—MUONG SO	21		53.0(40.0)*
3	PA TAN—HUOI LUONG—	24.5		54.5(40.0)*
	PA NAM CUM			
Dien Bien 1	MUONG BANG—MUONG	17.0	VI	45.0(40.0)
	DUN			
2	NA SAY-PHIENG HIN	19.2	Class A	35.0(28.0)
3	NA TAU-PA KHOANG	17.0	v	46.0(40.0)
Son La 1	KM15 NR4G—CHIENG	18	Class A	38
	VE—HAT LOT			
2	NR6—PHONG LAP	8	Class A	16
3	QUANG HUY—SUOI TO	19	Class A	38
Hoa Binh 1	DAN HA—DOC LAP	22	VMN	38
2	LUONG SON-TIEN SON	20	VMN	30
3	HOP THANH—PHU MINH	15	VMN	30

Table 1 List of Dran and Driarity Drains	
Table I List of Proposed Priority Project	ct

Note: * Figure in bracket shows construction cost.

(4) Maintenance of Road

Maintenance of roads in four provinces is carried out by the following organizations.

National road:	regional road management unit or provincial
Provincial road:	provincial department of transportation
District road:	provincial peoples' committee or district peoples' committee
Commune & village road:	district peoples' committee

Budgets are regularly prepared for maintenance of national and provincial roads by central and provincial governments, therefore, running repairs at occurrence of disasters and regular maintenance works are able to be carried out. However, maintenance works for rural roads are limited only to minor activities, such as patching of potholes, mowing, side ditch cleaning etc. moreover, in case of inter-commune and village roads the work is performed only by local residents with laboring works due to deficiency of budgets.

Provincial government intends to prepare budgets for maintenance works of rural roads in order to solve the above issues. For example, 20 million VND/km for a new road, 10 million VND/km for an improved road will be subsidized.

To support the rural road maintenance works for solving such problems, "Operation and Maintenance Management for Rural Road" subprogram is proposed as shown in Table 10.6-2, targeting provincial, district and commune officers responsible for O&M management.

Objectives of subprogram are to develop management system, technical management, capacity building, and fund resources in terms of operation and management of rural road networks including district road, commune road, inter-commune road and village road.


A.5.1-5



PROPOSED PRIORITY PROJECTS FOR RURAL ROADS OF DIEN BIEN PROVINCE



A.5.1-7

Attachment 5.1



A.5.1-8

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A5.2 Irrigation Development Program (for Small-Scale Irrigation Schemes)

(1) Basic Policy for Irrigation Development in the Northwestern Region

The Region is located at remote place, and both the density and technical standard of rural roads are low, which cause difficulty in distributing food even within the region. Both the rates of ethnic minorities and poverty in the region are high, and many of the people live in more or less subsistence farming. In the Region, proportion of cropped area of paddy in the dry season is as low as 60% to that in the wet season and hence upland rice, maize, etc. are planted under slash-and-burn farming for securing food. It is, therefore, necessary to increase irrigated agriculture not only for food security but also for conservation of forests. Under these circumstances, each provincial DARD gives top priority to the double cropping of paddy.

Actually, however, it is not easy to procure budget for irrigation development which incur large investment cost. For the areas where practice of irrigated paddy cropping is difficult, it is important to increase productivity of cereals by introducing high rainwater utilization method (with water harvesting technology). It seems to be feasible to reclaim such areas as cultivated fields by means of terracing works with hedgerow, woods and bamboos. It is commonly understood in the Southeastern Asian countries that such terracing works are effective not only for improving the productivity but also for stabilizing sloped lands. In this regard, it is proposed that the basic policy should be the improvement of productivity of the lands in due consideration of preservation of sloped agricultural fields to promote not only double cropping of paddy but also rainfed agriculture in the terraced fields for diversification of crops such as fruit trees, industrial crops, etc.

(2) Examination of Development Program

Arrangement of the list of the Master Plan (M/P) of the irrigation schemes is made in the formulation of the comprehensive irrigation development program in the Northwestern Region. Data and information are examined and analyzed systematically for prioritization of irrigation schemes. The study results are categorized into the following three stages:

- 1) Irrigation schemes to be implemented by 2010,
- 2) Irrigation schemes to be implemented from 2011 to 2015, and
- 3) Irrigation schemes to be implemented from 2016 to 2020.

The criteria for prioritization of the projects are as follows:

Maturity for Implementation

Those schemes of which implementation has been commenced, implementation has already been approved by PPC, or implementation has been postponed due to shortage of budget even after completion of F/S report, and the short listed schemes which have been approved by PPC, are considered to be highly matured for implementation.

Urgency

The schemes which need urgent rehabilitation/upgrading, for example, breaching of a dam which is expected to cause serious damage in the down-steam area after collapse, and breaking of a main canal that is anticipated to malfunction the entire irrigation system.

Accessibility to the site

In the Region, both the density and technical standard of rural roads are low. For the rehabilitation/upgrading of irrigation schemes located remote place from the existing roads, it is necessary to construct temporary roads before implementation, which would necessitate additional expenditure. Such work may be postponed until the completion of road system. As a result, accessibility to the site is one of the important criteria for prioritization.

Rehabilitation or new construction

According to the 1996 WR review, one of the recommended areas of focus under High Priority Investment is "Agricultural water control and rehabilitation projects that will improve dry season water supply". Also, SPLs (III) \sim (V) give a high priority in the rehabilitation projects in the irrigation sub-sector in principle. In the target 4 provinces, there exist many small irrigation projects of which technical standard is low, and as a result, most of them are malfunctioning, and hence they need rehabilitation/upgrading. Therefore, high priority is given to the rehabilitation projects in the master plan study.

Availability of water resources in the dry season

The 1996 WR Review also recommends that "Irrigation projects that require additional dry season water supply" is put under investment requiring further basin planning and management. In the Region, irrigation water is taken from mountain streams, whose discharges have not been measured. Due to lack of such basic information, there are big discrepancies between the design irrigation area and actual irrigation area. To cope with this, it is recommended to examine the availability of dry season runoff, and high priority should be given to the projects which can utilize stable dry season stream water.

Size of irrigation project

Average command area of one irrigation scheme in the Region is small. The schemes which irrigate less than 10 ha are as large as 64% in number, nonetheless the area irrigated by the scheme with less than 10 ha occupies as small as 22%. The impact of such small irrigation schemes on socio-economic development, and agriculture and rural development seems to be very small. In this regard, it is proposed not to evaluate priority of these small projects in particular.

Activities of Water User's Organization (WUO)

It should be noted that operation and maintenance (O&M) of irrigation projects carried out by IMC is limited to only large schemes in the Region. O&M of most of the small irrigation schemes are conducted by farmers themselves. Collection of irrigation service fee might be abolished for farmers, which indicates that all the activities related O&M would be transferred to farmers or WUO. For the sustainability of irrigation systems, present status of activities of WUO is one of the most important criteria for prioritization of irrigation projects.

Regional characteristics

Yearly consumption of rice per capita in Vietnam is estimated at 168 kg (total rice production minus export and industrial rice divided by population) and that in the Northwestern Region is 137 kg, which are equivalent to 82%. Per capita consumption in Lai Chau and Dien Bien provinces is more than that of country's average, whilst per capita consumption in Son La and Hoa Binh provinces is less than that of country's average. Rice production of the former two provinces seems to be sufficient as a whole. Nonetheless, there exist differences in supply of rice within the same provinces due to shortage of access. To cope with this, "high priority in rice production for food security (self-sufficiency) should be given to these provinces".

(3) Selection of Priority Irrigation Projects aiming at Increasing Dry Season Paddy

Based on the Circular No. 75/2004/TT-BNN, MARD has started to decentralize the management of irrigation and drainage works. At present, irrigation and drainage works are managed as follows: 1) for large scale irrigation and drainage works serving several provinces, at present four schemes fall in this category, 2) fairly large irrigation and drainage works serving several districts within one province, and 3) small scale structures such as dam and reservoir, pumping stations that irrigate or drain areas within one commune or in one cooperative will be operated and maintained by the communes or the cooperatives.

In the Region, all the existing and planned irrigation schemes fall in category 3) above, and it is not possible to consolidate such small irrigation schemes into one large scheme, which serves several districts. In this regard, it is actually not practical to formulate a regional master plan.

Instead, master lists of irrigation schemes are prepared or being prepared by the related 4 DARDs located within the region. The master lists are prepared in such a manner that each commune draws up draft plans, which are sent to each DARD through the district DARD. As the Provincial DARD enumerate such draft plans as the master plan list, and very few drafted plans are confirmed by the officials of DARD, reliability of them are not very high technically. On the other hand, some Provincial DARDs have examined the priority of proposed irrigation schemes based on the Criteria for Prioritization. The priority scheme lists have been presented in this Interim Report. Outlines of these lists are as follows:

Lai Chau Province

In Lai Chau province, the master plan list includes 65 irrigation schemes (more than 30 ha/ scheme), and after completion of rehabilitation/improvement of these schemes, total irrigation area will be 6,800 ha. Most of the intake structures of these traditional schemes are stone and cobble masonry reinforced by wooden and/or bamboo stakes twisted by tree branches, and hence such intake structures are free from water leakage and washed away by every flood, which necessitate renewal of the structures after floods. Also, traditional earth canals traversing the mountain slope is apt to be breached at its river side due to leakage of water, and hence frequent repair is necessary.

As improvement of such basic structures affect the entire irrigation system, it is very important to upgrade them by means of reinforced concrete. These improvement/upgrading projects seem to be highly prioritized because benefit cost ratio is usually high. For instance, intake structure site of the Nam Bon Project, which is located at Phuc Khoa commune in Than Uyen district consists of rock and cobbles, and hence stone masonry is unstable and wooden and bamboo stakes are not effectively driven. As a result, intake structure is suffering from leakage of water and easy corruption. However, as the geological condition of the intake site is preferable for concrete works, such problems will be easily solved by constructing concrete fixed weir. Since the earth canal traversing the mountain slope is reinforced by sand bags at its river side, serious leakage of water is observed and such temporary structure has been collapsed often. To cope with this kind of problems, it is proposed to improve the canal by reinforced concrete flume. There exist similar projects which need urgent improvement by the same method is more than 10 in Lai Chau province.

