

Chapter 8

Examination of Formulation of Community Development Plan (CDP)

8.1 Significance of Participatory Development Process and Aims of CDP Formulation

Vietnam issued a decree on Grassroots Democracy in communes in 1998, which has been carried out under the slogan, “People know, People discuss, People decide, People supervise.” Grassroots Democracy attempts to enhance decentralization of government power and empower its people by increasing participation of local residents in the local government. The following roles of the local residents in commune development are stipulated in the decree;

- Work to be informed to the people:
The State’s policies and laws, Communes’ development plans, the Annual projections and settlements of the commune budgets, etc.
- Work to be directly discussed and decided by the people:
The contributions and their levels for the construction of infrastructure and public welfare works, etc.
- Work to be discussed or consulted by the people and decided by the commune people’s councils and/or people’s committees:
Draft long-term master-plan and annual plans on the communes’ socio-economic development, Draft plans on the implementation of national programs, etc.
- Work to be supervised and inspected by the people:
Activities of the commune People’s Councils and People’s Committees, etc.

In addition to the above, this decree pays attention to villages and hamlets as the lowest body of the Grassroots Democracy “where democracy is exercised in a direct and broad manner” despite the fact that the villages and hamlets “do not constitute a level of administration”¹.

Before the enactment of the decree, communes followed the plans and development activities that had been given out by the central government. Currently, communes are to formulate their own socio-economic development plans based on the actual needs of their localities, and to execute the plans by implementing and monitoring development activities. In actuality, however, most communes are not yet taking full ownership or carrying out a development project by themselves. This is because commune leaders and officers are inexperienced and do not know well how to implement the decree. Some development projects including Program 135 Phase II put special effort on capacity development of commune leaders and officers.

¹ Decree No. 29/1998/ND-CP; Regulations on the Exercise of Democracy in Communes

In this Study, CDP formulation was carried out in order to examine the level of absorption of Grassroots Democracy in the local government, especially to examine the capacity of district staff and commune leaders and officers to formulate development plans. Specifically, it aims to examine 1) whether it is possible to formulate CDPs based on the participatory approach, 2) whether district staff and commune leaders and officers understand the meaning of participatory formulation of CDPs and are willing to carry out such CDP formulation, and 3) what is needed to have participatory planning firmly established in the local government.

8.2 Summary of CDP Formulation

The CDP formulation consists of 3 segments that are 1) Selection of Trial Communes, 2) Commune Workshop and 3) CDP Review Workshops in the four provinces (Table 8.2.1).

Table 8.2.1 CDP Formulation

Segment	Dates	Remark/Duration
1) Selection of trial communes	October 2007	Each district in the four provinces selects one commune
2) Commune Workshop	Oct. to Dec., 2007	2 or 3 days per commune
3) CDP Review Workshop	Jan. to Feb., 2008	2 days per workshop

District DARD staff whose job assignments include management and supervision of commune development was the key player in the CDP formulation. The JICA Study Team assisted them with advices and guidance. Through the CDP formulation exercises, the district DARD staff gained first-hand experience as well as technique and knowledge of participatory development planning. Commune Workshop activities such as preparation and pre-arrangements, collection of communes' data on socio-economy and natural conditions, and recording of workshop sessions were carried out by local consultants.

CDP Review Workshops were carried out in the four provinces. Representatives from DARD, DPI, Ethnic Committee, and each district office participated to examine the CDP formulation and discuss their experiences, obstacles and opinions on the CDP formulation.

8.2.1 Selection of Trial Communes

Each of the 32 districts in the Northwestern Region selected a trial commune based on its own criteria, and the JICA Study Team reviewed the selection criteria for their appropriateness. The trial communes are presented in Table 8.2.2.

Table 8.2.2 List of Trial Communes

Province	District	No.	Commune	DOLISA (2005)		District Profiles (2007)	
				Population (household)	Poverty Rate(%)	Population (Villages)	Poverty Rate(%)
Lai Chau	1. Muang Te	LC01	Bum Nua	5,087	79.71	5,561	50.29
	2. Phong Tho	LC02	Huoi Luong	5,403	66.38	5,567	64.00
	3. Sin Ho	LC03	Ma Quai	4,225	79.50	4,920	37.60
	4. Tam Duong	LC04	Nung Nung	2,250	86.29		
	5. Than Uyen	LC05	Na Cang				
Dien Bien	1. Dien Bien	DB01	Muong Phang	3,561	24.23	8,132	
	2. Dien Bien Dong	DB02	Hang Lia	2,041	78.00		
	3. Muong Cha	DB03	Moung Muon	6,304	52.78		
	4. Muong Nhe	DB04	Muong Nhe	3,105	79.96		
	5. Tua Chua	DB05	Lao Xa Phinh	1,826	66.80	1,900	63.78
	6. Tuan Giao	DB06	Na Say	5,153	59.40		
	7. Muong Ang	DB07	Xuan Lao				
Son La	1. Bac Yen	SL01	Song Pe	(774)	50.39		
	2. Mai Son	SL02	Ta Hoc	(1,054)	45.54		
	3. Moc Chau	SL03	Quy Huong	(735)	45.99	3,666	
	4. Muong La	SL04	Pi Toong	(912)	56.36		
	5. Phu Yen	SL05	Muong Lang	(564)	59.40	2,100	
	6. Quynh Nhai	SL06	Chieng Khoai	(1,590)	25.28	7,628	19.42
	7. Song Ma	SL07	Dua Mon	(967)	52.43		
	8. Sop Cop	SL08	Sop Cop	(725)	43.86	3,674(17)	
	9. Thuan Chau	SL09	Chieng Bom	(778)	55.53	4,910	53.87
	10. Yen Chau	SL10	Phieng Khoai	(1,789)	45.28		
Hoa Binh	1. Cao Phong	HB01	Dong Phong	1,960	13.08		
	2. Da Bac	HB02	Cao Son	3,643	55.05	3,762	
	3. Kim Boi	HB03	Hop Dong	3,486	62.66	3,489(7)	53.22
	4. Ky Son	HB04	Trung Minh	5,675	9.13	5,835	6.69
	5. Lac Son	HB05	Yen Phu	6,730	43.07	1,832(18)	
	6. Lac Thuy	HB06	An Binh	6,485	55.24	6,808	
	7. Luong Son	HB07	Lien Son	3,858	8.20	3,877(10)	1.90
	8. Mai Chau	HB08	Van Mai	2,928	34.94	3,007	26.59
	9. Tan Lac	HB09	Dong Lai	5,818	40.68	5,900	
	10. Yen Thuy	HB10	Huu Loi	3,729	39.73	3,760	

8.2.2 Commune Workshop

The Commune Workshop consists of two (2) activities; that are (A) Collection of socio-economic data of the commune and (B) Commune Session attended by people of the commune. These activities were carried out to develop the capacity of the district staff and commune leaders. During the Workshop, the local consultants made it known that the Workshop did not aim to select infrastructures to be constructed by development projects. The consultants also made it clear that the Workshop aimed to listen to the voices of commune residents, especially their opinions and hopes for commune development, and to seek their development visions and needs.

The following is an overview of the Commune Workshop including its schedule and activity contents:

Table 8.2.3 Overview of Commune Workshop

	Workshop Activity	Persons Involved	Remark / Concern/ Suggestions
Day 1	(AM) Visit to district Introduction/Explanation of CDP	District staff	- Capacity building of district staff - Raising awareness/ownership of district staff as participants of this study - Each district staff will introduce CDP in his/her district in the Review Workshop in Jan and Feb, 2008
	(PM) Visit to commune Introduction/Explanation of CDP; objectives and procedures Preparation of Commune Profile	District staff Commune leaders and staff	- Capacity building of district staff and commune leaders - Data collection and arrangement for Commune Profile
Day 2	(AM) Preparation of Commune Resource Map	District staff Commune leaders and staff	- Data collection and mapping of all the existing rural infrastructures and facilities (1:50,000 scale)
	(PM) Commune Workshop Session - Examination and comparison of present and future livelihood - Examination of livelihood problems	District staff Commune leaders and staff Village representatives Commune residents	- Equity among the participants (Listening to everybody's voices): Special attention to the voices of the socially weak/powerless: Find out who the weak are (ethnicity, village location, gender, age, resettlement, etc.): Dividing into groups (the weak, the strong, etc.): Group discussion and presentation - Core of a problem (digging deeper into a problem): Distinction between "Problem" and "Causes / Solution"; "No irrigation", "No school", "No money", "No electricity"; these are not problems, but causes, "Women can't read", "No capacity"; these are facts. It is not clear what the exact problems are. Problems should be clear, simple, specific and straightforward (No need theorizing, explanations or reading-in) - Primary focus on problems; somewhat minor focus on causes and solutions - Do not analyze too much. Treat the session as brainstorming of problems - Do not focus too much on or limit to problems on infrastructure. - Both participants and the facilitators should open up - In dealing with "capacity building", identify what kind of knowledge and skill are needed
Day 3	(AM) Workshop Session - Finding problem solutions	District staff Commune leaders and staff	- Review and further discussion on problems to find out solutions
	(PM) Preparation of Draft Commune Development Plan	Village representatives Commune residents	- Visualization/listing of "problems", "causes" and "solutions" - Prioritization of "solutions"

Outputs by local consultants (32 sets)

- 1) Commune Workshop Records
- 2) Commune Profile
- 3) Commune Resource Map
- 4) Commune Development Plan

2-A Collection of Commune Data

Commune data were collected during the Commune Workshop to create the Commune Profile and the Commune Resource Map. The Commune Profile includes not only demographic and agricultural data, but also data on health, sanitation and education so that it will show the living conditions of the people in the commune. The Profile was compiled by district staff and commune leaders with the support of local consultants (Table 8.2.4).

Table 8.2.4 Items Included in Commune Profile

	Items to be Surveyed	Contents to be Surveyed
1. Commune general		
1)	Population	Men and women, Adults, Children, Minority
2)	Location	Confirmation of the location on the maps
3)	Organization of commune	List of representatives of commune
4)	Development plan in commune	Whether available or not. If available, contents of development plans, and their possibility of realization
2. Land use plan		
1)	Present land use	Confirmed by resources map stated below
3. Life infrastructures		
1)	Access roads to village	Connection of roads, paved or not, conditions of structures
2)	Water supply	Number of wells, Availability of water supply system, Conditions of system, Water resources for water supply
3)	Village electrification	Electrified or not, source of electricity, Conditions of facilities, Water resources for hydro-power generation
4. Improvement of farming practices		
1)	Irrigation facilities	Availability of irrigation facilities, Conditions of the facilities, Water resources for irrigation
2)	Crops	Crops, Cropping intensity, Production, Problems to be solved
3)	Water users' organization (WUO)	Existence of WUA, Number of members, Activities, Leadership, Problems to be solved
5. Agricultural supporting system, and improvement of organization		
1)	Organization of inhabitants	Women's union, Organization of youth, Number of organization member, Activities, Leadership, Problems
2)	Organization of farmers	Existence of agricultural cooperative, Number of members, Activities, Leadership, Problems
3)	Agricultural support system	Availability of staff of agricultural support services, Activities, Problems
6. Farm products processing		
1)	Facilities for farm products processing	Existence of facilities for farm products processing, Conditions of facilities
2)	Market	Conditions of market, Expected market
3)	Processing technique	Level of farm products processing technique, Problems
7. Income generation other than agriculture		
1)	Local industries	Existence of local industries (cottage industry, handiwork), Present market condition, Expected market, Problems
8. Livestock (cattle, pig, chicken)		
1)	Cattle, pig, chicken	Breed, Head, Kind of feed, Method of breeding, Problems
2)	Other small livestock	Breed, Head, Kind of feed, Method of breeding, Problems
9. Forests		
1)	Conservation forest	Existence of protection forest, Problems (slash-and-burn, etc.)
2)	Community owned forest	Existence of community owned forest, Problems
10. Inland fisheries		
1)	Inland fisheries	Existence if inland fisheries, Kind of fish, Expected water resources, Problems
11. Education		
1)	School	Availability of school, Availability of secondary school, Number of teachers, Contents of course, Access to higher education, Problems
12. Health care and medical services		
1)	Clinic	Availability of clinic, Number of medical doctors, Kind of medicine, Problems
13. Gender		
1)	Education	Literacy rate, Degree of education
2)	Labor	Gender-wise labor
3)	Decision making	Initiative of men and women in decision making
14. Disaster		
1)	Disaster	Kind of disaster, Scale of disaster, Frequency of occurrence of disaster, Availability of disaster prevention facilities
15. Energy		
1)	Energy	Kind of energy, Procurement place of energy, Procurement method of energy, Problems
16. Sanitation		
1)	Lavatory	Availability of lavatory, Number of lavatory
2)	Disease	General disease
17. Tourism		
1)	Tourism	Availability of tourism resources, Intension of tourism development
18. Others		
1)	Development projects	List of past and ongoing development projects in the commune

District staff and commune leaders also compiled the Commune Resource Map. The JICA Study Team provided topographic maps of 1:50,000 scale for this activity. Through discussion with the local consultants, the district staff and the commune leaders indicated existing resources of the communes on the map. The existing resources included roads, irrigation, schools, water supply facilities, medical facilities, markets, etc. The information collected in the Commune Profile and Resource Map will be stored in the GIS in NIAPP for centralized data management and for further planning and project monitoring/evaluation. At the district level, commune data are collected and stored manually.

2-B Commune Session

District staff, commune leaders and staff, representatives of mass organization, representatives of all the villages in the commune and commune residents attended the Commune Session which was facilitated by the local consultants. The local consultants explained participatory planning methods and showed planning techniques to the district and commune leaders. As shown in Table 8.2.5, a total of 797 individuals participated in the 32 workshop sessions in the four provinces. Seventy-nine percent (79%) of the participants were men. The average number of participants per session was 25 with the maximum of 47 and the minimum of 5.

Table 8.2.5 Participants of Workshop Sessions

	Number of Sessions	Men (average per session)	Women (average per session)
Lai Chau	5	122 (24)	18 (4)
Dien Bien	7	128 (18)	40 (6)
Son La	10	173 (17)	37 (4)
Hoa Binh	10	204 (20)	75 (8)
Total (average)	32	627 (20)	170 (5)

The workshop session was carried out under four (4) themes; 1) current livelihood/living conditions, 2) future livelihood/living conditions, 3) livelihood problems and 4) problem solutions. Commune development plan was compiled as an integration of the activities under each theme. The session was designed simply as session participants and facilitators were assumed to be unaccustomed to participatory discussion and planning. It was also designed this way to have the participants come to realize their living conditions through discussion and find problems rooted in the conditions.

Commune session started with verification of the data collected on the previous day for the commune profile and resource map. Then, to examine the living conditions, the participants were divided into groups according to the geographical conditions of their villages (upland-lowland) and/or main economic activities (agricultural-commercial), so that diverse socio-economy of a commune could be captured. In each group, the participants made a list as in Table 8.2.6, by writing down current livelihood sources on cards and putting the cards on a big sheet of paper. As for the list of future livelihood sources, the new sources that had not appeared in the list of present sources were written on different colored cards (Bold letters in Table 8.2.6) so that they could be recognized easily at one glance. The new livelihood sources were considered to

reflect the development vision held by the participants as well as their development needs and potentials

Table 8.2.6 Present and Future Living Conditions (examples)

Livelihood Sources (Living Conditions)

2007			2020		
	Product /Source	Method to get product		Product /Source	Method to get product
Cash 現金 收入 源	Paddy	Grow - Sell	Cash	Paddy	Grow - Sell
	Maize	Grow - Sell		Bamboo	Grow in for farm - Sell
	Pig, Cow	Raise-Sell		Fish	Raise-Sell
	Potato	Grow - Sell		Fruits	Raise-Sell
	Hired labor	Work in and outside province		Hired labor	Work in and outside province
	Small shop	Open grocery shop		Tourism	Organize for service
In-Kind 現物 收入 源	Paddy	Grow for family use	In-Kind	Handicraft	Make – Organize to sell
	Maize	Grow for animal husbandry		Paddy	Grow for family use
	Buffalo	Raise for draft		Maize	Grow for animal husbandry
				Buffalo	Raise for draft

After thorough examination of the present and future living conditions, the participants discussed problems associated with the present living conditions, especially those that were likely to make it difficult to bring their future lives. The participants summed up the livelihood problems by using the cards as they did for the present and future living conditions. The problem cards were divided into three components; production, infrastructure and others.

The Commune Development Plan was compiled as shown in Table 8.2.7 after the participants made further examination of each problem to come up with the best solutions.

In the workshop session, the local consultants, through their facilitation, tried to prevent discussions being dominated by commune leaders and those from and near the commune centers where most development activities were concentrated. The local consultants also tried to ensure the participation of representatives of remote villages and women so that their problems and their solutions would be included in the CDP.

8.2.3 CDP Review Workshop

The two-day CDP Review Workshop was carried out in January and February 2008 in each of the four provinces. Participants included those from DPI, DARD, Ethnic Committee and district offices. In the workshop, each district personnel introduced the CDP compiled in his/her district. Thereafter, the participants discussed the significance of participatory CDP formulation and things needed to improve such formulation.

Table 8.2.7 Example of Commune Development Plan

Component	Livelihood Source	Problem	Solution
Production	Rice Corn Livestock Fish Ponds Handicraft Bamboo Fruit trees	Production Problem 1. Not enough water for agriculture 2. Irrigation canals break down easily 3. Lack of fund to buy seeds, fertilizer and agrochemical 4. Low technique on cultivation 5. Low technique on animal husbandry	Solution to production problem (order of priority) 1. Construction of irrigation 2. Concrete lining of irrigation canals 3. Provision of low-interest and long-term loan 4. Provision of training courses on agricultural technique; how to use fertilizer, agrochemical and pesticide 5. Provision of training courses on how to prevent animal diseases
Infra-structure	Electricity Safe Water Road	Infrastructure Problem 1. Only foot paths to remote villages (No road) 2. Inaccessible road during rainy season 3. Unsafe water (No facility for safe water) 4. No electricity (national grid)	Solution to infrastructure problem (according to priority) 1. Construction of roads 2. Improvement of roads 3. Construction of safe water facilities 4. Electrification
Others	Eco-tourism Biogas	Other Problem 1. No cultural houses 2. Shortage of classrooms 3. No kindergartens 4. Lack of fund and knowledge to construct biogas facilities	Solution to other problem (according to priority) 1. Construction of cultural houses 2. Construction of classrooms 3. Construction of kindergartens 4. Provision of loan and training courses for biogas

Nearly all the participants presented their firm support to participatory CDP formulation and their aspiration to extend it to the other communes because such planning formulation, according to them, was 1) based on the needs of the locality, 2) practical, and 3) democratic. For the development approaches of the province and districts, the participants showed strong inclinations toward construction of infrastructure facilities. They, on the other hand, did not show much concern for operation and maintenance of such facilities. Their ideas of the participatory approach seemed to be limited only on development planning instead of covering the whole project cycle that includes facility operation and maintenance. Considering the fact that much of the development assistance by the Japanese Government to Vietnam has been given on construction of infrastructure facilities, it is perhaps inevitable that they put a stronger emphasis on the facility construction.

8.3 Commune Development Plan (CDP)

Thirty two CDPs that were compiled in the CDP Workshop bear various similarities. The biggest one was that the problems and their solutions were concentrated on infrastructure facilities. In almost all the CDPs, roads, electricity, irrigation and rural water supply were selected as high-priority solution items.

Other similarities of the CDPs are that 1) the problems and solutions were expressed in the same manner and 2) the problem and solution items were the same. The following is the summary of livelihood problems mentioned in CDPs:

Table 8.2.8 Livelihood Problems in CDP

Common Expression	Problem Item (Facility)	Problem Item (non-facility)
Lack of Shortage of Insufficient Unsuitable Unsatisfactory Difficult Poor Degrading	<ul style="list-style-type: none"> • Irrigation • Road • Electricity • Water facility • School - Classrooms • Clinic / Health center • Cultural house • Market • Fish pond • Biogas 	<ul style="list-style-type: none"> • Hybrid seed and breed • Fertilizer • Agrochemical • Veterinary medicine • Fund • Skill/Knowledge/Technology

As can be seen from the above table, lack/shortage of irrigation, shortage of classrooms, lack of market facility, low grade of school and clinic/health center, difficult road, lack of fertilizer, lack of fund, lack of knowledge and lack of technology were pointed out as problems in nearly all the CDPs.

Similarly, the problem solutions can be summarized as follows:

Table 8.2.9 Problem Solutions in CDPs

Common Expression	Solution Item (Facility)	Solution Item (non-facility)
Construction of Provision of Improvement of Upgrading Training of	<ul style="list-style-type: none"> • Irrigation • Road • Electricity • Water facility • School - Classrooms • Clinic / Health center • Cultural house • Market • Fish pond • Biogas 	<ul style="list-style-type: none"> • Hybrid seed and breed • Fertilizer • Agrochemical • Veterinary medicine • Fund/Credit/Subsidy • Skill/Knowledge/Technology

Throughout the CDPs, problems solutions were expressed in the same manner and the solution items were carbon copies of the problem items.

What the above problems and solutions demonstrate is a very simple and straightforward association of a problem and its solution. For example, because a facility is lacking (problem), it should be constructed (solution); because people have no money to buy seeds, fertilizer, livestock, etc. (problem), a long term, low interest credit, subsidy or payment in kind should be provided (solution); because people do not have enough knowledge or skills (problem), training should be offered (solution). Strictly speaking, however, these are not sets of problems and their solutions, but of problem causes and their solutions. The set of a problem cause and its solution may well be a result of an examination of a narrow and fixed item (example: irrigation) from the front and the back (front: lack of irrigation, back: construction of irrigation).

Similarly speaking, because it is focused on a narrow item, the set of a problem cause and its solution does not identify the real nature of the problem or show the whole problem situation brought out by the problem cause. Expression like “Lack of XX” does not reveal a problem situation and contents in their entirety, especially the negative effects brought by the problem cause. Therefore, it is not clear what the problem

exactly is that people are facing in their everyday life. For this reason, CDPs made in the workshops have turned out to be rather a list of development activities/projects which resembles a shopping list. Faces of people in the communes and their life ways can be hardly seen from the CDPs.

8.4 Analysis of CDP Formulation

(1) List-Based Development

Looking at the 32 CDPs, it would not be so difficult to assume that the problem solutions such as facility construction and capacity building workshops did not originate from the problem situations or the hardships people face every day. Those solutions are probably based on an idea that “every commune should have such facilities as A, B, C, D, etc., and the facilities should have such level of quality or be in such state.” In other words, what the expressions such as lack of, shortage of, insufficient, difficult, etc. point out is the existence of idea of “what should be” and “how things are ought to be.” As the commune session participants had the same ideas and definitions of “being sufficient” and “being appropriate”, there was no need to discuss how much was sufficient enough or appropriate enough.

In the CDP formulation, “what should be” and “how things are ought to be” may well refer to the problem and solution items including road, irrigation, electricity, rural water, school, clinic, hybrid seed, agrochemical, fertilizer, fund, knowledge/technology, etc. A set of these items can be called a list of development items. Based on this list, commune session participants must have identified the lacking items, insufficient items, or items that were not on the appropriate level (grade) as problems. In the same manner, those problems were to be solved by adding the lacking items and improving insufficient items on the list. This is why the final outcome of the problem solutions was a complete list of development items.

This list of development items seem to be treated by the commune session participants as a model of development for which people should strive. The list must have given people the following images of development:

Development is

- ✓ costly (Items on the list are expensive)
- ✓ provision of material things (People wait and receive)
- ✓ construction of facilities (mostly infrastructure)
- ✓ training and workshops
- ✓ relying on outsiders who are rich (Local people cannot complete the list)

Development planning based on such a list can be considered as that of non-participatory development which perhaps was carried out in a top-down manner in Vietnam until recently. The above image of development is, thus, the opposite of the image in participatory development. The commune sessions were held to formulate a CDP in participatory manner with the use of participatory tools. In spite of such emphasis on participatory approach, commune session participants seem to have formulated their CDPs with still-existing mentality and manner of the top-down style development.

(2) Inexperience with Participatory Development

Actual implementation of the commune sessions in the four (4) provinces revealed that participatory development had not been fully established in the communes. People in the communes have not fully experienced the new approach. The followings are examples of their inexperience:

- 1) Commune meeting rooms, where the sessions were held, had a podium (or a podium-like table) in front and all the people sat on the chairs, facing the podium as if they were in a classroom. Because such seating arrangement was not preferred in participatory meeting/discussion, the first activity of a session was always to move the chairs and tables so that the participants could sit in a circle, seeing one another's faces. Carrying out a meeting with such seating arrangement seemed to be rather rare in the communes.
- 2) Facilitators were often called "Teacher" by the participants. Similarly, the session was understood to be training. Many participants seem to have expected to learn new things, instead of being facilitated to formulate a development plan. Facilitation must have been a new way to carry out a meeting.
- 3) In a session, it was difficult to put up a large map and a large sheet of paper for the CDP formulation exercises because most commune meeting rooms did not have a large blackboard or big empty wall space. Large sheets of paper are commonly used in participatory workshop as a part of visualization of discussion matters. Workshop and meeting in a participatory style did not seem to take place very often.
- 4) Communication style in the session was a set of repetitive dialogues between a facilitator and a participant. There was not much discussion or arguing among the participants, and the facilitator was always in the center. Similar to the seating arrangement, this communication style was that of a teacher and a student in a classroom. This also showed that the participants were not accustomed to be facilitated.

(3) Inactive Participation by Women and Those Who Live in Remote Mountainous Areas

The facilitators tried not to have commune leaders and people from lowland villages near the commune center dominate the discussions as those with power had tendency to silence women and those from remote mountainous areas. Although the sessions were facilitated to reflect the voices of the socially weak, it fell short of bringing their active participation due to the following reasons:

- 1) The majority of the session participants had government posts in the communes and the villages. Women are much less likely to hold such posts. Although representatives of Women's Union and female residents of the communes were requested to participate in the session, the number of women in the session was still far smaller than that of men.
- 2) Communication among province, districts and communes was often not smooth. Some communes did not receive any information on the commune session, i.e. what it was and when it was going to be

held. In such instance, commune leaders came to know about the session when local consultants and district staff visited the commune a day before the session. It was almost impossible to send invitation letters to leaders of villages far away and have them attend the session on the following day.

- 3) Some sessions had a considerably large number of women and/or those from remote mountainous areas. However, because CDP formulation was based not on the problem identification through careful examination of the actual living conditions, but rather on the list of development items discussed earlier, it was extremely difficult to make the most of their participation and to reflect the problems in their particular living conditions.

8.5 Recommendations

Provincial, district and commune officers expressed positive opinions on the participatory CDP formulation in the CDP Review Workshop. They also showed their determination to expand the CDP formulation to the other communes. Despite their overwhelming acceptance, what the 32 CDP formulation activities revealed was that many people were not yet accustomed to the participatory approach. Most people had heard about participatory development, but they hardly had any experience practicing it.

Perhaps, the weakest point of the CDP formulation activity was that it had ended as collection of information on different matters within a fixed frame, and that those pieces of information had not been consolidated to logically construct the whole picture (the situation of the commune). This is not due only to inexperienced facilitation, but mostly due to images and ideas of development planning commonly held by workshop participants and facilitations. Their images and ideas seem not to include logical thinking that participatory approaches require. For example, the line of thinking in which “lack of irrigation facility” is a problem and its solution is “construction of irrigation facility” does not include analysis nor demonstrate problem causes. Problem analysis based on the whole socio-economic situation of a commune is lacking as well. Throughout the CDP workshops, development problems were touched only at the surface, only because the people were not used to the way of thinking needed to carry out participatory development.

Participatory development is often expressed as “a new paradigm” or “a paradigm shift” and identified as new worldview and attitude. Use of participatory technique in development planning does not necessarily make it or guarantee participatory planning. What makes development planning participatory is not technique, but a mindset of participation. Seen in this light, what the CDP formulation in the 32 communes suggests is that the people there do not yet have the full mindset of participation, that the old mindset of the top-down approach still lingers on.

Change of mindsets does not take place in a flash nor are they guaranteed to take place if a person listens to lectures or read books on that subject. On a practical level, the new mindset calls for independent thinking by individuals, and critical views, analysis and flexibility by facilitators. What is needed to bring the new mindset is to take enough time to have people (local government officers) experience participatory technique, and understand the significance of the approach as well as participatory development.

CDP formulation was carried out in areas where diverse ethnic groups live. Existence of stereotypes, discriminatory sentiments, sense of superiority concerning ethnic groups was obvious at times among the participants and facilitators. Considering the uniqueness of the Northwest Region, participatory workshops in communes and villages require special attention on the local languages (employment of facilitators who can speak the local language, use of local language interpreter, etc.) and to those who cannot read or write well (use of participatory tools which do not rely on reading/writing, etc.). Attention should be also given to women and minor ethnic groups who tend to remain quiet in public situations (small-group discussions, questioning to specific individuals and groups, creation of relaxed and enjoyable atmosphere, etc.) Thrusting a microphone at farmers and getting their opinions by asking the same questions do not make a meeting participatory. Participatory approach and facilitation require questions to be made, depending on a particular situation and particular individual and group, so that real intentions and opinions of those who answer would be captured. In this sense, facilitators who can handle unique characteristics of the Northwest Region are much needed.

To promote participatory development in the Northwest Region, it is not enough to teach people theories and methods in workshops. People should acquire participatory approach through taking actual part in implementation and experiencing participatory development projects/activities as this will give them new mindset/perspective on development. Capacity development workshop on participatory development is not recommended. In lieu of such workshop, a project which consists of a series of stages including planning, implementation, monitoring and evaluation is recommended to be carried out using participatory approach, so that local government officers and regular persons learn participatory technique and gain awareness on participatory development through direct and indirect involvement in the project.

Chapter 9

Problem Analysis and Development Needs

9.1 General

Constraints against the on-going regional development and development needs are analyzed on the basis of the facts on regional economy and social basic infrastructure verified through the First, the Second and the Third Field Works, which are described in Chapters 4 and 5 in this report. According to the regional economy and infrastructure development, the development constraints and needs are described in the field of 1) crop production, ii) animal husbandry, iii) inland fishery, iv) agro-industry, v) forest conservation and production, vi) handicraft industries, vii) rural roads, viii) irrigation, ix) water supply, and x) electrification. And other constraints especially of sociological impact and institutional weakness for smooth operation of poverty reduction programs in the Region. The problem tree is prepared as seen in Figure 9.1.1.

9.2 Constraints against the Regional Economy and Needs for Development

9.2.1 Agricultural Production

The agricultural sector in each respective province still has many of the outstanding problems in the current performance of development, and those constraints are categorized into four (4) aspects, namely i) natural conditions, ii) agriculture technology, iii) agriculture support service and iv) social economy. Constraints and problems described below are common for each province, unless mentioned specific name of the province. Major outstanding problems and constraints are as follows:

(1) Negative factors of agro-climatic conditions

1) Irregular precipitation

Both annual and monthly rainfalls patterns largely fluctuate from year to year and it become more difficult to control cropping schedule as well as crop maintenance. To this end, development of the irrigation facilities including reservoirs and farm ponds is essential and crucially needed.

2) Shorter sun-shine hours

Daily sun-shine hours are as short as 5 hours throughout the year except in May. When cereal crops production is increased in future, it is apprehensive about sun drying of harvested grains. Recently, the power-dryers have been installed in a part; however, fuel supply (coal and maize waste) assume serious problems.

3) Low air-temperature in winter season

The minimum air-temperature is sometime fall-down less than 15 °C in the night time during the month period of December and January. When an intensive cropping pattern is practiced, the nursery work should be commenced as ear as later December up to the middle of January.

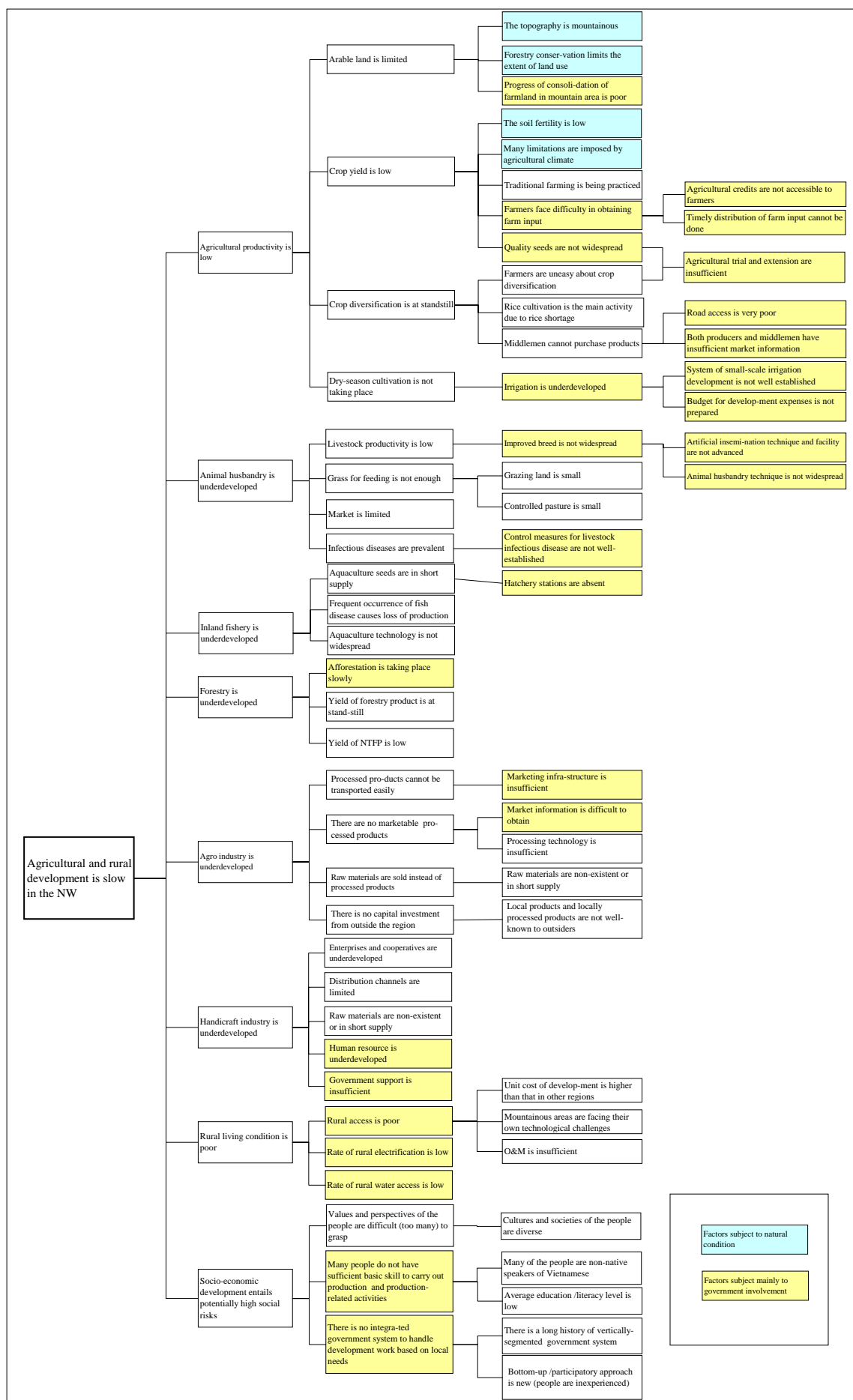


Figure 9.1.1 Problem Tree for Agricultural & Rural Development in the Northwest Region

(2) Insufficient land suitable for crop production

1) Soil erosion and degradation of land productivity

The soils in the Study Area have no structural development; and firmly compact throughout the soil layers. The soils are, however, quite friable consistence when wet; and accordingly, it has to pay particular attention to a soil erosion problem, especially in the mountain slope area. To mitigate the said erosion troubles, it is essential and crucially needed to develop “terrace fields” so as to interfere and/or mitigate velocity of surface-run-off of rain water.

2) Lack of arable land

The local farmers have fully reclaimed an arable land, and even the steep slopes with shallow gravel soil are cultivated by the farmers. No more land is there possible to use for economical crop production in the Region. Therefore, the land productivity of the arable land shall be necessary and essential to stable farming in the Region.

