JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

DEVELOPMENT STRATEGY INSTITUTE (DSI)
MINISTRY OF PLANNING AND INVESTMENT (MPI)
THE SOCIALIST REPUBLIC OF VIET NAM

THE STUDY
ON
THE INTEGRATED REGIONAL SOCIO-ECONOMIC DEVELOPMENT MASTER PLAN
FOR
THE KEY AREA OF THE CENTRAL REGION
OF
THE SOCIALIST REPUBLIC OF VIET NAM

FINAL REPORT
PRE F/S REPORT VOL.1

Part I: Highland Industrial Crops and Reforestation Promotion Program
Part II: Integrated Rural Community Development Program

MARCH 1997

PACIFIC CONSULTANTS INTERNATIONAL
SANYU CONSULTANTS INC.
INTERNATIONAL DEVELOPMENT CENTER OF JAPAN

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The following foreign exchange rate is applied in the study:

US$ 1.00 = 11,000.00 Vietnamese Dong (as of October 1996)

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ABBREVIATIONS

AGRIBANK	Vietnam Bank for Agriculture
BHN	Basic Human Needs
CRDC	Central Region Development Committee
FAO	Food and Agriculture Organization
FIRR	Financial Internal Rate of Return
GERUCO	General Rubber Corporation
GTZ	Gesellschaft fur Technische Zusammenarbeit
HCMC	Ho Chi Minh City
MARD	Ministry of Agriculture and Rural Development
NES	Nucles Estate and Small-holder
NGO	Non-Governmental Organization
ODA	Official Development Assistance
Q.N.Da Nang	Quang Nam Da Nang
Q.N.D.N.	Quang Nam Da Nang
Q.Ngai	Quang Ngai
Q.Tri	Quang Tri
T.T.Hue	Thua Thein Hue
UNICEF	United Nations (International) Children's Fund
VAC	Vuon, Ao, Chuong (fruit trees, ponds and piggery in Vietnamese)
VINACAFE	Viet Nam National Coffee Export - Import Corporation
VINAFOOD	Vietnam State Company of Food Processing
VIJACHIP	Chip Producing /Exporting Enterprise, sponsored by a Japanese enterprise
VISERI	Viet Nam Sericulture /Silk Corporation
VND	Vietnamese Dong

CHAPTER 1

GOALS AND OBJECTIVES

CHAPTER 1 GOALS AND OBJECTIVES

1.1 BASIC POLICY

Out of the two major agricultural zones, hilly/mountainous zone and flat plains, the former has larger possibility in future development with land availability for crop diversification. Coming era will demand not only food security but rural income source that provides rural population with healthy level of standard living and purchasing power to buy the products of indigenous industries so that created industrial sector within the area can be partly supported by the inhabitants themselves. The reason why priority is attached to the former lies in the advantages of planting industrial crops therein that can supply materials to processing industries which in turn may create job opportunities for local population. The processing industries should be established within the producing areas otherwise transport costs of bulky materials aggravate profitability of processing.

A tentative goal can be set in a way that local population living in hilly/mountainous zone will enable to earn as much as those living in urban areas in the same region. The concrete objectives of the proposed program include: rational crop plantation plans for individual farm household, provision of effective ways of technical transfer and diffusion among industrial crop growers, of access to capital and financial sources. As a matter of course, provision or improvement of processing and marketing systems should be simultaneously addressed in industrial or infrastructure sector to make the whole process complete. The proposed program will bring a healthy result of narcotic eradication, because the revenue from industrial crops often outweighs illegal income from isolated cocaine or opium production. Not only Viet Nam but donor countries can benefit from this result. In this connection, projects have been already launched by U.N.D.C.P. etc..

Fortunately, Vietnam's exports of tree crop commodities enjoy steady expansion, *inter alia*, those of coffee and rubber experienced favorable and remarkable development. Future task still remains in establishing own brand with more value-added types or in offering finished products through manual skill, since they have higher margin and ample labor resource can be converted into foreign currencies.