In this province, based on the criteria for prioritization of the projects, five priority projects have been selected as shown in the following table:

Project	District	Commune	Irrigation Area (ha)	Construction Cost (10 ⁶ VND)	Availability of F/S
Nam Bon Irrigation P.	Than Uyen	Phuc Khoa	200	25,000	Available
Dong Pao Irrigation P.	Tam Duong	Ban Hon	160	15,000	n.a.
Cau Mang-Muong Te P.	Muong Te	Muong Te	60	6,000	n.a.
Nam Lon Irrigation P.	Phong Tho	Ban Lang	200	20,000	Available
Ta Cu Nhe Irrigation P.	Sin Ho	Lang Mo	70	7,000	Available

Dien Bien Province

In Dien Bien province, the order of priority has been determined to all the proposed projects (master plan list of more than 30 ha/system), which consolidated small schemes into one, based on the selection criteria. According to the master plan list, four systems with an area of 201 ha dry season paddy cropping are proposed to be completed by 2010, 20 systems with an area of 921 ha by 2015, and 29 systems with an area of 1,308 ha by 2020, totaling 2,430 ha dry season paddy cropping. Just like Lai Chau province, many projects need improving and upgrading the main structures such as intake structures and trunk canals. As improvement of such basic structures affect the entire irrigation

system, it is very important to upgrade them by means of reinforced concrete. These improvement/ upgrading projects seem to be highly prioritized because benefit cost ratio is usually high. It should be noted that DARD in this province is now trying to raise the effectiveness of the irrigation project by consolidating several small systems into one. However, it is necessary to examine carefully the effectiveness of consolidation of small irrigation systems located in one commune in terms of implementation costs.

In this province, based on the criteria for categorization of the projects, four priority projects have been selected as shown in the following table:

Project	District	Commune	Irrigation Area (ha)	Construction Cost (10 ⁶ VND)	Availability of F/S
Pa Sat Irrigation P.	Tuan Giao	Chien Sinh	150	18,000	Available
Ban Chau Irrigation P.	Tuan Giao	Quai To	90	8,000	Under preparation
Yen Hoa Irrigation P.	Dien Bien	Muong Phang	25	7,000	n.a.
Chieu Tinh Irrigation P.	Tua Chau	Ta Phinh	70	7,000	n.a

As shown in the above table, in Ta Phinh commune of Tua Chau district, it is proposed to consolidate seven small scale irrigation schemes into one, which covers an area of 70 ha for dry season paddy cropping, and in Muong Phang commune of Dien Bien district, it is also proposed to consolidate seven small scale schemes into one, which covers an area of 25 ha for dry season paddy cropping. In Tuan Giao district, it is proposed to combine five small schemes into one, which irrigates an area of 90 ha of dry season paddy cropping in Quai To commune, and to combine two systems into one, which irrigates an area of 150 ha of dry season paddy cropping in Chien Sinh commune.

Son La Province

In Son La province, the order of priority has been determined to all the proposed projects (master plan list of more than 30 ha/system) based on the selection criteria. According to the master plan list, implementation period is classified into two, i.e., 50 systems including on-going 16 systems with an area of 8,270 ha paddy cropping are proposed to be completed by 2010, and seven systems with an area of 274 ha by 2015, totaling 8,544 ha paddy cropping. The Son La province is characterized by the irrigation development for upland fields by applying Program 135. Just like Lai Chau province, many projects need improving and upgrading the main structures such as intake structures and trunk canals. As improvement of such basic structures affect the entire irrigation system, it is very important to upgrade them by means of reinforced concrete. These improvement/upgrading projects seem to be highly prioritized because benefit cost ratio is usually high.

In this province, midterm candidate priority project list consisting of 50 projects has been prepared. It is expected that irrigation of paddy field with an area of 978 ha and upland field with an area of 650 will be realized by the on-going 12 projects. Remaining 34 new projects aim at irrigation of paddy field with an area of 2,600 ha.

Project	District	Commune	Irrigation Area (ha)	Construction Cost (10 ⁶ VND)	Availability of F/S
Thom Mon Irrigation P.	Thuan Chau	Thom Mon	110	10,800	Under preparation
Na Nghiu Irrigation P.	Phu Yen	Tuong Phu	67	9,500	Under preparation
Phai Mo-Phai Phan P.	Yen Chau	Chieng Pan, Chieng Sang	83	12,500	n.a.
Chieng Ly Irrigation P.	Thuan Chau	Chieng Ly	50	6,200	n.a.
Luong Me Irrigation P.	Yen Chau	Chieng Dong	20	3,600	n.a.

In this province, based on the criteria for categorization of the projects, five priority projects have been selected as shown in the following table:

Hoa Binh Province

In Hoa Binh province, the order of priority has been determined to all the proposed projects (master plan list of more than 30 ha/system) based on the selection criteria. According to the master plan list, implementation period is classified into two, i.e., 86 systems consisting of rehabilitation and new construction with an area of 9,546 ha dry season paddy cropping are proposed to be completed by 2012, and 58 systems with an area of 2,894 ha dry season paddy cropping by 2020, totaling 8,544 ha dry season paddy cropping. In this province, not like other three provinces, there are many suitable sites for reservoir/dam projects. Therefore, many reservoir/dam projects are proposed to be implemented. However, it is important to note that in designing reservoir/dam projects, accurate estimate of river runoff is essential in addition to detailed investigations of topography and geology.

In this province, based on the criteria for categorization of the projects, five priority projects have been selected as shown in the following table:

Project	District	Commune	Irrigation Area (ha)	Construction Cost (10 ⁶ VND)	Availability of F/S
Roc Co Reservoir P.	Lac Thuy	An Binh	93	18,000	Available
Thanh Luong Pump P.	Kim Boi	Thanh Luong	257	15,000	n.a.
Nai Pump P.	Lac Son	Tan My	90	3,500	n.a.
Kha Reservoir P.	Lac Son	Quy Hoa	800	30,000	n.a.
Luong Cao Reservoir P.	Yen Thuy	Lac Luong	70	3,500	n.a.

Among the above, highest priority is to be given to the Roc Co dam project located at An Binh commune in Lac Thuy district. It is understood that the dam, which was constructed in 1968, may be destructed by overtopping of floods, as the design discharge of the dam is too small compared with the recent flood records. Hence, it is proposed to height-increase the dam from the present 8.0 m to 14.0 m so as to secure safety of the dam. The F/S report of this dam project has been approved by PPC, but implementation is postponed due to shortage of budget. By increasing dam height, it is expected that the present irrigation area of 30 ha for the dry season paddy will be increased to 93 ha. Priority of the project seems to be really high, but it should be noted that heightening of dam will be dual investment.

Lessons learned from this case indicate that the detailed investigation of river runoff is of paramount importance. As there are no discharge data for small streams, it is recommended to take time for the estimation of runoff of the rivers.

(4) Recommended Procedures for Development of Terracing Works

In the lower-part of mountains, the local inhabitants reclaim gently sloped-terraces at the foot of mountains. In case of Son La and Hoa Binh provinces, farmers have recently consolidated their farmlands with formation of terraced fields on slope, and diversified to paddy production from upland rice cultivation. In contrast, farmers in Lai Chau and Dien Bien provinces still keep their traditional mind and continue crop cultivation by means of land reclamation in natural slope land as the same to crop cultivation in the higher-part mountain area.

For the land with slope of more than 15°, it is difficult to reclaim lands for paddy field, but it is practical to reclaim sloped land into upland field by means of terracing works by planting hedges and reinforcing with branches of trees and bamboos.

(5) Project Organization for Implementation of Irrigation Projects

It is proposed that PMB should be strengthened for widely exchanging opinions as required by inviting stakeholders in order to promote participatory development. The key role of PBM is to make the decisions to carry out activities of each phase, and to review and accept the outputs of each phase. In this regard, PBM is to play a facilitator's role in collecting ideas and inputs to the development program at the respective phases from water users and other stakeholders. PMB is also responsible for getting final approval from the Chairman of PPC about its decisions on implementation of the program including budgeting and budget implementation plans. PBM will be composed of the following organizations and/or individuals:

Final decision making:	PPC
Budgeting, budget implementation:	DPI
Project implementation:	DARD
Member of PBM:	District PC, Commune PC, DPI, Chief of IWD, Chief
	of AED at the provincial and district levels,
	Representatives of the WUO, Universities and NGOs

Recent policy on irrigation and drainage intends 1) to decentralize the management of irrigation and drainage works, 2) to establish, strengthen and develop WUO, 3) to transfer hydraulic works to WUO to manage exploitation and protection, and 4) to abolish irrigation service fee. The Government aims to break the customary practices such as 1) irresponsible request for construction/rehabilitation of irrigation and drainage works, and 2) dependence upon the Government in operation and maintenance of the hydraulic works. To cope with such policy, the beneficiaries have to change their view in management of irrigation and drainage such as, 1) to switch from irresponsible request to application

for development by bearing a part of expenses, 2) to establish and strengthen WUO for independent operation and maintenance with ownership.

(6) Capacity Building of WUO

Strengthening of WUO and capacity building of the WUO members are essential in order to implement the procedure and process as discussed in paragraph 4) above. The WUO shall accomplish four fundamental tasks to ensure the effective operation of the irrigation system, i.e. distribution of water, maintenance of irrigation facilities, management of water conflict, and collection of water service fee (WSF). For this, it is essential to organize and strengthen beneficiary farmers. In specific, 1) duties of the members in pre-irrigation stage, 2) irrigation stage, 3) post-irrigation stage and collection of irrigation service fee, 4) financial management, and 5) others. It is really difficult to raise farmer's consciousness that he is a member of the autonomy.



2

A5.3 Rural Water Supply Development Program

(1) Basic Policy for Rural Water Supply Development in the Northwestern Region

The National Rural Clean Water Supply and Sanitation Strategy stipulates that 80% of rural population will have access to "domestic quality water" by 2005, 85% of the rural population will have access to national-standard clean water of minimum 60 liters/day by 2010, and 100% of rural population will have access to national-standard clean water of minimum 60 liters/day by 2020. In other words, firstly, the National Strategy intends to secure sufficient water, and secondly, improve the quality of water.