(3) Delay of infrastructural development and lack of appropriate farming techniques

1) Lack of irrigation facilities

The technical function of the existing irrigation facilities for stable paddy cultivation is also subject to improve in most part (water source development, headwork improvement, canal protection against seepage-losses, etc.) so as to maintain irrigation efficiency to a reasonable extent.

2) Poor basic infrastructure

Poor road network and/or system much disturb transportation of commodities and communication of the local people especially in the rainy season. And lack of efficient rural road network becomes the critical constraints for improvement of farming practices.

3) Poor technical knowledge and skills

The local farmers are not sufficiently skilled yet in cultivation of the diversified crops, and also have no appropriate knowledge on farm management. Such present situations disturb the local farmers to improve their labour productivity as well as crop production. The not-widespread of the adequate farming implement and tools are the troublesome in modernization of agriculture in this area.

4) Unconsolidated poor farm in mountain slope (Significant in Dien Bien and Son La provinces)

In the mountain slope area, it is crucially needed to pursue “farm consolidation work”, i.e. terrace field formation, farm road network, etc. so as to promote soil fertilization and land conservation against erosion hazard.

5) Continuous traditional farming practices (Significant in Son La province)

Production of such local specialties as tea and coffee is still low at subsistence level in most farms. This is due mainly to no presence of appropriate technology in the said crop plantation. The same problems are also appeared in industrial crop production. The crop diversification has been

progressed physically; but in contrast, the technical extension services are at standstill or absent in production practice of the diversified crops. To achieve the target of crop diversification program, satisfactorily and successfully, the traditional farming practices should be replaced with modern practices inclusive of such appropriate technology as crop/soil fertilization, trimming/pruning of twins, thinning of selective seedlings/young fruits, etc.

(4) Insufficient agricultural support services

1) Poor agricultural extension services

Number of the agricultural extension staff, especially technically skilled staff is too short, at present. Under the present restructuring of the administrative services, the government does not consider staff increase in the agricultural extension service sector. Accordingly, it has to create the best working system for effective extension services within the present staff. To this context, it is appreciated that the technical demonstration farm plots (TDFP) is highly applicable even to the smallest operation unit at each village; and being so effective for the peoples of ethnic minorities to learn the technology in visual ways. As for operation and management of TDFP, it is recommended to organize the beneficiary farmers and then apply “participatory approach” to the subjected TDFP operation. Then, farmers could study and acquire appropriate technology through practical operation of TDFP, successfully.

2) Lack of information to be necessary for improvement of farming technology

In the field investigation, it has confirmed that majority of farmers complains about a lack of information necessary for agricultural technology improvement as the most essential problems in the area. In fact, the agricultural offices in province and/or districts have only limited references in those libraries. The technical information from the national research institutes is also limited to small up to present. Recently, the central agricultural extension centre (CAEC) has prepared and distributed the technical pamphlets and posters. Those are set up on the wall in the provincial and agricultural offices as well as commune and village offices. However, those services are being still kept a distance and less impact to most of the farmers.

On the other hand, the government is being publicized “success story on an agricultural commercialization” using TV and the news-medias in the course of the current crop diversification and agricultural commercialization campaign. However, it is appreciated that the said publicity never brings high enough propaganda effect for clearance of the dissatisfaction of farmers on poor extension services. To achieve the subjected agricultural commercialization and crop production increase for generating the rural as well as farmers’ economy, the government should pay utmost effort for reinforcement of the agricultural extension services, including creation of the information system on marketing activities.

3) Ineffective institutional credit for small holder farmers

The government has established the institutional credit service system, and being extended the

agricultural and rural credit to the rural people. In reality, however, the said credit is still not so effective for the small-holder farmers who are most strongly wishing to use credit in the rural area. A lack of mortgage sources is one of the critical constraints on this aspect. A complicate manner for awarding the loan is also a critical problem for the less-educated rural farmers.

(5) Socio-economic Problems and Constraints

1) Population pressure to arable land

As the steep-cum-elevated mountains occupies more than 85% of the Region, and thus, an arable land is quite limited to a small extent. Such arable land has been recently reclaimed over fully. Under the said situations, a unit farming size per farm household is gradually fragmented to small through generation changes, and it has become 0.5 to 0.7 ha/ farm family on an average, recently. Since population in the Region is increasing rapidly, the land fragmentation would proceed speedier. The land holding size becomes as small as 0.3 ha/family in very near future.

2) Poor marketing function for agricultural products

As stated in the preceding Section (3) hereof, it is so poor infrastructure development in the Region. Besides, it is also poor in marketing infrastructure inclusive of the transportation means and communication system as well as storage and processing facilities. Therefore, commercialization of the crop product in the respective four provinces is being progressed only in the area that is extended along the trunk road and major feeder roads. The marketing activities in the remote area are still stagnated at a subsistence level. A poor marketing performance directly discourages farmers' will in crop production as well as farming activities.

3) Lack of harvesting-cum-post-harvesting technology

The staple food produced in the Study Area is mainly for self-consumption in the domestic area, and thus, the food crops commercialized are still small at subsistent extent. Production of the industrial crops is all sold to the market through intermediate buyers or directly to the processing factories thereafter harvesting. Up to present, therefore, farmers never appreciated needs of such marketing facilities.

Majority of farmers still practice the crop cultivation using the traditional farming tools and implements. Since then, it is notable that the field losses of crop products is as large as 10% or more, and besides, a quality of the products is also contaminated to a serious extent with mixing of foreign materials.

On the contrary, use of the crop residues and by-product is so far limited to a small extent, and majority is burn out on field uselessly, at present. A lack of the farm road is one of the physical constraints on the said aspect.

4) Lack of agricultural processing facilities

At present, there are number of small rice mill and maize flour mills having a working capacity at

500 to 750 kg/hr in each commune and/or major villages for domestic consumption. Besides, there are also medium rice mills (having a working capacity at 1 to 1.2 tons/hr) available in major part of the district for rice commercialization. For processing tea and coffee, the state as well as private factories is available near by the plantation areas. However, there is no factory even for primary processing of the industrial crops, i.e., soybeans, groundnuts and sesame. Accordingly, greater part of the productions is taken away outside the Region as the ingredient or raw materials in bulk without any adding value. This is practically a great loss of not only the useful-cum-valuable resources but also the best chance for creating employment opportunity as against the large population. The processing activities could contribute to the regional socio-economy as well as to provide stable marketing channel for producers. The by-product to be obtainable through the processing work would be highly useful resources for developing new production business, e.g., pig farming, fish farming, mushroom farming, etc., and then, generating an additional income to be helpful for the farm-household economy.

5) Weak-cum-poor farmers' organization

It is to understand that the group organization of farmers is being well progressed in the northern territory of Vietnam; and those are operated systematically in active. In fact, the farmers' organization presents almost 99% of the commune and village at least one. In contrast, however, organization of farmers' groups or co-operatives is less progressed in the Region. Inactive agricultural production that is represented by self-sufficiency oriented farming in most part of the mountain area is an essential cause on this context. According to the information obtainable in the "Farmers' Need Survey (2003), approximately 45% of the total farmers is being participated to someone co-operative activities, while most of those co-operatives is inactive due mainly to poor knowledge and/or lack of experience of the executive staff in operation and management of the co-operative works.

The co-operatives so far organized are broadly divided into four types according to the specific purposes for establishment, namely, "Production Oriented Co-operatives", "Credit Oriented Co-operatives", "Marketing Oriented Co-operatives" and "Improvement of Living Condition Oriented Co-operatives". Up to present, the Production Oriented Co-operatives share most 90% of the total organization. The Marketing Oriented Co-operatives share only 6% and others are as small as 4%.

To organize and operate the farmers' organization on the sustainable bases, it is crucially needed to train the leading staff as well as build capacity of the member farmers in operation and management of the co-operative activities through engagement in practical jobs.

9.2.2 Animal Husbandry

(1) Animal diseases

The most serious constraints against animal husbandry in the Region are the prevailing epidemic animal

diseases. Considerable numbers of animals were killed by recurrent occurrence of epidemic animal diseases in the Region. The government forces farmers to eliminate animals affected by diseases according to the government regulation. Although the government subsidizes relevant farmers to compensate partly their damages, the farmers tend to be discouraged by risky animal husbandry.

Among several diseases, foot-and-mouth is the most serious in terms of damages. It takes years to recover the damages especially in cattle raising compared to swine and chicken raising. Bird-flu is another risk for farmers. For prevention and protection of prevailing diseases, the government provides the veterinary services with vaccination. In addition, other disease control such as disinfection and elimination of contagious animals has to be thoroughly practiced. Due to weak supporting system, the prevention is not achieved to the satisfactory level.

(2) Shortage of animal feed

Neither fodder crops nor artificial feeds are used although grazing sources are limited. Most of animals are fed with natural grasses vegetated on low-lying land such as paddy fields and along the foot passes. Shortage of animal feed is one of crucial constraints in future when intensive livestock industries are introduced in the Region. The technical guidance will be required to farmers, whose knowledge on animal feeds are limited. In parallel, artificial feed production has to be encouraged. Substantial maize is in surplus is especially in Son La and Hoa Binh, where animal feed factory is located. More feed production has to be promoted.

(3) Insufficient facilities for institutional supports

Lack of facilities for artificial insemination is another constraint in the Region. It is expected to obtain the technical supports from the Moncada artificial insemination center in Ha Tay province established in 1970 and reinforced by JICA in 2000-2005, where some 1.0 million units of cattle frozen semen are produced and distributed.

(4) Shortage of experienced extension workers

In order to introduce the modern animal husbandry techniques to the Region, more extension workers and their capacity building is to be required.

(5) Lack of official marketing system

In general, animals are sold to middlemen at farm gate with low prices. It is expected that the government will take responsibilities to provide market information to farmers so as to price conditions will be improved. In addition, quality standard of animal products should also be controlled under the responsibility of the government.

9.2.3 Inland Fishery

In the fisheries sector of the Region, some factors are found which prevent the Region from development.

Those factors are divided into unfavorable natural and social incidents

(1) Unfavorable natural incidents

1) Geographical characters

Since 85% of lands of the Region are occupied by mountains with steep slopes, there happen the disasters such as land slide and fall of rocks in rainy season which interrupt the roads connection. Traffic infrastructures are damaged which subsequently stop the transportation of fishes. Especially the lack of aquaculture fish seeds caused by the interruption of the roads may largely affect the aquaculture activity.

2) Flood

Due to the steep geographical characters, concentration of rainfalls to one restricted area may cause the flood. River coasts are undermined by water flow which damage the connection of roads. The flood also destroys the paddy field and fishes are escaped from the ponds.

3) Fluctuation of rainfall

The social economy in the Region depend on the waterfall on the Annamite mountains. Annual rainfall in the dry season is not fluctuated, but that of rainy season is fluctuated. Availability of water for the aquaculture pond might not always be certain.

(2) Social Incidents

1) Lack of the knowledge in the farmers regarding aquaculture

Basic knowledge for the biology is sometimes lacking in the farmers. Since they do not know the carrying capacity, fishes are so densely cultured in their ponds. Moreover they do not know that the nitrates come from feces of fishes and chemicals come from water discharge from home, which may have bad impact to the quality of aquaculture fishes and let the fishes become fish disease.

2) Lack of knowledge in the local staffs regarding the fisheries

The staffs of the fisheries department have more knowledge regarding the fisheries than farmers, but their knowledge do not extend the level which they can educate local farmers. Also the number of fisheries staffs for promotion of aquaculture might not be enough to train the farmers. The staffs for aquaculture promotion are moving from one place to another to train the farmers since their number is limited.

3) Lack of aquaculture seeds

Provincial fisheries staffs are responsible for producing aquaculture seeds. But the amount of the seeds do not meet the demand of farmers. Under the UNDP and SIDA projects, the construction of hatchery station was subsidized, but in the most cases they are not successful in producing the seeds. So, they finally buy fish seeds from outside.

4) Frequent occurrence of fish disease

Pond aquaculture is sometimes implemented in the urban environment. Discharge of drain and sewage water, low circulation of water, high density of aquaculture fishes and low dissolved oxygen may cause fish disease. Especially for the virus disease, there is no way to prevent from fish disease. All the aquaculture fishes are totally exterminated. Farmers may not collect the invested money only to have debt.

5) Illegal fishing

Illegal fishing are found in the Hoa Binh reservoir, that is, poison fishing, electric fishing and dynamite fishing. Fishery resources are heavily damaged by illegal fishing. Fishermen are living from hand to mouth but there is no education or enlightenment for those fishermen.

6) Increasing number of fishermen

Number of fishermen are relatively increasing compared with that of farmers in the country. In the Region, farmers are shifting to become fishermen, because harvest of unit area is larger in fisheries than in agriculture.

In the capture fisheries, number of fishermen is increasing in Son La and Hoa Binh provinces. There is no evaluation for the relevant number of fishermen for the existing fisheries resources. So, there is a concern about the over fishing in future. It is already said that the catch per unit effort is decreasing recent years.

7) No plan for the construction of post harvest infrastructure

Fishes are sold as alive fishes in the fish market, because of the lack or absence of cold chain such as ice making machine, refrigerator and freezer. Lack of those infrastructures to keep the quality of unsold fishes may have big hygienic problems.

8) Absence of fish processing facility

Even the simple fish processing facility is also lacking to refrain from the waste. Unsold fishes should be abandoned in the present situation. It is suggested to implement smoke processing for unsold fishes.

9) Absence of fisheries management plan

The Ministry of Fisheries (MOFI) has not yet established comprehensive fisheries management plan in the reservoir. Fisheries resources in the reservoir might have a great capacity in future, so the fisheries management plan should be established for the sustainable use of the fisheries resources in the reservoir. Regarding the aquaculture, there has been no evaluation for the carrying capacity of aquaculture ponds. Those intensive aquaculture should be shifted to extensive aquaculture without feeding. Rice paddy aquaculture might be considered as well as pond aquaculture.

10) Invasive species

Almost all of the cultured fishes are invasive species including Tilapia, Indian carp, Catfish and Grass carp. Rainbow trout is regarded as the most good aquaculture species, but again the species

is an invasive species and appeared on the list of the worst hundred invasive animals and plants prepared by the IUCN. Except for the rainbow trout, those invasive species are reproduced in the wild which might be a large concern to the biodiversity of the areas.

The apple snail is also rapidly and widely dispersed in the areas. Water lily is also widely observed in the area which may interrupt the flow of the streams and rivers.

9.2.4 Agro-industry

(1) Lack of products- commercializing strategy

The following two questions are arisen in agro-industry in the Region.

- 1) How many crude materials is processed and produced into commercial product during the unit period ?
- 2) In the processing plant, to which stage the material will be processed and shipped ?

The relationship between a volume of production (the volume of processing) and production (processing) cost is not justified in most of agro-processing in the Region. . It is obvious that a production cost per unit product is generally reduced when production amount is increases, as illustrated Figure 9.2.1.

The relationship between level of processing progress and profit is another factor to justify target products of the relevant factory. When the production amount is the same, the highest profits is obtained when the material is processed into the final products and shipped although it takes high processing cost. In case of tea leaves processing in Lai Chau, final tea leaves products for end-consumers make higher profit than to ship half-processed leaves for other factory in which processing is completed.

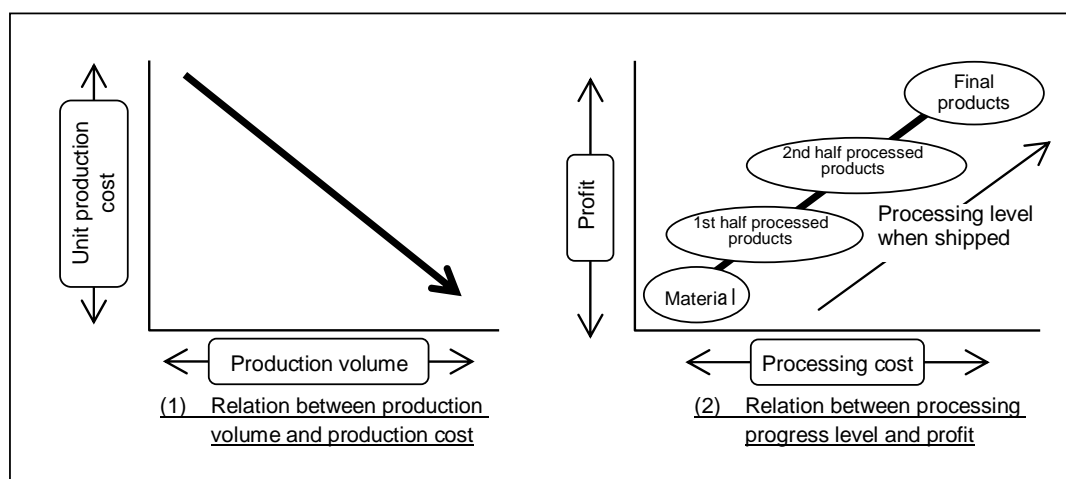


Figure 9.2.1 Relationship between Production Amount and Cost

Figure 9.2.2 shows the relationship between production volume and desirable processing progress level. When there are limited amounts of products, they should be shipped as crude materials without processing.

The coffee processing factory of Dien Bien Phu plans to introduce instant coffee production equipment and to make final products for the end consumers. However, careful financial analyses will be required to compare the quantity of raw materials and capital investment for processing equipment.

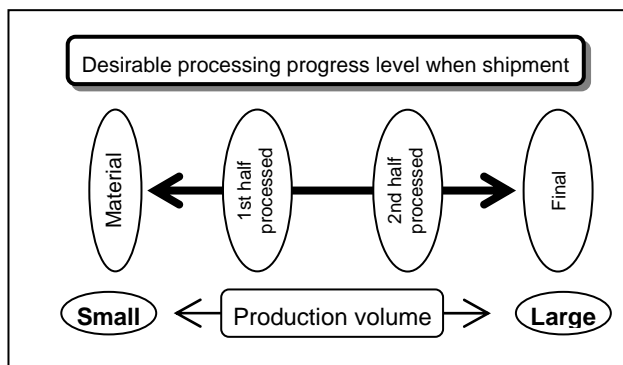


Figure 9.2.2 Relation between production volume and Desirable processing progress level

(2) Lack of Financial assistance

It is highly important to secure operation fund to continue sustainable management of a processing plant. For instance the coffee processing plant in Son La, the designed processing capacity of this plant is 3,500 to 5,000 ton per year on green coffee. However the shortage of the purchasing fund for material coffee, actual annual processing volume is only about 1,000 ton, which is 20 to 30 % of designed capacity.

In Son La province, 3,000 to 4,000 tons of green coffee is produced annually. If operation fund is available, all coffee beans produced in Son La can be purchased by the provincial plant. In such case, all coffee can be processed into near final products and sold at higher price. More profits can be expected for the province. In addition, coffee producers are encouraged and employment opportunity will be increased. Although financial problems are reported in a credit line from a domestic bank to processing plant, etc., it will be necessary to consider the financial assistance to encourage local industries.

(3) Stagnant Privatization

In order to compensate the low level of the competitive power in and outside of the country, it is indispensable that the old state firm corporation should be merged with a substantial private corporation or fully privatized in order to utilize for the maximum following information which private-sector firms have.

- 1) Technology of the collection and analyze of consumers' information of in and outside the country, such as a requirement, fashion information, and market-size information (quantitative and amount-of-money target) etc.
- 2) Technology of secure of the purchasing channel material and technology of how to secure the materials in fixed quality and in fixed quantity.
- 3) The exploitation technique and commercial production technology of a promising merchandise corresponding to the local characteristic
- 4) An industrial engineering, increase-in-quality technology and quality control engineering
- 5) Development technology, such as a finished-product design which stimulates a consumers' incentive for buying
- 6) Construction technology of marketing channels and technique of sales-network expansion

(4) Insufficient Market information

In order to sell a finished product in a market-place, it is necessary to obtain the trend of a market-place and fashion information etc., and it needs to be reflected in a product strategy.

According to experience of a field work, the internet environment is good in each provincial capital of object four (4) provinces, and there is no problem in a data collection in and outside the country. Market information in and outside of the country can be obtained instantly on making full use of these communications technology. The earliness of acquisition of market information will serve as an important point of profits acquisition.

The followings are good examples which are going to collect market information sensitively and are going to tie it to specialty-product promotion.

1) Bamboo pulp material

In the Region, the paper pulp material from bamboo is promising as a export goods to People's Republic of China where accomplishes rapid economic development now. Paper pulp is promising especially as the material of corrugated paper hardboard. Bamboo pulp is already exported to People's Republic of China, and the joint venture with People's Republic of China has also started the productive activity. Including expansion of the demand of a carton in domestic, it is a field promising from now on.

2) Introduction of Arabica coffee and cultivation expansion

Vietnam is the 2nd coffee exporting country in the world (Export weight standard). However, the coffee produced and exported is Lobster variety in which an international appraisalment is low and all are mostly dealt with low price. Export price per kilogram is the minimum mostly with the 114th place among an entire world.

The meteorological condition in the Region is said to be suitable for the Arabica variety than Lobster variety, and production increase of the Arabica variety whose marketable price is higher than Lobster variety is expectable. Based on the above mentioned market information, the coffee of the Arabica variety serves as the main agrotypes by Son La and Dien Bien province.

3) High price honey

As mentioned before, high quality and price honey is collectable from the flower of a longan around the Son La province. However since the beekeepers do not know longan honey being dealt with a heavy price in a market-place, they do not perform positive collection because of lack of information.

From now on, it is required that DARD of each province or each district obtains information and to establish the structure which can distribute the information on the high products of a market value etc. to local farmers etc.

(5) Branding

When selling a local specialty product in domestic market, development and distribution of “branded goods” has been started also in the Region.

The high-quality rice from Dien Bien province is packed in the exclusive designed bag and sold as “Dien Bien Rice”. It is put on the good place in the high-class supermarket in Hanoi etc, and sale is also a good situation.

There is another example currently sold by the tea from the Lai Chau province specifying a producing district. Local people also investigate users’ requirement and it has come to perform the device grasping a popular trend. The distributor of a private sector is accumulating many know-how of above. Probably, joint management with a private sector, or renewal of the business structure by privatization is a shortcut to sales-network expansion, as mentioned above.

(6) Strengthening of organization

From now on, it is recommended that the processing and distribution of farming produce etc. should be managed by the private sector contractor. Also it is rational to entrust traditional union of a local resident about the cultivation of the farming products, collection of the products and transportation etc.

Strengthen the organization with rural-community infrastructure building should be done based on the foundation of traditional resident organization, in order to achieve following points,

- Examination of the new products which will be cultivated,
- The spread of cultivation techniques,
- The spread of the post harvest processing technology in the farming-family level,
- Examination of improvement of collection and transportation of products in a village unit, etc.

(7) Vocational training

In order to increase the farming products processing technology of residents' and to increase the money income of them, it is proposed installing the institution which can perform vocational training and small-scale practical use operation to each village. Man-power development of the local resident who used this institution is also carried out simultaneously.

In this institution, while performing the education and training of a small-scale agricultural production processing group, it will also be carried out the actual products collection, temporally processing and shipping function if needed. Followings are the concrete contents of activity,

- 1) The village person who has traditional industrial-processing technology transfers technology to the next-generation younger age group.
- 2) Based on the idea in a colony, or the information from the outside, propose a new processing enterprise. And study and training in those technology.

- 3) Invite experts from an urban area to transfer the technology of a sanitary processing method and effective preservation technology etc.
- 4) In order to raise data-collection power, improve internet-connection environment. And collect a market trend in and outside of the country and users' taste trends in detail, and consider it as reference of shipment of the products to the market.

9.2.5 Forest Conservation and Production

(1) Delay of afforestation program

Forest coverage ratio in the Region is approximately 40%, in which the natural forests consist in 93%, and is increasing in the area year by year. Forest coverage ratio in Hoa Binh province is approximately 43% in 2005. Artificial plantation area in Hoa Binh province covers 11% in the province, however, other three provinces in the region covers only 1% of the area, and there are almost no industrial plantations in those three provinces. That is mainly because there are fewer areas suitable for industrial plantations by mean of high mountainous geographical features.

Needs for afforestation in the Region is significant. However, the performance of afforestation in the Region, including special-use forests, protection forests and production forests, has been gradually decreasing in total, i.e. 19,900 ha in 2003, 16,300ha in 2004 and 10,600ha in 2005. Especially, plantation to the production forests decrease in number, i.e. 9,749 ha in 2003, and 4,311 ha in 2005.

Almost all the planting cost depends on the budget from the Program 661 (5 million afforestation program). However, labor fees, which are subsidized by the Program 661, are relatively lower than the normal labor fees, i.e. 10,000-15,000 VND/day for the production forests, and 18,000-25,000 VND/day for protection forests. This low labor fees for the plantation activities causes the shortage of labors for plantation activities.

Forestation for protection forests has been increasing after 2004 in the Region, however, forestation for production forests should be promoted by clarifying the clear target of afforestation. Recently, the fast-growing tree species, such as *Eucalyptus* spp. and *Acacia* spp., are mainly planted for the production forests, and several kinds of species, such as pine trees, are for protection forests. In case of timbers for making furniture, they had been harvested mainly from the protection forests in the region in the past. However, the furniture manufacturers in the region, nowadays, have to import those timbers suitable for furniture from neighboring countries, i.e. Laos, because felling from the protection forests have been banned.

Although the forest area is expanding in the country, afforestation should be promoted with strategy to increase the quality and bio-diversity of forests. And it is essential to nurse and plant the tree species with high commercial value.

(2) Weak support to NTFPs

NTFPs of the Region are represented by bamboos (materials for construction and paper making and fresh/dried bamboo shoots), rattans (materials for handicrafts), reeds (materials for making brooms), tree fruits (materials for oil extraction), and lac (material for lacquer), which are sold as they are after preliminarily processed to the outside the Region. The Region can not obtain full profits of NTFPs.

Over 100 kinds of plants which are used as NTFP can be seen in the Region; however, approximately 30 kinds of plants are often used as NTFP and managed by the Sub-DOFs in the Region. For example, although many kinds of plants are used as NTFP in Son La province, the Sub DOF in Son La does not manage the production of NTFPs except for bamboos and does not supply adequate instructions on management of NTFPs to the local residence.

Technical supports on NTFPs are needed by farmers. DOF of MARD issued the NTFP Conservation and Development Strategy in the period 2006-2020 in 2006 (approved by the Decision No. 2366 QD/BNN-LN) and has been promoted the utilization of NTFPs. The NTFP Research Center, one of the institutes under FSIV of DOF, conducts technical assistance to the provinces and research and development on NTFPs. However, the center has difficulty to implement those efficient activities because of shortage of budgets. Therefore, cooperation with not only Sub-DOF in the Region but also those research centers shall be needed for further promotion of utilization of NTFPs by means of production, processing and marketing of NTFP products in accordance with the geographical features and marketing conditions in the Region.

9.2.6 Handicraft Industries

(1) Problem Analysis

Problem analysis by the local stakeholders was carried out to explore the problems from the local perspectives and to reflect on the issues emerged from the case studies as presented in 4.14. In the exercise, issues surrounding bamboo/rattan products, textile, small-scale agriculture products processing and wood works were analyzed. The results of the analysis were reflected in the development plan which is presented in the later section.

As shown in the problem trees (Figurer 9.2.3), handicraft industries in the Region faces a number of problems which are interlinked and hinder the development of the sector as a whole. In this problem analysis, “handicraft industries in northwest region do not develop.” was taken as the main problem. Five hindering factors directly affecting the sectoral development emerged: 1) Enterprises/ Organization does not develop; 2) Market is limited; 3) Human resources (handicraft makers, successors, entrepreneurs) are not developed; 4) Stable supply of the raw material cannot be maintained; 5) Government support to develop handicraft industries in the northwest region is not sufficient. These factors were analyzed in detail from the government point of view.

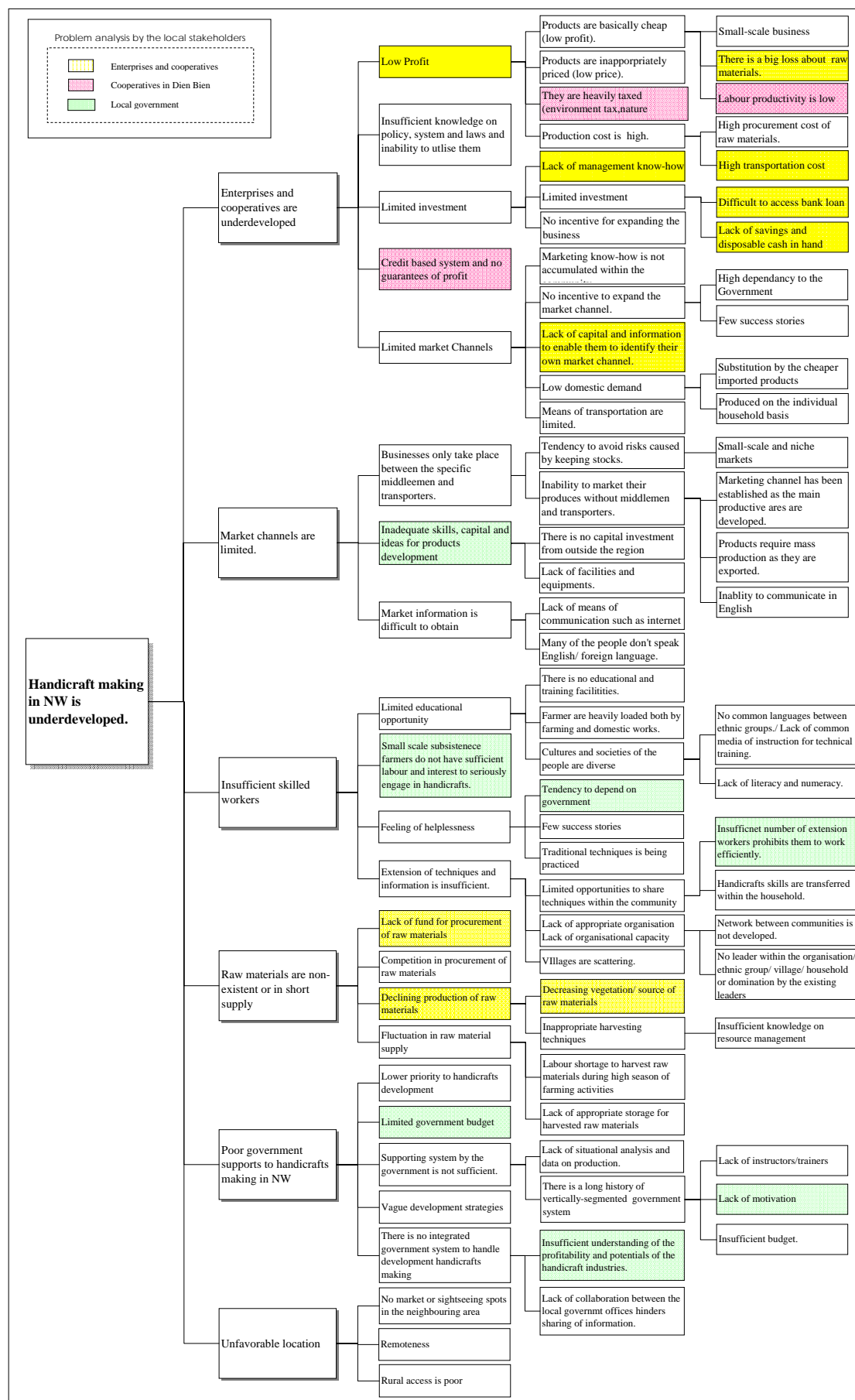


Figure 9.2.3 Factors hindering the development of handicraft industries in the Regions of Vietnam and Development Programs

(2) Main hindering factors

1) Analysis of causes and effects in underdeveloped enterprise/ organization

Cooperatives and Enterprises are expected to play a leading role in modernizing and extending production skills and creating employment opportunities through increased investment. However, these bodies have not acquired sufficient capacity to play such role. This, in other words, limits the development of the handicraft sector. The causes of limited level of organizational development are; 1) low profitability; 2) lack of investment; 3) difficulties in identifying market; 4) financial insecurity caused by the uses of credit and 5) lack of knowledge of new policy, system and laws and therefore inability to take advantage of the system.

Low profitability is mostly caused by the high cost of raw materials and tax on natural resources and environment despite such costs should be maintained minimal as the prices of handicraft are often low. As a result of high costs, management of the handicraft business often faces financial crisis.

In Vietnam, the companies and organizations which cannot access loans from the financial institutions often run business on credit basis. This increases the risks of obtaining the cash return which could also reduce the funds available for operation and production.

Difficulties in marketing derive from the decreased domestic demand due to the availability of the cheaper imported products. Lack of funds, business oriented mind set and management skills also hinder them to explore the alternative market.

Further, establishment of enterprises/ organizations aiming at effective management and production does not necessarily lead to the creation of the capital and organized labor force. It does not necessarily mean the effective way of management either.

2) Analysis of causes and effects in Limited Market

Having businesses with the same intermediaries often limits the opportunities to explore alternative markets. This is caused by the rigid marketing system in the country and the nature of handicraft market which demands a bulk of the high quality products and mostly exists in overseas. For small-scale enterprises and cooperatives in the Region producing handicraft for overseas market, it is essential to deal with the intermediaries or trading company to access market. In addition, the pre-fixed contract with the intermediaries is an effective way to secure the market, to avoid risks in keeping excessive left over products and to win the competition against the growing number of organizations producing handicrafts.

Further, newly developed handicraft products could easily be eliminated by many other products of similar nature and copied illegally. Therefore, it is nearly impossible to find a market for the products which does not clearly reflect regional uniqueness or originality. The factors hindering development and improvement of the products include 1) lack of investment from overseas; 2) lack of innovative design and skills; 3) facilities and equipments are not accessible. The potential of

marketing through fair trade system was hindered by lack of information, sustainability and foreign language skills.

3) Analysis of cause and effects in underdevelopment of human resources

Lack of handicraft makers and entrepreneurs was caused by “lack of access to technical training”, “lack of motivation”, “lack of capacity or interest in management since their struggle to survival through farming is hard enough”, and “slow transfer of technical information.”

Lack of training institutions such as universities, research institutes and vocational schools in the northwest region limits the learning opportunities of the community members who could potentially be productive handicraft makers. Further, the diverse language background also hinders the access to training opportunities. In northwest region, many ethnic groups speak their own native languages which are different from the official language. Such difference affected the level of basic skills in literacy and numeracy and their learning capacity in technical training. Although women were the main producers of handicraft, their access to training is often difficult compared to men as they are often occupied with farming, housework and childrearing and cannot negotiate their time for learning skills.

High dependency towards government resulted in lack of motivation. Lack of successful cases in the neighborhood and being satisfied with their traditional skills also undermines their motivation.

Extension of market information and handicraft skills was hindered by the lack of framework for extension caused by the lack of network and leadership in the community. Since transfer of handicraft skills only take place within the community, it is impossible to introduce innovative skills without external intervention.

4) Analysis of cause and effects in difficulties in keeping stable supply of raw materials and resources

1) Lack of funds to procure raw materials; 2) Decreasing yield of raw material; 3) competition in procurement of raw materials against larger handicraft villages and 4) unstable supply of raw material; hinder the stable supply of the raw materials.

Decreasing harvest of the raw materials is caused by the deteriorating vegetation. Lack of awareness towards natural resource management has caused excessive harvesting of the raw material.

Competition in raw material supply exists. A bulk of the raw materials is directly supplied to the larger handicraft villages. The raw materials available to the handicraft makers in the Regions are limited. Some interventions must be implemented to solve the problem.

Unstable supply of the raw materials is also caused by the seasonally fluctuating labor force available for harvesting materials and lack of appropriate storage facilities.

5) Analysis of cause and effects of Insufficient Government Support

There are five (5) directly hindering factors concerning insufficient government support indicated by

the participants: 1) Government places priority on social infrastructure development; 2) lack of capital; 3) Supporting system is not developed. 4) An approach for development has not yet been clarified; and 5) lack of access to the government supporting services.

Currently the government does not have appropriate supporting plans as they do not have sufficient data and understanding on handicraft industries and lack of administrative system and capacity to provide appropriate technical support.

Further, lack of access to supports by the handicraft makers is caused by the government does not see the potential in handicraft products and business enterprises itself. Lack of collaboration with other government organization hinders information sharing.

6) Limitations caused by geographical condition

Geographical condition is challenging in the Region: 1) There is no neighboring market and tourist spots; 2) There is a lack of transportation; and 3) the rural areas are remote and inaccessible.