1.2 CURRENT STATUS OF INDUSTRIAL CROPS IN THE STUDY AREA

1.2.1 Current Production Profile of Major Industrial Crops

Among the industrial crops in the study area, only sugarcane has economically viable acreage for processing, actually inherited from a traditional state enterprise. As a whole, tree crops so far planted are still immature for actual harvesting (rubber, coffee, cacao and cinnamon in the plantation by ethnic minorities), or grew too old but no more new plantation (cashewnut and pepper) where senescent trees feebly maintain dwindling output because of sustaining gloomy price development in the world market for these commodities. As for mulberry cocoon production, the industry damaged too seriously by the cutting for increasing food production during the war time to recover to the previous state. As long as Chinese dumping sale of cocoon and silk continues, the restoration of silk industry in other producing countries including Viet Nam will be retarded (though as labor wage in China rises with living standard, there will surely be a shift in the production pattern in primary commodity sector). Nevertheless, some processing mills are still maintained (silk thread reeling, tea processing, cashew processing etc.) and it is worthwhile to rehabilitate the upstream part of these existing

industries, rather than seeking for the creation of new factories. Also, latex and sugar mills have staged up for new debut, but they are calling for secured material supply around them.

Current production of major industrial crops in the study area is briefed in Table 1.1.

Table 1.1 Current Production of Major Industrial Crops

Item	Crop	Study Area	Q.Tri	T.T.Hue	QNDN	Q. Ngai
Acreage	Coffee / Cocoa	2.5	1.4	0	0	1.1
Unit : 1,000 ha	Tea	1.3	0	0.2	1.0	0.1
	Rubber	6.2	5.4	0	0	0.8
	Cashewnut	3.4	0	0	0.2	3.2
	Mulberry	2.2	0.6	0	1.2	0.4
	Pepper	1.2	0.9	0.2	0.1	0
	Cinnamon	36.0	0	12.0	16.0	8.0
	Total Tree Crop Area	52.8	8.3	12.4	18.5	13.6
	Sugar Cane	16.5	0.1	0.6	3.9	11.9
	Tobacco	1.3	0.2	0.2	0.8	0.1
	Peanut / Sesame	24.0	4.0	3.7	11.0	5.3
Annual Production	Coffee / Cocoa Bean	1.2	0.6	-	-	0.6
Unit : 1,000 ton	Dried Green Tea	0.0	0.0	0.3	1.3	0.4
	Rubber	0.6	0.0	-	-	0.0
	Cashewnut	0.6	-	-	0.1	0.5
	Mulberry Cocoon	0.3	0.2	-		0.1
	Pepper	1.4	0.8	0.5	0.1	-
	Cinnamon	1.6	-	0.4	0.7	0.5
	Sugar Cane	728.0	1.0	27.0	125.0	575.0
	Tobacco	1.7	0.1	0.2	1.0	0.4
	Peanut / Sesame	25.0	2.9	4.9	11.7	5.5

Note : estimation for 1996 based on the Annual Statistiques Book and data from provincial department concerned.

1.2.2 Current Situation of International Industrial Crop Commodities

Profitability of industrial crops, so long as their principal economic roles of which are exports or import substitution, has a bearing on international commodity price, their trends and future outlook. Though domestic price levels also affect the farm-gate prices of these crops, but there has been rather stable trends in domestic market demand and prices in comparison with those in the international markets.

Recent trends of commodity supply and international market prices up to 1994 are available in the publication by FAO (Food and Agriculture Organization of the United Nations) and the World Bank, which publicized their commodity market outlook for 2000 and 2005, while FAO regularly provides world production and trade of commodity crops including major industrial crops. A synopsis of these information is given in Table 1.2. Of the nine kinds of commodities employed in the program, international market prices of silk and pepper has declined in early 1990s, while those of coffee and rubber have recently shown bullish trends,

although some wax and wane is observed from year to year. Those of tea has somewhat bearish trend but still holds a stable range. Price levels of other commodities are not recorded, but according to Vietnam Economic News reports that current quotation price of cashew nut remains at a low level of less than 0.7 US$/kg, and the recovery is desirable to reach about 1.0 US$/kg to bring it to break-even point with other industrial commodities like cassava. While unit prices depend heavily on export quality, export prices of some Vietnamese commodities shows rising trends through improvement in quality, and this is a favorable material to justify the commodity projects in Viet Nam.