Proportion of rural water supply for the respective regions in Vietnam in 2004 and estimated figures for 2005 (excluding large cities) indicate that in any region, percentage of rural water supply is steadily progressing. According to the actual result in 2004, ratio of rural water supply in the whole Vietnam was only 57.7%, and the rural water supply in the Red River Delta Region, which has the highest record, was 63.0%, and that in the Central Highlands Region, which has the lowest record, was 47.1%, less than one half of the population. Similar trend is observed in the estimated figures for 2005, and the average water supply ratio is 62.4% in the whole country. The Northeast & Northwest Region which includes the Study area of four provinces is the second lowest with water supply ratio of 56.1%, followed by the lowest Central Highlands Region of 52.3%. Under these circumstances, each provincial Center for Rural Water Supply and Sanitation (pCERWASS) gives highest priority to the development of water resources, especially countermeasures against water shortage in the dry season.

On the other hand, there is a variety of constraints in management and O&M of the rural water supply systems. Major issues to be addressed are: 1) to carry out treatment of sewage and excrement of animals to protect the water resources and the water supply system from pollution, 2) to close the gate of the intake structure to prevent from intrusion of earth and sand during flood time, 3) to stop or limit supply of water, if amount of water is not sufficient to fully supply during the drought period, 4) to supervise dam, canal, pipeline, water distribution system and related structures, etc. Since these subjects are not schematically managed, pollution of water and malfunction of the system often occur. Under these circumstances, the basic policy of the pCERWASS is to organize and strengthen cooperatives for the appropriate management of the systems and sustainable supply of clean water.

(2) Examination of Development Program

Arrangement of the list of the Master Plan (M/P) of the rural water supply schemes is made in the formulation of the rural water supply development program in the Northwestern Region. Data and information are examined and analyzed systematically for prioritization of rural water supply schemes. The study results are categorized into the following three stages:

- 1) Rural water supply schemes to be implemented by 2010,
- 2) Rural water supply schemes to be implemented from 2011 to 2015, and
- 3) Rural water supply schemes to be implemented from 2016 to 2020.

The criteria for selection of the projects are as follows:

Maturity for implementation

Those schemes of which implementation has been commenced, or implementation has already been approved by PPC, or implementation has been postponed due to shortage of budget even after completion of F/S report, and the short listed schemes which have been approved by PPC, are considered to be highly matured for implementation.

Urgency

The schemes which need urgent rehabilitation/upgrading, for example, breaching of a dam which is expected to cause serious damage in the down-steam area after collapse, and breaking of a main canal or main pipeline that is anticipated to malfunction the entire rural water supply system.

Accessibility to the site

In the Northwestern Region, both the density and technical standard of rural roads are low. For the rehabilitation/upgrading of rural water supply schemes located remote area from the existing roads, it is necessary to construct temporary roads before implementation, which would necessitate additional expenditure. Such work may be postponed until the completion of road system. In this context, accessibility to the site is one of the important criteria for prioritization.

Availability of water resources in the dry season

In the Northwestern Region, rural water supply water is taken from mountain streams, whose discharges have not been measured. Due to lack of such basic information, there are some discrepancies between the designed population for rural water supply and actual population for rural water supply. To cope with this, it is recommended to examine the availability of dry season runoff, and high priority should be given to the projects which can utilize stable dry season stream water.

Population of beneficiaries

Rural water supply systems are proposed to be located at cities or towns in a district, where large population have not been supplied with rural water. However, in the Northwestern Region, such cities or towns with population of more than 4,000 are equipped with rural water systems. At present, population of villages which have no access to clean water are usually less than 1,000 and most of such villages are scattered. It is preferable to supply water to the combined adjacent several villages rather than supply water to one village with small population.

Activities of cooperatives

The provincial Water Supply Company (pWSC) is in charge of management, operation and maintenance of rural water supply systems. But In the Northwestern Region, activities of pWSC are limited to only large scale rural water supply systems, and hence most of the small systems are managed by farmers themselves. For the sustainability of rural water systems, present status of

activities of cooperatives is one of the most important criteria for prioritization of rural water supply projects.

(3) Selection of Priority Projects for Promotion of Rural Water Supply

Master lists of rural water supply schemes have been prepared by the related four provinces located within the region. The master lists are prepared in such a manner that each commune draws up draft plans, which are sent to each pCERWASS through the district CERWASS. As pCERWASS enumerates such draft plans as the master plan list, and very few drafted plans are confirmed by the officials of pCERWASS, reliability of them are not very high technically. On the other hand, each pCERWASS has examined the priority of proposed rural water supply schemes based on the Criteria for Prioritization. The priority scheme lists to be finalized together with the JICA Study Team are presented in this Interim Report. Outlines of these draft lists are as follows:

Lai Chau Province

In Lai Chau province, there are 27 candidate projects for rural water supply systems, number of which beneficiaries is more than 1,000. Upon the completion of these projects, it is expected that the beneficiaries will be 72,066. The province is characterizes as the predominance of small rural water supply systems with limited number of beneficiaries, as small villages are scattered due to topographic conditions, and the systems depend on water of minor streams in the mountainous areas. Since this province is located at upper reaches of other provinces, water is not much polluted and suitable for rural water supply. On the other hand, stream runoff is not stable because catchment areas of the streams are small. As the province has such merit and demerit, issues to be addressed are planning methods in consolidation of water resources and villages for rural water supply development.

In the province, it has been expected to complete the said 27 candidate projects by 2010, but actually it is difficult to attain such target, it is proposed to select priority projects to be accomplished by 2010 and the remaining projects are to be implemented by 2015. In fact, pCERWASS of Lai Chau has planed to select priority projects, and implementation of the above projects has been classified into two stages. For instance, a rural water supply project in Muong Than commune of Than Uyen district is planned to supply water to five villages in the commune from one water resource of the relatively large stream with stable runoff. The F/S report of the project has already been prepared. Nonetheless its implementation has been postponed due to shortage of budget. It is proposed to formulate such consolidated projects in order to facilitate easy management of the system.

In this province, five priority projects have been selected based on the criteria for categorization of projects as shown in the following table:

Project	District	Commune	Population	Capacity	Construction	Availability
			(Persons)	(m ³ /day)	$Cost (10^6 VND)$	of F/S
Muong Te Water Supply	Muong Te	Muong Te	15,000	1,200	25,000	Available
Muong Kim Water Supply	Than Uyen	Muong Kim	3,000	240	3,000	Available
Muong Than Water Supply	Than Uyen	Muong Than	4,000	320	4,000	Available
Muong So Water Supply	Phong Tho	Muong So	2,500	200	3,000	Available

Dien Bien Province

In Dien Bien province, the master list has been prepared in such a manner that each commune draws up draft plans, which are sent to the pCERWASS through each district CERWASS. The present list covers about 200 rural water supply projects including the projects with less than 100 beneficiaries. The Dien Bien pCERWASS is now studying the possibility of integration of inter-commune rural water supply systems and examining the priority of proposed rural water supply schemes. According to the present list, it is expected that about 17,000 people will have access to rural water supply. Now, the pCERWASS has prepared master plan list and high priority candidate project list.

In this province, three priority projects have been selected based on the criteria for categorization of projects as shown in the following table. As shown in the table, The Dien Bien province proposes to establish large-scale rural water supply systems in large communes, such as Sam Mun and Thanh Nua. It is expected that beneficiaries will be more than 12,000 persons after the completion of these high priority projects.

Project	District	Commune	Population	Capacity	Construction	Availability
			(Persons)	(m ³ /day)	$Cost (10^6 VND)$	of F/S
Sam Mun Water Supply	Dien Bien	Sam Mun	4,800	480	7,700	n.a.
Thanh Nua Water Supply	Dien Bien	Thanh Nua	3,300	330	5,300	n.a.
Thanh Hung Water Supply	Dien Bien	Thanh Hung	4,000	400	6,300	n.a.

Son La Province

In Son La province, the order of priority has been determined to all the proposed projects (master plan list of more than 1,000 beneficiaries), which consolidated small schemes into one, based on the selection criteria. According to the master plan list, six systems with number of beneficiaries of 43,420 are proposed to be completed by 2010, nine systems with beneficiaries of 37,220 from 2011 to 2015, and eight systems with beneficiaries of 30,430 from 2016 to 2020, totaling 23 systems with 111,070 beneficiaries. Since this province is located at upper reaches of other provinces just like Lai Chau province, water is not much polluted and suitable for rural water supply. On the other hand, stream runoff is not stable because catchment areas of the streams are small. As the province has such merit and demerit, issues to be addressed are planning methods in consolidation of water resources and villages for rural water supply development.

In this province, candidate priority project list consisting of six projects has been prepared. In Tong Co commune of Thuan Chau district, it is proposed to consolidate several small villages into one rural water supply system (inter-village system), which serves water to 7,000 villagers. In Song Ma district, it is also proposed to combine three communes into one water supply system (inter-commune system), which serves water to 24,000 beneficiaries. In this province, the pCERWASS intends to combine several villages and/or communes into one unit of water supply system for efficient supply of water. However, it is necessary to examine carefully the project cost incurred, as such large scale rural water supply systems necessitate large and long water conveyance facilities.

Project	District	Commune	Population	Capacity	Construction	Availability
			(Persons)	(m ³ /day)	$Cost (10^6 VND)$	of F/S
Tong Co Water Supply	Thuan Chau	Tong Co	7,000	700	85,000	Available
Chieng Khoong Water	Song Ma	Chieng Khoong, Chieng	24,000	2,400	22,000	Available
Supply		Cang, Chieng Khuong				
Muong Lam Water Supply	Song Ma	Muong Lam	5,000	500	7,800	n.a.
Tong Lenh Water Supply	Thuan Chau	Tong Lenh	12,000	1,200	10,000	n.a.
Muong Pu Water Supply	Muong La	Muong Pu	3,230	323	6,300	n.a.
Chieng Mung Water Supply	Mai Son	Chieng Mung	4,500	450	6,800	n.a.