(3) Limiting Factors and Stakeholder

Five root problems other than geographical limitation are grouped under 3 stakeholder groups of Cooperatives/ Organization, Handicraft makers for income generation; and local government and training institutions.

Issues for Enterprise/ Organization	:	”Enterprise/ Cooperative does not develop”, “Market is limited.”
Issues for Handicraft makers	:	”Market is limited.”, “Human resource is not developed.”
Issues for local government and training institutions	:	“Difficulties in keeping stable supply of raw materials.” “Insufficient government support to develop handicraft industries in the northwest region.”

(4) Development needs of handicraft products

1) Objectives of handicraft promotion

In order to solve the major issues pointed out in the problem analysis, the following objectives of handicraft promotion are established:

- To promote activities by small enterprises and cooperatives
- To promote diversification of handicraft products through human resource development of people in farming villages
- To strengthen the system of support to handicraft promotion

The above objectives are inter-related as handicraft promotion needs to be carried out in a comprehensive manner

2) Basic strategies of handicraft promotion

The followings are basic strategies to achieve the objectives:

i) Promotion of activities by small enterprises and cooperatives

Handicraft industry should play a major role. The management should be strengthened so that the handicraft industry can receive various support and foreign investment. For this, support to a) procurement of fund for the time being to improve small-scale management by making the business be on the right track, b) gaining of knowledge of policies, laws and taxation which are constantly changing, and c) improvement of business sense/awareness including marketing, is needed.

ii) Human resource development and product diversification

Many handicraft products in the Region are made for household use. Production system of handicrafts is, thus, weak and the basis of the handicraft industry is not solid. Major handicraft production areas near cities are developing rapidly these days, making the rural/remote areas as areas for material supply and production on contract. Handicraft production in the Region is underdeveloped, needing gradual growth with its own unique strategies different from those for other regions.

Essential strategies for the Region include “creation of local demand” which can offer marketing channels, and “effective use and management of regional resources” which secures sustainable income sources. Instead of relying heavily on export promotion and enticement of foreign enterprises to develop the handicraft production, a long-term development approach with a local point of view is needed.

As for product diversification, handicraft products a) whose materials can be obtained in the local area and b) which can be made through the application of the existing technique are to be the main products. New products should be also made which may create local demand and be consumed in everyday life. Such products include processed food (liquor/alcoholic drink, products using fruits and honey, products using vegetables from house garden, and oil made by pressing) and beauty products (skin toner, oil).

For handicraft development, human resources (both actors and entrepreneurs) need to be developed who will support the basis of the local handicraft industry. The target of the program is to be farmers who produce handicrafts. The program aims for development and quality improvement of handicraft products, raise awareness on handicraft production, and capacity development through its support to strengthen technical extension of handicraft and to establish a secondary occupation.

iii) Strengthening the system of support to handicraft promotion

Capacity development of local government agencies, that plan and implement activities for handicraft promotion, is needed in the support program. Especially, policies at the provincial and district levels are important in promoting handicrafts whose characteristics are different in each area.

Local government officers with little experience in handicraft promotion need a) capacity development program on formulation of basic plans, b) study on various systems and policies of advanced handicraft industry areas in Vietnam, and c) training to have social considerations on ethnic minorities, environment, and so on. In implementation of the support program, comprehensive support to improve the capacity of technical extension workers is effective.

In order to effectively carry out a handicraft promotion policies which are difficult to be unified, coordination with other sectors is needed. Establishment of system of cooperation among the 4 provinces in the Region with a view to develop tourism and set up regional brands is also needed.

3) Approach for promoting textile production

At first, we need to clarify objectives to be achieved through promotion of textile promotion and its beneficiaries. Especially if the textile production is to be promoted for income generation for the rural households, collaboration with the NGOs and other relevant organizations must be established. Further detailed domestic and regional market analysis must be conducted to identify the appropriate market.

Nonetheless, further in-depth investigation from sociological and ethnological perspectives to analyze the rural livelihoods must be conducted in order to answer the question “whether the handicraft makers with limited farm land could manage their livelihoods based on the textile production”.

9.3 Rural Infrastructure

9.3.1 Rural Roads

The Study 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 due to river flooding, landslide, erosion of road, 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 roads contribute positively to the economic growth of the area and help reduce poverty directly through better linkages to markets, education and health facilities and indirectly through its contribution to growth. In the study area situated in mountainous areas with high poverty rate, the improvement of road networks should be prioritized.

9.3.2 Irrigation

Common constraints for the irrigation development are summarized as stated below:

- 1) The DARDs of the four provinces give the high priority to the double cropping of paddy by means of irrigation. Paddy fields seem to be irrigated as much as possible, nonetheless a lot of rainfed paddy fields still exist. As the possibility of development of additional paddy fields is limited, highest priority should be given to irrigation of the existing fields which depend on rain. Therefore, the constraints for irrigation development are addressed to water resources of which development should be carefully examined in terms of benefits and costs.
- 2) Improvement of the traditional irrigation systems seem to be essential. For the medium and small scale irrigation systems, irrigation water is not efficiently controlled and utilized, because most of the systems have not been equipped with water control facilities (gates) and are of earth canals including the improved ones. In this regard, development level of the systems should be examined carefully in terms of benefits and costs.
- 3) In order to practice double cropping of paddy, it is preferable to create reservoirs by constructing dams, rather than direct intake of water from the mountain streams. However, in view of topographic conditions, appropriate sites for dams seem to be limited due to steep slope of the streams.
- 4) Discharge measurements for most of the mountain streams have not been conducted, and hence accurate discharges of the streams are unknown. As a result, there are big differences between the designed irrigation areas and actual ones.
- 5) Access to the proposed irrigation development sites is poor due to shortage of roads such as national, provincial and rural roads. Therefore, it is difficult to carry out detailed investigation, design and construction, and hence efficient development for irrigation is difficult.

9.3.3 Rural Water Supply

Common constraints for the rural water supply development are summarized as stated below:

- 1) Appropriate site for the intake of the river water for rural water supply is that there are no inhabitants in the upstream river basin. In other words, the basin where there are villages, paddy fields and upland crops lands is not suitable in taking rural water due to pollution of the river water.
- 2) In order to secure stable clean water from streams throughout the year, it is preferable that the basin is as large as possible and natural forests still remain. However, plenty of forests have already been burned for the slash-and-burn farming by local farmers, especially in Lai Chau Province. In this regard, it is difficult to locate appropriate sites for taking clean water. It should be also noted that in other provinces including Dien Bien, Son La and Hoa Binh, though some primeval forests still remain, proper sites for taking water is also limited due to pollution of river water.
- 3) Discharge measurements for most of the mountain streams have not been conducted, and hence accurate runoff of the streams is unknown. In this context, it is too risky to establishing rural water

9.4 Sociological and Institutional Constraints

9.4.1 Key Issues of Poverty Reduction for Ethnic Minorities in Vietnam

The ADB clarified the key issues of poverty reduction for ethnic minorities in their report titled “Indigenous Peoples / Ethnic Minorities and Poverty Reduction in Vietnam (2002).”

- 1) There exists the notion that different ethnic groups have a lower or higher civilization, a concept based on evolutionary theory
- 2) Most government programs and projects use a top-down approach and do not fully address the needs of local ethnic minority committee
- 3) The top-down approach does not give ethnic minority communities a sense of ownership of the project and at the same time creates dependency on the project
- 4) There does not seem to be any coordination between the programs and projects implemented in ethnic minority areas
- 5) The Vietnamese language has been used as the communication tool for program and project purposes
- 6) Most development programs and projects do not focus on cultural aspects of ethnic minority life
- 7) Most programs and projects focus on construction of buildings, roads, etc., while paying little attention to activities for capacity building, human resource development and legal framework development
- 8) Some ethnic groups with no special needs might become beneficiaries of development projects
- 9) In some cases, the wealthy benefit more from development projects than do the poor
- 10) In many mountainous provinces, the development of infrastructure and the maintenance of food security remain unbalanced
- 11) Many projects face difficulty in fund disbursement.
- 12) Encouragement of plantations and cash crops can seriously conflict with food security for ethnic minorities
- 13) Marketing of agricultural produce from ethnic minority communities appears to be facing serious difficulties
- 14) Development workers face a dilemma of wanting successful projects and having these projects reach the poorest of the poor

9.4.2 Diversity and Difficulty in Commune Selection

It is difficult to capture people or places in the study area as one because the area is characterized by diversity and complexity. Examples of such diversity are as follows:

- Hoa Binh is different from the other 3 provinces in terms of ethnic compositions, history, and topography. Compared with other provinces, Hoa Binh has very high population density, also.
- A large gap between urban and rural areas (population density, ethnic compositions, poverty rate, level of development, etc.) can be found in every province.
- Within a province or a district, level of development (= people’s living conditions) of each district or

each commune varies widely (Table 9.4.1)

- On average, a commune is made up of more than 10 villages with various ethnic groups and income strata. Even in a commune, people in villages on lowland and near river streams are economically better off while those in mountain villages are poor
- Although most villages are composed of single ethnic groups, villages with multiple ethnic groups seem to be on the rise, especially resettled villages.

Program 135-1 selected its target communes by using numerical values on socio-economic criteria such as poverty rate, access rate for irrigation, domestic water, and electricity, number of primary school classrooms, etc. Such numerical values representing a commune are considered to be the average values of all the villages within the commune. If a commune has a large number of better-off villages, the average values become higher, hiding the real development needs of the poor villages and households in the commune. This commune may likely to lose a chance to become a Program 135 target commune. In the Program 135 target communes, on the other hand, more development activities may well take place in lowland villages, where many better-off ethnic groups such as the Kinh, the Thai and the Muong live, because irrigation, rural water, school and health facilities are more easily constructed there.

Table 9.4.1 Example of Diversity in Commune

Ethnic Groups	Nua Ngam Commune Dien Bien Province (21 villages)			
	Population	Households	Person/HH	Proportion (%)
Thai	2057	379	5.43	37.9
Kha Mu	864	164	5.27	16.0
Lao	829	155	5.35	15.3
Hmong	788	108	7.30	14.6
Kinh	725	194	3.74	13.4
Other	152			2.8
Total	5,415	1,000	5.42	100.0

Program 135 target communes were selected mostly from mountainous areas (Zone III). An officer from DARD commented, “Program 135 communes are surely poor, and they are lucky to receive so much development assistance. Poor villages in lowland do not receive such volumes of development assistance. In this sense, it is those non- Program 135 communes which suffer a great deal from poverty.” Based on the same grounds, some NGOs carry out their activities in very difficult communes in non-mountainous areas (Zone II). Diversity and commune selection are thus likely to require special consideration in making a development plan.

9.4.3 Lack of Socio-Economic Indicators (Numerical Values that Represent Conditions)

It is extremely difficult to pick out from Vietnam’s official statistical data books numerical values that indicate the difficult living conditions, quality of life and development needs. Those data books mostly reveal the number of buildings, persons and facilities. Such numbers may display concrete and objective results of development activities, but the faces of people (in terms of their living conditions and quality of their lives) who benefited from development activities cannot be seen.

Most statistics on education include the number of educational facilities according to the kind of building structure (permanent, temporary, etc.), and the numbers of schools, teachers, and pupils. From these numbers, one can only understand how many new buildings were constructed or how many more students went to school. Those statistics do not show essential quality of education or its difficult situations such as how many schools, classrooms, and teachers are lacking, how many percents of school-age children are actually attending school regularly or graduating from there, what the average time and distance of walking from home to school are, what the means of transportation to go to school are, what the ratio of a teacher to students are, etc. Similarly, indicators of quality and difficult situations of health and medical care cannot be found. In terms of electricity, despite the existence of rate of electrification, percentage of households that actually use electricity in electrified areas¹ was hard to find also.

From the above, one can conclude that much emphasis is put on the number of buildings, facilities and people as well as coverage/availability rates of electricity, water, etc. One can also say that indicators of actual socio-economic situations (both baseline and result/effect values) hardly exist and that development activities cannot be evaluated or monitored properly². In other words, how much improvement a certain development activity made in people's lives, or how satisfied people became cannot be verified.

9.4.4 Division/Sectionalism of Development Work

In the 4 Provinces, many government offices including the DARD were visited for interviews and to collect statistical and other information. As for the general socio-economic information, information on household and poverty rate was obtained from DOLISA, information on ethnic minorities and Program 135 from CEMA, educational information from Department of Education and Training (DOET), health information from DOH. To know more about socio-economic situation of each province, it is also necessary to visit other offices such as PPI, Department of Culture and Information, Women's Union, etc. While in some provinces, it was rather easy to visit other offices with assistance from DARD, one province required official letters being sent from Hanoi, namely NIAPP and MARD to its PPC.

The same information obtained from the central and provincial governments varied widely. For example, the number of population, households and districts were not always the same, which is due perhaps to insufficient information sharing among different government offices. Furthermore, although all the offices/departments carry out poverty reduction projects and activities based on the central government's socio-economic development strategies and plans, some offices did not have a list of poverty rates for their areas. Their explanation was that the list could be obtained from DOLISA. This means that some offices carry out poverty reduction projects/activities without much regard for or knowledge of the poverty

¹ Some households are too poor to pay to have electric line connected to their houses.

² One of the weaknesses of P.135-1 was lack of proper monitoring and evaluation. In P.135-2, much emphasis is put on monitoring and evaluation. The P.135-2 sets up indicators to reveal quantitative and qualitative aspects of people's lives and conducts household survey and commune survey to obtain baseline values. Reliability of their methodology, in which the level of people's satisfaction with infrastructure construction, agricultural extension, education, health care, life, etc. is obtained by multiple choice questions (very satisfied, satisfied, not satisfied, etc.), is rather questionable. However, their efforts to improve the system of monitoring and evaluation are highly commended.

rates. Perhaps those offices are too focused and busy on specific activities of their own, and do not have time or energy to look at what the other offices are doing for poverty reduction or to know their province's poverty reduction program as a whole.

CEMA (the ex-CEMMA) is in charge of comprehensive management of poverty reduction schemes. In Program 135-1, one of their weaknesses, according to their report, was their insufficient control and management of the program. As a result, their management role is much emphasized in Program 135-2 and the program seeks more participation from the line ministries and concerned offices. Through such participation there are to be better coordination among the participating offices and improved relationship between the central and local governments including provinces, districts, communes and villages. Program 135-2 also tries to share more information among the concerned offices, and to make use of such information in program monitoring and feedback. In Vietnam, top-down approach and bureaucratic sectionalism have a long history, and CEMA may not have enough experience or management capacity of a large nation-wide development schemes. While CEMA's plans are improved and elaborated, a big challenge lies in actual implementation of the plans and achievement of their objectives.

9.5 Development Needs

9.5.1 Development of Regional Economy

The Northwestern Region is sparsely populated border areas occupying 11% of the national land where only 3% of national population live. Over 80% of the land is mountainous and 40% is covered with forests. Most of the people in the Region is ethnic minorities under poverty line. To promote the regional economic development, poverty reduction of the local people is the utmost important issue. On the other hand, it is also important to discuss future prospects of the regional economy taking into consideration the border trade with China and Laos. It is expected that the Region will geographically function to provide the corridor to both countries. Moreover, the border trade will encourage the economic activities including agricultural production and local industry. Therefore, the Study is envisaged to prepare the master plan not only for improvement of rural living conditions but also the development of the regional economy as a whole.

Vietnam achieved the notable development especially in industrial and service sectors, which generated 42% and 37% of GDP in 2005, respectively. In contrast, the Region is still highly dependent on the agricultural sector, of which share in GRDP is as high as 42%. Industrialization is to be prioritized toward year 2020 in the Region. Under such current economic structure, the development priority will be attached to the development of agro-based industrialization.

9.5.2 Improvement of Income of Regional People

Local people are to primary beneficiaries of the regional economic growth. Some 84% of the local population depends on agriculture. Including agro-industries and related economic activities, more people make their livelihood based on agriculture.

The per capita GDP of Vietnam was US\$634, while one of the Region is only US\$259 or 40% of the national average. The development efforts should be directed to improvement of the socio-economic status of local people through a diversity of development measures, namely intensification and diversification of crop production, modernization of animal husbandry and inland fishery, research and technical improvement of forestry production, etc. by obtaining the government supports. Market promotion is also important to ensure cash income of local people.

Apart from major economic activities, diversification and improvement of livelihood of vulnerable people is another issue. Promotion of cottage industry and handicraft making is required especially for people who are not accessible to land and water resources.

9.5.3 Improvement of Rural Living Conditions

Infrastructure ensures the basic need for rural people. They include roads, irrigation, water supply, electrification, dispensary, schools, markets, etc. To enhance their sustainability, the infrastructure development has to be rationalized from both viewpoints of hardware (physical specification and quality of facilities) and software (operation and maintenance system). It is highly important to optimize design standard and operation rules. In addition, the project benefit monitoring and evaluation (PBME) is also essential to know constraints concerning infrastructure use and further needs for development.

The Master Plan will attach priority more to small-scale infrastructure. However, medium- and large-scale infrastructure will also be studied. Especially for on-going transportation improvement project in and around the Region will be fully taken into consideration when the rural accessibility improvement is planned.

9.5.4 Resource Management for Sustainable Development

In terms of resource management, particular attention should be paid to forest conservation. Implementation of the scheduled afforestation has to be ensured under Program 661, namely 5 million hectares afforestation program, in order to utilize forest resources more for poverty reduction and economic development taking local specific conditions of the Region into consideration. To enhance survey efficiency, use of satellite imageries and GIS is promising.

The disaster prevention is one of the crucial issues in the Region taking the frequent occurrence of land slide, floods and strong storms into consideration. The measures including resettlement in the disaster-prone areas have to be urgently implemented. In this regard, FASC is requested to set up the disaster prevention programs.

9.5.5 Capacity Building of Local Government

The government supports are essential for improvement of productivity and profitability in agricultural activities. A wide range of services are included, namely research, extension, seed and farm inputs supply, farm credits, etc. Performance of these services will be highly governed by capacity of local government.

The capacity building programs will be needed for local government.

In line with decentralization policy, capability of local government for formulation of development plan including budgetary arrangement is keen. In this regard, the Study will make in-depth analysis of lesson-learned accumulated through JICA's intervention for technical assistance of formulation of SEDP to DPI of Hoa Binh province.

9.5.6 Capacity development of local administration

Promotion for expansion and diversification of crop production cannot be carried out only by farmers themselves. Such promotion requires agricultural support services by the local government. These support services include agricultural experiments and studies, training and extension of agricultural technique, production and distribution of quality seeds, distribution of fertilizer and agrochemical, agricultural financing, etc. These services cannot be strengthened or improved in a short time because of limited human resource and budget of the local governments. The M/P proposes realistic measures based on the administrative capacity of MARD and the 4 provinces.

Chapter 10

Master Plan

10.1 General

The Region is richly endowed with natural and human resources as mentioned in Chapter 3 on Regional Vision. On the other hand, the Region faces several constraints against future development as stipulated in Chapter 9. The Master Plan is formulated so as to meet the development needs from both points of view; (Figure 10.1.1)

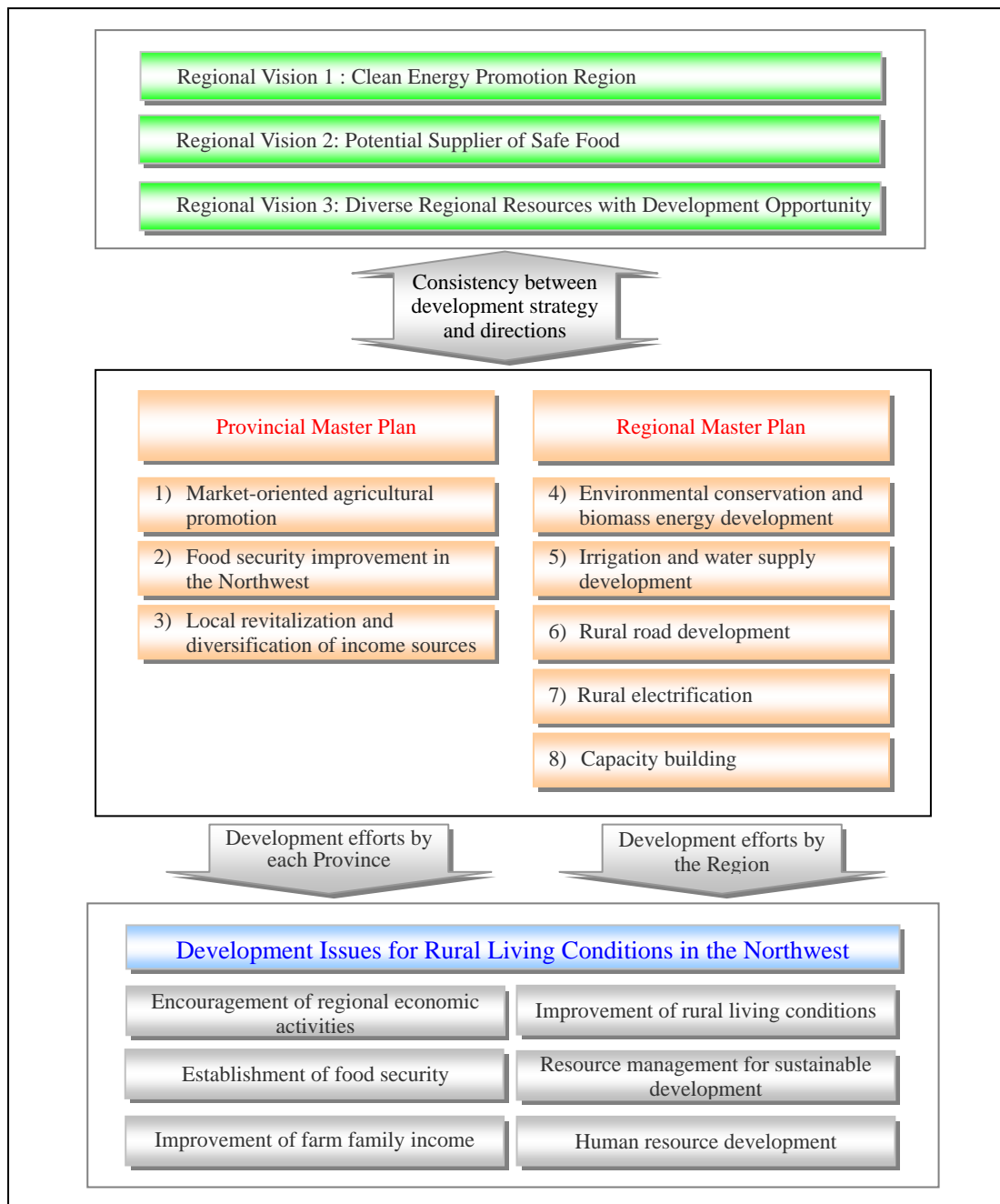


Figure 10.1.1 Regional and Provincial Master Plans

For sustainable development of the Region, each of the four Provinces needs to have its own development measures based on its local conditions. At the same time, the four Provinces need to unite and embark on the common development issues. The above-mentioned eight issues of the Master Plan from 1) to 3) are to be handled by each Province according to its priority for the Province. On the other hand, the issues from 4) to 8) will be dealt with by joint efforts of the Region as a whole. Each of the eight issues that make up the Master Plan consists of 19 programs. Each of 19 programs is summarized below ; (Figure 10.1.2)

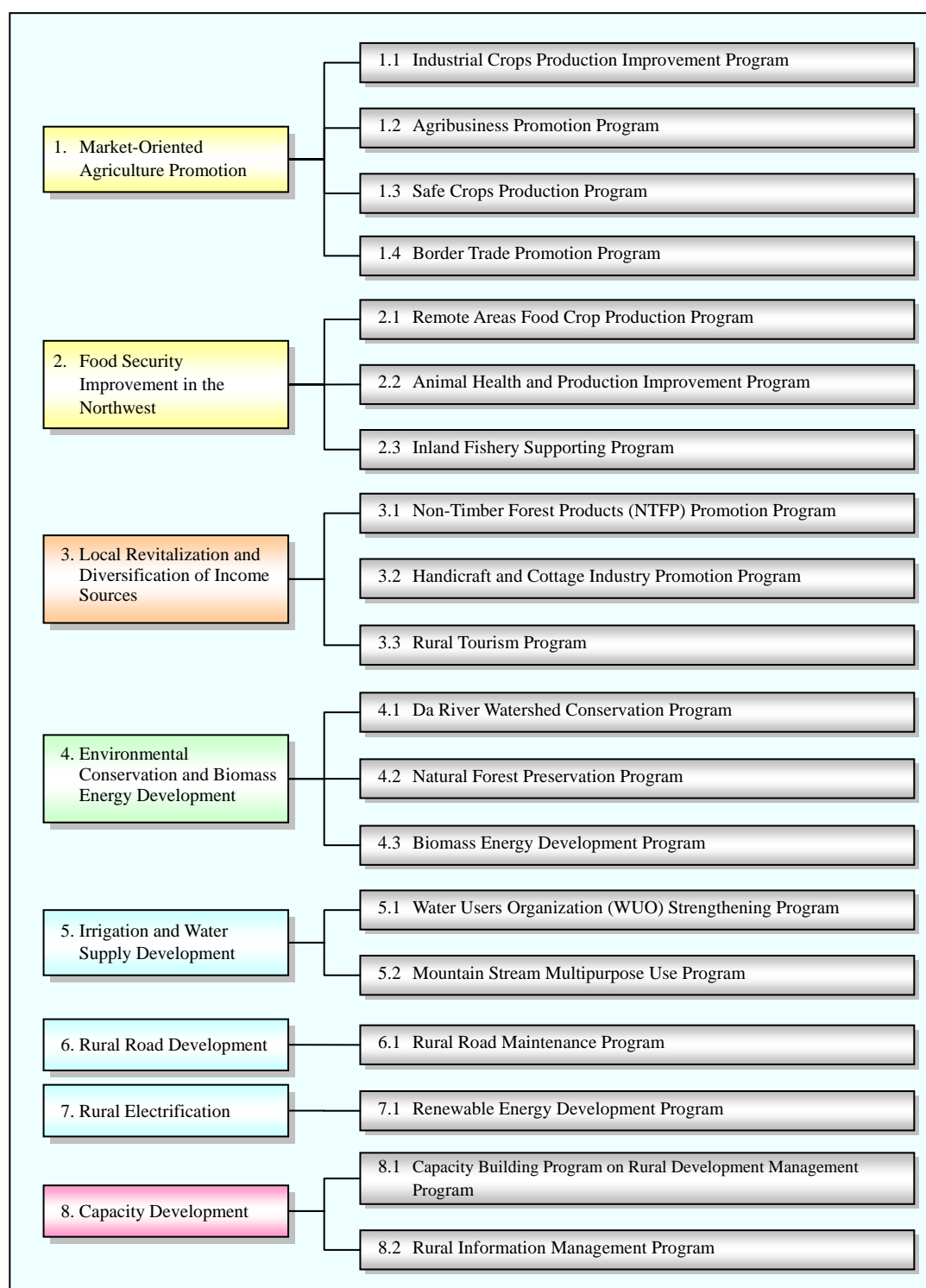


Figure 10.1.2 Compositions of the Master Plan

10.2 Market-Oriented Agricultural Promotion

10.2.1 Industrial Crop Production Improvement Program

(1) Background

Vietnam is one of the largest tea export countries. According to the latest data by FAO, Vietnam produced 1,423,000 tons of tea leaves in 2006, and exported 51,100 tons in 2005, both of which rank the world's 7th place. Sixty percent (60%) of the Vietnam's tea is exported to India, Iraq, Taiwan and Pakistan, while Japan has been increased import of Vietnamese tea in recent years. As the demand for green tea is rapidly increasing in the international market, tea industry in Vietnam is receiving greater attention and expectations.

Coffee is another leading industrial crop in Vietnam. In 2006, Vietnam produced 853,500 tons of coffee, ranking the world's second place after Brazil. Coffee plays a major role in Vietnam's export together with rice, cashew nuts, natural rubber, pepper, corns, etc,

Sugarcanes, cottons, pepper and corns are produced and commercialized in the Region. Apart from these industrial crops, tea and coffee are extremely important crops in the central position of the regional agriculture. They are likely to be the key player in the industrialization of the Region toward 2020. This program focuses on tea and coffee for improvement of their productivity. Although their marketing channels in the Region are stable, quality improvement of the products is a key issue to increase the economic value of their industry.

First of all, establishment of a value chain among producers, distributors and processors is essential in order to improve qualities of tea and coffee. With close partnership with the enterprise and private companies who purchase either tea leaves or raw coffee beans, this program will provide appropriate farming techniques to farmers through the pilot project. Through the program, several aspects such as ways to purchase raw materials, quality standard of the raw material, market price according to the quality, farming technology by farmers, etc. will be verified. Lesson learnt to be accumulated will contribute to establishment of both further research and extension strategies for DARD.

Issues and prospects of tea production

Vietnam has some 20 tea producing zones, and 80% of the tea producing zones is concentrated in the north mountainous regions of Vietnam, of which Tan Cuong District in Thanh Nguyen Province, Thanh Ba District in Phu Tho Province, and Moc Chau District in Son La Province are representative. Most of tea produced in these regions is of Assam type (var. *Assamica*) which is divided into two groups based on the size of leaves. Large leaf type is called Shan, while smaller one is called Trungdu. Shan is also called "Shan Tuyen" which means snowy mountains, and is planted in the Region by ethnic minority such as Hmong and Dao. Trungdu is planted mostly by Kinh on lowland, but its production area has been decreasing due to Trungdu's high incidence of hereditary mutation, unevenness of the harvest, and low productivity. In recent years, farmers are adopting new variety by the grafting method resulting in decreased area of

Trungdu.

Tea varieties and cultivation methods are less controlled. Tea plantation owned by the enterprises tends to be larger in size in which tea trees are planted neatly in rows, while tea field owned by private firms tends to be smaller where Shan is cultivated by ethnic minorities.

According to the agricultural statistics of 2006, the tea production in the Region amounted to 24,847 ton (8,469 ha) consist of 20,553 ton (4,144 ha) in Son La Province, 4,176 ton (4,126 ha) in Lai Chau Province, and 138 ton (199 ha) in Dien Bien Province. Although the production record for Hoa Bin Province is not available, some 4,000ha is planted with tea according to the information from DARD.

In Son La Province, the Shan variety is cultivated in highland in and around Moc Chau District between 700 and 1,000 m a.s.l. Shan tea, considered to be high-quality tea in Vietnam, is exported to Europe and Pakistan. In Lai Chau Province, tea is planted in mountainous areas over 800 m a.s.l in and around Tam Duong District. Shan tea is planted over 1,000 ha and processed at many tea factories located near the plantations for domestic consumption.

In addition to the traditional fermentation process, green tea processing is also common in the Region. Green tea is processed by roasting. Moc Chau Tea as local brand is gaining popularity and expected to increase its market share. Here, improvement of both quality and production are likely to be the big challenges for increase of profitability.

Lately there has been a serious shortage of tea leaves in the Region due to bulk buying. Farmers are forced to engage in improper harvesting (early picking: picking of young leaves). Knife-cutting became common. This practice tends to induce cutting not only leaves but also branches. As a result, harvested amounts of tea leaves are temporarily increased, but it induces negative impacts on a long-term basis such as degradation of tea quality, damaging of tree crowns, etc. For tea cultivation, MARD attaches higher priority to quality improvement and maintenance. Promotion of organic and chemical-free tea leaves is also encouraged with a national target of 89,000 ha by 2010.

Issues and prospects of coffee production

Coffee production in Vietnam can give a large impact to the international market in terms of its amount and price. As the Vietnam's coffee production may result in over supply or sudden collapse of coffee price, other countries are deeply concerned with its excess production that has no regulations. Large fluctuation of the international market price of coffee adversely influences coffee farmers in Vietnam including ethnic minorities in the Region. MARD has been giving instruction to farmers not to expand its planted areas but improve quality through replant with Arabica. Since coffee plantation is rapidly expanded, MARD controls the national total of coffee plantation at 500,000 ha. It is also advised to replace with rubber where coffee production is not suitable.

In the central highlands, technical standards are under preparation for cultivation, harvesting and processing to improve coffee quality. Organic farming by use of coffee hulls is practiced so that experiences in the

central highlands will be applied in the Region. Introduction of GAP is under consideration. Coffee produced in the Region will penetrate more into both domestic and international markets with local brand name in future. Marketing support including package improvement and development of marketing outlets will be effective.

(2) Program Objectives

This program aims to increase family income of tea and coffee farmers firstly by quality improvement and secondly by yield increase. In the Region, farm gate prices of tea and coffee are set based on the quality. Farm gate prices in the Region as of June 2008 are presented in Figure 10.2.1.

Table 10.2.1 Farm Gate Price of Tea and Coffee (2008)

Product	Province	Quality Standard	Price (VND/kg)
Tea	Lai Chau	Tea leaves immediately after harvesting	3,300 - 3,500
	Dien Bien	Tea leaves immediately after harvesting	5,000
	Son La	Tea leaves immediately after harvesting	3,000 - 5,000
		Tea leaves after manufacturing	45,000
	Hoa Binh	Tea leaves immediately after harvesting	2,300 -3,400
Coffee	Dien Bien	Dried beans; Good quality	40,000
		Dried beans; Medium quality	35,000
		Dried beans; Poor quality	30,000
	Son La	Raw beans	5,000
		Dried beans	45,000

Source: Provincial DARDs (June 2008) Data collected by NIAPP

The quality standard by MARD classifies tea leaves into five grades on the basis of contents of old leaves rather than three young leaves (shoots). The records of tea purchase by the SH Tea Farm, i.e. one of the tea factories in Hoa Binh, are summarized in Table 10.2.2.

Table 10.2.2 MARD Quality Standard and Purchase Record of Tea Leaves (2008)

Grade	A	B	C	D	E
Contents of Old Leaves	<10%	10%≤ <20%	20%≤ <30%	30%≤ <40%	40%≤
Producer Prices (VND/kg)	3,400	2,900	2,600	2,300	-
Proportion of Graded Leaves	50%		40%	10%	0%

This program promotes quality improvement of tea leaves and coffee beans through supporting producers. The program targets are set to improve the farming techniques to harvest over 70% of raw products with Grades A and B.

(3) Program Content

This program targets all the tea and/or coffee producers in the Region. The program will be carried out through two (2) phases. The pilot program is implemented in Phase I, whereas extension of appropriate farming practices are carried out in Phase II by employing experience and lessons learnt accumulated in Phase I. The pilot program is to be implemented at commune level. A program site is to be between 30

ha and 50 ha, and each Province is to have 2 sites. The planted areas of the pilot program are to be 11,000 ha for tea and 3,200 ha for coffee to cover 5% of the whole cultivation areas of both crops.

Phase I: Pilot Program

1) Designing of Pilot Program

- 1-1 Base line survey of tea and coffee producers in the Region
- 1-2 Survey on tea leaves and raw coffee purchase: Distribution and marketing to the domestic and international markets
- 1-3 Establishment of quality standard of raw materials, and quality/price: Clarification of farmers' production technique and development constraints
- 1-4 Selection of pilot program sites and designing of implementation methods
- 1-5 Trial production of guidance and extension materials (easy to understand and with consideration for ethnic minority languages)

2) Implementation of Pilot Program

- 2-1 Baseline survey on farming households; especially farm gate prices of tea and coffee
- 2-2 Survey on tea and coffee quality and establishment of objectives for quality improvement
- 2-3 Examination and establishment of standard farming practice: Adoption of good variety and provision of healthy seedlings: Teaching and extension of planting methods
- 2-4 Establishment of demonstration sites: Training of extension workers and key farmers at the demonstration site
- 2-5 Extension of appropriate farming equipment (pruning scissors, knapsack sprayer, etc.)
- 2-6 Review of profit improvement measures of the state companies and production farmers: Strengthening of producers' unions: Support to institutional banking/finance
- 2-7 Improvement of primary processing facilities and establishment of facilities for commercial processing
- 2-8 Selection of production centers, quality improvement (unification of varieties), streamlining of procurement of raw materials
- 2-9 Development of market channels, public campaign to promote the Region brand
- 2-10 Monitoring of the above (market channels and public campaigns)

3) Capacity Building of Program Staff

- 3-1 Training of provincial-level agricultural extension workers with research institute
- 3-2 Training of district and commune level agricultural extension workers
- 3-3 Improvement and strengthening of training courses for NGO and leading farmers

Phase II: Guidance and Extension of Appropriate Farming Practice

4) Preparation of Guidance and Extension Program

- 4-1 Setting up provincial annual plans and compilation of guidelines
- 4-2 Making extension materials for ethnic minorities
- 4-3 Formulation of monitoring plan

5) Implementation of Guidance and Extension

5-1 Implementation based on experience and learning from the pilot program (above 2-1 to 9)

5-2 Monitoring

(4) Implementation System

The program will be carried out under the direct control of DARD in association with agricultural extension centers. The technical advices will also be provided by Department of Production in MARD. For cultivation technique, cooperation with the Northern Mountainous Agriculture and Forestry Science Institute (NMAFI) is to be sought. This institute was established in 2006 by unifying several agricultural research institutes including Vietnam Tea Institute. Vietnam Tea Institute aimed to a) conduct basic research and experiment on tea cultivation, b) develop capacity of those who play a major role in the domestic tea industry, and transfer techniques, and c) conduct research on appropriate tea varieties for the northern mountainous regions.