Future price projections are always uncertain, but current trends reflect, to certain extent, both changes in consumers preference, pattern of daily life and those in end-season stock, availability or production level of commodities. The following observation on the behavior of international market supply and price developments has been recently written in various information sources on the commodities employed in this program:

- Coffee prices are highly volatile , with short cycles in which climatic conditions in Latin America play a leading role in price determination
- Arabica coffee can compete by quality, but robusta coffee must compete quality plus production cost
- Global affluence in commodity supply to the world market has been warned all sort of tropical beverages
- Younger generation has different preference on spice from that of elder one, and this has led to lasting demand shortfall and price decline of pepper
- Natural products, like natural rubber and silk, will recover the share against synthesized materials in the world market, welcomed as renewable resources
- Speculative activity sustains boosting trend of natural rubber
- Monopoly regime of Chinese silk and cocoon will terminate as the level of standard living in China rises up, and price recovery can be expected
- International price level of sugar will keep its stability at constant low level, supported by demand from developing world with rising trend of consumption
- In the long run, supply of sugar will not be able to catch up with strong demand and global consumption, leading to reduction in the world stock level.
- In the coming decade, exports in the form of raw primary commodities will decrease as value-added ones are increasingly produced in developing countries.

International commodity arrangements, either newly concluded like rubber agreement (INRA III), new coffee agreement, and new international tropical timber agreement, or conventional ones including sugar agreement, cocoa agreement and so on also affect price levels of the commodities employed in this program. Outsiders of these arrangements more suffer from loss than take advantage of staying out of them, otherwise the arrangement themselves become meaningless. Late starters like Viet Nam can mitigate hardship by affiliating in these arrangements, especially during the period of economic recession.