Hoa Binh Province

In Hoa Binh province, the order of priority has been temporarily determined to all the proposed projects (master plan list of more than 1,000 beneficiaries) based on the selection criteria. According to the master plan list, 43 systems with beneficiaries of 158,208 are proposed to be completed by 2010, 97 systems with beneficiaries of 318,314 from 2011 to 2015, and 53 systems with beneficiaries of 206,025 from 2016 to 2020, totaling 193 systems with 682,952 beneficiaries. This province is, not like other three provinces, characterized as predominance of flat land and availability of underground water, and hence there are many pumping rural water supply and underground water supply systems, nonetheless, gravity water supply systems are predominant. For exploitation of underground water, it is necessary to carry out careful examination of water level and quantity by means of test drilling.

In this province, candidate priority project list consisting of four projects has been prepared as seen in the following table. All the proposed projects are planned to supply water by combining several communes into one system (inter-commune commune system). For example, the highest priority project, the Doi Sim Commune Center Project in Kim Boi district is proposed to consolidate three communes into one rural water supply system (inter-commune system), which serves water to 9,000 beneficiaries by pumping up surface water and/or underground water. Other than this, three projects located in Ky Son, Mai Chau and Tan Lac districts are proposed to serve water to beneficiaries by pumping up surface water. It should be noted that as the province is located downstream of the tree provinces, quality of water is generally low, and hence it is necessary to install water treatment plants for surface water supply systems.

Project	District	Commune	Population (Persons)	Capacity (m ³ /day)	Construction Cost (10 ⁶	Availability of F/S
Doi Sim Inter-commune W.S.	Kim Boi	Long Son, Cao Thang, Thanh	9,000	900	18,000	Available
Bai Nai Inter-commune	Ky Son	Mong Hoa, Dan	9,500	950	19,000	n.a.
Mai Hich Inter-commune	Mai Chau	Mai Hich, Van	7,500	750	16,000	n.a.
Ngoc My Inter-commune	Tan Lac	Ngoc My, Dong	8,500	850	17,000	n.a.

(4) Countermeasures for Water Shortage during the Dry Season

In the upper-part of mountains in Lai Chau, Dien Bien and Son La provinces, villages of the ethnic minority group are scattered here and there. Most of inhabitants of these villages have no access to rural water supply, thus utilize stored rainwater, and/or bring home water of streams located downstream. In these areas, catchment areas of streams are small and in most cases, the streams dry up during the dry season. Also, water in ponds and spring water dry up during the dry season due to unstable shallow underground water table. There is only one method to supply and distribute water to those people, that is to pump up water from the large streams located downstream area. However, difference of elevations between villages and water resources in the upper-part mountain is generally very large, and hence it is not practically possible to utilize such high head pumps in view of technical and monetary terms.

Under such circumstances, it seems to be very difficult to supply water to these inhabitants, especially in the dry season. To cope with this, it is proposed to create reservoirs by damming up water or by excavating ponds. Generally it is understood that there are very few suitable sites and even if such sites are available, such reservoirs and ponds may be very small and dry up due to seepage of water. In such areas, it is recommended to underlay reservoirs/ponds with polyvinyl chloride sheets to prevent seepage of water or to construct concrete tanks to collect stream runoff and rainwater as a model project, though these methods may not be the basic solution.

(5) Procedure for Implementation of Projects

The levels of grants stated in National RWSS Strategy are: 1) for gravity water systems in high mountain areas, the subsidy cannot exceed 90%, 2) for water piped schemes in a standard single village, the subsidy levels could reach 40% of the total construction cost, whereas 3) for more difficult sites in mountainous, island and border areas, the national government subsidy can be as much as 60% to be supplemented by provincial government funds.

Major actions to be taken are: 1) if the beneficiaries of a rural water supply system desire construction/rehabilitation of the system, PPC shall turn-over management of the project to the Cooperative, 2) the beneficiaries shall establish Cooperative for rural water supply system under the supervision of PPC/DPC, 3) the Cooperative shall initiate the application for funds from PPC through pCERWASS for the construction/ rehabilitation of the project, 4) the Cooperative shall enter into agreement with pCERWASS on the sharing of counterpart funds which is subject to approval of PPC/DPC, and 5) the Cooperative shall submit request to PPC/DPC through pCERWASS for funding of the project, etc.

For the smooth implementation of projects, above "Procedure for Implementation of Projects" is proposed to be taken up as one of the candidate programs. The main purpose of the program is to ensure appropriate management and O&M of the water supply systems independently (by the concept of ownership) by reorganizing and strengthening the cooperatives.

(6) Capacity Building of Cooperative (for Countermeasures of Water Pollution and O&M of the System)

Strengthening of Cooperative and capacity building of the Cooperative members are essential in order to implement the procedure and process as discussed in paragraph (5) above. The Cooperative shall accomplish four fundamental tasks to ensure the effective operation of the rural water supply system, i.e. distribution of water, maintenance of supply facilities, management of water conflict, and collection of water tariffs. For this, it is essential to organize and strengthen beneficiary farmers. In specific for countermeasures of water pollution and O&M of the system, it is expected: 1) to carry out treatment of sewage and excrement of animals to protect the water resources and the water supply system from pollution, 2) to close the gate of the intake structure to prevent from intrusion of earth and sand during flood time, 3) to stop or limit supply of water, if amount of water is not sufficient to fully supply during the drought period, 4) to supervise dam, canal, pipeline, water distribution system and related structures, etc.



A5.4 Rural Electrification

(1) Rural Electrification Plan

The Government of Vietnam has been promoting and reinforcing rural electrification based on the Six Power Development Master Plan, covering 2005-2015, with a view towards 2020. In response to this governmental policy, four provinces in the northwestern mountainous region carried out the master plan study on development of electricity in the province, including the possibility of new technology application and policies on operation and maintenance systems of provincial electricity. Rural electrification rate is targeted at 80% of all rural households by 2010, excluding Hoa Binh province.

Rural electrification covering remote, mountainous areas is now facing its development constraints such as complicated topography, scattered and thinly population, communes being far from middle-voltage transmission lines. Construction of power transmission lines and distribution facilities require a lot of investment. EVN has been giving development priorities to non-electric rural areas being easily accessible to existing national electric networks or to electrified areas where electric energy losses are increasing due to deterioration of electric equipment.

The department of industry in the province has been commencing preparation of prioritized projects in accordance with the above criteria. The long-term project list was already prepared in the provincial master plan of electric development. The short-term list for prioritized projects has been studied under the department of industry. After submission and approval from the department of planning and investment and provincial peoples' committee, F/S reports will be prepared for each priority projects and be submitted to the central government for getting approval for financing.

F/S report submitted by each provincial department of industry will be different, even the preparation method and description. It is necessary to decide the items to be screened, based on selection criteria for evaluation and approval of F/S report by relevant agencies of fund sources.

Concerning selection criteria for priority projects, the following criteria has been prepared by the JICA study team, referring the criteria applied for existing Poverty Reduction Programs called Sector Project Loan (SPL) by JBIC.

- ① Project owner shall be department of industry in the province or district people's committee.
- ② Subproject component shall be limited to 1) new construction, expansion or rehabilitation of middle voltage lines 2) new construction or rehabilitation of low voltage lines.
- ③ New installation or rehabilitation of distribution transformers shall be included as subproject components.
- ④ Subprojects shall be easily accessible to national grid.
- ⁵ Project including more than 220kv or more than 15 km elevated transmission line is not eligible.
- 6 Construction cost shall not be over 25 billion VND.

The department of industry proposed the priority projects based on the criteria as shown in Table 1.

Province	Location	MV	/ line	- -	Fransformer S	Station	LV	Construction	Electrified
							line	Cost	Household
		KV	km	No.	Unit Capcity	Total			
					(kVA)	(kVA)	km	(billion	(house)
								VND)	
Lai Chau									
Priority	Phong Tho District	35	12.7	5	31.5, 50	176	7.6	25.0	500
1					(4) (1)				
1	Tam Duong District	35	17.5	9	31.5,50,75	345.5	23.3	(ichuded in	1177
					(7)(1)(1)			the above)	
	Total		30.2	14			30.9	25.0	1677
2	Tan Uyen District		36.4	9	31.5		34.5	25.0	1294
Dien Bien									
Priority1	Muong Nhe District		30					21.5	
Son La	-								
	Son Ma District						108.9	25.6	
Priority1									
2	Sop Cop District		34.1	11			46.9	24.5	
3	Bac Yen		45.6	13			41.4	24.1	
Hoa Binh								(Const.Cost)	
Priority1	Ky Son District						51	83	2,409
2	Hoa Binh City	35	0.5	1	31.5	31.5	2	0.6	17
3	Lac Son District	35	2	2		280	43.4	50	1629
4	Mai Chau disrict	10	2	5		300	15	56	313
5	Cao Phong District	35	6.1	6		313	40	45	535
6	Tan Lac District	35	4.7	3		125	16	30	475

Table 1 Priority Project List

(2) Operation and Maintenance of Rural Electric Facilities

Rural electrification has been developing by mobilizing diversified fund resources procured in domestic and foreign countries. Recently, ownership of the assets for electric facilities is being set up in various ways under the electric power sector reforms. Most of state own enterprises are changing towards joint-stock-companies, by which power generation plants are constructed.

Furthermore, maintenance and organization of electric facilities has been gradually privatized in rural areas. Management entities for arranging their own distribution network to the master electricity meters to each household are 1) a commune's Board of Electricity Management 2) electricity companies 3) co-operatives 4) private entities/individuals selected 5) provincially managed state owned companies 6) centrally managed state owned companies.

In four provinces, EVN manages high-voltage and middle-voltage transmission networks and district co-operatives manage low-voltage transmission networks. These two managing organizations will be diversified into many entities in near future. In order to keep sustainability of rural electrification projects, it is necessary to establish firm organizations. In this connection, "Assistance on Maintenance and Organization for Distribution Networks in Rural Areas" is proposed as one of proposed programs in rural electrification sector. Main issues for assistance are given as follows:

- Investigation of similar electrified areas
- Preparation of maintenance manual
- Establishment of maintenance and organization involving residents and Ngo
- Electric tariff system

(3) Rural Electrification Planning for Availability of Renewable Energy

Application of renewable energy has an important significance that in addition to power supplementation for national grid systems, it will create an independent local power source for supplying to production and domestic use of local people.