10.2.2 Agribusiness Promotion Program

(1) Background

The agricultural sector of the Region can become more competitive and sustainable with close linkage with other industries such as agribusiness especially for agro-industry. Industrialization of the Region toward 2020 depends much on development of the agro-industry. The products in the Region are represented by tea, coffee, sugar, etc., but other products including processed food, alcoholic beverages, starchy flour, noodles, dairy products, etc. are also promising. It is also envisaged to develop new products in parallel to crop diversification.

This program aims to a) find local products with potential for commercialization, b) promote development of processed goods, c) transmit information to attract private companies to the Region, and d) develop/train local entrepreneurs. The main beneficiaries of this program are producers, entrepreneurs, cooperatives, etc. This program tries to a) create employment opportunities, b) increase farm income and c) support to contract farming.

Promotion of agribusiness relays highly on investment from outside the Region. Investors outside the Region will be motivated and encouraged by the clear commitment by the government in several forms, e.g. favorable taxation, etc. Improvement of institutional banking service is also crucial. In this program, with board sense, the agribusiness sub-sector is defined as local industry and business which satisfies the following conditions;

1) Business to receive investment from outside:

- high profitability
- competitive edge held by the Region,
- improvement of images of enterprise business through its environmental and social considerations.

- 2) Business with large-scale management
- 3) Business that needs advanced technologies

The regional economy will be more encouraged by introduction of new agribusiness with high investment incentives. Foreign investors are interested not only in profitability from the business but also in contribution to supports for undeveloped areas such as the Region as social responsibility. The concept of agribusiness is illustrated in Figure 10.2.1.

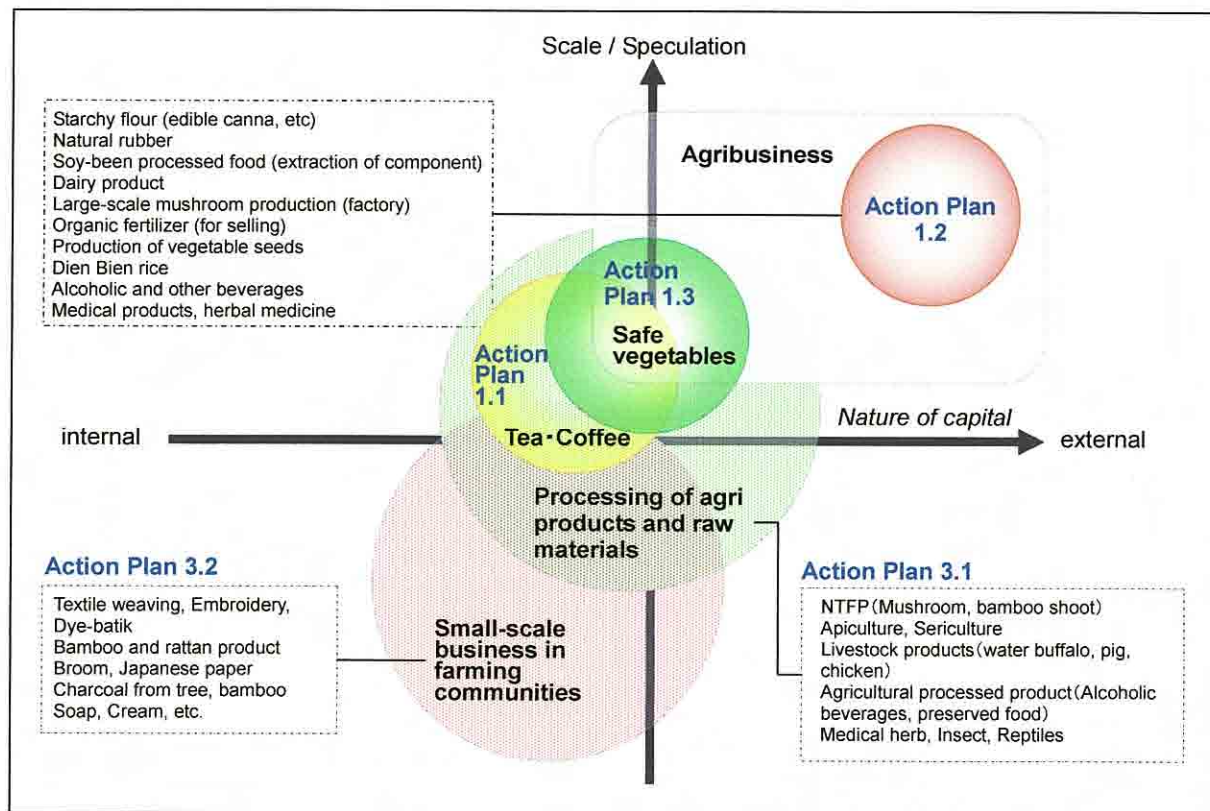


Figure 10.2.1 Categorization of Local Industry in the Region

(2) Candidate for Agribusiness

This program focuses on a) business that contributes to poverty reduction among ethnic minorities in terms of procurement of raw material, b) eco-business that contributes to environmental conservation, and c) business with strong environmental and social concerns shown through the use of biomass and material circulation including creation of by-products of animal feed and organic fertilizer. Potential agribusinesses in the Region are stipulated in Table 10.2.2.

Table 10.2.3 Potential Agribusiness in the Region

Business/ Products	Overview	Evalu- ation
Dairy product	In Moc Chau District of Son La Province, about 3,000 dairy cows are raised with marketing channels to the Vinamilk. Milk, yogurt and other sweet dairy products are locally sold. With such track records, introduction of new agribusiness is possible.	A
Dien Bien Rice	Quality improvement of milled rice and profit increase are promising. Dien Bien rice can be established as a high-quality and high-price brand by extension of good cultivation methods, teaching of technical improvement of post-harvest processing, use of modern high-performance rice mills on trial basis, etc.	A
Mushroom (large scale)	Mushrooms are cultivated in farming communities. Although study on market share of mushrooms produced in China and distribution system is necessary, demand for mushroom for eating is promising. Raw materials for mushroom cultivation such as logs and sawdust are easy to obtain in the Region. Supply of local species may not be stable, thus, mushroom may be a weak candidate for agribusiness that requires stable supply in large amount.	A
Organic fertilizer	Use of organic materials such as crop residues, plants and trees should be investigated. Growth of organic farming is likely to increase the demand for organic fertilizer. Due to high cost of obtaining raw materials and need for quality assurance, public assistance may be needed in starting this agribusiness.	A
Tea	New entry to this business is difficult because competitions with the existing business enterprises will be fierce. Adoption of new technique such as catechin extraction is promising. Development of new products has good possibility.	B
Coffee	Competition with the central highlands will be fierce. Differentiation made by organic coffee, etc. is needed.	B
Natural rubber	There has been a shortage of rubber throughout the world, so that it is expected to be profitable agribusiness. As the planting of rubber trees has just started, and it needs some time until stable supply of raw material becomes possible, priority of natural rubber as agribusiness is low. (Will be taken up in the forestry sector)	B
Plant oil	Lately there has been a shortage of cooking oil throughout the world, and plant oil is expected to be a profitable agribusiness. Production of fertilizer and compost from the by-products is likely to contribute to the local agriculture. As most of the varieties cultivated are for eating, and not for oil extraction, shift to new varieties are needed to run the business.	B
Starchy flour	Noodles are manufactured by micro enterprises and starchy flours have been produced. After the further extension of edible canna led by DARD, which guarantees stable supply of raw material, starchy flour producing factories will be sought. Promotion of edible canna, which is a raw material crop for starchy flour production just like cassava, is not so promising.	B
Medical herb and trees (Herbal remedy)	There are many kinds of raw materials and the business depends much on speculation. Manpower for picking and process is easy to obtain. Competitions with the already-existing merchants are likely to be fierce.	B
Alcohol beverage	There are diverse raw materials in the Region including fruits and grains. Water is also easy to obtain. If this is aimed for consumption in the other areas, it will be difficult because high-quality product is required and there will be many competitors. How to establish a brand is likely to be a big challenge.	B
Beverage product (tea, etc.)	There are diverse raw materials in the Region including fruits, tea, coffee, etc. Water is also easy to obtain. Maintaining the balance between price and transport cost is likely to be a challenge.	B
Salt cured product, pickles	This business already exists in the Region with many competitors. For obtaining raw materials, introduction of farming techniques to produce agricultural crops of fixed quality to meet the standard is necessary.	C
Kon-nyaku	It is not known whether this has been cultivated. Although there is high demand in Japan, most imports to Japan are processed ones due to the import tariffs. Market development in Vietnam as low-calorie food can be expected.	C
Sungan	As high-quality products cannot be made from the local variety, improved varieties from Taiwan are cultivated. Manufacturing of sungan is unknown. It is easy to obtain raw materials, but stable supply is not guaranteed. Hence, priority for agribusiness is not high.	C
Ginger (pickles)	The business already exists with many competitors. For obtaining raw materials, introduction of farming techniques to produce agricultural crops of fixed quality to meet the standard is necessary. Demand in Japan is expected to be high.	C

Source: JICA Study Team

Seven products among the above-mentioned potential agribusinesses were preliminary selected as shown in Figure 10.2.2.

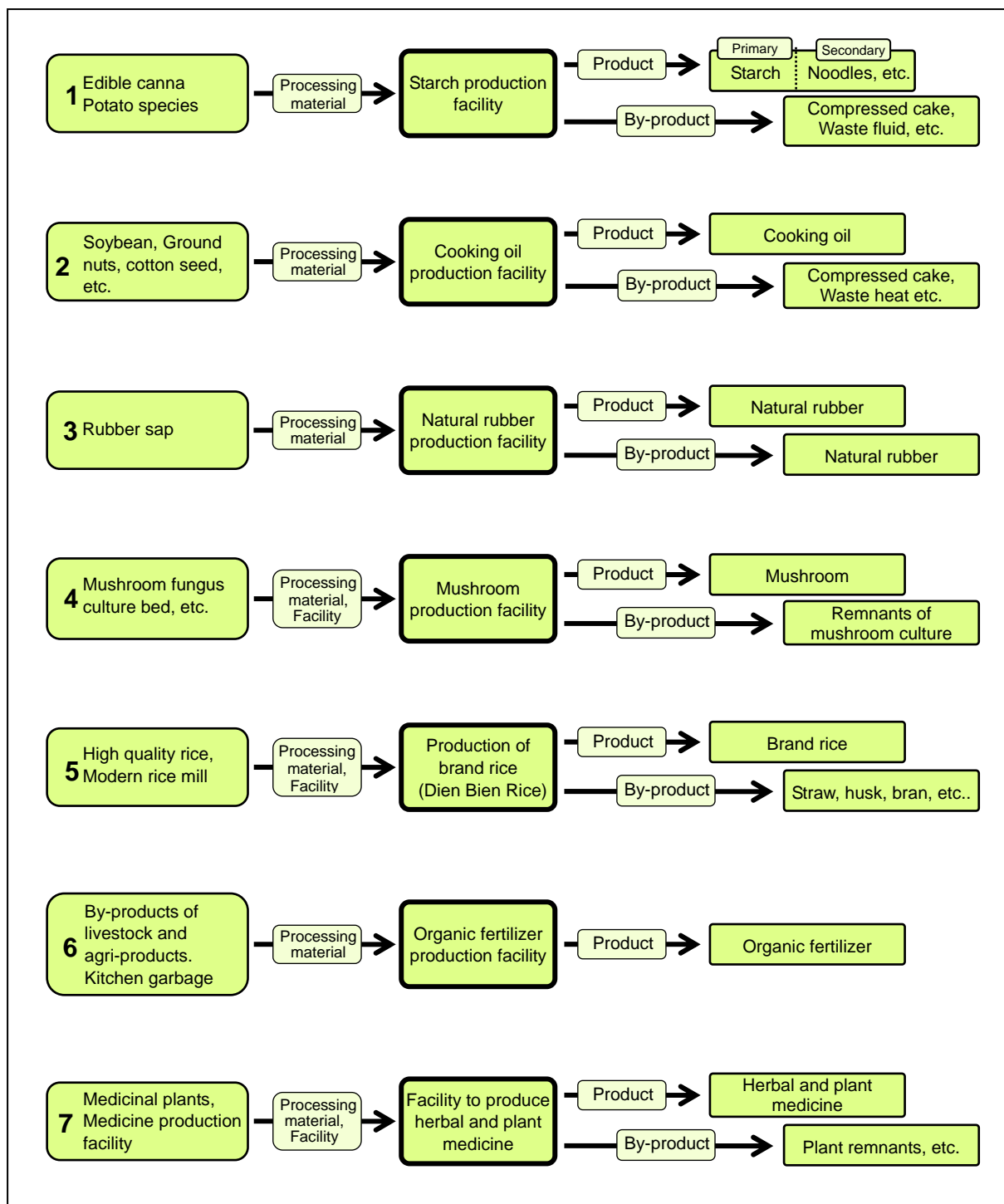


Figure 10.2.2 Candidate Agribusiness in the Region

(3) Program Contents

This program consists of the following activities/inputs;

- 1) Formation of clusters for product development (research institutes, producers' organizations, farmers that supply raw materials, vendors/buyers, etc.)
- 2) Information collection and analysis of market environment for local products of the Region (analysis of competing products, selection of targets, etc.)

- 3) Product development and establishment of production system (procurement of raw materials, size of production, etc.) based on the above-mentioned market analysis
- 4) Assistance to raw material production (provision of seeds and fertilizer, production training, etc.)
- 5) Advice on conditions for factory set up (serving as mediator between the business and the local government; advice on land, taxation, and legal system)
- 6) Advices on financing and management to entrepreneurs, seminars on new techniques by research institutes
- 7) PR through various means (newspaper, TV, pamphlets, local information magazines, campaign at sales outlets)

(4) Linkage with Other Programs

Various by-products, which can be used to produce organic fertilizer, are obtained through this program. Effect of this program becomes even stronger if it is linked with the “Safe crops production program”. Wise usage of biomass in the Region will promote environment-friendly agriculture. It will lead to sustainable management practices and improve the images of the enterprises and value of their products. As shown in Figure 10.2.3, a linkage between agribusiness and organic fertilizer production will be considered in terms of the material circulation system in the Region.

(5) Implementation System

This program is to be implemented by DARD by obtaining technical supports by Department of Agro-forestry and Fishery Products Processing and Salt Industry in MARD. The other agencies concerned are Cooperative Alliance, Department of Industry and Trade (DoIT), Agricultural Extension Center, etc.

10.2.3 Safe Crops Production Program

(1) Background

Export expansion of agricultural products is one of key issues for improvement of the balance of payment of Vietnam. In the international markets of agricultural products, there has been strong interest in “food safety” in recent years. It is crucial for Vietnam to obtain confidence from importing countries of fresh agricultural products (vegetables, fruits, marine products), processed food and frozen food.

MARD keeps its pace with the international efforts on “food safety” by participating in establishing ASEAN GAP. As mentioned in Chapter 3, Vietnam started the safe vegetable support program and set up the standard cropping methods which conform to GAP and IPM. MARD envisages introducing VIET GAP in near future.

Vegetable production in the Region is only 1.6% of the total domestic vegetable production outputs. The Region is endowed clean land and water resources with low chemical contamination, which is prerequisite for safe foods. On the other hand, stable supply system (stable shipment of fixed amount of products of

fixed quality), which is a paramount condition to be met for distribution of agricultural products, has not been established in the Region.

This program offers technical guidance to farmers on low agrochemical / organic farming so that by 2020, DARD, business enterprises and producers will cooperate to establish a production area of safe crops. In terms of environmental consideration, promotion of organic farming within a circulatory system of resources is essential, and it is an integral part of this program. (Figure 10.2.3)

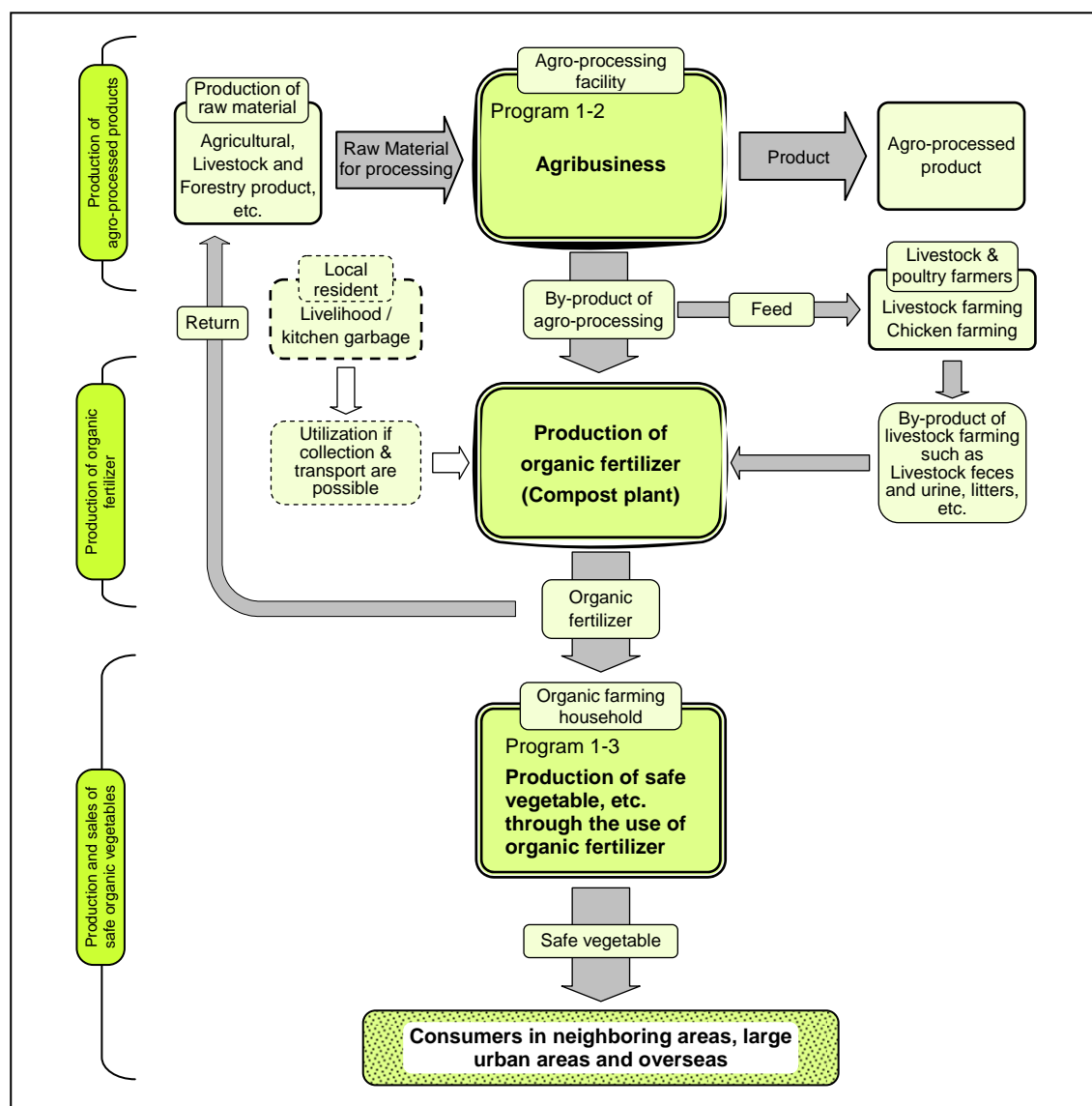


Figure 10.2.3 Promotion of Safe Vegetables; Linkage between Agribusiness and Organic Fertilizer

(2) Program Objectives

The ultimate goal of this program is to develop the Region into a supply base of safe vegetables by 2020 with international markets in mind. Organic farming techniques in line with ASEAN GAP are to be established and extended to make the Region as a GAP leading area. A new brand of safe vegetables will be established. In addition, environmental impact is minimized.

Organic farming is a method to increase food safety. Besides, farmers themselves can directly gain benefits because they can reduce the production cost by limited use of chemical fertilizer and agrochemical. Producers can have safe crops for their own consumption. Awareness creation on food safety by DARD is an important element when organic farming is introduced. Thus, strong commitment by the government is greatly expected.

At the early stage of the program, the markets will be limited only in the Region. In future, however, the program will create a brand and develop market channels strategically in order to distribute the products directly to vegetable stores and restaurants in Hanoi. Then, the program will try to supply the products to international markets. Possibilities for PPP (Public-Private Partnership) that is linked with ODA programs will also be sought.

In selecting sites for model activities, areas around Dien Bien Phu are likely to be favored as they can easily send the products by air, keeping freshness of the vegetables and causing minimal damages during transporting. In addition, Mac Chau District of Son La Province and several districts of Hoa Binh Province are also advantageous due to past experiences in vegetable production and their geographical positions adjacent to Hanoi.

(3) Business Model of Enterprise

This program anticipates that the safe vegetable business will also become popular in the Region by 2020. This business consists mainly of contract farming, which is prevailing in Dalat, Lam Dong Province. (Figure 10.2.4)

In order to have the Region well-known to the public as an area where safe vegetable grow and to attain sustainable development there, profits gained by producers must be assured so that their morale/motivation for farm work will remain high. For this, consumption of the safe vegetable only in the Region limits the development. Marketing strategies are needed that include marketing in Hanoi and other cities where wealthy people live, tourist destinations such as Sapa, and overseas. The leading actors in such strategies are private companies. In setting up a value chain for safe vegetables, existence of private companies is crucial. To bring in private companies, the followings are needed to improve the business environment;

- 1) Strong awareness on safe vegetables and high technical capacity held by farmers
- 2) Service by local government (development of legal system and certification system, setting up physical and chemical science research center, agricultural extension service)
- 3) Maintenance of clean land and water resources
- 4) Improvement of distribution facilities (airport, cold storage, processing factory)

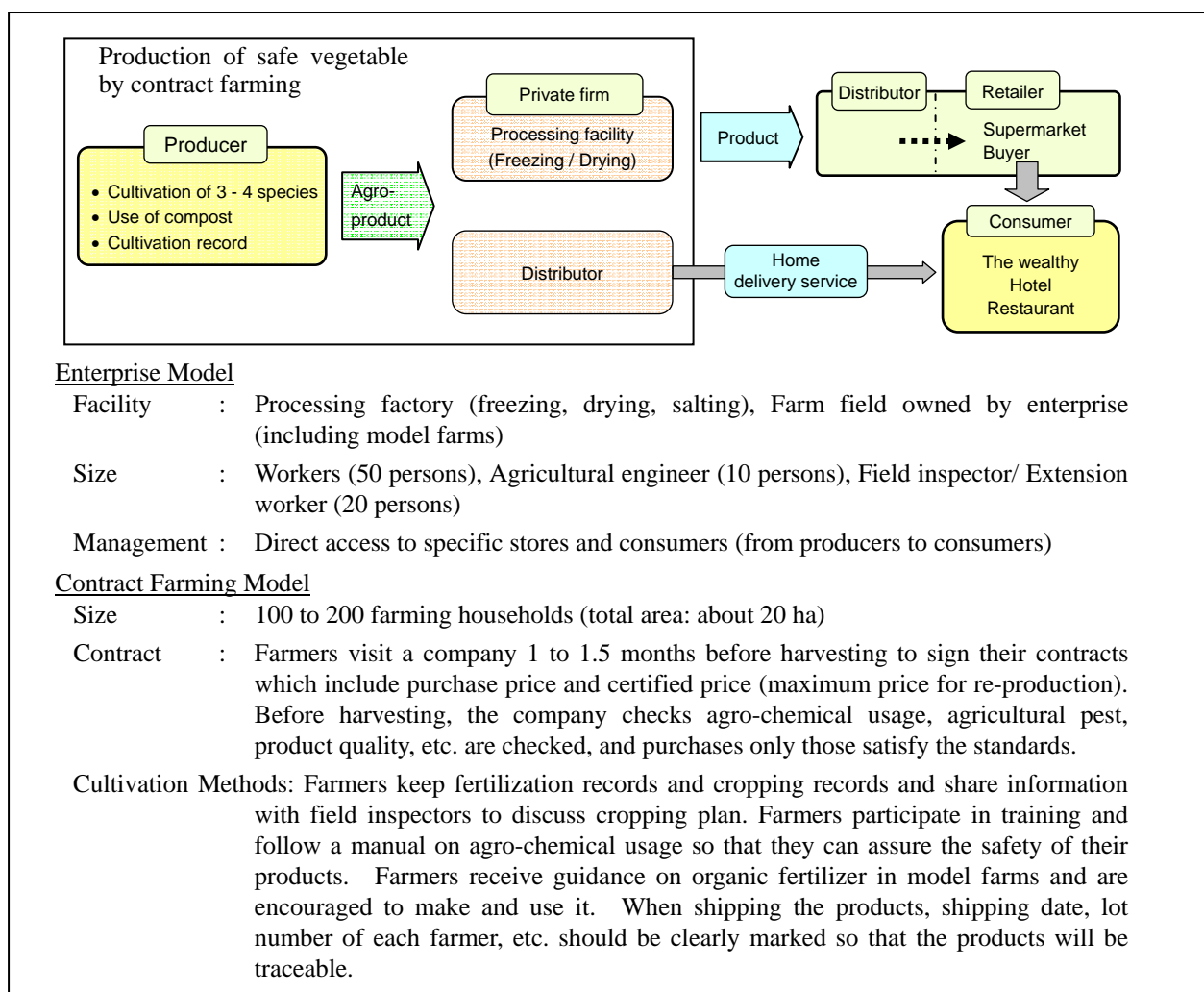


Figure 10.2.4 Safe Vegetable Production-Sale Business Model in the Region

(4) Program Content

Improvement of environment that is described in the above 4 items is going to be carried out in order for the Region to gain prominence as an area of safe vegetable production. The top priority is to have the producers with strong awareness on safe vegetables and high technological standard before 2020. Activities and inputs of this program focus on establishing a safe vegetable production system at an early date. This program proposes to set up “Clean Vegetable Center (CVC)” which is to be the center of development (Figure 10.2.5).

Among the various roles and functions of CVC, the most important one is that the center makes the public know a commitment of the local government, that the government is starting comprehensive service to promote safe vegetables

CVC is to consist of three units, namely technical extension, organic fertilizer production, and chemical analysis. The technical extension unit will be in charge of establishing and extending production technologies that follow GAP in the Region. The organic fertilizer production unit collects by-products from large agribusinesses or livestock waste to process into organic fertilizer and distribute the fertilizers

thus produced. The chemical analysis unit conducts componential analysis of organic vegetables and organic fertilizer to certify their qualities.

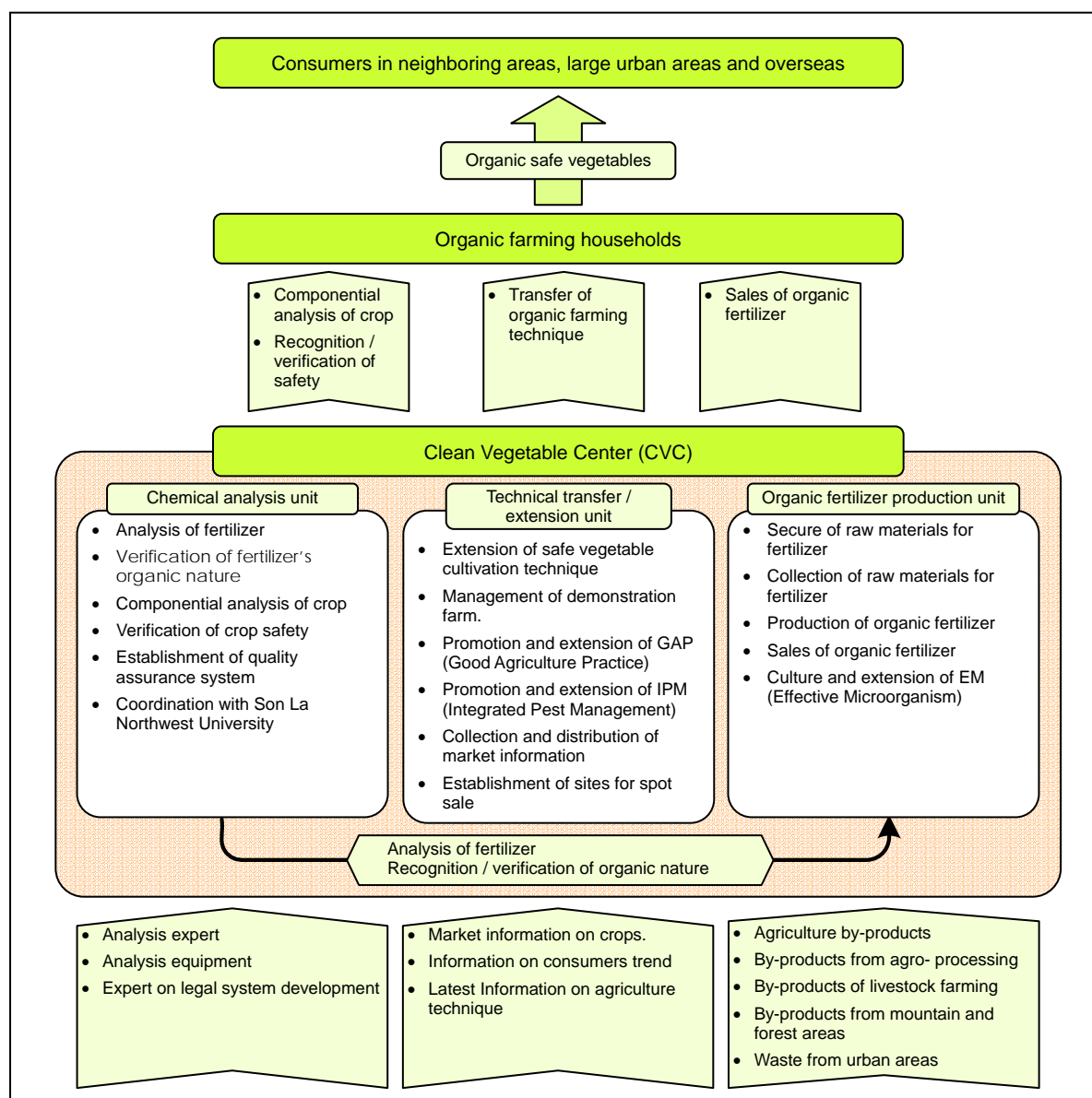


Figure 11.2.5 Conceptual Diagram of Clean Vegetable Center (CVC)

(5) Implementation System

This program is implemented by Department of Crop Production in MARD which is the responsible body for GAP promotion in Vietnam. A part of the functions may be delegated to private sector so that know-hows held by the private firms can be used., e.g. starting eco-program through PPP.

Some of the officers who took part in the Clean Vegetable Program by MARD or the capacity development program at Hanoi Fruits and Vegetable Research Institute by AusAID should be assigned to the technical extension unit. From localities, staff of DARD's agricultural extension center will be transferred to the unit.

Production and sales of organic fertilizer will not be under direct management by MARD. They may be commissioned to a) exporters of safe vegetables as it has a high potential for agribusiness or b) agricultural processors or livestock breeders who discharges/produces many by-products.

Linkage with FIRI is most likely to produce positive results because FIRI received technical assistance from JICA and has capable technique and staff. Commissioning to private firms may be worth investigating.

10.2.4 Border Trade Promotion Program

(1) Background

In the 6th China-Vietnam border trade conference held in November 2006, the two countries discussed and agreed to the idea of two corridors and one economic zone. The two corridors are 1) “Kunming-Lao Cai-Hanoi-Haiphong-Halong Bay” route and 2) “Nam Ninh, Guangxi Zhuang Autonomous Region-Lang Son-Hanoi-Haiphong-Halong Bay” route. These routes are to redevelop distribution of goods and commodities between and within the two countries.

Prior to the agreement on the idea of two corridors and one economic zone, Asian Development Bank (ADB) announced in January 2006 its technical assistance to the highway construction between Hanoi (Noi Bai Airport) and Lao Cai. This highway is 260 km in length and is a part of the 400 km highway between Kunming and Haiphong. As for the Kunming-Haiphong highway, Kunming-Ha Khau and Hanoi-Haiphong have been completed. Noi Bai-Lao Cai highway had been rough so that this technical assistance is to improve the communication and traffic and increase economic exchange among different areas.



Figure 10.2.6 International Trading Routes and the Region

Border trade between Vietnam and China is growing remarkably. In 2006, the total amount of trade at the Ha Khau-Lao Cai border gate reached US\$460 million¹. Although being next to Lao Cai Province, limited amount of products from the Region is exported to China via Lao Cai. This is probably due to weak road system and transport means. Geographically speaking, the location of the Region is good, but it is unable to make the most of its geographical advantages because three national roads (Route No. 70, 32 and 6) which run between Hanoi and the Vietnam-China border and feeder roads that run between east and west are not fully effective.

¹ This figure is from statistics of Vietnam whereas China announced the amount of trade at Lao Cai as US\$600 million.

The idea of the North-South Corridor, that connects China, Laos and Thailand and runs next to the border area of the Region, has been taking its shape. Currently, a 248 km road from Kunming to Chiang Khong in Thailand (via Boten in Laos) is under construction. The National Road No. 3 in Laos was narrow and many sections were unpaved so that traveling was extremely difficult and limited during the rainy season (4 months/year). As this road is going to be an all weather road, distribution system in Laos is going to improve a great deal after the completion of the project in late 2008.

The Region has a long national borderline and border gates are open in several places. The border gate in Ma Lu Thang, Phong Tho District, Lai Chau Province is officially open and agricultural products are traded. However, the amount of trade in Ma Lu Thang is less than 1% of that at the Lao Cai border. Although in Dien Bien Province, Tay Trang, Dien Bien District and A Pa Chai, Muong Nhe District have been opening the gates to Laos, trading is not active.

The Region is sandwiched between Kunming-Hanoi route and Kunming-Bangkok route. Improvement of these trade routes is going to give significant impact to the Region. However, the Region should not be a passing area of border trade. While receiving the benefits of the border trade, the Region should develop into an area that contributes to the growth of border trade.

For stable growth of border trade, improvement of living conditions of the people in the area and establishing sustainable area development is necessary. Poverty rate of border area is higher than that of other areas in the Region. Socio-economic activities of people in the border area have been limited. Poverty reduction programs in border areas that keep an eye on growth of border trade are extremely important. Specifically, basic infrastructures such as roads, water supply and electrification as well as government services including education, healthcare, communication, etc. need to be improved to vitalize the area.

Border trade in the Region is not just an economic activity, but human and cultural exchange among people of the same ethnic groups who live on both sides of the border. It is of paramount importance that those people share the same concern toward local residents and conservation of local resources. Against such background, this is a comprehensive program to vitalize the areas and promote border trade with views on construction of international roads in the future.

(2) Program Objectives

Overall goal of this program is promotion of border trade. As sustainable program implementation needs cooperation and participation of local residents, improvement of living conditions and environmental conservation, both of which support development of the localities, are to be implemented also.

Local products geared toward China and Laos need to be developed/made as a way to promote border trade. In JICA's Artisan Craft Development Project for Rural Industrialization, and programs proposed in this Master Plan such as Industrial Crop Production Improvement Program (1.1), Agribusiness Promotion Program (1.2) and Safe Crops Production Program (1.3), agricultural crops for international trade are going

to be developed and produced with a view on future border trade.