Table 1.2 International Commodity Trends

COMMODITY / AREA	PRODUCTION ACREAGE	YIELD	QUANTITY	EXPORTS QUANTITY	VALUE	UNITVALUE	WORLD PLACE	MARKET UNIT	PRICE PRICE
FAO year-book	ha	kg/ha	1,000 ton	1,000 ton	1,000 US$	source :	FAO trade	year-book	
COFFEE								unroasted	ARABICA
WORLD	11,241	543	5,620	4,110	8,710	2,119	LONDON	US cent/kg	183
	11,217	545	6,020	4,600	6,850	1,489			161
	10,902	553	6,032	4,986	6,181	1,240			125
	10,412	566	5,890	4,973	6,680	1,343			147
	10,535	515	5,430	4,772	11,918	2,497		colombia-	293
VIETNAM								mild	ROBUSTA
	82	959	59	89	92	1,034	LONDON	213	121
	78	764	60	80	83	1,038		198	50
	82	1,533	125	116	91	784		150	97
	103	1,456	150	106	91	858		167	117
	130	1,385	180	156	266	1,705		323	240
TEA							left column	US cent/kg	
WORLD	2,442	1,037	2,521	1,134	2,308	2,035	COLOMBO	188	207
	2,503	1,042	2,568	1,075	1,956	1,820	right colum	151	186
	2,468	988	2,439	1,030	2,275	2,209	LONDON	149	197
	2,282	1,159	2,645	1,191	2,288	1,921		144	180
	2,261	1,160	2,623	1,031	1,994	1,934		130	181
VIETNAM									
	44	728	32	16	25	1,563	WORLD		205
	45	747	34	10	15	1,500	AVERAGE		164
	50	726	36	13	16	1,231			157
	60	558	35	16	20	1,253			153
	64	561	36	17	19	1,110			141
RAW SILK			TON					US cent/kg	cocoon
WORLD			65 987	27.977	664.7	23,759	TOKYO		11 2
			91.282	29 693	621.7	21,667			10 9
			105 220	28.310	514.5	18,174			10 5
			114.473	34.994	455 0	13,006			10 2
			114.509	41.455	625.0	15,077			9 6
VIETNAM							TOKYO		thread
			0 500	0 040	0 5	12,000			12,600
			0 500	0 050	0 7	13,667			11,200
			0 500	0 079	1 6	20,253			10,500
			0 550	0 040	0 6	15,000			7,100
			0 588	0 130	2 4	18,462			6,500
PEPPER									
WORLD			205	147	265	1,803	NEW YORK	US cent/kg	214
			230	169	258	1,527	black pep		156
			214	242	271	1,120			124
			173	208	297	1,428		1988	198
			165	213	447	2,099		1989	140
VIETNAM									
			13	9	14	1,544	SINGAPOR		152
			12	13	18	1,406	black pep		111
			11	22	14	636			90
			9	18	15	833		1988	599
			9	18	14	778		1989	428
NATURAL	RUBBER	(natural)							
WORLD			5.200	4,124	3,426	831	INRO-		0 24
			5,350	4,170	3,451	828	DMP		0 23
			5,290	4,351	3,661	841			0 23
			5,470	4,148	3,509	846			0 22
			5,337	4,510	4,694	1,041			0 30
VIETNAM									
			58	76	66	875	KUALA-		0 34
			60	61	53	874	LUMPUR		0 35
			68	82	67	817			0 37
			76	86	77	895			0 36
			80	63	74	1,175			0 46
RAWSUGAR	CANE	CANE YD.	SUGAR EQ				left column	US cent/kg	US cent/kg
WORLD	17,120	61 39	123,864	29,925	13,632	456	ISOdaily P.	-	20 8
	17,778	60 77	125,181	29,560	10,506	355	right colum	-	20 5
	18,367	60 04	129,020	31,863	10,013	314	LONDON	20 0	21 2
	17,185	60 02	123,508	28,706	8,942	312		22 2	24 4
	17,606	61 14	123,155	29,033	9,993	344		26 9	30 7
VIETNAM				IMPORTS			W BANK		
	131	41.33	376	-123	-68	553			27 7
	141	42 10	418	-41	-9	220			19 4
	144	42 93	478	-31	-10	323			18 8
	145	44.38	460	-76	-23	303			19 5
	159	40 00	450	-141	-49	346			22 0
CASHEWNUT								US cent/kg	
WORLD			450.1	412					
			542 6	497					
			730.1	668					
			528.4	484					
			614.1	562					
VIETNAM									
			0 8	0			TOKYO		
			1 0	1					
			1 5	1					
			1 0	1					
			1 2	1					566

1.2.3 Issues, Constraints and Countermeasures in the Commodity Sector

Reviewing so far reported socio-economic and structural constraints, a contrast sheet shown in Table 1.3 is presented to make development context clearer and practical. As a basic concept, the production of industrial crops is a typical private economic activity pursued by their growers at their own risk. However, the expansion of industrial crop production is an important state policy, and every province is mobilized for the achievement of policy targets. Hence, the promotion activity has public character to which ODA is applicable.

Table 1.3 Issues, Constraints and Measures

Issue	Constraint	Countermeasure
Organizing Producers	Lack of Core for Organization	Creating Well-Associated Groups
Technical Transfer	Weak Capacity of Extension Wing	Fully Employing Extension Media
Infrastructure Consolidation	Lack/Shortage of Fund/Techniques	Improving by Participatory Frame
Investment Fund, Input Supply	Complete Lack of Access to Fund	To Create Accessible Funds
Alignment of Processing/Marketing	Failure of Creating Channels	Creation of Local Mills
Improving Quality, Adding value	Lack of Techniques/Materials	To Create Supply/Diffusion Media

The first issue implies that competitiveness of crop commodities stems from advantage of scale that allows cheaper and uniform production on one hand, but their producers, or settlers in new economic zones are small-holders, on the other, hence strong solidarity to create well-associated and functioned, co-operative system is indispensable conditions to keep bargaining power towards buyers and overseas commodity markets, by procuring required lot for delivery etc.. Past experiences in neighbor producer countries have shown that an approach of NES (Nucleus Estate and Small-holder) system is often useful where state or province-owned estate/processing units are still in operation and available for such nucleus. An ideal pattern would have an estate/mill complex surrounded by new economic zone(s) where resettlers can either offer labor for expanding fields supplying processing material, or diversify their crops to meet requirement of the estate. If such nucleus is not existing, a privately invested, new processing unit can act as the nucleus if any investor puts it into practice.