Nowadays, global warming becomes very important issues for all of the country, which have begun to put in serious efforts to tackle research and application of renewable energy to the electric sector. The Government of Vietnam and provinces in the northwestern region understand the indispensable subjects to apply renewable energy to rural electrification from a point of view to contribute to implementation of KYOTO International Convention signed by Vietnamese Government.

Taking into consideration ethnic minorities living in remote areas being far from the national grid, application of renewable energy for electrification is urgent and important issues to meet basic human needs for the, hence, "Assistance for application of Renewable Energy to Rural Electrification "including policy, technology and economic aspect is proposed as one of supporting programs.



A.5.4-4



ROPOSED PRIORITY PROJECTS FOR RURAL ELECTRIFICATION OF DIEN BIEN PROVINCE



Attachment 5.4

A.5.4-6



Attachment 5.4

A.5.4-7

A6.1 Lists of Projects Subject to Making of Environmental Impact Assessment Reports and Inter-Ministry and Inter-Provincial Projects with Environmental Assessment Reports to be Appraised and Approved by the Ministry of Natural Resources and Environment

SN	Projects	Size
1	Important national projects and works in which investment guidelines are submitted to the National Assembly for decision under the National Assembly's Resolution No. 66/2006/NQ11 dated June 29, 2006	All
2	Projects using part or the whole of land areas of nature conservation zones, national parks, historical-cultural relic areas, world heritages, biosphere reserves, and famous scenic places, ranked or not yet ranked, which are protected under decisions of provincial/municipal People's Committees	All
3	Projects involving risks of directly and badly affecting water sources in river basins, coastal areas and areas having protected eco-systems	All
	Group of construction projects	
4	Projects to build infrastructures in urban centers or residential areas	Covering 50 ha or more
5	Projects to build infrastructures in industrial parks, hi-tech parks, industrial clusters, export-processing zones or trade village clusters	All
6	Projects to build supermarkets of markets	With 200 business places or more
7	Projects to build sports centers	Covering 10 ha or more
8	Projects to build hospitals	With 50 hospital beds or more
9	Projects to build hotels and rest homes	With 100 rooms or more
10	Projects to build tourist and entertainment resorts	Covering 10 ha or more
11	Projects to build tourist service establishments (infrastructure and physical foundations) in coastal areas and on islands	With a wastewater volume of 1,000 m ³ or more per day and night
12	Projects to build golf courses	With 18 holes or more
13	Projects to build cemeteries (burial, incineration or other forms)	All
14	Projects to build underground works	All
15	Projects to build houses with basements	Basement of 10m or more deep
16	Projects to build combat works, military training centers, shooting grounds and defense ports	All
17	Projects to build military warehouses	All
18	Projects to build defense economic zones	All
19	Projects to build prisons and detention camps	All
	Group of projects to manufacture construction	n materials
20	Cement production projects	Design capacity of 300,000 tons or more of cement per year
21	Projects on grinding of clinker for cement production	Design capacity of 1 million tons or more of cement per year
22	Projects to produce bricks and roofing tiles	Design capacity of 10 million ore more standard tiles and bricks per year
23	Projects to produce other construction materials	Design capacity of 10,000 tons ore more of products per year
	Group of traffic projects	
24	Projects to build underground traffic works (subways and tunnels)	500 m or more in length
25	Projects to build motorways, and roads of grades I to III	All
26	Projects to build, renovate and upgrade motorways, and roads of grades I to III	50 km or more in length
27	Projects to build grade-IV roads	100 km or more in length
28	Projects to build railways	50 km or more in length
29	Projects to build overhead railways	All
30	Projects to build telpher lines	500 m or more in length

Table 1: Lists of Projects Subject to Making of Environmental Impact Assessment Reports

SN	Projects	Size
31	Projects to build permanent road and railway bridges	200 m or more in length (excluding the length of access roads)
32	Projects to build traffic works	Requiring resettlement of 1,000 or more people
33	Projects to build river ports and seaports	Accommodating vessels of 1,000 DWT or more
34	Projects to build fishing wharves	Accommodating fishing vessels with 100 arrivals or more per day
35	Projects to build airports and airfields	All
36	Projects to build passenger car terminals	Covering 0.5 ha or more
37	Projects to produce hot asphalt concrete	Design capacity of 30,000 tons or more of products per year
	Group of energy and radiation project	ets
38	Projects to build nuclear reactors	All
39	Projects to build production, business and service establishments using radioactive substances or discharging radioactive wastes	All
40	Atomic power or thermal nuclear projects	All
41	Thermo power projects	Design capacity of 30 MW or more
42	Wind power projects	Covering an area of 100 ha or more
43	Solar power projects	Covering an area of 100 ha or more
44	Hydropower projects	With a reservoir of a capacity of 300,000 m ³ or more of water
45	Projects to build high-voltage power lines	100 km or more in length
46	Projects to manufacture electric wires and cables	Capacity of 2,000 tons or more of aluminum per year (or equivalent)
	Group of electronic and telecommunications	projects
47	Projects to build radio transmission and radio transmission-receipt stations	Design capacity of 2 kW or more
48	Projects to manufacture electric and electronic appliances	Design capacity of 10,000 or more appliances per year
49	Projects to manufacture electric and electronic components	Design capacity of 500 tons or more of products per year
50	Projects to build telecommunications lines	100 km or more in length
51	Projects to manufacture telecommunications cables	All
	Group of projects on irrigation, forest exploitation	and forestation
52	Projects on reservoirs and irrigation lakes	With a reservoir of a capacity of 300,000 m^3 or more of water
53	Projects on irrigation works	Covering 200 ha or more
54	Seaward expansion projects	All
55	River and sea embankment projects	1,000 m or more in length
56	Projects involving exploitation or conversion of use purposes of headwater protection forests, breakwater forests or special-purpose forests	Covering 5 ha or more
57	Projects involving exploitation or conversion of use purposes of natural forests	Covering 20 ha or more
58	Forestation and forest exploitation projects	Forestation of 1,000 ha or more; exploitation of forests of 200 ha or more
59	Projects to build consolidated rubber, cassava, sugarcane, coffee, cocoa, tea and pepper growing areas	Covering 100 ha or more
60	Projects to build consolidated vegetable and flower growing areas	Covering 100 ha or more
	Group of mineral exploitation projec	ts
61	Projects to exploit minerals on the mainland for use as construction materials	Exploitation capacity of 50,000 m ³ or more of materials per year
62	Projects to exploit minerals for use and ground fill-up materials	Exploitation capacity of 100,000 m^3 of more of materials per year

SN	Projects	Size
63	Projects to exploit, dredge and salvage- exploit minerals in river beds for use as construction materials	Capacity of 50,000 m ³ or more of materials per year
64	Projects to exploit solid minerals (without using chemicals)	A mined volume (including minerals and discharged earth and rock) of 100,000 m ³ or more per year
65	Projects to exploit and process solid minerals containing hazardous substances or involving use of chemicals	All
66	Projects to process solid minerals	- Design capacity of 50,000 tons or more of
		 A volume of 500,000 tons or more of discharged earth and rock per year, for coal sorting
67	Projects to exploit groundwater	Exploitation capacity of 10,000 m ³ or more of water per day and night
68	Projects to exploit natural mineral water (underground or on surface) for bottling	Exploitation capacity of 120 m ³ or more of water per day and night
69	Projects to exploit natural mineral water (underground or on surface) for service purposes (bathing, medical treatment and other purposes)	Exploitation capacity of 500 m ³ or more of water per day and night
70	Projects to exploit surface water	Exploitation capacity of 50,000 m ³ or more of water per day and night
	Group of oil and gas projects	
71	Projects to exploit oil and gas	All
72	Projects on petrochemical refineries (except projects on LPG extraction and lubricant preparation)	All
73	Projects to produce petrochemical products (surfactants, plasticizers, methanol)	All
74	Projects to build oil and gas pipelines	All
75	Projects to build oil and gas entrepots	Storage capacity of 1,000 m ³ or more
76	Projects to build oil and gas depot areas	All
	Group of waste treatment projects	
77	Projects on re-processing and treating ordinary solid wastes	All
78	Projects to build dumping sites for industrial and hazardous wastes	All
79	Projects to build dumping sites for garbage	For 500 households or for use by people of a district or more
80	Projects to build concentrated industrial wastewater treatment systems outside industrial parks, export-processing zones and hi-tech parks	All
81	Projects to build concentrated daily-life wastewater treatment systems	Design capacity of $1,000 \text{ m}^3$ or more of wastewater per day and night
82	Projects on purchase and preliminary processing of scraps (including imported scraps)	Design capacity of 3,000 tons/year`
83	Projects on vessel clean-up (all types of vessels)	All
84	Projects to dismantle old vessels (of all kinds)	All
	Group of mechanical engineering and metallurg	ical projects
85	Ferrous and non-ferrous metallurgy projects	Design capacity of 3,000 tons or more of products per year
86	Steel rolling projects	Design capacity of 5,000 tons or more of products per year
87	Vessel building and repair projects	Vessels of 1,000 DWT or more
88	Projects to manufacture, repair and assemble locomotives and cars	Design capacity of 500 units or more per year
89	Projects to manufacture, assemble and repair motorcycles	Design capacity of 10,000 units or more per year
90	Projects on mechanical engineering and manufacture of machines and equipment	Design capacity of 1,000 tons or more of products per year
91	Projects on metal plating, coating and polishing	Design capacity of 1,000 tons or more of products per year