As for improvement of living conditions and environmental conservation, large-scale national projects such as Program 135 and 5-Million Hectare Reforestation Program have been taking place. Coordination with these national programs is necessary to implement this program. In other words, such coordination with on-going programs is needed to bring activities of those programs to the border areas.

The sites of this program are the following 8 districts that share national border with China and/or Laos:

Table 10.2.4 Sites of Program 1.4 (Border Trade Promotion Program)

Province	District	Border Gate	Opposite Side
Lai Chau	Phong Tho	Ma Lu Thang	Yunnan Province, China
	Sin Ho		Yunnan Province, China
	Muong Te	U Ma Tu Khoang	Yunnan Province, China
Dien Bien	Muong Nhe	A Pa Chai	Yunnan Province, China, Laos
	Muong Cha		Laos
	Dien Bien	Tay Trang	Laos
Son La	Moc Chau	Pa Hang	Laos
	Song Mai	Chieng Khuong	Laos

(3) Program Content

The majority of the export products will be agricultural crops. Through the coordination with other poverty reduction programs, this program aims to introduce/carry out highly sustainable economic activities in order to develop the local industries. While maintaining friendly relationship with the neighboring countries and major cities in Vietnam, this program offers information services by conducting public relations activities and collecting various information.

Road improvement and adoption of public transport are to be on the priority list for the improvement of living conditions. This program is to assist people in safeguarding their healthy life including conformity to social norms and maintenance of security through a) the improvement and construction of rural infrastructure such as rural electrification, rural water, school, health care centers, communication posts, etc., b) prevention of infectious diseases and communicable diseases including HIV, malaria and polio, and c) sensitization on drug addiction and eradication of drugs. In remote areas, this program will coordinate with Remote area Food Crop Production Program (2.1) to improve food security. Establishment of modern rice mills and flour mills, and construction of granaries and markets may be considered as a part of government service, although they are ordinarily done by private sectors.

Environmental conservation (e.g. destruction of forest resources, pollution of water resources, etc.) is a difficult issue to solve unless people share the same values. Based on a long-term perspective, this program tries to establish a system in which most suitable resource utilization takes place, while coordinating with the neighboring areas.

This program consists of the following activities/inputs

1) Promotion of border trade

- 1-1 Establishment of information center for border trade promotion (exhibition of local products, establishment of stores)
- 1-2 Campaign led by the government to promote border trade (newspaper, tv, pamphlets, local information magazines)
- 1-3 Transmission of information bound for China and Laos (local products of the Region and environmental conservation campaign)
- 1-4 Production fair to discover good local products (official recognition, PR to trading companies, etc.)
- 1-5 Organizing exchange and events with China and Laos (cultural exchange, environmental conservation)

2) Improvement of living condition in the border area

- 2-1 Baseline study to understand the living conditions of the residents (establishment of GIS database)
- 2-2 Enhancement of transport means (improvement of road linking with border gates, public transport)
- 2-3 Rural electrification (crucial for maintenance of security, utilization of renewable energy will be considered)
- 2-4 School construction and promotion of primary education and adult education (coordination with the ministry of education)
- 2-5 Improvement and construction of health care facilities and improvement of public health (coordination with the ministry of health)
- 2-6 Enhancement of communication (expansion of cell phone's communication area)
- 2-7 Measures and policies to improve public safety (eradication of addictive drugs, measures for illegal aliens, restrictions on border crossing, etc.)

3) Environmental conservation of border area

- 3-1 Enhancement of facilities and resources in national parks and natural conservation areas (strengthening of tourism centers)
- 3-2 Strengthening of inspection system to prevent environmental destruction (coordination with border security police)

(4) Implementation System

DARD will be the main body. The program will coordinate with CEM, DOIT, Cooperative Alliance, and Department of Culture & Sport, Tourism.

10.3 Food Security Improvement in the Northwestern Region

10.3.1 Remote Area Food Crop Production Program

(1) Background

Available supply of rice per person per year in the Region is calculated as 140kg (less than 90 kg in Son La Province). These figures are way below the national average of 169 kg. The Region imports rice from other areas in Vietnam while rice shortfall is compensated also by maize, cassava and tubers.

When looking at the supply system of food crop in each Province, the average area of paddy field per person in Dien Bien Province and Lai Chau Province is found to be between 0.08 and 0.10 ha. If these figures are combined with figures for upland rice field, rice can be called as the principal food. Self-sufficiency rate of rice in the Region is 114% of the national average. Hoa Binh Province has high population pressure on its arable land, making the average area of paddy field per person extremely small at 0.03 ha. In spite of such small area, the average yield of paddy rice in Hoa Binh is 5 ton/ha, a very high figure, due to its good road network, farm input and technical extension throughout the Province. Hoa Binh Province is self-sufficient in terms of rice, i.e. the principal food. Its rate of rice sufficiency is 95% of the national average.

Rice shortfall is compensated by maize and tubers. Son La Province has small arable land in its low plains due to the topographic constraints. Average area of paddy field per person is only 0.03 ha, the same figure as Hoa Binh Province. However, unlike Hoa Binh Province, Son La Province has many remote/secluded places in its mountainous areas where transport of farm inputs and extension services hardly reaches. The average paddy yield is relatively low at 3.5 to 4.5 ton/ha and the rate of rice sufficiency is only 50% of the national average. In the past, self-sufficiency of rice was upheld by upland rice cultivation on mountain slopes. Lately, self-sufficiency has been upheld while diversifying to maize is taking place. Table 10.3.1 shows supply amount of various food crops per person and their shares.

Table 10.3.1 Food Supply Amount and Shares (conversion to starch kg/person)

Province	Paddy Rice		Upland Rice		Maize		Tubers		Total		Type of Self-Sufficiency
	kg/prs	%	kg/prs	%	kg/prs	%	kg/prs	%	kg/prs	%	
Lai Chau	173	45	20	5	83	21	112	29	388	100	Rice Type
Dien Bien	156	39	35	9	102	26	104	26	397	100	Rice Type
Son La	76	15	11	2	217	43	196	39	500	100	Maize-Tuber Type
Hoa Bin	161	39	0	0	113	27	139	34	414	100	Rice-Tuer Type

As shown above, the total food amount for each province is about 400 kg/person. The supply-demand balance within the Region in terms of total food amount is, thus, maintained, reaching self-sufficiency. However, it must be pointed out that total food amount is way below the average, and thus, unstable in areas where transport access is bad and distribution system is underdeveloped. Such phenomenon can be found even in both Dien Bien and Lai Chau Provinces where reliance on rice is high. Production of food

crops for household consumption in remote mountainous regions remains as a challenge that requires immediate attention. Table 10.3.2 presents an estimated balance between supply and demand of rice in the Region.

Table 10.3.2 Estimate of Supply-Demand Balance of Rice in the Region

Item	Region				Total
	Dien Bien	Lai Chau	Son La	Hoa Binh	
Estimate of Rice Demand (1,000 ton/year)					
2005	75.7	55.0	167.9	136.1	434.7
2010	84.4	60.9	185.1	143.4	473.8
2015	94.1	67.5	204.1	151.8	517.6
2020	105.1	74.8	225.0	161.7	566.6
Estimate of Possible Production Amount of Self-Supplied Rice (1,000 ton/year)					
2005	86.7	63.1	87.2	130.7	367.7
2010	-	-	-	-	-
2015	104.1	80.3	113.9	160.8	459.2
2020	122.3	105.1	136.3	203.2	566.8
Rate of Rice Self-Sufficiency (%)					
2005	115	115	52	96	85
2010	-	-	-	-	-
2015	111	119	56	106	89
2020	116	140	61	126	100

Methods used for estimation :

- 1) Estimation of rice demand was calculated based on estimated population size and the national average of rice self-sufficiency amount (168kg/capita)
- 2) For the future production amount, the average yield of paddy rice in the Region was estimated as 5 ton/ha. This figure was based on the assumption that by 2015 the current rate of irrigation of 45 to 60 % will increase to 60 to 75% with improvement of cropping methods, adoption of appropriate crop varieties, and intensification of paddy rice cultivation.
- 3) As for upland rice, terraced paddy fields will be reclaimed in mildly-sloped land with a slope angle of less than 7 degrees to have diversification to paddy rice cultivation. Yield of paddy rice from the terraced paddy field (rain-fed) was estimated as 3 to 4 ton/ha.
- 4) Rice production amount for 2020 was estimated based on the assumption that the rate of irrigation will become 95% and double cropping of paddy rice will be well-established.

As shown in the above table, rice self-sufficiency is likely to enjoy the immediate benefits of the production increase. However, gradual rice shortage is estimated to take place after 2020 due to technical limitations on production increase. On-going production increased of supplementary food crop such as maize and tubers need to be continued. Farm household in the Region uses 50 to 60 % of its agricultural land for food production. With the tide of generational change, land owned by household has been divided and shrinking. Thus, population pressure on arable land is increasing. In the future, diversification to cash crops and importing grain surplus from the neighboring Red River delta are needed. Measures to improve the distribution system of agricultural crops are also likely to be required.

As for food crop production in the Region, different ethnic groups cultivate different crops according to their living environment. For example, the Thai occupying 30% of the regional population and the Muong (23%) tend to live on low land, engaging in paddy rice cultivation, whereas the Hmong and the Dao, who live in mountainous areas, grow upland rice, maize, etc. in upland field. This program should not

place a disproportional emphasis on paddy rice, the staple, but encompass regional food crops such as upland rice, maize, tubers, beans, etc.

For sustainable production increase of food crops, improvement of cultivation methods and agricultural production infrastructure (irrigation development, reclamation of terraced rice field and terraced field, etc.) are needed. This program places foremost priority on improvement of cultivation methods of major food crops as it can be achievable through 1) extension of improved varieties, 2) extension of technique for agricultural inputs, 3) improvement of farming practice and cultivation technique, 4) extension of appropriate farming tools, and other means. For extension of agricultural technique, existing agricultural extension workers, key farmers, and those from agricultural cooperative, youth union, and other groups for agricultural extension are to be guided and trained to increase their technical capacity. Irrigation facilities are also needed.

(2) Program Objectives

Objectives of this program are as follows;

- 1) Food self-sufficiency is attained even in remote mountainous areas
- 2) Diet of the poor is improved (meeting the recommended intake calories), leading to improvement of their health condition
- 3) Land productivity is increased by improvement of cultivation efficiency in the mountainous areas (intensification of crop cultivation)
- 4) Livelihood of agricultural household becomes stable and environmental destruction in slope areas (mountainous areas) is reduced

The priority areas of this program are the following Districts (sites of Action Plan);

Dien Bien Province	:	Muong Cha District and Dien Bien Dong District
Lai Chau Province	:	Tam Duong District and Phong Tho District
Son La Province	:	Thuan Chau District and Mai Son District
Hoa Binh Province	:	Da Bac District and Mai Chau District

(3) Program Content

- 1) Selection of program sites by DARD; Discussion and consensus building with residents (clarification of major points, roles and responsibility)
- 2) Baseline Survey (crops, cropping area, yield, crop season, balance of farm economy, etc.)
- 3) Based on the above 2), review of appropriate cropping methods, crops, crop varieties, cropping system, etc.
- 4) Establishment and management of technical demonstration farms (0.3-0.5 ha each: training and guidance on cropping technology, technical demonstration and extension of recommended cropping methods including sowing, fertilizer application, disease and pest prevention, etc.
- 5) Improvement work on paddy field through farmers' participation (improvement of water source

facilities, improvement of irrigation canals, prevention of water leak, digging of drainage canals, land leveling) in 2/3 of the winter-spring paddy cultivation area and 1/3 of the summer-autumn paddy

- 6) Reclamation of terraced fields, drying of grains, rice milling, storage and preservation, etc. through farmers' participation
- 7) Promotion and extension of VAC system (material circulation among crops, livestock and aquaculture) in household vegetable garden (inputting equipment, technical extension); Reclamation of cropping field (establishment of green belt, construction of drainage canals and farm roads) (1/3 of the existing upland rice cultivation area and 1/3 of the maize cultivation area)
- 8) Strengthening of farmers organization (including procurement of farm inputs)
- 9) Extension of appropriate farming tools (oxen plow, paddy planting ruler, rotary weeder, saw-edged sickle, paddy thresher, etc.)
- 10) Improvement of post-harvest technique and facility
- 11) Assistance to increase draft animal (insemination and vaccination)
- 12) Assistance to purchase the surplus

(4) Implementation System

DARD, Cooperative Alliance, CPC, Agricultural Extension Center, etc.

10.3.2 Animal Health and Production Improvement Program

(1) Background

In January 2008, the Government of Vietnam unfolded the Strategy for Development Animal Husbandry (10/2008/QD-TTg) targeting 2020. In view of the rapid economic growth, the plan aims to increase the annual growth rate of livestock industry to 42% together with measures against epidemics and improvement of food safety and hygiene. In the Region, however, supporting service of livestock industry is not well established due to the lack of human resources, etc.

Vietnam is one of the infected countries of livestock epidemics which are continuously monitored by the World Organization for Animal Health (OIE) and other international agencies. So far, over 50 persons were confirmed to have died from H5N1-type avian flu/influenza (AI) in Vietnam. If an AI case happens in the Region, it takes 4-5 days to start killing chickens because samples for pathological examination must be sent to Hanoi. This will accelerate the expansion of AI and its damages. Disease-causing agents have been mutating so that there is a concern for pandemics. The present measure against AI is mass slaughtering of chicken and waterfowls, which gives enormous suffering to livestock farming households. It may cause economic losses at the national level, as well. AI vaccines are manufactured in Vietnam, but WHO and other agencies have been questioning their effectiveness. General vaccines for animals are manufactured domestically, but those made in China and Holland are frequently used.

AI cases were reported in the four provinces in the Region, and livestock epidemics which are

legally-designated infectious diseases in Japan such as anthrax disease, etc. are rampant. Rampancy of foot-and-mouth disease (FMD), with which livestock of clover-hoofed animals (5.4% of the clover-hoofed livestock population in the country are in the Region) get infected easily, is even more serious. Livestock farmers tend not to discover FMD promptly as they do not know much about the disease. This is causing the disease to spread more widely. Each province is working hard on disease prevention by trying to vaccinate livestock regularly. However, effectiveness of such prevention is hardly noticeable due to difficulties specific to the national border areas and inaccessibility to the livestock in remote mountainous areas.

News on livestock epidemics started to be broadcasted lately so that people come to know more and more about them. Livestock farmers, on the other hand, do not seem to fully understand conditions of occurrences or economic losses triggered by such epidemics.

Land area of the Region is 11.2% of that of the whole nation. According to 2005 Agriculture and Forestry Statistics of Vietnam, 4.4% of all cows in Vietnam are in the Region: figures for other animals are pigs (4.8%), water buffaloes (14.9%), and poultry/chickens (3.6%). Except for the water buffaloes, percentages of animals in the Region are considerably low.

This program is based on the idea that activities on livestock disease prevention and animal health improvement can be carried out more easily in the Region due to its low population density and the small-scale livestock management. Also, it may be possible to establish an epidemics-free area (EFA) in the Region. When these activities (epidemic prevention, animal health improvement and establishment of EFA) are completed, “livestock epidemic control and improvement of food safety and hygiene” that are proposed in the Strategy for Developing Animal Husbandry (10/2008/QD-TTg), are accomplished.

If the EFA is established, the Region is to be widely recognized in Vietnam and overseas as production area of safe livestock products and their by-products. Such recognition will make it possible to carry out development programs that strengthen the unique characteristics of local areas. Examples of these programs include common farms (cooperatives) and increased production of improved water buffalo for beef and milk.

(2) Program Objectives

- 1) Eradication of FMD and improvement of AI prevention
- 2) Establishment of coordination system among the four Provinces for epidemic prevention and improvement of hygienic environment
- 3) Lay the base for the livestock program to strengthen the unique characteristics of the locality
- 4) Improvement of household economy of livestock farmers (increase of income)
- 5) Increase the added value of livestock products

(3) Program Content

This program consists of the following activities/inputs;

- 1) Establishment of quarantine facility for crossing of national and regional boundaries
(Coordination with the road sector of infrastructure improvement)
 - i. Improvement of facilities for medicated bath and spraying at the national border gates, on major roads, in airports and at river ports (target: cars, people and livestock)
 - ii. Examination of influx routes to the Region that can be checked on a map
 - From outside of Vietnam: about 18 sites including the present boarder gates
 - From outside of the Region: about 22 sites (including several crossings of provincial boundaries by train)
- 2) Establishment of a team for hygiene and livestock disease prevention, and appointment and technical training of livestock disease prevention officers in the four Provinces. Training of the livestock disease prevention officers on extension activities.
 - i. Adoption of all-in-all-out feeding procedures for chickens, waterfowls and pigs
 - ii. Appointment and training of village livestock volunteers who are to assist livestock extension workers of DARD
 - iii. Strengthening of quarantine surveillance on distribution channels from slaughter houses to meat markets/stores
 - iv. Killing of diseased animals and blocking distribution channels
 - v. Creation of a livestock resource map and livestock disease prevention map by GIS. (Plots of livestock by-products production area can be widely used)
- 3) Creation of livestock disease prevention guidelines and sensitization of livestock farmers on disease prevention measures
 - i. Improvement of information transmission system at the time of occurrence
 - ii. Full enforcement of on-site inspections, travel/movement restrictions, and sterilization
 - iii. Distribution of materials and equipments for sensitization and on-site guidance and training
- 4) Assistance to set up vaccine production facility
 - i. Coordination with MARD's Department of Animal Health and National Institute of Hygiene and Epidemiology that own BSL-3
- 5) Product development of livestock products of high added value and invention of hygiene equipment
 - i. Development of laws and readjustment of taxation system concerning slaughter houses, and improved management of slaughter houses
 - ii. Development and distribution of equipments to improve hygiene during sales (after killing livestock); communal display case (refrigerator) using solar power, etc.
 - iii. Training on how to make food with a long shelf life, and their distribution; Development of processed food including smoked food, etc.
- 6) Expansion of epidemics-free areas (EFA) through periodical inspections, and assistance to receive EFA certification by international organizations
 - i. Reporting made by DARD to OIE (World Organization for Animal Health) and FAO (Food and

Agriculture Organization of the United Nations) on livestock project plans and activities

(4) Implementation System

Department of Animal Health of MARD, DARD, National Institute of Animal Health (NIAH)

10.3.3 Inland Fishery Supporting Program

(1) Background

The total fishery production of the Region is about 7,500 tons (fish farming: 6,000 tons, fish catch: 1,500 tons). This amount is only 0.2% of total fishery production of Vietnam. The average annual per capita fish consumption in the Region is only 2.0 to 4.6 kg while the national average is estimated to be 20.0 kg per capita. Aquaculture development in the Region should be carried out through pond aquaculture and rice field aquaculture because rapid increase in the amount of fish catches cannot be expected. Specifically, the following support is given by this project; construction of fish hatchery centers in highly-motivated communes, guidance on environmental protection of fish ponds, demonstration of aquaculture technique, and digging of ponds to secure water for fish culture. Together with pond aquaculture, this project adopts rice field aquaculture in which fish is released into paddy fields. While aiming for sustainable development of aquaculture, this program also carries out capacity development of provincial and district offices/organizations that engage in aquaculture promotion.

From the late 20th century it has been indicated that marine and fishery resources in the world are in danger of breaking down. Although the amount of production of cultured fish is not enough to reduce this danger, it is necessary to promote fish farming in specific areas in mountain regions of Asia to increase the supply of animal protein. As in other agricultural activities, sustainability and harmony with environment are important issues of fish culture. Under these issues, the followings are emphasized: a) use of fish at low tropic level, b) non use of animal-based feed, c) integrated fish farming system, and d) fish farming as daily activity – integration into livelihood. In Vietnam, feed for cultured fish is plant based. A fish pond is often located next to the house and fish farming is a part of VAC system. If herbivorous and omnivorous fish (but NOT fish that eats animal-based feed) is cultured, sustainable fish farming is possible.

The primary objective of this program is to increase fish consumption and protein intake of the local people. The secondary objective is to secure a cash income source. Under subsistence economy, people in the Region maintain their livelihood without facing starvation, but they are short of money, unable to pay for education and health care. By selling surplus fish to merchants in town, people will have enough cash for education and health care.

(2) Program Objectives

Challenges of inland water fisheries in the Region include adoption and extension of proper fish farming technique that matches the natural and social conditions. This program is to be carried out to establish fish farming technique. Development targets for 2020 should be set based on the results of this program.

If practical and achievable development targets are to be set, they are likely to be as follows:

- Lai Chau Province : Increase of annual per capita fish consumption to 4 kg by increasing the public hatchery stations from one to three, public hatchery from seven to 21, and farmers owning fish pond from 6% to 50%
- Dien Bien Province : Increase of annual per capita fish consumption to 4 kg by making each district have one public hatchery station (currently only one hatchery station in the province) and increasing public hatchery from four to 12
- Son La Province : Increase of annual per capita fish consumption to 6 kg by increasing the number of public hatchery stations from one to three, public hatchery from 13 to 26, and farmers owning fish pond from 25% at present to 50%
- Hoa Binh Province : Increase of annual per capita fish consumption to 6 kg by increasing the number of public hatchery stations from one to six and farmers owning fish pond from 50% to 80%

This program aims for improvement of fish farming technique at the household level. The fish is for household consumption, and thus this is a part of support to improve food security. The four items below are necessary for sustainable fish farming. The existing fish farming in the Region is already satisfying these conditions, which proves great possibility for development of aquaculture.

- 1) As for farming of fish at low tropic level, plankton-eating, plant-eating, and omnivorous fish is preferable. Grass carp (grass eating), bighead carp (plankton eating), and Indian carp (omnivorous) are farmed in the Region, all of which satisfy the conditions.
- 2) Feed with low fat contents is preferable. In the Region, grains are used as fish feed. Manufactured feed is not used. In the Mekong Delta region where catfish is cultivated using rafts, manufactured feed is frequently used. However, catfish farming is for a commercial purpose and its direction of development is different from that of inland water fishery in the Region.
- 3) Sustainable fish farming should be combined with other livelihood activities to constitute a cyclic system. VAC system is becoming popular in the Region. Discharge from fish farming in the VAC system is minimal.
- 4) Fish farming should not be a burden to households. Fish farming should be carried out next to one's house, should not require much labor, and should be enjoyed by farmers.

In addition to the above-mentioned, if the following conditions are met, this program can serve as a good example of sustainable fish farming in Southeast Asia where the popularity of fish farming is the highest in the world; further reduction of discharge material, maintenance of water and bottom sediments through environmental improvement, strong measures against fish diseases, and promotion of women's participation.

This program consists of two sets of activities, 1) fish hatchery center – pond aquaculture and 2)

intermediate breeding center – rice paddy aquaculture. A goal of the program is establishment of a model of sustainable production of cultured fish of international standard.

- 1) Amount of fish farming production in remote areas (pond aquaculture and rice paddy aquaculture) is increased
- 2) Fish consumption in remote areas is increased
- 3) Cash income source in remote areas is secured (the prices of four kinds of fish presented below are all 20,000VND per kg)
- 4) Capacity of officers at department of fishery in province and district is improved
- 5) Model of sustainable production of cultured fish of international standard is established

(3) Program Content

Pond aquaculture and rice paddy aquaculture are to take place in Muong Phang Commune in Dien Bien Province and Bang Giang Commune in Lai Chau Province, respectively as demonstration/pilot activities.

The following points need to be improved in pond aquaculture in Muong Phang Commune:

- 1) Women's participation in fish farming. Women are to take part in not only fish sales, but also bringing in fries, feeding, measures against fish diseases, and improvement of nearby environment
- 2) Increase of pond water depth
- 3) Never let discharged water from households into the pond
- 4) Streamlining of water supply (coordination with irrigation and rural water supply work)
- 5) Successful production of fries: maintenance of healthy fries by self-supply of fries, supply of healthy fries (not frail from long hauling), adjustment of production that meets the demand

In Bang Giang Commune, instead of pond aquaculture, rice paddy aquaculture is to be carried out for the following reasons:

- 1) Although valley areas in Lai Chau Province generally have abundant water, rice paddy and fish farming pond cannot coexist due to limited production area. It is better to use the existing rice paddy as fish pond. In such case, fish can be harvested twice a year in harmony with paddy rice cultivation.
- 2) It is considered to be too early to support a fish hatchery center. For the time being, focus should be on rice paddy aquaculture. Acquisition of large amount of fries is difficult, but this can be solved by setting up intermediate breeding center which brings in fries from outside the area.
- 3) Presently, 200 out of 628 households (30%) engage in fish farming. The remaining 420 households do not show strong interest in pond aquaculture. Considering the limited production area, rice paddy aquaculture is deemed to be highly adaptable.

Activities and inputs of this program are as follows;

- 1) Selection of program areas and discussion on the project scheme with the residents carried out by

DARD

- 2) Selection of fish species (ease of fry production, quality of fish meat, appropriateness of fish price, resistance to fish diseases, taste preference of local residents, low tropic level)
- 3) Designing, site selection and construction of small-scale fry production center and intermediate breeding center
- 4) Assigning of full-time center staff, starting of fry production, and establishment of fry production method
- 5) Consultation on designing and site selection of fish pond and assistance to fish pond construction (tools for deep digging, environmental improvement of the neighboring areas)
- 6) Technical assistance on rice paddy aquaculture and establishment of rice aquaculture method
- 7) Education and training of staff of department of aquaculture on pond aquaculture and rice paddy aquaculture
- 8) Training of fish (aquaculture) farmers on fish production
- 9) Constant guidance on fish (aquaculture) production by staff of department of aquaculture
- 10) Compilation of manual on measures against fish diseases, preparation and storage of medicine for fish diseases
- 11) Mobilization of market channels to towns and examination of marketing method that puts additional values
- 12) Examination and analysis of successful and failing cases, and disclosure of information

The small-scale fry production center to be constructed in Muong Phang Commune consist of 1) hatchery, small-scale artificial incubator, rearing place for larval fish, 2) fry nursery (stocking until it is sold), 3) plankton cultivation facility, facility for fry rearing, 4) storage (container for fry stock, fry feed, oxygen tank, and other equipment), all of which can be managed and maintained by the commune. Lot area is expected to be 800 m² (20m x 40m). In this fry center, larva fish are cultivated in nurseries with abundant water hyacinth, and after turning to fries, they are moved to fry nursery. Equipments in the fry center are fine nets to scoop larva fish, and oxygen tank to provide oxygen when selling fish. The private hatchery located in Dien Bien Phu will be a reference for these operations of the fry center

(4) Fishery Resource Management in Dam Reservoir

Hoa Binh dam was constructed on the Da River in 1990s, which is a multi purpose dam to control flood and to create electricity. The average water depth of the reservoir is 60 m (maximum 120 m) and total water stock area 208 km². Along the coast of the reservoir, resettlement peoples continue to have their livelihood based on fisheries and agriculture. However, their lands are too small to harvest enough products and those peoples became to have difficulty in manipulating water of the Da River.

There are plenty of fishermen living along the coast of the reservoir to catch carps, catfishes and snakeheads inhabiting the reservoir. There are some concern about the fisheries in the reservoir. Firstly the number of fishermen is now increasing. Secondly due to the lack of any fisheries management, there are found many illegal fisheries such as dynamite fishing, electric fishing and cyanide fishing. Moreover,

the water level of the reservoir is fluctuated between wet and dry seasons, which range 40 m. Therefore, it is difficult for the fishermen along the coast of reservoir to build houses on the coast and barely adapt to the change of water level. It might be keen to improve the livelihood of fishermen.

Regarding the problems above, the DANIDA is establishing the fisheries management plan through the SCRFA (Strengthening of Capture Fisheries) project. It is expected that the fisheries resources are accurately estimated and relevant guideline for capture fisheries is demonstrated quickly by this project. More concretely, various options, catch management (prohibition of time, prohibition of areas, limit of mesh size, TAC), environment management and market management are adopted and at the same time capacity building of fisheries officers to strengthen the surveillance system of fisheries resources and program to train and enlighten the fishermen are implemented.

This program consists of the following activities;

- 1) Survey of the fisheries resources in the reservoir
- 2) Capacity building of the fisheries officers
- 3) Establishment of fisheries management
- 4) Enlightenment and training for fishermen
- 5) Pilot project to guide the diversification of income

(5) Implementation System

This program is implemented by PPC. Department of aquaculture at provincial and district DARD will offer guidance on fry production center – pond aquaculture scheme in Muong Phang Commune, Dien Bien Province and intermediate breeding center – rice paddy aquaculture scheme in Bang Giang Commune, Lai Chau Province.

10.4 Local Revitalization and Diversification of Income Sources

10.4.1 Non-Timber Forest Product (NTFP) Promotion Program

(1) Background

Most of the non-timber forest products (NTFPs), except for the main products, such as bamboo, rattan, are transported to the outside of the Region without any preliminary processing. Small number of enterprises and organizations for primary processing of NTFPs exist in the Region, together with small number of basic infrastructures for producing NTFPs. Both Sub-DOF, which manages NTFPs, and producers of NTFPs do not recognize market destinations of the NTFPs. Sub-DOF's management structures on NTFPs are very limited as well. In spite of the establishment of the National Plan on Non-timber Forest Product Development and Conservation 2005-2020 by MARD in 2005, not so much progress has been seen in the Region.

This program carries out i) inventory surveys on NTFPs in the Region, ii) technical transfer of stable production, iii) technical transfer for improvement of added values, and establishment and improvement of

primary processing facilities, and iv) exploitation of new NTFPs.

As most of the NTFPs are transported to the outside of the Region, not only examining their distribution channels, but also creation of new markets, and establishment of producers' unions, are considered to be useful and effective for the development of the region.

In this Program, products which can be collected from and produced in the forest land are defined as the Non-Timber Forest Products (NTFPs).

(2) Candidate NTFPs

Over 100 kinds of NTFPs are utilized in the Region, including those of low production and utilization. As most NTFPs grow naturally in the forests, it is said to be difficult to estimate and calculate production volume and make stock assessment. On the other hands, some NTFP species, as bamboos, mushrooms, etc., are cultivated nearby houses and communities, so that it is easy to estimate, calculate and increase their production volumes. Production volumes of NTFPs which are produced and managed by the Sub-DOFs in the Region are listed in the Table 10.4.1. Symbols in the column "Evaluation" are taken from the data by NTFP Research Centre (2007)².

Table 10.4.1 NTFPs which are produced in the Northwestern Region

Category	Vietnamese Name	English Name	Scientific Name	Characteristics	Related Provinces	Evaluation
Edible	Mang Kho	Dried bamboo shoot		Dried bamboo shoots. Mang Kho bamboos are commonly used.	DB, LC, HB	A
	Sat truc	Small bamboo		Fresh bamboo shoots.	DB	A
	Lá dong	Phrynium	<i>Phrynium placenterium</i>	Leaves of the plant in <i>Marantaceae</i> or arrowroot family. Mainly used for wrapped sheets for making traditional cakes.	-	B
	Hạt dẻ	Chestnut		Chestnuts	-	B
Medicinal, including spices	Sa nhân	Amomon	<i>Amomum echinosphaera</i>	Cardamom. Collected naturally, and unstable market.	DB, LC	B
	Thảo quả	Black cardamon	<i>Amomum costatum</i>	Black cardamom	-	A
	Huyết giác (dây máu chó)	Cambodian Dragon Tree	<i>Dracaena cambodiana</i>	A plant in the <i>Dracaena</i> species of <i>Ruscaceae</i> family.	DB, LC	-
	Khúc khắc (Thỏ phục linh)	Vine Family	<i>Smilax glabra</i>	A plant in the <i>Smilax</i> species. Collect naturally. Exploitation poses threat of extinction to this species. Bulbs are used as traditional medicine.	DB	C
	Thiên niên kiện	Vine Family	<i>Homalomena occulta</i>	A plant in the Subfamily <i>Aroideae</i> in the <i>Araceae</i> family. Roots are used for traditional medicine for prevention / cure of inflammatory infection.	-	-
	Củ cu ly	"Cu ly" bulb Scythian lamb	<i>Cibotium barometz</i>	Bulb of tree fern in <i>Cibotium</i> species. Length of leaves grow up to 2m.	-	-
	Cầu tích tươi	Fresh "Cau Tich"			-	-
	Riềng khô	Dried Galingale	<i>Alpinia galanga</i>	A plant in the ginger family. Roots have efficiencies as insecticide and prevention of grazing occultation.	-	-
	Riềng tươi	Raw/fresh Galingale			-	-

² NTFP Research Centre (2007): Technical Report No. 1. Non-Timber Products Potential in the Northwestern Region of Vietnam

Category	Vietnamese Name	English Name	Scientific Name	Characteristics	Related Provinces	Evaluation
	Củ nghệ (trắng; vàng)	Wild turmeric	<i>Curcuma aromatica</i>	A plant in the ginger family. Especially good for liver.	-	-
		Temu lawak	<i>Curcuma xanthorrhiza</i>	A plant in the ginger family. Said to have strong stomachic property, because of combined effect with <i>Curcuma Domestica</i> and <i>C. zedoaria</i> .		
	Củ bình vôi		<i>Stephania rotunda</i>	A flowering plant in the family <i>Menispermaceae</i> . Exported to the domestic medicinal plant market and China. Natural collection poses threat of extinction of the species.	-	C
	Dây tăng tăng		<i>Boehmeria malabarica Webb</i>	A flowering plant in the nettle family <i>Urticaceae</i> . Naturally grows in the forest area. Exported to China.	-	C
	Đăng sâm		<i>Campanumoea javanica BL</i>	A flowering plant within the family <i>Campanulaceae</i> . Being collected/exploited to the extent of extinction of the species.	-	C
	Hoài sơn		<i>Dioscorea persimilis</i>	A flowering plant in the family <i>Dioscoreaceae</i> . Being collect/exploited to the extent of extinction of the species.	-	C
	Củ tích		<i>Barometz</i>	Being collected/exploited to the extent of extinction of the species.	-	C
Oil	Hạt trâu	Vernicia seed (for Tung oil)	<i>Aleurites motana</i>	Seeds are used for extraction of Tung oil, from which bio-fuels and ingredients for cosmetics can be produced.	DB, LC	B
Dye	Cánh kiến	Sticklac Shellac	<i>Laccifer lacca (lac insect)</i>	Resin-like materials which are secreted on the branches of the host trees by the lac-producing insects, such as scale insects (<i>Laccifer lacca</i>). Used as red-color dye and cosmetics. Cọ khiết (<i>Dalbergia hupeana</i>) are planted and used as host trees in Dien Bien.	DB, LC	A
Materials	Song mây (Song mật)	Rattan	<i>Calamus platyacanthus</i>	Raw materials for handicraft making, collected mainly from the protection forests. Small number are cultivated.	DB, LC	A
	Song mây (Song nếp)	Rattan	<i>Calamus tetradactylus</i>			A
	Song đoạn	Rattan in pieces	<i>Calamus</i>	Cut and smashed rattan pieces.	-	A
	Tre nửa (Lùng)	Bamboo (<i>Neohouzeaua</i>)	<i>Bambusa spinosa</i>	Raw materials for bamboo poles, exist mainly in Hoa Binh and Dien Bien provinces. Dead bamboo forests after flowering can be seen there.	DB, LC, SL, HB	A
	Tre cây	Bamboo tree	<i>Dendrocalamus membranaceus</i>		-	A
	Tre nửa (Nửa lá nhỏ)	Bamboo (<i>Neohouzeaua</i>)	<i>Schizostachium pseudolima</i>	Raw materials for bamboo paper. Dead bamboo forests after flowering can be seen in the Region.	DB, LC, SL, HB	A
	Giang		<i>Melocalamus</i>	One kind of bamboos growing in the low lands	-	B
	Bông chít	Reed		Raw materials for brooms, etc.	HB	
Others	Cây guột	Gout trees	<i>Dicranopteris</i>	One kind of ferns	-	-
	Vỏ dây nhót	Nhot vine bark		-	-	-

Note: Documents collected from DARDs and results of the interview surveys with the DARDs

Symbols in the column "Evaluation" are taken from the NTFP Research Centre (2007)

A: High marketability and demands. Production techniques are already developed and extended in the Northwestern Region.

B: High demands but unstable and less production, with difficulties to predict the production. Most of them are collected from the forests.