The second issue should include supply of market intelligence that gives information on world consumers' preference to quality and on trends of supply-demand in the world market. Of course, mere technical transfer entails in copy commodities, so Vietnamese originality must be added over the transferred technology in the long run. Accordingly, close collaboration among institutes/universities or colleges, extension network and commercial engineers/consultants will be essential through frequent visit and contact to farmers' fields. In the initial stage, full dependence on seed/strain supply from abroad may be unavoidable, but self-supplying systems should be explored otherwise superiority and originality of Vietnamese products cannot be firmly established.

The third point, the issue on infrastructure ranges from access road, electricity supply for local processing, water source development for irrigating perennial or annual crops to processing and marketing facilities. Gradual development in consolidating it will be needed keeping pace with acreage expansion and output augmentation. Needless to say that once infrastructure is created it incurs recurrent maintenance cost for its proper use. Basic infrastructure should have already been provided at the stage of settlement of new economic zone, but the existing one is far from meeting needs of settlers nor has been adequately maintained due to lack of budgets and of efficient maintenance system.

As to processing and marketing, institutional and functional incompleteness is commonly observed among the countries under late or current socialist regime because after dismantling a complete centrally planned distributing system it has not fully been replaced with relevant private marketing network. Yet, this imperfection would be better from job opportunity point

of view, for itinerary venders can earn daily margin with a bamboo bar and two baskets, though in the developed world they are completely replaced by supermarkets. Nevertheless, a well organized flow of materials and products is demanded from crop industries facing to fierce international competition in order to maximize productivity at the same time to minimize loss and costs. This part belongs to a pure commercial area, and only the efforts of private marketing and processing enterprises can ease the bottlenecks and renovate it into more modern and efficient structure. Official efforts should also be paid to recruiting and inviting domestic and foreign partners for J.V. with local enterprises through public bulletins and preferential treatments for taxation etc. for foreign partners.

1.3 STRATEGY

1.3.1 National and Provincial Strategy and Policies towards Industrial Crops

MARD has kept the forwarding stance for the development of industrial crops and attaches special importance to sugar, coffee, tea, rubber, silk, exportable vegetables and meats as priority area for the expansion towards 2000 and 2010, to materialize the annual production target of one million tons of sugar by 2000. Sugarcane is to be grown on 280 thousand ha, or expanded by 25 % from 1995 acreage. The target of tea garden is set at 100 thousand ha, or increased by 50 % from it. Acreage under coffee will augment to 200 thousand ha, the growth of around 8 % from 1995 acreage to fulfill the annual export target of 240 thousand tons. Rubber plantation area reaches 400 thousand ha, a 44 % increase from 1995 acreage to extract annually dried latex of 200 thousand tons. As to silk production, an ambitious target is set at 70 thousand ha of mulberry field, 3.2 times as much as current acreage to enhance silk industries for export. Besides, MARD orients to expand processing industries for these crops by facilitating new mill construction and expansion of current capacity to accommodate larger supply of materials. It envisages 27 sugar refineries under construction, renovation of tea processing plants of tea, two modern coffee processing factories equipped with instant coffee manufacturing so that annual processing capacity can be expanded at the rate of 50 to 100 thousand tons of green coffee, five new latex processing plants put into operation with the upgrading of existing plants, and silk weaving and printing mills to manufacture export textile.