SN	Projects	Size
92	Projects to manufacture shaped aluminum	Design capacity of 2,000 tons or more of products per year
93	Projects to manufacture and repair weapons and military materials and technical equipment	All
	Group of timber processing and glass, ceramic porcelair	production projects
94	Timber processing projects	Design capacity of 5,000 m ³ or more per year
95	Plywood processing projects	Design capacity of 100,000 m ² or more per year
96	Household woodwork manufacture projects	Design capacity of 10,000 or more products per year
97	Projects to produce fine art articles	Design capacity of 1 million or more products per year
98	Projects to produce glass, ceramic and porcelain	Design capacity of 1 million products or more per year
99	Projects to produce sanitary porcelain	Design capacity of 10,000 tons products or more per year
100	Projects to produce enameled tiles	Design capacity of 1 million m ² or more per year
101	Projects to produce bulbs and thermos flasks	Design capacity of 1 million or more products per year
	Group of food processing and beverage p	rojects
102	Food processing projects	Design capacity of 5,000 tons or more of products per year
103	Cattle and poultry slaughter projects	Design capacity of 1,000 cattle or 10,000 poultry or more per day
104	Frozen aquatic product processing projects	Design capacity of 1,000 tons or more of products per year
105	Sugar production projects	Design capacity of 20,000 tons or more of sugar per year
106	Alcohol and spirit production projects	Design capacity of 100,000 liters or more of products per year
107	Beer and beverage production projects	Design capacity of 500,000 liters or more of products per year
108	Monosodium glutamate production projects	Design capacity of 5,000 tons or more of products per year
109	Milk processing projects	Design capacity of 10,000 tons or more of products per year
110	Edible oil processing projects	Design capacity of 10,000 tons or more of products per year
111	Confectionery production projects	Design capacity of 5,000 tons or more of products per year
112	Ice production projects	Design capacity of 3,000 ice bars or more per day and night (for 50 kg bars) or 150,000 kg or more of ice water per day and night
	Group of agricultural product processing p	projects
113	Cigarette production projects	Design capacity of 30,000 packs or more per year
114	Cigarette materials processing projects	Design capacity of 1,000 tons or more of products per year
115	Cereals processing projects	Design capacity of 10,000 tons or more of products per year
116	Rice grinding and processing projects	Design capacity of 20,000 tons or more of products per year
117	Manioc starch processing projects	Design capacity of 1,000 tons or more of products per year

SN	Projects	Size
118	Cashew nut processing projects	Design capacity of 10,000 tons or more of products per year
119	Tea processing projects	Design capacity of 10,000 tons or more of products per year
120	Coffee processing projects	Design capacity of 5,000 tons or more of products per year, for the wet processing method; 10,000 tons or more of products per year, for the dry processing method; 1,000 tons or more of products per year, for processing coffee powder and instant coffee
	Group of feed processing and cattle, poultry rearing and	aquaculture projects
121	Cattle, poultry and aquatic animal feed processing projects	Design capacity of 5,000 tons or more of products per year
122	Projects to process aquatic by-products	Design capacity of 1,000 tons or more of products per year
123	Projects to process fish meal	Design capacity of 1,000 tons or more of products per year
124	Aquaculture projects (intensive/semi-intensive farming)	Water surface area of 10 ha or more
125	Extensive aquaculture projects	Water surface area of 50 ha or more
126	Projects on aquaculture on sand	All
127	Large-scale cattle raising projects	1,000 cattle heads or more
128	Large-scale poultry raising projects	20,000 poultry heads or more; 200 or more for ostriches; 100,000 or more for quails
	Group of chemical fertilizer and plant protection	drug projects
129	Projects to produce chemical fertilizers	Design capacity of 2,000 tons or more of products per year
130	Projects on warehouses of chemical fertilizers and plant protection drugs	Storage capacity of 2 tons or more
131	Projects to produce plant protection drugs	All
132	Projects to bottle and pack plant protection drugs	Design capacity of 1,000 tons or more of products per year
133	Projects to produce organic fertilizers and micro-fertilizers	Design capacity of 1,000 tons or more of products per year
Group of chemical, pharmaceutical and cosmetic projects		
134	Projects to produce pharmaceuticals	Design capacity of 50 tons or more of products per year
135	Projects to produce vaccines	All
136	Projects to produce veterinary medicines	Design capacity of 50 tons or more of products per year
137	Projects to produce cosmetics	Design capacity of 50 tons or more of products per year
138	Projects to produce plastics and plastic products	Design capacity of 500 tons or more of products per year
139	Projects to produce plastic packages	Design capacity of 2 million or more products per year
140	Projects to produce paints and base chemicals	Design capacity of 500 tons or more of products per year
141	Projects to produce detergents and additives	Design capacity of 1,000 tons or more of products per year
142	Projects to produce projectile power, explosives and fire equipment	All
143	Projects to produce industrial explosives	All
144	Salt production projects	Covering 100 ha or more
Group of paper and stationery production projects		
145	Projects to produce pulp and paper (from raw materials)	Design capacity of 1,000 tons or more of products per year

SN	Projects	Size
146	Projects to produce paper from pulp and recycling	Design capacity of 5,000 tons or more of products per year
147	Projects to produce stationery	Design capacity of 1,000 tons or more of products per year
	Group of dyeing textile and garment pro	ojects
148	Projects on dyeing textiles	All
149	Projects on non-dyeing textiles	Capacity of 10 million m or more of fabric per year
150	Projects to produce and process garment products involving laundering and bleaching	Design capacity of 50,000 or more products per year
151	Projects on production and processing of garment products without laundering and bleaching	Design capacity of 2 million or more products per year
152	Industrial laundering projects	Design capacity of 50,000 or more products per year
153	Projects to produce silk and artificial yarn	Design capacity of 1,000 tons or more of products per year
	Group of other projects	
154	Projects on rubber latex processing plants	Design capacity of 5,000 tons or more of products per year
155	Projects on rubber processing plants	Design capacity of 1,000 tons or more of products per year
156	Projects to manufacture footwear	Design capacity of 1 million or more of products per year
157	Projects on to manufacture car and tractor tires and tubes	Design capacity of 50,000 or more of products per year for cars and tractors; 100,000 or more products per year, for bicycles and motorcycles
158	Projects to manufacture accumulators and batteries	Design capacity of 50,000 kWh per year or 100 tons or more of products per year
159	Projects on leather tanning plants	All
160	Projects to produce and extract liquefied CO2 gas	Design capacity of 3,000 tons or more of products per year
161	Projects to manufacture fire-fighting equipment and products	All
162	Other projects on renovation, upgrade and expansion	Of a nature, size and capacity equivalent to projects numbered 1 to 161, except for projects numbered 25 and 26 of this Appendix

Source: Decree No.21/2008/ND-CP, Appendix

Table 2: Inter-Ministry and Inter-Provincial Projects with Environmental Assessment Reports to be Appraised and Approved by the Ministry of Natural Resources and Environment

1.	Projects involving the use of part or the whole of land areas of national parks, nature conservation zones, biosphere
	reservation zones, world heritages and historical-cultural relics areas which are of national grade.
2.	Projects on nuclear power plants, thermonuclear plants and nuclear reactors
3.	Projects on thermal power plants with a design capacity of between 300 MW and under 500 MW, located less than 02
	km away from urban centers and residential areas; projects on other thermal power plants with a capacity of 500 MW
	or more.
4.	Projects on hydropower plants and irrigation works with reservoir capacity of 100,000,000 m ³ or more of water or
	affecting the sources of supply of surface and groundwater of two or more provinces and centrally-run cities.
5.	Projects involving the destruction of headwater protective forests, breakwater forests, sea progradation forests or
	special-purpose forests of 20 ha or more or involving the destruction of other natural forests of 200 ha or more
	according to the Government-approved planning on conversion of land use purposes.
6.	Projects on aquaculture on sand covering an area of 100 ha or more.
7.	Projects on petrochemical refineries; projects on plants to manufacture base chemicals, plant protection drugs,
	detergents, additives or chemical fertilizers with a capacity of 20,000 tons or more of products per year; projects on
	accumulator plants with a design capacity of 300,000 Wh per year; projects on cement plants with a capacity of
	1,200,000 tons or more of cement per year; projects on plants or workshops containing radioactive substances or
	discharging radioactive wastes.
8.	Projects on oil and gas exploitation; projects on exploitation of solid minerals with a capacity of 500,000 m ³ per year
	(including earth, discarded rock, lean ore): projects on exploitation of radioactive metal minerals, rare earth; projects
	on exploitation of groundwater with a capacity of 50,000 m ³ of water per day and night, exploitation of surface water
	with a capacity of 500,000 m ³ of water per day and night
9.	Projects on building infrastructures in industrial parks, export-processing zones, hi-tech parks, industrial clusters,
	tourist and entertainment resorts of 200 ha or more in area; projects on building ports to accommodate ships of a
	tonnage of 50,000 DWT or more; projects on iron and steel refining with a design capacity of 300,000 tons or more of
	products per year.
10.	Projects on re-processing hazardous waste, treating and dumping hazardous waste.
11.	Projects with one or more component among projects from 1 to 10 above.
12.	Other projects specified in Appendix 1 of the Decree No. 80 (Table 1 in Attachment 6.1) and located in two or more
	provinces and centrally run cities.

Source: Decree No.80/2006/ND-CP, Appendix II

A 6.2 Structure and Requirements for the Contents of the Report on Strategic Environmental Assessment

INTRODUCTION

- 1. The origin of the project
 - Summary of the origin, context of the project including the explanation of the type of project: new, supplementary, expanding or others.
- Approving agencies or organizations approve of the project.
- 2. Legal and technical foundation of the implementation of strategic environmental assessment
- List law and technical documents as the foundation of the implementation of strategic environmental assessment and conduct the report on strategic environmental assessment of the project, in which code, name, date of issuance, issuance agency of each document should be mentioned sufficiently and accurately.
- 3. Strategic environmental assessment organization and implementation
 - Summary the organization and operation of the expert group on strategic environmental assessment established by the project owner;
 - List of direct participants in the implementation process of strategic environmental assessment and establishment of the report on strategic environmental assessment;
 - Summary the working and discussing process of expert group on strategic environmental assessment with expert group on the strategy/planning/plan to incorporate the environment-protection contents in each stage of project establishment

Chapter 1: GENERAL INTRODUCTION ABOUT THE AIM, SCALE AND CHARACTERISTICS OF THE ENVIRONMENT-RELATED PROJECT

- 1.1 The project owner agency: Sufficiently and accurately mention: the name of the project owner agency, address and means of communication with the project owner agency; full name and the position of the leader of the project owner agency.
- 1.2 The aim of the project: Long-term and short-term aims of the project.
- 1.3 The scale of the project:
 - Space and time: Geographical scope (including co-ordinate, boundaries.. .) of the project area together with geographical location sketch in comparison with the surroundings of the project area with clear annotation; the time to implement the project.
- The operation: Give general information about all the operating fields and scales of each operating field of the project.
- 1.4 The characteristics of the environment-related project
 - The exploitation and usage of environmental components and natural resources; rehabilitation, modification of artificial and natural landscapes and other natural objects during project implementation process.
 - The construction, rehabilitation, expansion, exploitation, usage and demolition of infrastructures such as transportation, post and telecommunication, electricity, water supply, drainage and other infrastructures during project implementation process.
 - The construction, rehabilitation, expansion, exploitation, usage and demolition of works in the fields of culture, society, religion, belief, historical relics and other related works during project implementation; the resettlement during project implementation.