C: High demands by the unstable Chinese markets. Most of them grow naturally and are expensive.

NTFPs which are adopted from the other locations and introduced to the Region are listed in the Table 10.4.2 (NTFP Research Centre (2007)).

Table 10.4.2 Newly Introduced NTFPs to the Northwestern Region

Category	Vietnamese Name	English Name	Scientific Name	Characteristics	Related Provinces	Evaluation
Edible	Tre Bát độ	Taiwanese Bamboo	<i>Dendrocalamus latiflorus</i>	Origin: Taiwan. Recommended to plant to meet the domestic demands of bamboo shoots and raw materials in the Region. Presently low market value.	-	A
	Ong mật	Honey bees		Mainly cultivated in longan area of Song Ma district in Son La.	-	A
Medicinal	Cây kim tiền thảo	Ginkgo	<i>Ginkgo biloba</i>	Origin: China. Currently being experimented in Song Ma district in Son La. High value as medical tree to supply medical herbal market.	-	B
Construction materials	Cây dó trầm	Eaglewood	<i>Aquilaria crassna</i>	Origin: Ha Tinh Province. Promising commodity has not yet been found.	-	—
	Cây luồng		<i>Dendrocalamus barbatus</i>	Successfully exploited for production of chopsticks, mats, bamboo paper. Processing technique is difficult and high-valued products are expected.	-	A

Note: Documents collected from DARDs and results of the interview surveys with the DARDs

Symbols in the column “Evaluation” are taken from the NTFP Research Centre (2007)

A: High marketability and demands. Production techniques are already developed and extended in the Northwestern Region.

B: High demands but unstable and less production, with difficulties to predict the production. Most of them are collected from the forests.

The forest-related project funded by JICA³ is currently going on in Hoa Binh province, one of the Study Area. Many kinds of NTFPs are planted experimentally by this project. According to the project, the following NTFPs can be introduced to the Region as new NTFPs (Table 10.4.3).

Table 10.4.3 Potential NTFPs for the Northwestern Region based on the Results of the RENFODA Project

Category	Vietnamese Name	English Name	Scientific Name	Characteristics	Related Provinces	Evaluation
Resin	Tram trang		<i>Canarium album</i>	Multi-purpose trees: to produce resin, and to utilize fruits and timber. The resin is used for incense, canarium perfume oil and turpentine. Fruit edible and used as medicine against diarrhea, rheumatism and as a disinfective.	Northwestern Region	
Medicinal, including spices	Sưa Bắc Bộ		<i>Dalbergia tonkinensis</i>	Wood durable and beautiful with fine texture, resistant to insects and termite. Used in construction to make vulnerable furniture and carving. Leaves are used for incense.	Northwestern Region	

³ The Project for Rehabilitation of Natural Forest in Degraded Watershed Area in the North of Vietnam (RENFODA), funded by JICA, from 2003 to 2008.

Cate- gory	Vietnamese Name	English Name	Scientific Name	Characteristics	Related Provinces	Evalua tion
	Talauma Giỏi		<i>Michelia</i>	Utilized as spices for cuisines of Muong ethnic group	Northweste rn Region	
	Xa den	Vietnam staff vine	<i>Celastrus hindsii</i>	A flowering plant in the family <i>Celastraceae</i> . All stem, branch, leave and roots can be used as medicinal herb. Xa den is used as a traditional medicine to treat abscesses, inflames and as antitoxin remedy. Active agents which help to oppress and treat cancers have been extracted from xa den.	Northweste rn Region	
	Ba kick		<i>Morinda officinalis</i>	A flowering plant in the family <i>Rubiaceae</i> . The tuber roots are used as a valuable medicine for improving brain system, tendons, and treating rheumatism and scleroses artery.	Northweste rn Region	

Note: Interview with the RENFODA project personnel

In addition to the ones in the Table 10.4.1, Table 10.4.2 and Table 10.4.3, many kinds of NTFP species exist in the Region, which are utilized by the local residents, especially by ethnic groups in the mountainous region. Most of them are collected and used only by some ethnic groups, but not distributed to the market.

Demands and supply of some NTFPs are not balanced. Examples of strategies for NTFP production increase that maintains the balance between the existing amount (production amount) and demand are shown in the Table 10.4.4.

Table 10.4.4 Strategies for NTFP Production for Maintaining Demand-Supply Balance (Example)

		Stock Assessment (Production Volume)	
		Small/Low	Large/High
Demand	Large/High	<ul style="list-style-type: none"> - Increase of stock assessment - Expansion of production - Maintaining and expansion of market destinations 	<ul style="list-style-type: none"> - Securing and maintaining stock assessment - Securing of production volume - Maintaining and expansion of market destination
	Small/Low	<ul style="list-style-type: none"> - Examination of value addition - Innovation and renovation of processing techniques - Expansion of market destinations 	<ul style="list-style-type: none"> - Examination of value addition - Innovation and renovation of processing techniques - Expansion of market destinations

Note: JICA Study Team

Based on the draft development concepts shown in the Table 10.4.4, target NTFP species for this program are to be decided after examination of prioritized NTFP species for each province. Those NTFPs that are collected and used only by certain mountain ethnic groups, are also to be considered for prioritized NTFP species, depending on the possibilities for production in the Region.

Other NTFP species, which are not produced in the Region or hardly produced/utilized in the Region in spite of high production and high demands in other regions, will also be considered for target NTFP species. The target NTFP species are to be adopted, and its usage and production are to be expanded through the

coordination with other organizations on NTFP.

(3) Program Objectives

- 1) NTFP-related industries will be developed in the target areas
- 2) New kinds of NTFPs will be developed and produced in the target areas

(4) Expected Outputs

- 1) Standing stock and production volumes of NTFP products will be grasped and evaluated,
- 2) Stable production of NTFPs will be carried out
- 3) Primary processing and preservation of NTFPs will be done and market of NTFPs will be diversified,
- 4) NTFP Cooperative Alliances will be organized, and
- 5) Knowledge and techniques of concerned staff will be improved by the trainings on NTFPs.

(5) Program Content

This program is to be implemented in compliance with the National Plan on Non-Timber Forest Product (NTFP) Development and Conservation (2005-2020) and in coordination with The Project for Rehabilitation of Natural Forest in Degraded Watershed Area in the North of Vietnam (RENFODA) (JICA technical cooperation project, scheduled to be completed in September 2008).

- 1) Development of inventory methods to understand the standing stock of NTFPs utilized in the Region
Inventory methods are to be developed and inventory surveys are to be conducted to set up a database on standing stock of the NTFPs in the Region. Specific NTFPs, which are used by ethnic groups, will also be considered for the target NTFPs.
- 2) Development of management systems of production volume of NTFPS in the Region
Database on production volume of NTFPs are to be developed through improvement of the existing management system and/or development of a new system.
- 3) Establishment of production methods of NTFPs and extension of those methods
Production methods of NTFPs are to be extended to the local residents through extension activities. The methods include; seedling production, nursery construction, tending after planting, harvesting and storage of harvested products, etc.
- 4) Marketing survey and expansion of distribution channels
Marketing surveys on NTFPs are to be conducted, so that production plans for each NTFP will be established through grasping the demands and production capacity of NTFPs in the Region. Distribution channels are to be expanded through introduction of the existing and new NTFPs.
- 5) Assistance to establishing producers' organizations
As most of NTFPs are sold to middlemen by local residents on a personal basis in the Region, systems of production and sales are to be strengthened by establishment of producers' organizations. Such systems include production, processing and sales of NTFPs.

- 6) Assistance to establishment and extension of primary processing and preservation of NTFPs
Primary and secondary processing methods of NTFPs, which can be introduced to and conducted in the communities, are to be established. Processing technique are to be taught to the local residents through extension activities. Preservation methods of NTFPs, which can be introduced to and conducted in the communities, are to be established. Preservation technique is to be taught to the local residents through extension activities.
- 7) Construction and improvement of primary processing facilities of NTFPs
Existing processing facilities, if any, are to be improved. New processing facilities are to be constructed.
- 8) Assistance to introduction of new NTFPs into the Region
New NTFPs are to be introduced to the Region in consideration of the future demands. Following activities are to be included: methods for seedling production, nursing, and processing of new NTFPs, and nursery improvement/expansion.
- 9) Assistance to development of markets for new NTFPs
Markets for new NTFPs in the Region are to be developed based on the future production volumes of the NTFPs.
- 10) Assistance to capacity development of technical and administrative staff in the Region
Technical training on production technique, processing and technique and market development is to be carried out to improve capacity of the local government staff. Study tours to the advanced areas of NTFPs are to be conducted to motivate the staff.

(6) Linkage with Other Programs

This program focuses on the production and processing of NTFPs in the forest lands, which can be considered as a local industry of the Region. (refer to Figure 10.2.1). Profitability can be increased by cooperation with 1.2 Agribusiness Promotion Program. As by-products, which can be used as raw materials for organic fertilizer production, are to be produced through processing of NTFPs, cooperation with 1.3 Safe Crops Production Program will make the project effects even stronger. Cooperation with 3.2 Handicraft and Cottage Industry Promotion Program is a must, as some NTFPs, such as bamboo and rattan, can be used as the raw materials of handicrafts.

Results of the RENFODA project are to be included into the components of this program. Those NTFPs which resulted poorly in the RENFODA project are to be examined carefully. This program is to comply with the NTFP-related activities planned in the Agriculture and Rural Development Sector Program Support (ARD SPS, 2007-2012) by DANIDA.

(7) Implementation System

DARDs in the 4 provinces are to be in charge of the extension activities under the supervision of DOF of MARD.

The NTFP Research Centre (NTFPRC) under Forest Science Institute of Vietnam (FSIV) is to carry out

inventory survey, development of new NTFPs, and development of production and processing method. These activities are carried out under the supervision of DOF. NTFPRC is to give guidance and instruction to provincial DARDS.

If medicinal herbs/plants are to be included in the NTFPs in this program, it is necessary to cooperate with the Ministry of Healthcare.

10.4.2 Handicraft and Cottage Industry Promotion Program

(1) Background

Handicraft production is an important cash income source for farmers during off-farm season in the Region. Some ethnic minority people earn their livelihood through handicraft production. Handicraft has academic and cultural significance in terms of succession of traditional technique. Although handicraft production in the Region is expected to play a part in industrialization of rural areas and creation of employment opportunities, its development is rather slow. This is because the handicraft industry in the Region is facing many competitors in advanced handicraft areas around large cities outside the Region. Due to physical conditions of the Region such as mountainous and remote areas, assistance only to production is not adequate. A series of assistance including procurement of raw materials and establishment of market channels are required.

At present, the handicraft industry is facing many challenges. Assistances are required for a) promotion of sales in local cities/towns, b) expansion of demand in coordination with development of tourism, c) development of products with high added values, and differentiation of products through the use of trademark registration system.

Since further study is required to formulate a handicraft and cottage industry promotion program for the Region with target year of 2020, the program will be started on the pilot basis. The pilot project will be carried out to create successful cases and to increase motivations of the people concerned after the completion of the schemes.

Many development projects are carried out in the Region by international agencies, donors, and NGOs as well as the Government of Vietnam. This Master Plan tries to make the most of experiences and lessons learned from all the projects in the Region, and continue their development efforts with a long term perspective for development of the whole region.

(2) Potential for Handicraft and Cottage Industry Development in Each Province

1) Lai Chau Province

CLC has managed handicraft and food processing trainings in rural areas whose aim was income generation by women and farmers during off-farm season. These training courses do not receive enough assistance from the government. CLC is a good site/venue for extension activities as it has a function of community networking. Effective utilization of CLC is to be expected. This

program is to include handicrafts (hand-woven textiles, Japanese paper, bamboo crafts, etc.), processed food (alcoholic beverages, products that use fruits, honey, tea, etc, oil milling, cosmetics such as skin lotion, oil, etc.) , and NTFP (lac, bamboo, mushrooms, rattan). Tea and NTFP in Lai Chau Province hold comparative superiority in terms of raw material procurement. Demand of tea and NTFP in the outside of the Province can be expected so that development of new products should be carried out vigorously. Activities on traditional handicrafts including hand-woven textiles, etc. are good as it contributes to succession of traditions and culture of the target ethnic groups.

2) Dien Bien Province

Development of products for tourists and strengthening of retail and service industries that makes the most of tourism potential are to be examined. Through coordination with the tourism development program, assistance will be required for human resources development, sales promotion and establishment of market channels. Traditional handicraft products by ethnic groups are to be developed based on consumers' need.

3) Son La Province

Through previous projects, such products as wine, honey, tea, dairy products, etc. were developed. Further actions will be required for increase of competitive edge of those products, and marketing. Product development and market expansion through the cluster formation of industries are also needed.

4) Hoa Binh Province

The study on National Roadside Stations Master Plan by JICA is under way in which roadside stations (Michi-no-eki) are being constructed as pilot activities. This program examines how to utilize its sales stores to promote unique products in localities. Expansion of sales channels through marketing and sales promotion are needed because shipment to large consumption areas such as Hanoi, China, etc. is to be expected.

(3) Program Objectives

The objectives of this program are as follows:

- 1) Increase the number of extension workers and lecturers, and capacity development of local government staff
- 2) Establishment of side/secondary occupation such as handicraft, food processing, etc. through development of capacity of local people on production, procurement of raw materials, and marketing
- 3) Capacity development on marketing and expansion of sales channels
- 4) Diversification of local products through development of products and their sales channels
- 5) Expansion of model schemes to other areas

Kinds and quality of products, business skills, etc. are different for each product so that goals should be set carefully.

The average income of those who engage in handicraft in the Region at present is 246,000 VND for men and 116,000 VND for women, whereas the national average is 366,000 VND. The target of this program is to increase the income of those who engage in handicraft production in the Region by 30 to 50% by 2020, making it closer to the national average. This program also tries to reduce the gender difference in income.

To carry out various programs smoothly, DARD and its concerned offices need to cooperate to establish program implementation system. For this, involvement of PPC is highly anticipated. This program aims to establish cooperation framework of local governments for the promotion of the local industries.

(4) Program Content

This program consists of the following activities and inputs:

- 1) Development of administration capacity and environmental improvement
 - 1-1 Strengthening of planning capacity of the local government (government staff, extension workers, CLC steering committee)
 - 1-2 Training of trainers for technical extension
 - 1-3 Collection of basic data
- 2) Promotion of production activities
 - 2-1 Product development, improvement of facility and equipment for packaging, input of tools and equipment
 - 2-2 Production training of handicrafts (textile, Japanese paper, bamboo crafts, etc.)
 - 2-3 Training/guidance on production technique of processed food (alcoholic beverages, product that uses fruits, honey, etc, oil milling, cosmetics (face lotion, oil, etc.)), product development
 - 2-4 Training/guidance on production to improve procurement of raw materials (Forestation and supplementary planting of trees that produce NTFP (lac, bamboo, mushrooms, and rattan), sericulture, etc.)
- 3) Cultivation of sales channels through marketing and of sales promotion
 - 3-1 Strengthening of sales promotion in antenna/pilot shops and sales stores (Roadside stations, product centers, etc.)
 - 3-2 Product marketing, market analysis, sales strategies, and formulation of production plan
 - 3-3 Networking in the locality with an aim for sales promotion (publishing public relations magazine)
 - 3-4 Establishment of cluster of industries for product development
 - 3-5 Strengthening of cooperation with different industries and international firms

(5) Implementation System

Role of each stakeholder is presented in Table 10.4.5;

Table 10.4.5 Implementation System of Handicraft and Cottage Industry Promotion Program

target	content of assistance	implementation agency/org
Handicraft producer (household)	<u>Production</u> In addition to extension of production technique, technical extension for raw material procurement is carried out	DARD, DOIT, Agricultural Extension Center, CLC
	<u>Data Collection</u> Collection of basic data catering to stakeholders and managing conditions is to be carried out to understand the market. Statics that can be used to grasp the current conditions do not exist.	DARD
	<u>Sales</u> Through contract production and fair trade, products are distributed as ones with high added-value	NGO, International firms
Organizations and business firms	<u>Production</u> Guidance on improvement of productivity and products is offered. Management advices and training/lecture on business skills are given.	DARD, DOIT, Cooperative Alliance, NGO
	<u>Product Development–Establishment of Sales Channels</u> Set up a network with other industries and international firms to promote local products. Cluster of industries made up of government, private firms, and academics is established to develop products and expand sales channels.	PPC, DARD, DOIT, Private firms – international firms, research institutes, universities
	<u>Laws - System</u> Incentives for production are increased through the reform of the taxation system. Added-values of products are increased through product certification system.	PPC, MARD, MOIT
	<u>Sales</u> Promotion activities and product fairs in sales offices, and public relations magazines are utilized.	DARD, NGO, International firms

This program is managed by Department of Agro-Forestry and Fishery Production and Salt Industry in MARD at the central level. The main body of program implementation is to be the provincial government. Provincial DARD, Department of Cooperative, Agricultural Extension Centers, etc are to assume their responsibilities. Depending on a target, activities are carried through cooperation with PPC, CPC, Cooperative Alliance, CLC, etc.

10.4.3 Rural Tourism Program

(1) Background

Rural tourism has good prospects as it can contribute to promotion of non-agricultural and handicraft sectors in rural areas and diversification of income sources.

The number of domestic and international tourists to Dien Bien Province is increasing these days. Commodity flow and human exchange between Vietnam and Laos through the Tay Trang border gates in Dien Bien Province are expected to increase. In 2003, Department of Trade and Tourism (Currently DoIT) in the Province conducted a preliminary study to formulate the tourism master plan, and are

carrying out various assistance programs in specific areas. Formulation of the tourism master plan is planned in the other 3 provinces so that tourism is to play a part in development of local economy.

Tourism is to be promoted in coordination with other development projects such as JICA's technical cooperation projects because tourism promotion together with local industry promotions is likely to produce synergy effects such as development of local products (handicrafts, processed food, etc) and activation of service industries.

This program aims to develop rural tourism and diversify income sources of the residents through tourism by setting up culture villages and promote green tourism. Various pilot activities are to be carried out in Dien Bien Province which is likely to lead the tourism development in the Region. Based on the experience and lesson learned from these activities, assistance on tourism is going to be provided to other areas.

(2) Program Objectives

The objectives of this program are as follows;

- 1) Improvement of infrastructure for development of rural tourism and green tourism
- 2) Extension and development of rural tourism and increase of employment opportunities
- 3) Diversification of income sources of rural population and improvement of their business skills
- 4) Increase of cash income through establishment of secondary occupations of rural population

The Region needs to have tourism development that exploits its regional characteristics such as nature and cultures of minority ethnic groups. For this reason, improvement of various infrastructures needs to be carried out while paying enough attention to life ways of local residents and landscapes. Sustainable development of tourism requires residents' participation, so that program benefits are primarily enjoyed by socially vulnerable such as women and people of ethnic groups. Such consideration must be included in the activities to develop tourism.

Table 10.4.6 presents objectives on infrastructure improvement and human resource development targeting 2020:

Table 10.4.6 Target values for 2020 for tourism development in 4 provinces

Target areas, candidate areas	Infrastructure improvement	Software Program
Lai Chau Province <ul style="list-style-type: none"> • Ban Chat • Huoi Quang • Ho Thau • Tien Son 	<u>Road, Electrification, Rural Water</u> →70% of the whole target area of tourism <u>Facilities in the designated areas (national parks, natural reserves):</u> walkways, jetty/pier, walking bridge, rest station →whole target area <u>Tourism Facility</u> : farms and orchards for tourism →2 sites	<u>Human resource development in tourism village</u> <ul style="list-style-type: none"> • Language lesson (Vietnamese, English) • Education of leading figure for traditional dance, singing, etc. • Training of green tourism guides • Management guidance for guest houses
Dien Bien Province <ul style="list-style-type: none"> • Tay Trang Boarder • Muong Phang Commune (Areas around Pa Khoang Lake) • Nuong Luong Commune (U Va Village) 	<u>Border facility</u> : Duty-free shop →1 site <u>Tourism facility</u> : Hot spring, farm for tourism, food hygiene analysis center →candidate site (examination of PPP scheme) <u>Improvement of safety environment</u> : Pa Tham cave, Rafting on the Nam Rom River	<u>Human resource development in urban areas</u> <ul style="list-style-type: none"> • Training of tour guides • Training on tourism and service industry
Son La Province <ul style="list-style-type: none"> • Son La Town • Mai Son • Moc Chau • Muong La (Son La Dam) 	<u>Improvement of urban environment</u> : garbage processing center, wastewater treatment plant →Urban area of Son La Town <u>Tourism facility</u> : Tourist center, dam observation facility, guest ranch → candidate site (examination of PPP scheme)	(language, guest service, business) <u>Coordination with other programs</u> <ul style="list-style-type: none"> • Agricultural program (safe vegetables, livestock, inland fishery, NTFP) • Handicraft program (souvenir production: textile, bamboo-rattan products)
Hoa Binh Province <ul style="list-style-type: none"> • Kim Boi (Thuong Tien Forest, hot spring) • Da Bac (Phu Canh Forest) • Suoi Ngoc • Lac Son 	<u>Tourism facility</u> : Tourist center, walkway, jetty/pier, rest stations → candidate site (examination of PPP scheme) <u>Tourism Facility</u> : farms and orchards for tourism →2 sites	<u>Improvement of security and transportation</u> <ul style="list-style-type: none"> • Sensitization on traffic safety • Sensitization on food hygiene • Bus following a circular route and taxi

(3) Program Content

In order to diversify income sources of local population through promotion of rural tourism, agriculture and local industry have to be encouraged. Especially, it is highly important to know services and merchandise to meet tourists' demand and develop local cuisine and products of high quality by agriculture and local industry. This program consists of the following activities/inputs, offering assistance in wide domains by coordinating with other assistance programs.

1) Assistance to infrastructure for development of rural tourism and green tourism

- 1-1 Improvement of basic infrastructure (road, bridge, electricity, rural water)
- 1-2 Establishment of leisure and other facilities such as spa, rest station, toilet, etc.
- 1-3 Development of information ads, pamphlets, and tourism maps
- 1-4 Establishment of farms for tourism including ranch, orchard, etc.
- 1-5 Improvement of designated areas such as walkways, leisure spots, etc.
- 1-6 Examination of public transport such as bus following a circular route, etc.

2) Assistance for capacity development with an aim to promote secondary occupations

- 2-1 Sensitization workshop targeting local population
- 2-2 Assistance to improve and develop souvenir products that uses patterns/motifs of minority ethnic groups (textile, embroidery, dyed goods)
- 2-3 Assistance to develop and produce special local products (dairy food: soft ice cream, yoghurt), processed meat and fish (ham, sausage, smoked food), and alcoholic beverages (beer, wine),
- 2-4 Promotion of crop cultivation, animal husbandry, aquaculture, fruit cultivation, etc. for the above-mentioned activities (2-3)
- 2-5 Provision of service such as ethnic cuisine, ethnic arts, etc. (establishment of organizations, training)
- 2-5 Practical training which makes use of the program such as training on business skill, calculation (arithmetic), etc., assistance to establish shops in local markets

(4) Implementation System

Under the assistance by PPC, extension activities are carried out by provincial DARD, Department of Cooperative, Agricultural Extension Centers, etc. in coordination with DoIT and Department of Culture, Sport and Tourism.

10.5 Environmental Conservation and Biomass Energy Development

10.5.1 Da River Watershed Conservation Program

(1) Background

Several hydroelectric dams are constructed or planned on the Da river in the Region. They are represented by Hoa Binh Dam, Son La Dam as well as those are being planned such as Huao Quang Dam, Ban Chat Dam, Nam Nhun Dam, etc. With rising crude oil prices, hydroelectric power has been sought after. By the construction and start of operation of the Son La Dam, additional 10 billion kWh of electricity is going to be generated in Vietnam, which accounts for 16 % of hydroelectricity produced in the country (60 billion kWh: estimate for 2020). As for the existing Hoa Binh Dam, however, it is reported that power generation efficiency has been decreased due to sedimentation. Sedimentation has caused the decline of reservoir capacity of small-scale dams for irrigation and hydro-power generation. Deforestation in the upstream areas of the Da river watershed is the main cause of sedimentation.

The main objective of this program is to promote sustainable usage of clean energy, i.e. hydro-power, through forest conservation in the upstream areas of hydroelectric dams. This program a) promotes planting of useful tree species especially with rubber trees in the watersheds and b) adopts agro-forestry with rubber trees and other useful tree species for production forests, and c) improve the quality of protection forests by supplementary planting of indigenous tree species.

The planting promotion is based on the idea of watershed conservation and long-term livelihood improvement while agro-forestry is to be a short-term means for livelihood improvement. Through this

program, forest and soil conservation are to take place, which reduces sedimentation in dam reservoirs and assures sustainable usage of hydropower electricity. Their income of local people is to be increased so as to maintain and manage the forests in the watershed.

(2) Program Objectives

- 1) Conservation of forests and soils to reduce sediments drifting into dam reservoirs
- 2) Improvement of livelihood of local people

(3) Expected Outputs

- 1) Dam watershed conservation measures are formulated.
- 2) Planting to production forests takes place as part of the dam watershed conservation measures.
- 3) People's livelihood is improved on a short-term basis by adoption of agro-forestry
- 4) People's livelihood is improved on a long-term basis by planting rubber and other useful trees
- 5) Quality of protection forests is improved on a long-term basis by supplementary planting of indigenous tree species in the protection forests

The relationship between program activities and their outputs are presented in Figure 10.5.1:

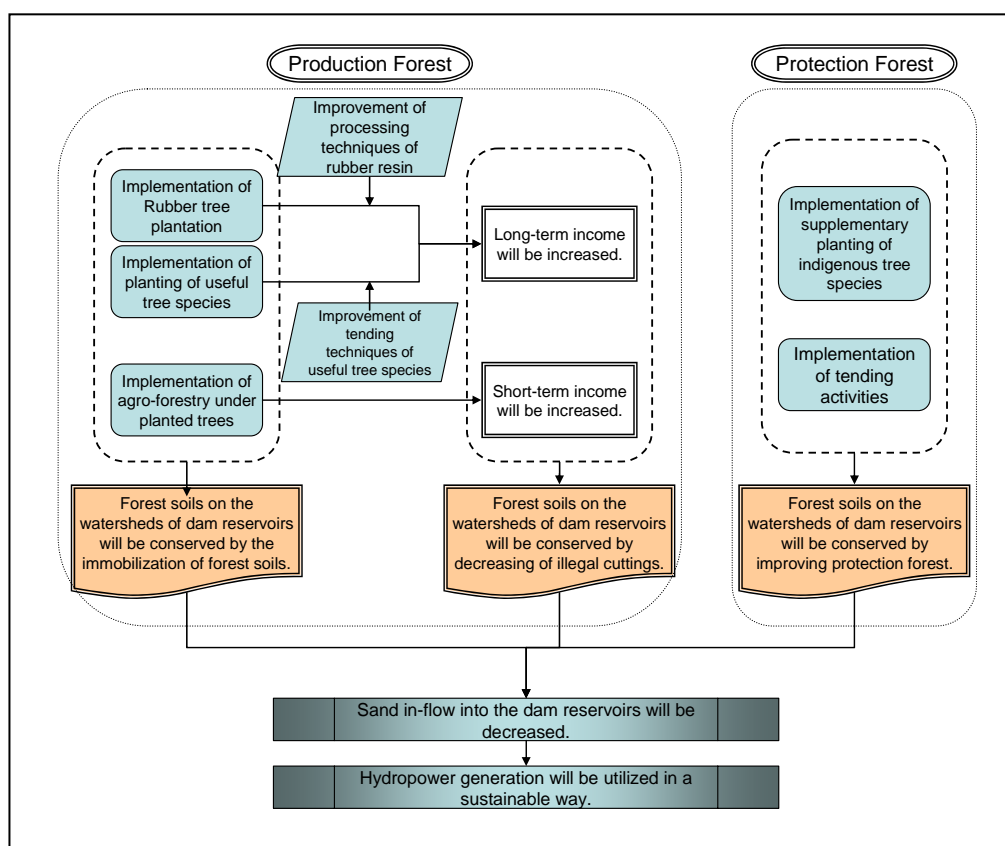


Figure 10.5.1 Activities and Outputs of Da River Watershed Conservation Program

(4) Program Content

- 1) Assistance to formulation of dam watershed conservation measure

Dam watershed conservation measures, including planting of useful tree species such as rubber trees, agro-forestry under their canopies for the production forests, and supplementary planting of indigenous trees for the protection forests are formulated. For the formulation, guidance is given on settings suitable site for forests and demarcation.

2) Adoption of appropriate species and provision of good seedlings

Species of rubber trees that are adapted to the Region are to be adopted. Experimental planting of rubber trees has been already taking place in the Region, so that species are to be determined based on the findings and results of the experimentation. Nurseries for production of seedlings of appropriate species are to be improved. Technique of raising seedlings is to be also improved through training in the advanced areas.

3) Extension and guidance on appropriate methods for planting and tending

Training on methods for planting and tending of useful tree species including rubber trees and indigenous tree species is conducted to improve forestry technique held by people in the area and increase productivity.

4) Development and construction of processing facility of rubber tree sap

Processing facility of rubber tree resin is improved. Training on processing technique for rubber tree resin is offered to the local residents. Study tours to advanced area of rubber tree production are conducted to motivate the residents.

5) Establishment and improvement of nurseries of useful tree species such as rubber trees and indigenous tree species and agro-forestry species

Nurseries of useful tree species such as rubber trees and indigenous tree species are improved. Nurseries of species for agro-forestry are also improved.

6) Assistance to adoption of agro-forestry in coordination with related programs

For short-term improvement of income, crops that will bring immediate income are to be cultivated under the useful tree species such as rubber trees that were planted as a measure for soil and forest conservation and long-term improvement of income for the production forests. The crops should be easy to cultivate and have high market values. They will be determined in coordination with 1.1 Industrial Crop Production Improvement Program, 2.1 Remote Area Food Crop Production Program and 3.1 Non-Timber Forest Product (NTFP) Promotion Program. As kinds of crops which are cultivated under the useful trees are limited in number, experimental cultivation of several kinds of crops under the useful tree species is to be conducted on a pilot basis.

7) Assistance to adopt simplified observation of amount of soil and sand flow/discharge

Changes of the amount of soil and sand flow/discharge caused by planting of useful tree species including rubber trees and adoption of agro-forestry to the production forests and supplementary planting of indigenous tree species to the protection forests are to be observed by using simple methods.

(5) Candidates for Useful Tree Species and Varieties

If a target area is a production forest, the followings can be candidates in addition to rubber trees;

Table 10.5.1 Useful Tree Species for Production Forest in the Northwest

No.	Vietnamese	Scientific Name	English	Evaluation
1. North Western (NW): consisting of 4 provinces: Lai Châu, Điện Biên, Sơn La, and Hoà Bình				
1	Tếch	<i>Tectona grandis</i>	Teak	
2	Xoan ta	<i>Melia azedarach</i>	White cedar	
3	Lát hoa	<i>Chukrasia tabularia</i> A.Juss	Chittagong wood	
4	Gạo	<i>Bombax malabarica</i> DC	Red silk-cotton tree	
5	Trám trắng	<i>Canarium album</i> (Lour.) Raeusch	Chinese olive	
6	Keo lai	<i>Acacia mangium</i> x <i>Acacia auriculiformis</i>	Acacia hybrid	
7	Keo tai tượng	<i>Acacia mangium</i> Wild	Acacia mangium	
8	Keo lá tràm	<i>Acacia auriculiformis</i>	Acacia auriculiformis	
9	Bạch đàn Urophylla	<i>Eucalyptus urophylla</i> S.T.Blake	Eucalyptus urophylla	
10	Bạch đàn lai	các giống lai khác loài bạch đàn uro, camal, tere		
11	Dó trăm	<i>Aquilarria crassna</i> Pierre ex Lecomte	Eagle tree	
12	Luồng	<i>Dendrocalamus membranaceus</i> Munro		
13	Trầu	<i>Vernicia montana</i>	Abrasin-oil tree	

Note: List of main forest species for production forest in 9 forestry ecological zones (FEZ) (Issued with Decision No 16/2005/QĐ-BNN, 15/3/2005)

The followings can also be candidates for the production forests from the results of the forest-related project by JICA (RENFODA);

Table 10.5.2 Candidate Tree Species for Production Forest in the Northwest as the results of the RENFODA Project

No.	Vietnamese	Scientific Name	English	Evaluation
1	Tràm	<i>Melaleuca</i> sp.	Melaleuca	
2	Sưa Bắc Bộ	<i>Dalbergia tonkinensis</i>		

Note: Interviews to the RENFODA project

If a target area is protection forest, trees to be planted will be selected from local tree species that grow in neighboring forests or areas. Crops and varieties for the agro-forestry are to be selected on the basis of the crops and varieties listed in the 3.1 Non-Timber Forest Product (NTFP) Promotion Program, and in cooperation with 1.1 Industrial Crop Production Improvement Program, 2.1 Remote Area Food Crop Production Program.

(6) Implementation System

Sub-Department of Forestry (Sub-DOF) under DARD is to be the main body for implementation under the supervision by Department of Forest of MARD. Vietnam Rubber Industry Corporation and Rubber Corporation in each province are to be the main body for seedling production of rubber trees, together with Sub-DOF. Sub-DOF is to be the main body for seedling production of useful tree species and indigenous tree species. Processing of rubber tree sap is to be done in conjunction with the Vietnam Rubber Industry Corporation and Rubber Corporation in each province. Department for Agro-Forestry Products Processing & Salt Industry (DAFPPSI) and NTFP Research Centre under FSIV are to work together on selection and cultivation of crops and varieties for agro-forestry activities. Agricultural extension center in each province is to work together to assist extension activities. Overall management of the program is

to be done by NIAPP which formulated the National Master Plan on Rubber Trees. As experimental planting of rubber trees are taking place in each province in the Region, this program is to be implemented in coordination with the implementation agencies of rubber tree planting.

(7) Points of Concern

For efficient collection of rubber tree resin, rubber tree forest should cover a large area to some extent. However, planting of single species of rubber tree in a large area is not advisable due to disturbance to biodiversity and fire prevention. For this reason, planting plans need to be examined in consideration of environment, which includes forest of mixed species, or small patches of single species scattered around while the patches of different species are next to each other.

10.5.2 Natural Forest Preservation Program

(1) Background

The Region shares national boundaries with China and Laos in its mountain regions where rare species of animals and plants exist. Currently, 11 special-use forests (SUFs) are appointed or planned. Even if a forest is planned for special use, development plan and management plan are not formulated, and organizations to manage the forests are not established. Immediate measures are thus needed for this. In forests which are appointed as SUFs, the land inside its boundaries is used for agricultural production by many local residents. Protection of rare species of animals and plants requires coexistence of SUF and local residents.

In forests which are not appointed as SUFs, this program aims to improve management technique and awareness of the local residents through establishment of management organization and formulation of management plan, etc. The program also promotes protection of rare species of animals and plants in SUFs through proper implementation of participatory management plan. In forests which are appointed as SUFs, this program examines activities by existing management organizations and implementation of management plan. If needed, technical training and facility improvement are done to further promote management activities of SUFs.

As stated earlier, in forests which are appointed as SUFs, local residents are frequently seen living their lives, and carrying out production activities such as cultivation of farms and fields. In order to promote protection of rare species of animals and plants in SUFs, implementation of management plan with active participation of local residents, and examinations of measures to reduce competitions with other land use are both needed. In addition, core zones and buffer zones are to be established and demarcated for each SUF so that core zones are to be conserved and regenerated and buffer zones to be utilized.

In some parts of SUFs, local residents live their lives and engage in production activities. On the other hand, in some other parts of SUFs and protection forests, rare species of animals and plants have been discovered. Such discovery may have taken place because production activities by the local residents in SUFs and protection forests exposed those animals and plants. In case of protection forests, in which

some kinds of activities are allowed to be conducted, populations of some kinds of species have been decreased by over-exploitation⁴. Therefore, some protection forests, in which rare and endangered flora and fauna live, are to be conserved as Species/Habitat Conservation Area, which is one of the categories of the SUFs.

It is not advisable to expel people living within SUFs, when future protection and management of SUFs are considered. Participatory management of SUFs is needed so that the people will not be expelled, and they and SUFs can coexist.