Provincial agricultural development policies also stress the priority given to industrial crops not only because of the enhanced national campaign but also various environmental, political and economic situations surrounding them. Agro-industry has become one of the leading job suppliers for inhabitants in and around the urban quarters in the study area, because agricultural sector supplies material for the processing industry sector but other primary industries fail to supply substantial materials to their manufacturing sectors. A subsector of food production would be the most important one, but at best it can fill only the stomach of producers and other inhabitants, least creating chain business nor job opportunities, or least improving ability of tax payment dedicated to fiscal income source of provinces concerned.

On the contrary, industrial crops presently bring higher return to producer-farmers than food crops do, contributing to job creation in rural area, paying higher amount of tax to the government. Moreover, a number of privatized processing enterprises, to which the investment for processing equipment was made, wait for processing materials, and if the delivery happens to fail, machinery would get idle or they would be blamed for over-investment. Some of the cadres of these enterprises are late officials who are to take responsibility for amortization of invested capitals. Due to such immediate circumstances, each province is obliged to promote industrial crops regardless of whether they are remunerative, profitable or economically viable or not. However, according to the estimation by the study team, all the crops chosen in this program, except for forestry products, have shown positive economic return within the period of program implementation, hence it is worthwhile to promote the future expansion for these crops. Yet, risk of any speculative crops cannot be nullified however the producers may make it a try to get rid of, so all the four provinces now make their best effort to create robust crop industries in their jurisdiction in an

attempt to minimize risk caused by improper variety selection, unsuitable application of husbandry techniques, post-harvest treatments, marketing logistics and so on.

1.3.2 Strategy of the Program for Tackling Current Constraints

In deploying industrial crops development in hilly and mountainous areas, a firm strategy is essential that must take account of their advantages and disadvantages, various prerequisites for their plantation such as techniques, labor supply and other input supply, post-harvest practices, marketing and processing and international market situation.

Table 1.4 indicates various features of the industrial crops that are employed as the components in this program (the gestation period, economic life differs from a variety to another, depending on husbandry techniques and ambient conditions). The most important feature common in tree crops lies in long gestation periods, the difficulty of switching into other species once a particular specie is planted. Another commonly found character among them is that the producing area should be located adjacent to the processing units, or their construction should be coincided with the harvesting stage of planted tree crops.

Table 1.4 Features of Selected Industrial Crops

Crop / Feature	Gestation Period	ProductStorability	Plantation Cost	Profitability/Risk	Labor Demand
Coffee Arabica	2 - 3	short, home drying	highest	highly variable	medium
Coffee Robusta	4 - 5	short, home drying	medium - high	less profitable	low-medium
Rubber	7 - 8	immediate delivery	fairly high	relatively stable	intensive
Pepper	3 - 4	short -medium	highest	slump in demand	medium
Tea	1 - 2	immediate delivery	medium	relatively stable	intensive
Cashewnut	3 - 4	medium	cheap - medium	slump in price	low-medium
Cinnamon	8 - 9	medium - durable	cheap	stable	low-medium
Cocoa	4 - 5	short -medium	highest	relatively stable	medium
Mulberry / Silk	0 - 1	home consumption	medium	slump in price	intensive
Sugarcane	0	short, fast delivery	cheap - medium	less profitable	intensive
Crop / Feature	**Economic Life**	**Irrigation Demand**	**Soil Requirement**	**Climatic Preference**	**Skill Demand**
Coffee Arabica	12 - 15	desirable +20%	basaltic best fit	cooler climate	high skill
Coffee Robusta	15 - 20	facultative	basaltic best fit	broader fitness	ordinary
Rubber	23 - 27	usually no need	stoneless RYsoil	tropical rain area	high skill
Pepper	15 - 20	desirable	basaltic best fit	warm and humid	high skill
Tea	10 - 15	desirable	highly adaptable	cool and humid	medium
Cashewnut	15 - 25	desirable	highly adaptable	tropic monsoon	extensive
Cinnamon	20 - 25	usually no need	highly adaptable	tropical rain area	extensive
Cocoa	8 - 12	usually no need	basaltic best fit	tropical rain area	high-skill
Mulberry / Silk	5 - 10	desirable +20%	basaltic best fit	broader fitness	medium
Sugarcane	1 - 1.5	necessary	alluvial better fit	wann and humid	medium

Source : provided by the Study Team based on the hearing in the provinces concerned.