Chapter 2: GENERAL DESCRIPTION OF NATURAL, SOCIO-ECONOMIC AND ENVIRONMENTAL CONDITIONS RELATED TO THE PROJECT

2.1 Natural and environmental conditions

- Geographical and geological conditions: After generally describing the geographical (including topographical and geomorphological) and geological conditions of the project area and its surrounding areas within Vietnam territory, define affected objects and processes; used data and documents should be quoted with sources.
- Hydro—meteorological conditions: After generally describing the hydrometeorology conditions of the project area and its surrounding areas within Vietnam territory, define affected objects and processes during project implementation; used data and documents should be quoted with sources
- Status of natural environment components: After generally describing the status of soil, water, air, biology, ecology and other natural environment components of the project area and its surrounding areas within Vietnam territory, define affected objects and processes; used data and documents should be quoted with sources.
- 2.2 Socio-economic conditions
 - Economic conditions: After generally describing the operation status of major economic sectors in the project area and its surrounding areas within Vietnam territory (industry, agriculture, transportation, mining, tourism, trade, services and other sectors), define affected objects and processes; used data and documents should be quoted with sources.
- Social conditions: After generally describing the operation status of cultural, social works, religion, belief, historical relic and other related works in the project area and its surrounding areas within Vietnam territory, define affected objects and processes; used data and documents should be quoted with sources

Chapter 3: FORECAST OF POSSIBLE NEGATIVE ENVIRONMENTAL IMPACTS DURING THE PROJECT IMPLEMENTATION PROCESS

3.1 Sources of impacts

- Sources of impacts that are related to wastes: Forecast all possible sources producing solid waste, fluid waste, gaseous waste and other wastes during project implementation.
- Sources of impacts that are not related to wastes: Forecast all possible sources of impacts that are not related to waste such as landslide, erosion, sinking, erosion of rive banks and stream banks, edge of a pond and seaside, aggradation of river bed, streambed, pondbed and seabed; the change of level of surface water, ground water; salinization, alumination; change of micro-weather; degradation of environmental components; biological diversification and other sources of impacts.

3.2 Objects and scales of impacts

- Objects of impacts that are related to wastes: Forecast all the objects in the fields of nature, economics, culture, society, religion, belief, historical relics and other related objects in the project area and its surrounding areas within Vietnam territory affected by impacts that are related to wastes during the implementation process of the project; predict the affected spatial and time scale.
- Objects of impacts that are not related to wastes: Forecast all the objects in the fields of nature, economics, culture, society, religion, belief, historical relics and other related objects in the project area and the project area and its surrounding areas within Vietnam territory affected by impacts that are related to wastes during the implementation process of the project such as landslide, erosion, sinking, erosion of rive banks and stream banks, edge of a pond and seaside, aggradation of river bed, streambed, pondbed and seabed; the change of level of surface water, ground water; salinization, alumination; change of micro-weather; degradation of environmental components; biological diversification and other impacts; predict the affected spatial and time scale.

3.3 The changing trend of natural, environmental and socio-economic conditions

- Changing trend of natural conditions: Forecast the changing trend of geographical (including topographical and geomorphological) and geological, hydro-meteorological conditions; changes in natural and artificial, biological diversification of the project area and its surrounding areas within Vietnam territory during and not during the implementation of the project. In case of having methods, statistic, data within the limit, this changing trend must be presented in diagram, chart, map and other visual illustrations.
- Changing trend of environmental conditions: Forecast the changing trend of environmental components such as land, water, air, biology, ecology and other environmental components of the project area and its surrounding areas within Vietnam territory during and not during the implementation of the project. In case of having methods, statistic, data within the limit, this changing trend must be presented in diagrams, charts, maps and other visual illustrations.
- The changing trend of socio-economic conditions: Forecast the changing trend of basic economic sectors, works in the field of culture, society, religion, belief, historical relics and other related works in the project area and its surrounding areas within Vietnam territory during and not during the implementation of the project. The information is presented in maximum in diagrams, charts, maps and other visual illustrations.
- 3.4 The assessment of the relevance of views and aims of the project in accordance with the views and aims of protection the environment
 - Compare the views and aims of the project with the views and aims of protection the environment approved by management levels and sectors in related official documents such as resolutions, instructions of the Communist Party, legal normative document of the Government; strategy, planning, plan on protection the environment; strategy, master plan, plan on the exploitation and usage of natural resource; and other related official documents.
 - Forecast the impact and effects of the views and aims of the project on the related views and aims of protection the environment in the above-mentioned documents.

Chapter 4: GUIDANCE ON SOURCES OF STATISTIC, DATA AND ASSESSMENT METHODS

- 4.1 Sources of statistic and data
 - Sources of reference statistic, data:
 - a. List reference documents, data with statistic of the name, time of appearance, author, storing and issuing place of the documents and data.
 - b. Assess the precise, reliable and update level of the source of documents and data for reference.
 - Sources of documents, data established by the project owner:
 - a List documents, data with statistic of the name, time of appearance, place of saving and issuance of the documents and data.

- b Assess the precision, reliability and update of the source of documents and data.
- 4.2 Methods applied in the strategic environmental assessment process
 - List of used methods: List all the methods that have been used in the strategic environmental assessment process and establish a report on strategic environmental assessment including methods of strategic environmental assessment, methods of investigating, surveying, researching, experimenting and other related methods.
 - Assess the reliability of used methods: Assess the reliability of methods according to the qualitative and quantitative levels according to the essence, characteristics and particular features of the each applied method.
- 4.3 Remark on the precision and reliability of the assessments

Remark objectively on the precision, reliability of the assessment of possible impacts, the changing trend of natural, environmental and socio-economic conditions during and not during the implementation of the project. For matters lacking necessary reliability, mention the objective and subjective reasons (lack of information, data; out of date statistic, data; lack of methods; limited reliability of the method; limited qualification of experts on strategic environmental assessment; other reasons).

Chapter 5: THE PROPOSAL OF GENERAL ORIENTATION, SOLUTION TO ENVIRONMENTAL PROBLEMS DURING THE IMPLEMENTATION OF THE PROJECT

- 5.1 General orientation
 - The general orientation to integrate environmental aspects in the implementation of the whole project.
- The general orientation to integrate environmental aspects in the implementation of each content of the project.
- 5.2 The orientation of strategic environmental assessment in the inception phase of the project
 - The areas that need more concern about the strategic environmental assessment in the implementation of the investment project should be defined; major reasons.
 - The sectors, fields that need more concern about the strategic environmental assessment in the implementation of the investment project should be defined; major reasons.
- 5.3 Technical solution
 - General technical solutions to environmental matters in the implementation of the whole project.
 - General and particular technical. solutions to environmental matters in the implementation of each content of the project.
- 5.4 Management solution
 - General management and organization solution to environmental matters in the implementation of the whole project.
 - General and particular management and organization solutions to environmental matters in the implementation of each content of the project.
- 5.5 Environmental management and monitoring program

Propose an environmental managing and supervising program during the implementation of the project, in there point out or propose:

- The content, location, agency and method of the implementation;
- Cooperating way during the implementation;
- Report regulations during the implementation.

CONCLUSIONS AND RECOMMENDATIONS

- 1. About the relevance of views and aims
 - Assess and conclude the relevance of views and aims of the project with the views and aims of protection the environment approved by levels, sectors in official documents as mentioned above in section IV.4.
- Recommendations for the overcoming of related inadequacies.
- 2. About the level of harmful impact on the environment
 - Conclusion of the harmful impacts on the environment in general in the implementation of the project; the possibility and level of mitigating;
 - Conclusion of the harmful impacts on the environment in the implementation of each content, each operating field of the project; the possibility and level of mitigating.
 - Negative environmental matters that are unable to mitigate; reasons; recommendations for solutions
- 3. About the approval of the project
 - Based on the environmental foundation, conclude:
 - Projects that can be approved; notice when approving of the project (if available); or
 - Project that cannot be approved; reasons.
- 4. Other conclusions and recommendations

Source: Circular No. 08/2006/TT-BTNMT, Appendix 1

A6.3 Structure and Requirements for the Contents of the Report on Environmental Impact Assessment

INTRODUCTION

- 1. The origin of the project
- Summary of the origin, appearing situation of the project including the explanation of the type of project: new, supplementary, expanding or others.
- Authorized agencies and organizations approve of the project.
- Legal and technical foundation of the implementation of environmental impact assessment List law and technology document as the foundation of the implementation of environmental impact assessment and establish the report on environmental impact assessment of the project, in there mention sufficiently and accurately: code, name, date of issuance, issuance agency of each document.
- 3. Environmental impact assessment organization and implementation
 - Summary the implementation of environmental impact assessment and establish the report on environmental impact assessment, in there the hire of consultancy in establishing the report on environmental impact assessment should be defined. In case of hiring consultancy, mention the name of consultant agency, full name of the leader and address of the consultant agency;
 - List of direct participants in the establishment of environmental impact assessment of the project.

Chapter 1: BRIEF DESCRIPTION OF THE PROJECT

1.1 The name of the project

Name of project should be mentioned accurately as in the feasibility studies or in the investment report of the project. 1.2 The project owner

- Mention sufficiently: name of the project owner agency, address and means of communication with the project owner agency; full name and the position of the leader of the project owner agency.
- 1.3 Geographical location of the project

Clearly describe the geographical location (including co-ordinate, boundaries ...) of the project area in comparison with natural objects (transportation system; river, stream, pond, lake, and other water reservoir system; mountain system...), socio-economic objects (residential, urban areas; manufacture-business and service objects; cultural, religious works; historical relics ...) and other objects in the surrounding area of the project area, attach the map of geographical location presented these objects with cleat annotations.