(2) Targeted Natural Forest

There exist 11 forests assigned as SUF by the review⁵ of SUFs in the Region. Adding to them, the Management Strategy for a Protected Area System in Vietnam to 2020 published by MARD⁶ appoints or plans forests as SUFs, and the report⁷ by Bird Life International and MARD show other protection areas in the Region. All these forests/areas are presented in Table 10.5.3.

Table 10.5.3 Forests in the Northwest Appointed or Planned as Special-Use Forest (SUFs)

Name	Location (Province)	Area (ha)	Description	M.S (2003)	B.I. (2002)	Review (2006)	Manage- ment Org	Manage- ment Plan
I. National Park								
Ba Vi	Ha Tay, Hoa Binh	12,023	Evergreen forest on low mountains; main flora, <i>Libocedrus macrolepis</i> , <i>Podocarpus neniifolius</i> , and endemic primate species, Tonkin Snubnose: <i>Pygathrix avunculus</i>	2	No	No	No (No management organizations are set-up, because of only few areas in Hoa Binh)	
Cuc Phuong	Ninh Binh, Thanh Hoa, Hoa Binh	22,200	Primary forest on limestone mountains. Diverse flora and fauna; Delacour's Langur (<i>Semnopithecus francoisi delacouri</i>)	12	No	No	No (No management organizations are set-up, because of only few areas in Hoa Binh)	
Hoang Lien	Lao Cai	28,5000	Evergreen forest on highest mountain in Vietnam. Many threatened and endemic gymnosperm species and precious medicinal plants; <i>Hylobates concolor</i> and endemic bird species.	13	✓	No	✓	✓
	Lai Chau	7,500		13	✓	No	No	No
II. Nature Conservation Area								
IIa. Natural Protection Area								
Copia	Son La	11,996	Forest on island with many Rhesus Macaque: <i>Macaca mulatta</i> .	7	✓	5	✓	✓

⁴ Harvesting of Po Mu (*Fokienia hodginsii*) has been prohibited now by over-exploitation in the natural forests, including protection forests and special-use forests.

⁵ FPD internal data (2006). According to the Directive No. 38/2005/CT-TTg, each province has prepared "Report of Results on Review and Planning on Three (3) Categories of Forests under the Directive No. 38/CT-TTg" in 2006. FPR organized and summarized the reports from all of the provinces.

⁶ MARD (2003): Management Strategy for a Protected Area System in Vietnam to 2020

⁷ BirdLife International in Indochina and MARD (2002): Sourcebook of Existing and Proposed Protected Areas in Vietnam: Second Edition

Name	Location (Province)	Area (ha)	Description	M.S (2003)	B.I. (2002)	Review (2006)	Manage- ment Org	Manage- ment Plan
Muong Nhe	Dien Bien	44,940	Evergreen, broad-leaved forest; many large mammal species. The former management unit has been managed by the Sub-DFP in Dien Bien province after division of former Lai Chau province into Dien Bien and Lai Chau province. Although the Mung Nhe forest located in Lai Chau province are designated as the special-use forest, the management unit and management plan have not been set-up by now.	19	✓	1	✓	✓
Muong Te	Lai Chau	33,775		19	✓	2	No	No
Hang Kia - Pa Co	Hoa Binh	5,258	Evergreen forest on limestone mountains; <i>Pinus kwangtungensis</i> ; <i>Paphiopedilum</i> spp., new orchid variety.	27	✓	7	No	No
Phu Canh	Hoa Binh	5,647	Evergreen forest on low mountains; high biodiversity.	30	✓	9	✓	✓
Sop Cop	Son La	17,369	Located in the steep and mountainous region. Evergreen forests still remain at high elevation, however, the natural vegetation there has been extensively cleared and replaced by scrub.	37	✓	3	✓	✓
Ta Sua	Son La	13,412	Ever-green tropical forests on the ridges of the mountains; Black-cheeked Crested Gibbon: <i>Nomascus (Hylobates) concolor</i>	40	✓	6	✓	✓
Thuong Tien	Hoa Binh	5,873	Ever-green tropical forests on the low mountain region.	45	✓	8	✓	✓
Xuan Nha	Son La	16,317	Forest on limestone mountains; <i>Podocarpus nagi</i> and many Angiosperm species.	48	✓	4	✓	✓
Ngoc Son – Ngo Luong	Hoa Binh	15,891	The proposed nature reserve lies on the north-eastern flank of the limestone range that extends in a north-westerly direction from Cuc Phuong National Park to Son La province. Tropical forests on the limestone karsts. The globally critically endangered and endemic primate, Delacour's Leaf Monkey <i>Trachypithecus delacouri</i> has been recorded in several contiguous areas of similar habitat. The project for establishment of protect areas funded by World Bank/GEF and Eco-tourism Development Project by Spanish Agency for International Cooperation are implemented from 2002.	No	✓	10	✓	✓

Name	Location (Province)	Area (ha)	Description	M.S (2003)	B.I. (2002)	Review (2006)	Manage- ment Org	Manage- ment Plan
Nam Don	Son La	18,000	This reserve is situated on the south-western flank of a mountain range that runs parallel to the main chain of the Hoang Lien mountains. The main objective of the nature reserve was the protection of a population of Gaur <i>Bos gaurus</i> that previously occurred in the area. However, during the period from 1986 to 1990, the species was eradicated from the area. The site currently has few or no biodiversity values.	No	✓	No	No	(There are no value for this forest to be conserved as SUF, because natural forest there had been already exploited.)
III. Landscape Protection Area								
Dao Ho Song Da	Hoa Binh	3,000	Island in the Da river water reservoir.	15	No	No	No	(Application to be SUF was rejected.)
Muong Phang	Dien Bien	936	Muong Phang Cultural and Historical Site has historical, tourism and educational values. The site protects the base of General Vo Nguyen Giap, the commander-in-chief of the Viet Minh forces during the Dien Bien Phu campaign of 1954. The site is only 40 km from Dien Bien Phu town.	No	✓	2	✓	(belongs to Sub-Department of Information & Culture in Dien Bien)

Source : M.S (2003): MARD, 2003, Management Strategy for a Protected Area System in Vietnam to 2020.

B.I. (2002): BirdLife International in Indochina and MARD (2002), Sourcebook of Existing and Proposed Protected Areas in Vietnam: Second Edition

Review (2006): FPD data (2006) which were organized and summarized with "Report of Results on Review and Planning on Three (3) Categories of Forests under the Directive No. 38/CT-TTg" from each province.

Serial numbers (SN) in the table are concurrent with those in the tables in the three documents above.

Columns for management units and management plan are concurrent with information from BirdLife International in Indochina and MARD (2002) mentioned above and results of interview to DARDs and DFPs in the northwestern region.

Specific protection forests, in which rare and endangered fauna and flora exist, are to be appointed as Species/Habitat Conservation Areas (SHCA), which is one of the categories of the special-use forest. Followings are the protection forests in the Region, which are to be appointed as SHCA (Table 10.5.4).

Table 10.5.4 Protection Forests in the Northwest, which are to be Planned to be Appointed as Species/Habitat Conservation Areas

Name	Location (Province)	Area (ha)	Description
Nam Cuoi, Tua Sin Chai (Sin Ho district), Binh Lu (Tam Duong district)	Lai Chau	1,000~1,500	One of rare tree species, Po mu, is found in these areas.
Ma Cuai, Nam Tam (Sin Ho district)	Lai Chau	2,000	Those rare species as Thong tre la dai, Hoang dang gia, Thong duoi chon, and Dinh Tung are found in these areas.
Ngoc Chiên, Nặm Păm, Hua Trai, Chiềng Ân, Chiềng Muôn communes (Muong La District)	Son La	15,000	Many number of Black Crested Gibbons (Vượn đen tuyền) habitat in these forests. Rufous-necked Hornbill (Niệc cổ hung) also is confirmed to habitat. Pơ mu tree exist in the forests in Ngoc Chiên, Nặm Păm and Chiềng Ân.

Note: Interview with the Sub-DFP of each province

Among the above, following SUFs and protection forests are to be the sites of this program on the basis of situations of setting-up of management board and management plan, and importance of SHCA.

- ✓ Dien Bien Province : Muong Nhe SUF (as Nature Reserve)
- ✓ Lai Chau Province : West Hoang Lien SUF (as Nature Reserve)

- ✓ Lai Chau Province : Protection forests in Nam Cuoi, Tua Sin Chai, and Binh Lu districts (as SHCA)
- ✓ Son La Province : Sop Cop SUF (as Nature Reserve)
- ✓ Son La Province : Protection forests in Muong La district (as SHCA)
- ✓ Hoa Binh Province : Hang Kia – Pa Co SUF (as Nature Reserve)

(3) Program Objectives

- 1) Special-use forest and subject protection forests are properly managed in the program areas
- 2) Livelihood of the local residents is improved in the program areas

(4) Expected Outputs

- 1) Management organization is established in each SUF and subject protection forests. Activities of existing management organizations are monitored.
- 2) In each SUF and subject protection forest, necessary inventory study is conducted, subject forest areas are demarcated into core zone and buffer zones, if necessary, and development plan and management are formulated. Implementation of existing development plan and management plan is confirmed.
- 3) Management capacity of managers and engineers is improved through training
- 4) Forestation (Supplementary planting), tending and fire-prevention activities are carried out according to the development plan and management plan. Rural livelihood improvement activities, including introduction of NTFP species, infrastructure, and preparation/demarcation of farm lands, etc. are to be conducted.
- 5) Forests become new tourism resource through the coordination with 3.3 Culture Village and Green Tourism Program

The relationship between program activities and their outputs are presented in Figure 10.5.2:

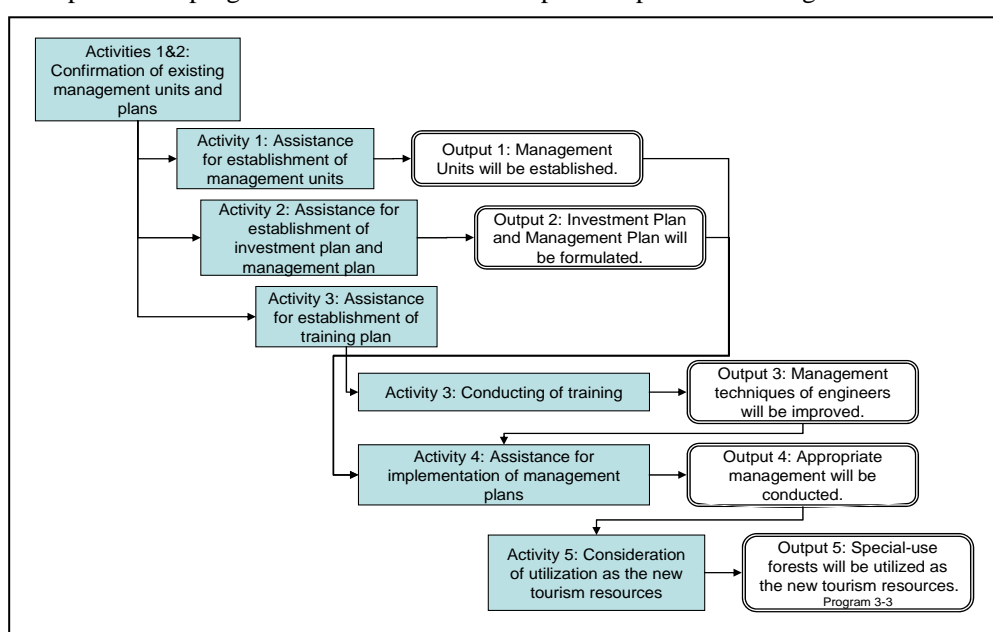


Figure 10.5.2 Activities and Outputs of Natural Forest Preservation Program

(5) Program Content

1) Assistance to establish management board

Conditions of establishment of management board of SUFs are examined. Through technical training for establishment, necessary management board is established.

2) Assistance to formulate investment plan and management plan

Whether investment plan and management plan are formulated is checked for the SUFs. If necessary, inventor study on animals and plants is carried out to formulate investment plan and management plan. Assistances for formulation of management plans for the protection forests subject to SHCA are to be conducted. Study tour to advanced areas is carried out to increase people's motivation.

3) Assistance to implementation of various inventory studies and technical assistance

Inventory study on animals and plants in SUFs and subject protection forests is conducted to collect basic data for formulation of investment plan and management plan.

4) Assistance to demarcation of SUFs

Land is used for other purposes even in areas that are appointed as SUFs. Boundary line between SUFs and neighboring area for land use is set, which will be reflected to a land use plan; setting demarcation of core zones and buffer zones. Boundary line for the protection forests subject to be SHCA is to be set.

5) Assistance to participatory management activities of SUFs, i.e. Core Zone (supplementary planting, tending of trees and fire prevention), improvement of management technique, and extension

Appropriate management of SUFs, such as supplementary planting, tending and fire prevention, is carried out through participation of the local residents. Management technique and residents' motivation for management are improved through training on management technique and study tours to the advanced areas. Nurseries to produce seedling for management activities (supplementary planting, etc.) are improved, and seedling production through participation of residents is carried out.

6) Sensitization of local residents on rare species of animals and plants

In order to make local residents abstain from the use of rare animals and plants in SUFs, sensitization of local residents on importance and necessity of rare animals and plants is carried out.

7) Assistance to rural livelihood improvement activities in the SUFs (core zones) with participation of local residents

Assistances to extension activities for the rural livelihood improvement activities and implementation of those activities through the cooperation with other programs, including introduction of NTFPs, preparation/demarcation of farm lands, and so on, and through adequate utilization of the buffer zones of the SUFs.

8) Assistance to regular monitoring of animals and plants

Management activities of SUFs is monitored to check if they are carried out as stated in investment plan and management plan.

9) Assistance to construction and improvement of facilities for extension/sensitization activities on

animal and plant protection

Facilities such as extension centers and walking trails, that are necessary for animal and plant protection and tourism resources, are improved

10) Examination on applicability as tourism resource

In coordination with 3.3 Culture Village and Green Tourism Program, possibility as new local tourism resource is examined.

(6) Implementation System

Sub-DOFs, which belong to DARD, are to be the main body for carrying out various inventory studies, formulating various plans and conducting extension activities under the supervision by Forest Protection Department of MARD. Sub-DOF of each province is to conduct seedling production. FSIV under MARD is to cooperate when various inventory studies on rare animals and plants are conducted.

Department of Forest Protection (DFP) in each province was independent from DARD and directly set under PPC until quite recent. DFPs have been merged into DARD to be Sub-DFP in sequence in accordance with the regulation of Forest Protection Department of MARD; in 2007 in Hoa Binh, and in 2008 in the 3 provinces other than Hoa Binh. As the results of the mergence, work for the adequate management of the whole areas of the forest lands, including the SUFs is to be carried out in close cooperation with Sub-DOF and Sub-DFP.

(7) Points of Concern

Adequate and sufficient compensation to the villagers should be taken into consideration in case of resettlement from the inside of the SUFs to outside / surrounding buffer zones by PPC's decision.

Inventory study of SUFs and formulation of management plan are to be carried out in compliance with the policy and guidelines of Vietnam as well as international ones, relating to the nature conservation such as Vietnam Red Data Book, IUCN Red Data Book, and so on. Cooperation with NGOs on nature protection and other related activities is to be examined.

10.5.3 Biomass Energy Production Program

(1) Background

With rising crude oil prices, bioenergy has been capturing attention as alternative fuel. Production of bioethanol in Vietnam faces problems on food security as it (bioethanol production) competes against food and feed crops cultivated on limited arable land.

In November 2007, "Project proposal on development of biofuel until 2015 and vision to 2025" (Prime Minister's Decision No. 177/2007/QĐ-TTg) was launched in Vietnam. In June 2008, MARD issued the Minister's Decision No. 1842/2008/QĐ-BNN-LN concerning the approval of the program on research, development and product use of *Jatropha curcas* L. in Vietnam in period 2008-2015 and vision until 2025", showing its serious intention to plant *Jatropha* as the raw material for biodiesel.

Jatropha curcas L., namely Jatropha or physic nuts, is one of the tree species that are easy to plant in the mountainous areas in the Region because it can grow on most locations and few is eaten by livestock and insects. Experimental planting of Jatropha that are conducted in other parts of Southeast Asia in similar climate and examination of appropriate species for Vietnam have been going on in Forestry Biotechnology Centre (FBC) which is under FSIV (an affiliated organization of MARD) and the Experiment and Research Center of Thanh Tay University.

In Vietnam, forestation has been taking place under 5-Million Hectare Reforestation Program. In degraded forest land and denuded land in mountain areas of the Region which are difficult for forestation, tree planting is making little progress as it gives local residents very small incentives. Under such circumstance, planting of Jatropha whose seeds can be collected from a year after planting onward can offer incentives to the residents. Furthermore, leftovers (by-products) from oil extracting such as compressed cakes and seed husks can be made into organic fertilizer.

Minimum size of an oil extraction facility is said to be 3,000 t/year, for which Jatropha forest of 1,000 to 1,500 hectares is necessary. Although a relatively large forest area is needed in terms of efficiency of seed collection, a large area of uniform forest is not recommended as it is considered dangerous in terms of biodiversity and disasters. Mixed forest of Jatropha and other species whose seeds produce oil and/or scattered patches of Jatropha forests should be set up, both of which have strong environmental concern.

This program a) examines and adopts appropriate varieties of Jatropha, b) develops and constructs oil extraction facility and c) purifies/refines biodiesel. Involvement of private firms in oil extraction facility and forestation activities is to be examined.

(2) Program Objectives

- 1) Foundation to get alternative energy is established in the Region including the program target areas
- 2) Livelihood of the local residents is improved in the program target areas

(3) Expected Outputs

- 1) Plan for bio-derived fuel production is formulated
- 2) Seedlings of tree species that can be used as raw materials for biodiesel are produced
- 3) Tree species that can be used as raw materials for biodiesel are planted and properly managed
- 4) Appropriate oil extracting technique is developed to improve productivity
- 5) Private firms are involved in biodiesel production

(4) Program Content

This program is implemented in coordination with the Project proposal on development of biofuel until 2015 and vision to 2025, and 5-Million Hectare Reforestation Project.

- 1) Assistance to adoption of appropriate species and supply of good seedlings

Based on the results of experimental planting done by Forestry Biotechnology Centre (FBC), etc.,

appropriate species for the northwest provinces are to be examined. System and facilities to produce good seedlings in the 4 provinces are to be improved. As for oil-producing tree species other than *Jatropha*, those which have already been growing in the Region are to be used. At the same time, good species are to be examined and their seedlings are to be produced.

2) Assistance to formulation of plan to plant various tree species including *Jatropha*

After selecting appropriate area for planting, plans to plant various oil-producing tree species including *Jatropha* are to be formulated. Although a relatively large forest area is needed in terms of efficiency of seed collection, a large area of uniform forest is not recommended as it is considered dangerous in terms of biodiversity and disasters. Mixed forest of *Jatropha* and other oil-producing tree species and/or scattered patches of *Jatropha* forests should be set up as planting plan should have environmental concern.

Trau tree (*Vernicia montana*) is one of the oil-producing trees planted in the Region. Production volume of seeds of Trau tree have been decreasing because of low level of demand. Trau tree can be one of the candidate tree species as not only for oil-producing trees but also timber trees for the Region.

3) Assistance to extension of proper planting method and tending method

Jatropha can grow on most locations and its growth is expected in the Region. Based on the results of experimental planting done by FBC, etc., methods for planting and tending appropriate for the northwest provinces are to be developed. Through the extension of methods for planting and tending, healthy *Jatropha* is to grow.

4) Assistance to development and construction of oil extraction technique and facilities

In coordination with FBC, etc. that have been conducting tests on oil extraction techniques, efficient oil extraction technique and facilities are to be developed. Research and development on utilization of by-products produced at the time of oil extracting are to be conducted.

5) Assistance to promotion of involvement of private firms

Private firms are expected to be involved in tree planting and oil-extracting activities including facility construction. In cooperation with PPC, seminars and workshops to promote the involvement of private firms are to be conducted. Possibility for cooperation with private firms and NGOs which have been already working on *Jatropha* planting and oil extracting is examined.

6) Assistance to promotion of biodiesel usage

Market research on biodiesel usage is to be conducted, and enlightenment on benefits and effectiveness of biodiesel is carried out.

The relationship between program activities and their outputs are presented in Figure 10.5.3;

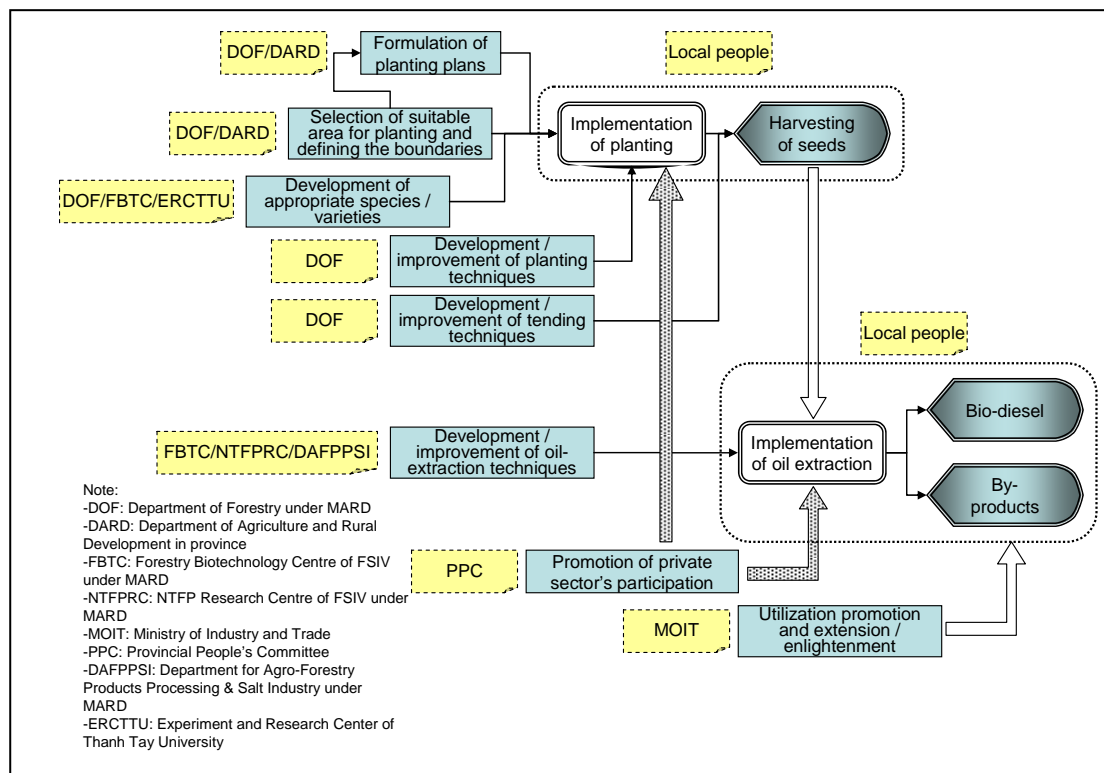


Figure 10.5.3 Activities and Outputs of Biomass Energy Production Program

(5) Implementation System

This program is implemented according to the Strategies for Jatropha Development (Plan) under the leadership of MARD as follows:

DARD is to be the main body to confirm appropriate areas for planting and formulate planting plan under the leadership of Department of Forestry in MARD.

Experimental planting of Jatropha that are planted in other parts of Southeast Asia in similar climate and examination of appropriate varieties for Vietnam have been going on in FBC, the Experiment and Research Center of Thanh Tay University, etc. Appropriate varieties for the Region are to be developed in cooperation with these research centers.

As for oil extracting methods, research has been conducted in FBC and NTFP Center. Appropriate oil extracting technique and facilities are to be developed under the leadership of Department for DAFPPSI.

Leftovers (by-products) from oil extraction such as compressed cakes and seed husks can be made into organic fertilizer. By-products are to be effectively used in cooperation with Agribusiness Promotion Program (1.2).

Promotion of usage of biodiesel that went through final purification/refining is to be carried out, following the policy by MOIT. DARD is to be the main body for extension of by-product usage. As for the promotion of involvement of private firms in planting activities and oil extracting process, each PPC is to be the main body to improve the condition for private sector involvement.

(6) Points of Concern

Although a relatively large forest area is needed in terms of efficiency of seed collection from *Jatropha* and other trees, a large area of uniform forest is not recommended as it is considered dangerous in terms of biodiversity and disasters. Mixed forest of *Jatropha* and other oil-producing species and/or planting of several species of trees in mosaic should be done. Such planting plan with environmental concern should be sought. Planting along the streets/roads and as boundary trees for paddy fields/agricultural fields are to be considered by easiness of planting and harvesting of seeds.

10.6 Irrigation and Water Supply Development

10.6.1 1 Water Users Organization (WUO) Strengthening Program

(1) Background

In Vietnam public works on irrigation have been financed by its government in principle. Operation and maintenance of those irrigation facilities covering more than 30 ha of areas have been commissioned to Irrigation Management Company (IMC). By enactment of the Decree No.154/2007/ND-CP in 2007, collection of water fee by IMC was terminated, and farmers became the ones with full responsibility for irrigation operation and management. Prior to this Decree, MARD presented a guideline for establishing WUO as a part of the Circular No.75/2004/TT-BNN. Establishing of WUO, however, has been taking place more slowly than originally planned.

The number of existing irrigation sites in the Region is 5,100 sites covering 61,000 ha (average: 12 ha per site). Through the irrigation development in various poverty reduction projects by the Government of Vietnam and international organizations/donors, irrigation was improved in 70% of the irrigation sites (43,000 ha out of 61,000 ha). The remaining 30% (18,000 ha) has an urgent need to repair their facilities, and such facilities in need of repair are likely to increase in the years to come. This program aims to promote establishment of WUO and development of their capacity together with development of service capacity of DARD. This program coordinates with on-going irrigation repair works of the existing system.

This program is to select model areas from the 35 irrigation sites (especially 29 sites that need rehabilitation), and assist WUOs in terms of irrigation hardware and software including improvement of capacity to operate and maintain the facilities after their transfer. This program builds up the foundation for sustainable irrigation development through capacity development of DARD staff and establishment of WUOs in all the mid-sized irrigation sites in the Region.

(2) Program Objectives

The size of irrigation areas that need repair is 18,200 ha in the Region. This program presupposes that irrigation facilities will be repaired in 20% of these areas by 2020. Based on this presupposition, WUOs are to be established and trained in 82 sites by 2020 under this program. Each of the sites is over 30 ha.

Table 10.6.1 Development of Mid-Sized Irrigation during this M/P (2010-2020)

Province								
	2010-2012		2013-2015		2016-2020		total	
	No. of Sites	Total Area (ha)	No. of Sites	Total Area (ha)	No. of Sites	Total Area (ha)	No. of Sites	Total Area (ha)
Lai Chau	2	180	6	230	10	420	18	830
Dien Bien	5	220	7	280	12	500	24	1,000
Son La	4	200	6	260	12	460	22	920
Hoa Binh	1	260	6	250	11	440	18	950
NW: Total	12	860	25	1,020	45	1,820	82	3,700

This program is to be implemented in accordance with annual work plan of each province for mid-sized irrigation development.

The objectives of this program are as follows;

- 1) Establishment and training of WUO following the guideline by MARD
- 2) Democratic management of WUO
- 3) Improvement of irrigation agriculture technique of WUO members
- 4) Improved capacity of DARD staff who is involved in establishment and training of WUO

(3) Program Content

1) Establishment and training of WUO

The primary duties of WUO are fair distribution of water, facility operation and maintenance, mediation of conflicts over water, and collection of irrigation fee. In an irrigation project in the Region that covers over 50 ha, WUO consists of 100 to 300 households (0.2 ha per household). The general meeting of WUO, whose participants are WUO members, have the highest authority for decision making. WUO executives who represent and work for the members are elected in the general meeting. WUO officers for facility operation and maintenance do their work based on the decisions made in a meeting of executives. Each operation and maintenance work is led by the sector leader and a work group is formed for each work such as maintenance and repair.

Establishment of WUO follows the following process;

- i) Confirmation of farmers views/wishes and members (who the members are)
- ii) Confirmation of the basic plan of the program and irrigation area layout by farmers
- iii) Discussion and agreement on land ownership and land exchange-consolidation and signing of agreement by the members
- iv) Explanations of the conditions of program implementations by DARD
- v) Discussion and agreement on WUO finance necessary for facility operation and maintenance
- vi) Land survey (if no accurate cadastral map exists)
- vii) Examination of irrigation facility program outline

- viii) Agreement paper on WUO establishment
- ix) Improvement of irrigation area including construction of drainage canals for feeder line
- x) Training on operation and maintenance of irrigation facility
- xi) Management, operation and maintenance of irrigation facilities by farmers

2) Management, operation and maintenance work after establishment of WUO

Management, operation and maintenance duties after establishment of WUO and rules for irrigation fee collection are as follows:

- i) Operation and maintenance of irrigation system are commissioned to WUO after completion
- ii) DARD formulates assistance plan for capacity building of WUO in cooperation with new IMC
- iii) DARD and IMC assist in strengthening of WUO
- iv) WUO establishes membership system of all the beneficiary farmers while receiving support from DARD and IMC
- v) WUO elects members of executive committees and WUO officers for work implementation while receiving support from DARD and IMC
- vi) WUO elects WUO officer in charge of facility operation and maintenance while receiving support from IMC
- vii) WUO examines members' capacity to pay irrigation fees, and submit the study report to DARD
- viii) WUO in cooperation with IMC decides the amount of irrigation fee in the harvest season, and report to DARD
- ix) WUO collects irrigation fee from all the members
- x) WUO estimates the cost for repair and maintenance of facility in cooperation with DARD and IMC
- xi) WUO saves money for emergency operation and maintenance and rehabilitation

(4) Implementation System

Provincial DARDs are to be in charge of establishment and training of WUO under the management of Department of Water Resource Facility Management (Currently, Department of Irrigation) in MARD. IMC is to be in charge of management, operation and maintenance of irrigation facilities. Before establishment of WUO was required by the law, IMC carried out management, operation and maintenance of facilities. They have ample human resources and experiences. The leader of the Department of Production of the Commune Agricultural Cooperative serves also as the irrigation leader. He/She is to be in charge of water management under the guidance of IMC.

10.6.2 Mountain Stream Multipurpose Use Program

(1) Background

Irrigation development is one of the most important components of poverty reduction programs. In the Region, irrigation development has been done by Program 135 and other programs. In the past, irrigation

development was carried out mostly in flat sections of mountain areas (in valleys) because of its cost effectiveness. The Region has limited number of irrigation sites of over 50 ha. Eighty percent (80%) of the existing irrigation sites (100%=5,000 sites, 40,000 ha) consists of small sites; less than 10 ha (less than 50 households) each. Geographical restrictions of the Region make it impossible to develop a large site. Thus, irrigation development methods used for mid- to large-size irrigation in other parts of Vietnam cannot be used in the Region. For this reason, contents of facility planning and functions of WUO which engages in facility operation and maintenance need to be re-examined based on the unique conditions of the Region.

Access to safe water has also been a pressing issue in the Region. As stated in Chapter 7, the GIS study on existing infrastructures found that many water facilities had broken down or their water had dried up within a few years after their construction. The main reasons for such dry-up and break down were a) lack of enough data on groundwater and b) lack of rules for facility management, operation and maintenance such as regular maintenance and collection of irrigation fees. Need for sensitization of the residents on safe water usage was reported in the study because lack of knowledge on sanitation and hygiene was causing water-borne diseases. Contamination of water at the water sources and in irrigation canals caused by livestock has been a serious problem. In addition to the sensitization on sanitation and hygiene, facilities for safe drinking water are needed.

This program promotes small-scale multi-purpose water resource development in the Region that includes irrigation and rural water. For this, technical improvement and capacity development of officers need to be carried out. Experiences and lessons learned from the pilot activities are to be closely analyzed so that participatory development methods that are better fitted to the situations of the Region can be used in the full-fledged implementation of the program. Such implementation is to be carried out in coordination with NGOs as well. Water facilities are to be constructed based on the proposals submitted by farmers' groups. Sense of facility ownership is to be promoted among the beneficiary farmers through participatory development process. Fund schemes that are suitable for bottom-up approach are to be examined.

In this program, water sources are to include both ground-surface and underground water. For the time being, ground-surface water has higher priority because not enough data on underground water exists in the Region. Improvement of minority ethnic groups' access to safe water also has high priority because it is an urgent matter.

Below is an image of multi-purpose water facility proposed by this program:

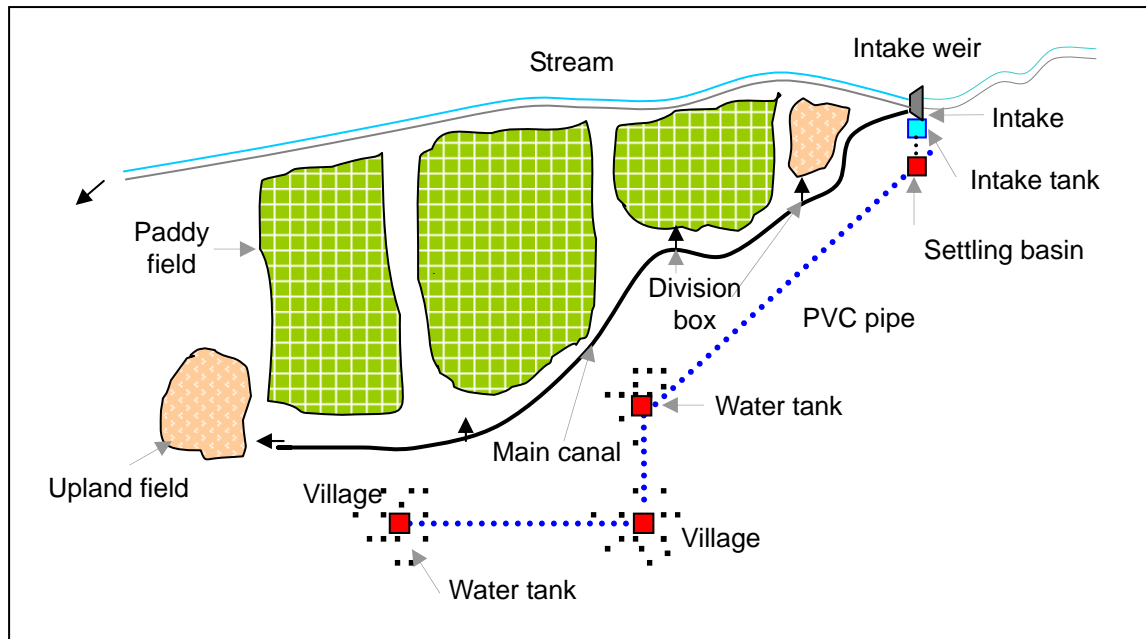


Figure 10.6.1 Example of Multi-Purpose Water Facility Using Mountain Stream

The typical design of multi-purpose water facility using mountain stream is summarized below:

1) Amount of water and flow amount of mountain stream during low-water season

- The maximum size of irrigation site is 5 ha, 25 farming households and 150 water users (individuals). Amount of water for irrigation is much larger than that for safe water supply.
- Paddy rice is cultivated on 60 to 70 % of the irrigated sites. Maize, sugarcane and vegetables grow on 30 to 40% of the sites.
- The demand for irrigation water is especially high in February (at the time of soil paddling) and April-May (flower blooming season)
- Water canals are to be made of concrete as water flows across steep hills. If water conveyor capacity is 60%, needed amount of water is 1.0 liter/ha/second.
- Safe drinking water is to be conveyed by use of PVC pipes at 60 liters/person/day. If water conveyor capacity is 80% and water is supplied for 12 hours a day to 150 persons, water flow amount is 0.25 liter/second.
- Based on the above, if the water flow amount of a stream is over 5.0 liters/second, it can be included in this program. Most of the mountain streams in the Region are considered to satisfy this condition. This condition must be taken into consideration in the site survey.