Among other characteristics, it should be noted that some tree crops require shading trees (cacao), mother trees like jackfruit tree (pepper), windbreak forest (rubber and desirably coffee, tea and cacao) so that plantation field can be protected from wind in the leeway.

In addition to such requirements needed for plantation, maintenance and tending of immature garden have to be counted in the budget of crop production. The total cost of developing industrial crop plantation will amount to the level that is beyond individual investment ability.

In short, just as found in other agricultural subsectors, producers face lack of investment capital and modern techniques and knowledge on crop husbandry, post-harvesting and marketing as well as lack of structure for the industry encompassing from formation of production groups to collective post-harvest operation and marketing of material products and of know-how to better utilize by-products. Small-holdingness, or too narrow holding of farm land per household is common feature throughout Vietnam, but particularly outstanding in this area. Any industrial

crops have their international markets, where cheap labor force and scale merit determine their competitiveness. The studied area can meet the former all right, but a special tactic is needed to satisfy the latter, that is group farming without any comparable measure to solve:

- Firstly, it is essential to select the core commodities among those already existing in the study area, because constraints and development tactics can be made clear from the past performance.
- Secondly, tentative or short term targets should be focused on economizing initial investment while making full use of currently available resources, i.e., plentiful manpower to formulate labor-intensive way of production and processing.
- Thirdly, the outline and contents of the proposed program are consistent with the up-dated government and provincial policies to be applied to mountainous and hilly areas in the study area.
- These three preconditions automatically limit the framework of the program and its components. With regard to afforestation and reforestation, it has fairly long gestation period before they contribute to the planters in a fruitful way, however, these activities should be evaluated from social and environmental aspects though the apparent economic value remains in much lower level than crop farming.

It should be reiterated here that most internationally traded agricultural commodities are subject to market-price fluctuations threatening too often producers' and exporters' survival, hence the development strategies desirably provide measures to withstand the detrimental impact to vulnerable settlers in newly reclaimed areas in hilly and mountainous zone by sudden price drop as well as to support tree crop growers during a long gestation period after the initial investment.

1.4 EXISTING PROJECTS ON INDUSTRIAL CROPS IN THE STUDY AREA

There are two on-going projects in cooperation with GTZ (German Technical Cooperation Agency) in Quang Tri and Quang Nam-Da Nang provinces. The former deals with promotion of agriculture in Tan Lam area covering Tan Lam and Khe Sanh districts. The project aims at successful crop diversification for the area of Tan Lam Joint Pepper Enterprise, developing a set of tree crops suitable to agro-climatic conditions and economically promising in terms of exportable commodities. It has selected arabica coffee, rubber pepper and candle nut as key tree crops to be developed in these districts. It has entered into the second phase, still remaining a decade for sustaining the bilateral cooperation. Besides, a joint venture on commercial basis is worth paying attention from forest greening and export promotion points of view. This is the VIJA CHIP Enterprise, covering the mountainous area of the four provinces in the study area. It provides investment for reforestation areas where production forest develops and afforestation right is granted to those who are engaged in planting and tending for 50 years. Usually, fast growing species such as Acacia camadulensis and Eucalyptus auricuriformis are planted and thinned to supply tip. Harvested tip is exported to Japan from the port of Da Nang. In the report from the MARD to the National Assembly in November 1996, MARD intends to urge the new policy for the industrial crop promotion towards 2000 as follows:

- integrated approach to technological transfer and provision of processing skill
- better access to up-dated information on markets for commodity enterprises
- improved access to institutional loans for agricultural producers
- rehabilitation of nomadic minorities should be finalized for their better life

- poverty alleviation and development of facilities in new economic zones with irrigation works worth 4,000 billion VND, also with rubber development by World Bank loans amounting 100 million US$
- sugar industry expansion from 16 mills with 16.7 thousand ton's output to 43 mills with 65.8 thousand ton's capacity, thereby mininizing sugar import

1.5 POLICY AND SIGNIFICANCE OF REFORESTATION

The government policy for forestry development known as No. 327 should further be pushed forward especially in hilly and mountainous zone of the central coastal and central highland provinces where the rate of bare land outweighs the rate under forest coverage. In this context, tree crops like rubber and cinnamon can contribute much to this end, because they must be planted for more than a decade, or for twenty years as a cycle of plantation. They develop a dense canopy to absorb rain water efficiently, thus preventing floods in the watershed and feed water to underground water regime. However, their plantation sites should be located near to roads on which vehicles can pass.