- 1.4 The main content of the project
 - List sufficiently and describe in detail the amount and scale (spatial and time) of all works in the implementation of the project, attach a map allocating all constructions or particular map for each construction. These constructions are divided into 2 types:
 - Major constructions: constructions for the aim of manufacture, business and service of the project:
 - Supplementary constructions: constructions that supplement the activities of major constructions such as: transportation, post and telecommunication, electric supply, water supply drainage, resettlement, green trees, sewage disposal processing station, solid waste processing and collecting station (if available), and other constructions.
 - Describe in detail the executing, manufacturing and activating technique of the project and of each work of the project, attach illustration. On these illustrations, environmental components that probably arise should be defined, for example: the sources of wastes and other factors of impacts (if available).
 - List sufficiently all necessary machines, equipment for the project together with instruction on the origin, manufacturing year and status (how many percent left or new).
 - List sufficiently all kinds of input materials, fuels together with instruction on the brand name and chemical formula (if available).

Chapter 2: NATURAL, ENVIRONMENTAL AND SOCIO-ECONOMIC CONDITIONS

2.1 Natural and environmental conditions

- Geographical and geological conditions: Only mention and describe the affected objects, phenomena and process by the project (describe in detail projects that can change geographical and landscape factors; mineral exploiting project and projects related underground constructions); show sources of reference and used documents and data.
- Hydro-meteorological conditions: Only mention and describe the affected objects, phenomena and process by the project (describe in detail projects that exploit, use and change hydro-meteorological factors); show sources of reference and used documents and data.
- Status of natural environment components: Only mention and describe the directly affected environmental components by the project, for example: air environment receiving the emission of the project (more focus on area that are affected due to major wind direction), water source receiving sewage disposal of the project, land and biological environment that are directly affected by wastes and other factors of the projects.

- Air, water and land environments require the following: Clear instruction on measuring and analytical data at the time
 of environmental impact assessment of environmental quality (notice: the site that is used to measure and take a
 sample must have code and there must have instruction on the time, location and is presented simultaneously in clear
 chart and table and illustrated in map allocating those locations); Remark on the sensitivity and generally appraise the
 resistance of the environment.
- 2.2 Socio-economic conditions
 - Economic conditions: Only mention economic activities (industry, agriculture, transportation, mining, tourism, trade, services and other sectors) in the project area and its surrounding areas that are affected by the project; show sources of reference and used documents and data.
 - Social conditions: Only mentions works in the fields of culture, society, religion, belief, historical relic, resident, urban areas and other related works in the project area and its surrounding areas that are affected by the project; show sources of reference and used documents and data.

Chapter 3: ENVIRONMENTAL IMPACT ASSESSMENT

3.1 Sources of impacts

- Sources of impacts that are related to waste: List in detail all possible sources producing solid waste, fluid waste, gaseous waste and other wastes during project implementation. Make quantitative calculation and concretization for each source (spatial and time). Compare with the current standards, criteria and regulations (if available).
- Sources of impacts that are not related to waste: List all possible sources of impacts that are not related to waste such as landslide, erosion, sinking, erosion of rive banks and stream banks, edge of a pond and seaside, aggradation of river bed, streambed, pondbed and seabed; the change of level of surface water, ground water; salinization, alumination; change of micro-weather; degradation of environmental components; biological diversification and other sources of impacts. Concretize the level, space and time of occurrence. Compare with the current standards, criteria and regulations (if available).
- Forecast environmental risks caused by the project: Only mention possible risks of the project during the establishment and operation caused by the project.
- 3.2 Objects and scales of impacts

List all the objects in the fields of nature, economics, culture, society, religion, belief, historical relics and other related objects in the project area and its surrounding areas affected by impacts that are related to wastes, by impacts that are not wastes or by environmental during the implementation process of the project; Describe in detail the affected spatial and time scales.

- 3.3 Impact assessment
 - Impact assessment must be concretized for each source of impacts and for each affected object. Each impact must be assessed in detail about the level, spatial and time scales.
 - Impact assessment for each project must be concretized and particularizes; do not assess in general like writing lectures, regulations, rules and instructions.
- 3.4 Assessment of used methods

Assess the reliability of methods applied in assessing environmental impacts and the reliability of each implemented assessment; uncertain issues in the assessment, reasons and recommendations.

Chapter 4: MEASURES TO REDUCE HARMFUL IMPACTS, PREVENT AND COPE WITH ENVIRONMENTAL INCIDENTS

- For harmful impacts: Appropriate measures to mitigate each harmful impact should have clear explanation about the advantages, disadvantages, feasibility, processing, productivity and efficiency. In case there is no possible measure or measures are unfeasible in the project scope, explain the reasons and specific recommendations so that the related agencies can have directions to solve and decide. Reduction of harmful impacts after applying the measures must be proved with comparison with current standards, criteria and regulations. In case of not meeting the requirements, explain the reasons and specific recommendations to solve and decide.
- For environmental incidents: Propose a general method of preventing and coping with the incidents, in which mention: The content and measures implemented by the project owner within the capability; remark on and assess the feasibility and efficiency; The content and measures that need co-operation and help from state agencies and other partners; Inevitable matters and recommendations for solutions.

Chapter 5: COMMITMENT OF IMPLEMENTING MEASURES FOR PROTECTION THE ENVIRONMENT

Commitment of the project owner to implement measures to reduce the aforementioned harmful impacts; simultaneously, commit to implement all the methods and regulations on protection the environment related to the activation and implementation process of the project.

Chapter 6: ENVIRONMENTAL TREATMENT CONSTRUCTIONS AND ENVIRONMENTAL MANAGEMENT AND MONITORING PROGRAM

6.1 List of environmental treatment constructions

- List sufficiently environmental treatment constructions for solid, liquid and gaseous wastes and other wastes in the project scope; attach the particular constructing scheme for each construction;
- List sufficiently environmental treatment constructions for other elements besides wastes such as landslide, erosion, sinking, erosion of rive banks and stream banks, edge of a pond and seaside, aggradation of river bed, streambed, pondbed and seabed; the change of level of surface water, ground water; salinization, alumination; change of micro-weather; degradation of environmental components; biological diversification and other sources of impacts (if available); attach the particular constructing scheme for each construction.
- 6.2 Environmental management and monitoring program
- 6.2.1 Environmental management program

Propose a program in order to manage environmental matters in the construction and practical operation of the project, including: organization and human resource for environmental management; wastes management, including hazardous wastes management; prevent and avoid environmental incidents (except for fire prevention and fighting that will be particularly implemented according to the Law on preventing and fighting fire); and other environmental management contents related to the project.

- 6.2.2 Environmental monitoring program
- a. Waste monitoring: Require the monitoring of wastes load and specific polluting data of project wastes according to the current standards and criteria of Vietnam, with the frequency of at least every 03 (three) months. Monitored sites must be presented in detail on the map with clear annotation.
- b. Surrounding environment monitoring: In case there is no monitoring station or site of state agencies, only monitor specific polluting data of project wastes according to the current standards and criteria of Vietnam with the frequency of at least 06 (six) months once. Monitored sites must be presented in detail on the map with clear annotation.
- c. Other monitoring: In case there is no monitoring station or site of state agencies, only monitor factors such as landslide, erosion, sinking, erosion of rive banks and stream banks, edge of a pond and seaside, aggradation of river bed, streambed, pondbed and seabed; the change of level of surface water, ground water; salinization, alumination; and other sources of impacts (if available), with the appropriate frequency in order to monitor the spatial and time changes of this factors. Monitored sites must be presented in detail on the map with clear annotation.

Chapter 7: BUDGET ESTIMATION OF ENVIRONMENTAL CONSTRUCTION

It is necessary to propose the budget estimation of the establishment and operation of environmental constructions during the establishment and operation of the project.

Chapter 8: PUBLIC CONSULTATIONS

- 8.1 Opinions of the People's Committee at commune level
- 8.2 Opinions of the representatives of the community

(Sections 8.1 and 8.2 are both presented according to the requirements stipulated in section 3.2 of this Circular).

Chapter 9: GUIDANCE ON SOURCES OF STATISTIC, DATA AND ASSESSMENT METHODS

- 9.1 Sources of statistic and data
 - Sources of reference statistic, data:
 - List reference documents, data with statistic of the name, time of appearance, author, saving and issuing place of the documents and data. Assess the precise, reliable and update level of the source of documents and data for reference.
 - Sources of documents, data established by the project owner:
 - List documents, data with statistic of the name, time of appearance, place of saving and issuance of the documents and data. Assess the precision, reliability and update of the source of documents and data.
- 9.2 Methods in the environmental impact assessment
 - List of used methods: List all the methods that have been used in the environmental impact assessment process and establish a report on environmental impact assessment including methods of environmental impact assessment, methods of investigating, surveying, studying, experimenting and other related methods.
 - Assess the reliability of used methods: Assess the reliability of methods according to the qualitative and quantitative levels according to the essence, characteristics and particular features of the each applied method
- 9.3 Remark on the precision and reliability of the assessments

Remark objectively on the precision, reliability of environmental impact assessments, the changing trend of natural, environmental and socio-economic conditions during and not during the implementation of the project. For matters lacking necessary reliability, mention the objective and subjective reasons (lack of information, data; out of date statistic, data; lack of methods; limited reliability of the method; limited qualification of experts on environmental impact assessment; other reasons).

CONCLUSIONS AND RECOMMENDATIONS

1. Conclusions

It is necessary to have conclusion of matters such as: whether all the impacts are realized and assessed, what is unclear; general assessment of the level and scale of defined impacts; the feasibility of mitigation measures; negative impacts that are impossible to reduce because of going beyond the capability of the project owner and petitions for solving.

2. Recommendations

Recommendations to management levels and sectors to help solving matters that go beyond the capability of the project.

Source: Circular No. 08/2006/TT-BTNMT, Appendix 4