2) Points to Keep in Mind in Planning and Design of Facility

- One fixed weir is to be placed in a stream. Amount of concrete for the weir is much larger than that for water canal, taking over most of the costs.
- Needed amount of water for irrigation is much larger than that for safe water supply. Designing of facility is to focus on irrigation. For water management, safe water supply is also included.
- Water intake structure is set. Major canal after the intake is to be reinforced concrete rectangle

canal as it may cut across steep hills. (bottom width: 10 cm, water depth: 5 cm, speed of water flow: 2m/sec)

- Division work is set at every 50 m interval. Through one feeder canal, water is supplied to a land of about 1 ha.
- Safe water is taken directly from a stream or through the major water canal (direct intake in the figure). If an irrigation canal is long, water should be taken at the nearest point to the village. In such a case, attention must be paid to water pollution.
- Water flows to the intake tank. There, coarse sand in water is deposited in a grit tank, then water flows through a PVC pipe (2 inch diameter) to the water tank with faucets attached.

(2) Program Objectives

This program aims to develop multi-purpose water facilities in 2 sites per commune by 2020. As the Region has a total of 608 communes, the development target is about 1,200 sites (irrigation area: 6,000 ha, User of safe water: 180,000 people). The program works should start in Lai Chau Province where the rates of irrigation and safe water supply are both low and not enough underground data exists.

In program implementation, training of DARD staff on planning and implementation is necessary. As this is a water resource development program targeting minority ethnic groups in mountainous area, sustainable management, operation and maintenance of facilities require sensitization of the residents. For this, fostering of social workers who motivate and facilitate the community members is needed. Engineers must work to reflect the resident's wishes in the facility planning, and raise the sense of ownership. In addition to technical training on small-scale water resource development, chances to learn participatory development should be also provided to engineers.

(3) Program Content

- 1) Optimization of program implementation process (examination of proposal method)
- 2) Budget allocation (at this step, development site has not been selected, and budget of sector-development type is needed)
- 3) Announcement to every commune about program implementation (Equal chance for participation)
- 4) Raising awareness of farmers and assistance to proposal writing
- 5) Participatory development survey on candidate sites
- 6) Preliminary planning of facility by local government and explanation to the residents
- 7) Confirmation of opinions and wishes by the residents and modification of plan if necessary
- 8) Detailed design (including estimate of operation cost and construction design)
- 9) Environmental impact assessment (EIA)
- 10) Acceptance/Endorsement by PPC
- 11) Bid tendering and construction by contractors
- 12) Residents' participation in construction to raise sense of ownership (especially in the construction of distribution canals)

- 13) Establishment of WUO and mutual agreement on management rules and operation and maintenance (including rules for irrigation fee collection)
- 14) Organizing basic data through the use of GIS
- 15) Monitoring of activities, organizing lessons learned (points to be improved) and including the lessons in annual plan

(4) Implementation System

This program is managed by provincial DARD. As for the safe water supply, this program is to coordinate with CERWASS in each province.

10.7 Rural Road Development

10.7.1 Rural Road Maintenance Program

(1) Background

Rural roads in Vietnam consist of district roads, commune roads, inter-commune roads and village roads. In the Region, although commune centers are accessible by rural roads, many rural roads cannot be used in the rainy season because they are not paved. During the rainy season, many villages become isolated from one another. Such seasonal blocking of traffic hampers people's socio-economic activities, denying access to medical care, education and marketing of agricultural products. The rate and the quality of road improvement in the Region are both low due to the shortage of local fund.

Improvement of rural road leads to a) fulfillment of the basic human needs, b) improved access to outside markets (eliminating the isolation of village economy), and c) increase in employment opportunities and household income by making favorable conditions for development of the rural industries. As an effective measure for poverty reduction, the Government of Vietnam considers rural road development as one of the most important elements of the National Road Development Strategies. Improvement of rural roads to establish efficient road network based on the following five points has been an urgent matter:

- 1) To maintain, consolidate and upgrade the existing traffic networks according to the technical standards applicable
- 2) To concentrate on building roads to a) the centers of communes, b) commune clusters where no road exists, c) agricultural and forestry farms, and d) rural industrial zones
- 3) To continue to build up the inter-village and inter-commune road system to form overall traffic network
- 4) To connect the rural transport network with the national transport network and to build the system of approach bridges and flyovers at intersections of express ways, national highways and local roads.
- 5) To develop small-sized motorized transport such as small tractors suited to the conditions of rural infrastructure.

'Master Plan for Transportation Development by 2010 and Orientation by 2020' was prepared by DOT in

each Province and approved by the central government. The section of this master plan on improvement or construction of national, border, provincial and rural roads presents a long list of road projects, including the size/scale, duration/schedule and cost of each project.

The total length of roads in the Region is 11,300 km, 75% of which (=8,490 km) are that of rural roads. Forty percent (40%) of the rural roads in the Region are paved. Each northwest province has Rural Road Development Master Plan / development strategies whose targets for 2020 are asphalt-paving of 100% of the district and commune roads and gravel-paving of 100% of the village roads.

Table 10.7.1 Rural Road Development Plan in NW Region by 2020

Existing Road (km)	Construction A (km)	Rehabilitation B (km)	Total A+B (km)	Total Investment (billion VND)
8,490	1,437	3,421	4,858	5,793

Source: Rural Transport Development Strategy, Ministry of Transport, December 2006

Based on the long list in the DOT's master plan mentioned above, each province makes a short list of priority road projects for every five-year period. Some of the projects are implemented with domestic and overseas funds such as SPL by JBIC. This Rural Road Maintenance Program by JICA M/P study excludes construction and improvement of rural roads. Instead, this program focuses on operation and maintenance of roads that were constructed or improved by other projects.

As for operation and maintenance of roads, a fixed amount of money is allocated every year as fund for maintenance of national and provincial roads. Emergency maintenance at the time of disasters and periodical maintenance of the roads, which are supervised by capable and knowledgeable government officers, have been carried out. As for the fund for maintenance of district and other roads, a scarce amount of money is allocated. Only gravels and cement for emergency road maintenance and periodical maintenance are provided by the province. Maintenance of inter-commune and village roads is done by voluntary labor of local residents. For these reasons, road quality is low, and road management capacity of local staff is also low.

Each province in the Region has a plan to improve operation and maintenance of its rural roads. When the four plans are combined, estimated annual investment cost for the period 2011-2020 to improve the operation and maintenance of roads of 7,422 km (total length) is 623.4 billion VND.

This Rural Road Maintenance Program (2010-2015) is to solve the above-mentioned issues on road maintenance. The targets of this program are local people and provincial, district and commune officers, who are responsible for O&M management. Aims of this program are to a) establish organizations for rural road maintenance (including maintenance of district, commune, inter-commune and village roads), b) promote participation of local people in road maintenance, and c) establish effective fund management system. Using donor's fund for technical cooperation/assistance, pilot activities are to be carried out. The activities include, a) capacity development of local government staff of the 4 provinces, b) e-filing of road data/information which is necessary in establishing effective network of rural roads, and sharing the data/information with the relevant organizations, c) preparation of a guideline on participatory road

operation and maintenance and d) road operation and maintenance by the local residents. For the pilot activities, a 20-km commune road is to be selected in each province. The activities are, thus, carried out for the roads whose total length is 80 km.

For selection of target areas, priority will be put on districts and communes which have roads ranked high on the list of roads requiring urgent improvement by DOT and DPC. Areas will be also selected where multiplier effects are expected through the cooperation with other development programs on agricultural production, cottage industries including NTFP and rural tourism.

(2) Program Objectives

The overall goals of this program are a) improvement of road access, b) enhancement of job opportunities and income generation, and c) quality improvement of education, healthcare and public hygiene. The project objectives are to a) strengthen the system of road operation and maintenance and b) enhance people's awareness of road maintenance.

The contents of this program are as follows:

- 1) Capacity improvement of a) road maintenance staff of the department of transport in each province and b) officers of district and commune people's committees on rural road operation and maintenance
- 2) Establishment of databases by compiling existing information and plans of rural road maintenance. Sharing of the database among the relevant organizations such as DOT ,DPC and CPC
- 3) Compilation of operation and maintenance guidelines in collaboration with the local governments and residents
- 4) Improvement of participatory rural road operation and maintenance

The lessons learned from the activities of this program (carried out from 2010-2015) are to be utilized in the latter half (2016-2020) for the road operation and maintenance long-term development plans. These plans are to be established by the 4 provinces to fulfill the development goals.

Table 10.7.2 Effectiveness on Long-Term Development

Pilot Activities (2010-2015) Total length	Activities in the second period (2016-2020) Total length	Effect (times)
80 km	3,711 km	46

(3) Program Content

In order to achieve this program, inputs such as experts, maintenance materials and equipment are to be allocated for the Phase I (2010-2012) and the Phase II (2013-2015).

Major activities in the Phase I consist of a) enhancement of local staff on rural road maintenance works at DOT, DPC and CPC, b) e-filing of rural road data/information and sharing them with the relevant

organization on e-network and c) participatory road maintenance by the local residents through the establishment of a fund mobilization scheme.

Phase II activities include a) monitoring of maintenance capacity of leaders who were trained during the Phase I, b) checking of road maintenance plans and their progress, c) provision of road information to local people, d) monitoring of mobilization of the proposed fund and appropriate measures to manage the fund, and e) improvement of the operation and maintenance manual based on lessons learned from the road repairing work by local people.

Detailed activities are as follows:

1) Training of Leaders for Rural Road Management

1-1 Data collection for making a plan of rural road operation and maintenance (O&M)

Under the guidance of experts and DOT, DPC staff collects data on O&M of rural roads belonging to their district to prepare an O&M map of rural roads. The map will be distributed to the related organizations. It will also be converted into e-files and stored in computers as a part of road database. For data collection, DPC staff together with CPC and representatives of the local people will study the present situations in detail.

1-2 Monthly and yearly road maintenance plans by responsible staff

CPC staff prepares monthly and yearly O&M plans of commune and village roads based on the data collected in the above 1-1 and submit the plans to DPC. Under the guidance of the experts, DPC collects each CPC plan to compile a district O&M plan. If discrepancies were found on road transport connections between the district and village road networks, DPC instructs CPC to modify the road plan. DOT, the leading organization of transport matters, compiles a provincial O&M plan. The provincial monthly and yearly O&M plans include a detailed list of equipment and materials, labor contributed by local people and required subsidies.

1-3 Technical guidance on management and monitoring of construction

Technical guidance will be given to road management staff. The guidance will be on management and monitoring methods to maintain the technical grades of rural roads according to the MOT standards.

1-4 Listing of local contractors and construction equipment

DOT prepares a list of local contractors and construction equipment for road construction and maintenance works in each province. Based on the list, the experts and DOT check the contractors' capability of crisis management for recurrent road collapse, landslide, and flooding.

1-5 Training to enhance people's participation (through workshop)

60-70% of the total maintenance costs come from people's contribution. Local government staff, together with the experts, prepares appropriate measures to reduce the share of local people.

2) Information Collection, Processing and Transmission

2-1 Database (location, construction time, improved rate, O&M record)

DPC staff prepares a database on the existing and proposed roads that includes location, construction time, improved rate, and O&M record. Under the guidance of the road infrastructure and the GIS experts, DPC staff lists major items of database on the O&M map by using GIS. All databases and the O&M map are to be stored in computers.

2-2 Explanation on database to district and commune staff

A workshop for district and commune staff is held to explain how to prepare the rural road databases. A representative commune in each district of the 4 provinces attends the workshop. (The total number of communes is 607)

In the workshop, data processing and its managing method are taught so that the attendants will carry out speedy and efficient maintenance works once they go back to their places.

2-3 Joint networks of database among communes, districts and provinces

E-filing data are to be shared among provinces, districts and communes. Fifty (50) sets of personal computers are to be installed at the relevant organizations to exchange information and enhance technical management of maintenance works.

2-4 Transmission of latest information on disasters, traffic jams, and traffic control. Public relations activities/public information to the local people

By using the computer networks, the latest information on disasters, traffic jams and traffic control, etc. is exchanged among provincial and district staff. Such information will be given to the local peoples.

3) Establishment of O&M System and Preparation of Guideline

3-1 Preparation works for a new O&M system

After reviewing issues of the current O&M works, which are carried out by the local people at the command of local government staff in a top-down manner, the staff in cooperation with the local people prepares a new O&M system including the rules. DOT, DPC and CPC staff prepares a draft of the new O&M system under the guidance of the social development expert. The draft is to be approved by the provincial government.

3-2 Preparation of O&M guideline through the collaboration of local government staff and people

The local government staff, together with local people, prepares O&M guideline under the guidance by the social development and participatory development experts.

3-3 Establishment of O&M system through discussions among staff and people

A new O&M system is to be established through discussions among local government staff and people.

3-4 Study of local materials that can be used for road construction

The Region is located in mountainous areas, where the maintenance cost of rural roads is extremely high because maintenance equipment and materials come from other areas. It is important to utilize soil, gravel and sand materials existing within the target areas as much as possible. Based on the study on road maintenance materials carried out by the road and the environmental experts, information on material availability will be disclosed.

3-5 Establishment of fund mobilization scheme

Provincial governments face constraints in approaching foreign fund sources (foreign donors) due to the subjective project selection criteria of the donors. Such selection criteria are not always suited to the current conditions of the Region. The provincial governments are anxious about fund mobilization. Adjustments of project selection criteria are required to attract foreign fund sources for effective investment.

In this program, study and trial on a fund mobilization scheme for participatory maintenance will be carried out by the local government staff in cooperation with the social development and participatory development experts. NGO, NPO and other voluntary groups are expected to cooperate with this program to establish the system. Establishment of the fund mobilization scheme is to be completed within this program's 6-year period.

3-6 Establishment of monitoring systems

Monitoring and evaluation of the new O&M system and trials of fund mobilization scheme are to be performed every year. Based on the results of the evaluations, the two systems are to be studied and corrected by the relevant local government staff and experts so that optimum systems will be finally established.

4) Workshop and O&M Works

4-1 Sensitization workshop on participatory O&M

Sensitization workshop on participatory O&M is to be held by the CPC leaders trained in this program. All the local people are to participate in this workshop, because the conditions of the rural roads depend much on their contribution of maintenance work. Major discussion topics include how to allocate people's contribution of maintenance works while taking their economic situations

into consideration.

4-2 Preparation of O&M manual (daily maintenance, work at emergency time)

The O&M manual for rural roads is to be prepared by CPC staff based on the conditions of daily maintenance and maintenance at the emergency time. In the workshop, the O&M manual is to be distributed to the local people.

4-3 Technical training on rural road management

Local people receive technical training on rural road management by the road experts because they play the major role in road maintenance.

4-4 Road repair works carried out by local people

To master road maintenance techniques, road repair works are to be carried out by the local people in the program areas.

(4) Implementation System

The Vietnamese side of the program is composed of provincial DOT, DPC and PCP. Their relevant organizations are provincial DPI and DARD. On the beneficiary side are water user's organizations, agricultural cooperatives and other mass organizations.

10.8 Rural Electrification

10.8.1 Renewable Energy Development for Rural Electrification Program

(1) Background

Rural electrification in remote mountainous areas of the Region faces constraints such as complicated topography, scattered and thin population, communes being far from transmission lines, and low income of farmers. Setting up power transmission lines and constructing distribution facilities require a large monetary investment. The Region has abundant potentials for constructing medium and small-scale hydropower plants, but most potential sites remain undeveloped due to inaccessibility and fund shortage.

EVN has been giving development priorities to a) non-electrified rural areas that can be easily connected to the existing national electric networks and b) electrified areas where electric energy loss is increasing due to deterioration of equipment. The provincial governments of the Region have been trying to increase the current household electrification rate (43-89%) to 80-95% by 2020. Provincial DoIT has been implementing rural electrification projects by using diverse funds from the Vietnamese government and foreign countries such as SPL of JIBIC.

Off-grid electrification was done in combination with irrigation projects by PPC with fund and supervision by MARD. After 1999, off-grid electrification was done independently under the leadership of PPC, but establishment of off-grid system by PPC was not possible due to a lack of comprehensive planning and

fund mobilization by the local authorities. Twenty percent (20%) of the households in Lai Chau, Son La and Dien Bien are located in remote non-electrified areas that are not included in the national grid extension plan. Renewable energy carries a large significance because, in addition to supplementation of the national grid systems, it becomes an independent local power source for production and domestic use of the local people.

Global warming is a serious issue nowadays in all over the world. Much effort has been made to study and apply renewable energy in the electric sector. Both the Government of Vietnam and the northwest provinces acknowledge the indispensability to apply/utilize renewable energy in rural electrification as the Government of Vietnam signed the Kyoto Protocol to the United Nations Framework Convention on Climate Change in 1997.

Considering the fact that ethnic minorities in the Region live in remote areas far from the national grid, application of renewable energy for electrification is an urgent and important matter to meet the basic human needs. Renewable Energy Development Program is, thus, proposed to expand rural electrification.

The objective of this program is to develop off-grid electrification systems in non-electrified communes located far from the national grid through the use of renewable energies such as micro hydropower, solar energy, wind power and biogas. Independent local power sources are to be created by this program. Pilot activities of this program are to be implemented and managed by DIT, DPC, CPC and the local people with technical assistance by donor countries.

For the selection of the pilot areas, priorities are to be given to a) communes with a very low electrification rate according to the DIT, b) communes whose electrification was proposed in the Commune Development Plan (CDP), and c) areas where multiplier effects are expected together with other development programs on agricultural production, cottage industries including NTFP, and rural tourism. This program will not cover Hoa Binh Province because all communes are to be electrified by the national grid by 2010.

In implementation of an action plan of rural electrification by off-grid systems,

- 1) The manual and database prepared in the study on “ Northern Rural Electrification Plan by Applying Renewable Energy July, 2002 “ should be referred and if necessary, additional data and modification shall be given to those manual and database.
- 2) Based on experiences from the JICA pilot project of off-grid type village hydropower carried out in Hoa Binh Province, rural electrification and potential of renewable energy use in each province should be studied in detail for implementation of the action plan. It is necessary to establish an optimum plan for the target area.
- 3) Concerning fund mobilization, technical development and strengthening of organizations for off-grid typed rural electrification, detailed discussions should be carried out, based on the recommendations mentioned in the previous study.

(2) Program Objectives

The overall goals of this program are to a) expand rural electrification in remote areas, b) improve the living standards of ethnic minorities, and c) improve education, healthcare and public hygiene. The project objectives are to a) increase the electrification rate in the target areas and b) enhance the capacities of local government staff on participatory rural electrification project formulation.

Off-grid rural electrification requires a lot of small-scale projects, and each project needs to follow the following steps;

- 1) To secure fund for initial investment
- 2) To set up a system of electric fee affordable for local people
- 3) To operate and maintain the electrification system based on electric fee collection
- 4) To pay off the loan

The fee system is to be established by reinforcing the current system. As for O&M, village organization is to be responsible after the installation of equipment. Training on O&M methods is to be offered to village staff because inspection and repairing currently going on are not sufficient to maintain the equipment.

The contents of this program are as follows:

- 1) Capacity building of local government staff in the northwest provinces
- 2) Examination and analysis of off-grid rural electrification
- 3) Formulation of commune electrification project
- 4) Establishment of participatory O&M system of off-grid power source (participation of local people)

Know-hows gained from the program activities in 2010-2015 are to be reflected in the long-term rural electrification development plan in its latter period (2016-2020). Expected results of this program will spread out throughout the region.

Table 10.8.1 Effectiveness on Long-Term Development

Pilot Project (2010-2015) (household)	Long-Term Development Plan (2016-2020) (household)	Effect (times)
300	33,000	110

Remarks: Total households in three provinces excluding Hoa Binh; $336,000 \times \text{non-electrified rate}(20\%) \times \text{off-grid typed power source rate}(50\%) = 33,000$

(3) Program Content

In order to achieve this program, activities and inputs such as experts, maintenance materials and equipment are divided between the Phase I (2010-2012) and the Phase II (2013-2015).

Major activities in Phase I consist of a) capacity development of local government staff engaging in rural electrification under DIT, DPC and CPC, b) study on potentials of off-grid power development through the application of renewable energy, c) project formation and implementation based on proposals made by

local staff and people, d) transfer of equipment installation technique to local people, e) establishment of O&M systems, f) preparation of O&M guidelines, and g) establishment of electric fee-collection system and its trial management.

Phase II activities include a) e-filing of results of the studies on off-grid development potential, b) establishment of monitoring systems managed by the local government staff, c) continuation of equipment installation, d) transfer of technique to local people, e) monitoring on O&M, f) improvement of O&M manuals, g) management of electric fee-collection system and h) repair work done by the local people.

Details of the activities are as follows:

1) Staff-Training for Rural Electrification Project Formation

1-1 Data collection on rural electrification programs

Under the guidance of the program experts and DIT staff, DPC staff classifies the electrified communes into grid-type or off-grid-type and collect data on power supply and distribution. DPC studies the number of non-electrified communes that must depend on off-grid type electrification and their living conditions. All the collected data will be converted into e-files. E-filing data are to be shared among provinces, districts and communes.

1-2 Collection of information on fund mobilization for the electrification program

Local government staff collects information on fund mobilization for the existing and proposed electrification programs and study the possibility of having diverse fund sources for the program/pilot areas.

1-3 Training on project cycle management including project supervision, equipment installation and monitoring

Training on project cycle management including supervision, equipment installation and monitoring is to be offered to DIT and DPC staff responsible for rural electrification.

1-4 Study/Examination of local contractors and available equipment and materials

DIT prepares a list of local contractors and available equipment in existing off-grid power facilities. It also prepares domestic enterprises, universities and oversea companies that have knowledge and/or experience of equipment and materials for power generation by use of micro-hydropower, solar energy, wind and biogas energy.

1-5 Study and training to increase people's participation

Construction and maintenance of off-grid electrification facilities/equipments depend upon the public fund and/or people's participation. Local government staff in cooperation with the experts is to establish appropriate fund mobilization/acquisition schemes by reducing people's work.

2) Study on Power Development by Applying Renewable Energy

2-1 Potentials for micro hydropower generation (water resources, site, capacity)

DIT and DPC staff examines rainfall, river water, irrigation canals and installation sites and study development potentials for micro hydropower generation. Under the guidance of the power generation and the GIS experts, DIT staff lists major items of database on the topographical map by using GIS. All databases and the map are to be stored in computers.

2-2 Possibility of solar power, wind power and biogas generation

Possibilities of solar and wind power generation depend on meteorological characteristics of the pilot program areas. After collection and analysis of the data on sunshine hours and wind velocity, possibility of using solar and wind energies for power generation and their installation sites will be studied from technical and economic points of views. As for biogas, farmers are already using this energy as fuel. Studies on the possibility of conversion of biogas to gaslight and/or electric power generation are needed.

The numbers of electric power generation equipment and households in the three districts in the program/pilot areas are to be as follows:

Micro hydropower: 150 units (150 households), Solar power: 15 units (15 households)

Wind power: 1 unit (60 households), Biogas: 15 units (15 households)

2-3 Explanation of rural electrification to district and commune staff

A workshop for district and commune staff is to be held to explain rural electrification by use of renewable energy. A representative commune in each district of the 3 provinces is to attend the workshop. (The total number of communes is 393)

In the workshop, results of the studies on possibility of off-grid power development are introduced. Proposal-typed participatory rural electrification programs are also introduced to the workshop attendants. DIT and DPC staff and the experts are to exchange opinions with the attendants.

2-4 Cost estimation on installation, operation and maintenance works

Costs of power generation equipment, installation, operation and maintenance are to be estimated, based on the site conditions and accessibility. This cost estimation is to be used in establishing the fund mobilization scheme.

2-5 Advice to DTT staff on data management of off-grid power sources

E-filed data on off-grid power source development compiled by DPC are to be managed by DIT. By using the computer networks, the latest information is to be shared among provincial and district staff.

3) Project Formation and Implementation

3-1 Training on project planning

In order to develop off-grid power sources by local people, training of DIT, DPC and CPC staff is to be carried out by the social development expert. Topics of this training are a) project formation based on proposal-typed rural electrification, and b) project management including project design, fund mobilization, implementation, O&M, and monitoring and evaluation.

3-2 Explanation of renewable energy generation by DIT, DPC and CPC

Renewable energy generation and proposal-typed rural electrification are to be explained to the local people by DIT, DPC and CPC staff who went through the above training (3-1).

3-3 Establishment of executing committee (local government staff and local residents)

After the explanatory meeting, a joint project committee consisting of local government staff and commune residents is to be established to formulate a participatory project.

3-4 Preparation of proposals for electrification by use of renewable energy

The joint committee is to prepare a proposal for rural electrification with the consent of local people and submit the proposal to the related organizations for approval.

3-5 Installation of equipment and technical transfer on operation and maintenance

Off-grid power facilities are to be operated and maintained mainly by local people.

After getting approval, the renewable power generation expert and local government staff are to teach local people about installation, operation and maintenance of power equipment.

3-6 Establishment of operation, maintenance and monitoring system

Monitoring and evaluation are to be performed every year on the installed power generation and distribution equipment. Based on the results of the monitoring and evaluations, problems and their countermeasures are to be disclosed. Through the analysis of the problems, the operation, maintenance and monitoring system is to be finally established.

4) Establishment of O&M Systems and Preparation of Guidelines

4-1 Workshop on participatory O&M

Sensitization workshop on participatory O&M is to be held by the CPC leaders trained in this program. All the local people are to participate in this workshop because off-grid power development depends upon their labor and financial contribution to maintenance activities.

4-2 Preparation of operation and maintenance manual (daily O&M, work at emergency time)

An O&M manual for off-grid power facilities is to be prepared by CPC staff based on the conditions of people's participation in daily O&M and work at emergency time. In the workshop, the O&M manual is to be distributed to the local people.

4-3 Technical workshop on O&M

Local people receive technical training on management of off-grid type power facilities by the renewable power generation expert and local government staff as they are to maintain the facilities.

4-4 Fund saving/accumulation for repair work by local people (establishment of electric fee-collection system)

Money to pay for repairing works of power facilities must be saved as local people are the ones to perform such works. Based on the result of a questionnaire on people's willingness to pay electric fee, an electric fee collection system is to be established.

4-5 Construction of facilities to protect and reinforce power equipment

In the Region, facilities to protect and reinforce power equipment from torrential rainfall and flash floods are required. Cost for construction and improvement of facilities is to be estimated. Appropriate amount is to be set based on the studies on how much public fund and electric fee from users can be allocated to sustain the power equipment.

In implementing the program activities, the followings should be kept in mind:

- i. Off-grid power development by use of renewable energy shall be discussed and coordinated with responsible staff in each province. The existing situation, that each province has a different ways of applying renewable energy to power development, must be taken into consideration.
- ii. Off-grid power sources will be independently developed in non-electrified areas far from the national power grid. This program focuses on exploitation and application of renewable energy sources available within target village areas.
- iii. Micro-hydropower generation is valuable and, thus, to be studied as a multipurpose project in combination with irrigation and water supply if the site conditions are suitable.
- iv. Selection of off-grid power sources greatly depends upon local people's willingness to pay for electric fees in addition to the technical constraints. Before the selection, people's willingness to pay must be confirmed through project explanation and workshop.

(4) Implementation System

The government side of this program is composed of DIT, DPC and CPC. Organizations relevant to the program are DPI and DARD. On the beneficiary side are water user's organizations, agricultural cooperatives and other mass organizations.

10.9 Capacity Development

10.9.1 Capacity Development Program on Rural Development Management

(1) Background

Poverty reduction projects in Vietnam tend to focus on standardized rural infrastructure facilities due to its heavy emphasis on project efficiency and equity. This tendency has been creating passive attitude among local residents with little sense of facility ownership. Consequently, malfunctioning of facilities has been frequently reported. Because rural development is considered to be equal to rural infrastructure construction, local residents believe in an all-too-easy manner that rural infrastructure facilities lead directly to better rural lives.

This program aims to improve the capacity of provincial DARD officers in formulating development plans that are sustainable and meet the needs and wishes of the local residents. The focal point of the program is participatory development as it supports the planning reform in the on-going administrative decentralization of the Government of Vietnam. In future, participatory development philosophy and methodologies are to be applied not only in formulation of development plans but also in rural facility construction, organizing facility users for O&M, implementation of development activities, and project monitoring.

As explained in Chapter 8 of this report, formulation of Community Development Plan (CDP) was carried out in 32 selected communes in all the districts of the 4 provinces. After the completion of all the CDPs, CDP Review Workshop was held in each province in which provincial and district DARD staff and DPI staff participated. In the workshop, consensus was made on 1) significance of development plan formulation using participatory development method and 2) promotion of human resource development program on participatory development.

This program aims for capacity development of those who manage development projects. With a comprehensive perspective on socio-economic development, they are to formulate provincial agricultural development plan, and implement and monitor its activities in a democratic manner while reflecting the views and opinions of the local residents. Four (4) types of capacity development are to be carried out; 1) comprehensive understanding of development activities in the province, 2) formulation of provincial agricultural development plan which is to be the basis of SEDP, 3) monitoring and evaluation, and 4) participatory development methods for agricultural development planning. Capacity development in this program is not carried out in a class-room setting where the participants must memorize theories written on a textbook. Instead, participants are to learn things by taking part in actual work for one year.

(2) Program Objectives

This program aims to develop capacity of provincial DARD staff to manage development projects. In each province, 11 DARD officers from the following section are to participate (one from each section). In total, 44 officers in the Region are to take part in this program.

Administration Division
Planning & Investment Division
Personnel & Labour Division
Technical Division
Inspection Division

Agricultural Extension Division
Forestry Division
Irrigation & Water Division
Aquaculture Division
Veterinary Division
Plant Protection Division

(3) Program Content

The content of this program is as follows:

- 1) Although many development projects are carried out by various organizations in provinces, no local government offices/agencies keep and manage information on the project activities. Collection and organization of information on development activities in a province is an important work that can lay the basis for agricultural development planning.
- 2) After a thorough understanding and analysis of the SEDP 2006-2010's agricultural sector, objectives of the agricultural development for the following 5 years are to be set. The objectives are to be realistic and match the agricultural conditions of the province. Based on the objectives, sub-sector development plan, plans for agricultural infrastructures, extension services, local industries, farmers' organizations, and their budgets and staffing (personnel) are to be made.
- 3) Monitoring and evaluation, an important task in project management, is considered to be one of the stages of project cycle. Monitoring framework is to be developed which examines the progress of implementation and checks the effectiveness of activities of projects formulated in the above 2). As GIS is widely acknowledged as an effective tool for monitoring, coordination with the following program, 8.2 Rural Information Management Program may take place.
- 4) In Vietnam, development projects are supposed to be carried out under government decentralization with participation of local individuals. However, participatory development has not been well established as it is understood only superficially. In this program, participatory methods are used in agricultural development planning, and public consultation meeting in which key farmers, district and commune staff, those from donors and NGOs, etc. participate to voice their opinions on the draft provincial agricultural development plan.

(4) Implementation System

This program is to be implemented by DARDs and DPIs in the Region.

10.9.2 Rural Information Management Program

(1) Background

Many poverty reduction projects have been carried out in Vietnam as a) ODA projects implemented by international donors and development assistance agencies and b) government projects implemented by the

Vietnamese Government, using the national budget. These projects target poor communes and are generally reported to have contributed to reduce poverty by improving infrastructures and developing capacity of local government officers and farmers. However, efficient and effective monitoring of projects is rarely done and project outputs are not evaluated. These are perhaps due to the lack of monitoring system, unclear/undefined role of the local government which is to manage the projects, and low management capacity of the local government officers.

Obtained data through the project monitoring provide vital information for not only evaluate the project that has been done up to now but also will be needed in the future project to be decided activities and scales, etc. Key findings in the poverty reduction program monitoring that the study team executed through this study can be summarized as follows.

- 1) Gap of project management level and the ground level according to the insufficient information management

There are some cases that the management of the administration has not caught up with the actual ground situation, such as division of the village according to a population growth. This implies that if water supply facility is installed in a subdivided village, it can be considered that water is provided with the entire village (before subdivided village). This could be a prevailing example that insufficient information management potentially creates a gap in interpretation of the project impacts between project management level such as the statistical figure, etc and the actual ground level then there are possibility that the influence to the poverty reduction program acceptance in the future.

- 2) Incompleteness of management system in post-project implementation

The introduction of facilities is an object of the present poverty reduction program in Vietnam, then it is not targeted that the post project implementation management. Therefore, it was observed that some facilities provided by poverty reduction program were not in use or already malfunctioned due to contamination of water sources. Additionally, there is no chance for the resident to appeal for incompleteness in facilities to the government.

- 3) Absent beneficiary's system

The introduction of the projects might be decided by the top-down control in Vietnam. In that case, it might not carry out the function that neither the resident's nor resident's needs are reflected in the project, and installed facilities are not in use as assumed. The remarkable example is an electrification project. There are some cases that the poverty reduction project provided the middle voltage line to the village, however, the low voltage distribution line to each resident house was not included in the project. Therefore, some residents faced difficulties to receive the project benefit because of their financial deficit. It is difficult for electrified villages to introduce the new electricity project in the future. This can be said that there are issues in the lack of monitoring and evaluation system of the project, and in an absence of villagers who are beneficiary of the project.

This program is to establish a) a management system that uses GIS and b) a Project Cycle Management method for planning, screening, monitoring and evaluation of poverty reduction projects, so that ODA and government projects can be managed in an integrated manner. Capacity development of those who manage and use the system is to be carried out, also.

This program set the program period for six years, Phase I (for three years) and the Phase II (for three years). In the first phase, Dien Bien province is taken up as a pilot project area, and the poverty reduction program monitoring and evaluation system is established. The established system in Phase I for Dien Bien province is expanding to another 3 provinces. In addition, the verification and improvement of system are done in the next phase.

The Dien Bien ministry is taken up as a pilot project area, and the system of the construction of a system and the monitor is constructed for the first half three years.

(2) Program Objectives

The overall goals of this program are a) appropriate use of the poverty reduction project, b) improvement of quality of life of local people to be an upper target, and then conduct the program 1) establish the unified information management system which properly to manage and to evaluate the poverty reduction project in the Northwestern region, 2) development of the Project Cycle Management (PCM) method from project planning to evaluation stages, and 3) development of human resources, which should manage and maintain the system.

The contents of this program are as follows:

- 1) System of monitoring of poverty reduction projects is established with NIAPP playing the central role
- 2) System of integrated management of poverty reduction projects is established in which project planning, screening, monitoring and evaluation are carried out in a flow
- 3) Capacity of NIAPP and DARD staff on poverty reduction project management is improved

(3) Program Content

In order to achieve the above mentioned target in this program, project inputs such as experts, equipments, and other materials are to be allocated for this project Phase I (for three years) and the Phase II (for three years).

Major activities in the Phase I consists of a) establishment of the poverty reduction project monitoring and evaluation system, b) data collection, and c) capacity development of administrative staffs which activities are targeted Dien Bien province as a pilot project area.

Phase II activities include a) expand the established system to another three provinces, and b) the verification and improvement of system are done in this phase. Detailed activities are as follows:

Phase I-1; Survey for the Existing Poverty Reduction Programs

Due to lack of monitoring and evaluation system with well-organized basic information of the programs, the impacts and effects of the programs are not sufficiently assessed, although a lot of poverty reduction programs have been implemented so far. In phase I, basic information of the past and on-going programs should be collected and managed through creating the centralized program database according to the following steps in Dien Bien province as a pilot project. Consideration of the survey method, Field surveyer training, Data collection in the site and from other donors, and Verification of collected data.

Phase I-2; Establishment of Method for Program Monitoring and Evaluation

There has been no standard for post-program management and monitoring and evaluation, which seems not likely to enable some facilities to be utilized by the beneficiaries. In phase I-2, the PCM method will be introduced in order to manage the programs from planning to monitoring and evaluation in the post-program stage. In phase II, a centralized information system for the poverty reduction program will be established using GIS. It aims at an effective monitoring and evaluation of the programs through providing the O&M training for the system use.

Phase I-3; Capacity Building for the Poverty Reduction Program Management

There has been a lack of institutional framework for coordination between line ministries and the province in running the monitoring and evaluation tasks. In addition, it is of understanding that the impacts and effects of the program is not sufficiently assessed due to lack of M&E system and insufficient capacity of officers. Therefore, the framework of the management system in terms of organizational approach will be examined and established. Then, assistance for capacity building (human resource training) will be provided to the the system administration (NIAPP) and the system user (DARD).

Phase II; Expand another 3 Provinces

The established system in Phase I for Dien Bien province is expanding to another 3 provinces. In addition, the verification and improvement of system are done in this phase.

(4) Implementation System

This program is to be implemented by NIAPP and DARD.