Besides, tree crops almost always need wind break where trees of both exotic and indigenous origins for fuelwood and lumber are planted. This area is also counted as the reforestation plots that also contribute water conservancy. Those who play a key role in promoting this least profitable activity are settlers in new economic zones and resettlers in ethnic minority resettlement projects. If reforestation is projected alone, very few inhabitants can follow this national enterprise due to low profitability and too long gestation period. However, if it is coupled with such remunerative activities as tree crop production, they can be more easily mobilized and involved in reforestation activity that necessarily accompanies with crop cultivation. In addition to rubber and cinnamon, cacao and pepper also serve as canopy formation, because they need mother trees and shading trees living with them.

World Food Program has sponsored in the reforestation project in coastal Viet Nam in which Quang Tri province is included. This project has an objective of guarding crop land from invasion of white sand from sea coast. Such a preventive method is also applicable to cashewnut plantation area in the coastal wasted land. In the reforestation activity, both fast growing and slow growing species should be planted. The former includes casuarina, eucalyptus and acacia, while latter encompasses various indigenous tree species as well as exotic ones like Caribbean Pine and Merkusii Pine. They produce not only fuel wood and pole wood, but also they provide resin oil etc.

CHAPTER 2

OUTLINE OF THE PROGRAM

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2.1 PROGRAM COMPONENTS

The proposed program comprises two aspects, viz. technical assistance and financial credit funds for tree plant growers and their associations. It is important to note that Vietnamese government and provincial people's committees have quite limited sources of budgetary revenue that make the maintenance of state or province owned facilities quite difficult. In case of facility donation, running/maintenance of the donated facility should also be supplied from the donor for a decade or two, otherwise it will sooner or later be left unused, unless the facility itself can earn enough amount of revenue to offset its own maintenance cost. In so far as commodity projects are concerned, usual form of overseas assistance is mostly confined to soft term loans, except technical transfer without facility.

The proposed program consists of three components, namely analysis of crop potential and market outlook, technical set-up and transfer to producing households and provision of long term loans for planting, husbandry and reforestation of production forest by them, as well as crop price insurance loan for the survival of small holder producers during the period of sharp price drop of the commodities concerned.

2.2 CONTENTS OF THE COMPONENTS

2.2.1 Crop Analysis for Pursuing Cost Effectiveness

The first component as stated above is evidently essential for realizing a loan project which requires cost effectiveness or justification of industrial crop plantation. Most of industrial crops bear either export-oriented or export substitution character, so their success depends heavily on future international market demand/supply situations, quality and forms of exportable products or yield levels, speed of tree maturity and levels of production/marketing costs. Feasibility of employing an industrial crop in the study area will be determined through these analyze, otherwise risk would be greater if random adoption is made. The comprehensive crop analysis should be made in the study area, instead of Hanoi or Ho Chi Minh, where a part of data that can be input into the analysis has been already accumulated, and the staff with ample experiences of site surveys within the study area is also available. As for the concrete place, The Hue University of Agriculture is recommendable to perform this analysis because it has both data and staff eligible for performing it.

2.2.2 Technical Transfer

There are a host of poor settlers who planted industrial crops without any particular contract with processing units and they are apt to become suppliers to casually visiting middlemen/collectors who offer low unit price and make a good profit from them. Among settlers and resettlers in new economic zones and ethnic resettlement projects, progressive ones who managed to procure investment fund for planting industrial crops started their plantation by imitating what neighbors practice, or only based on verbal communication from acquaintances, because of the lack of public extension media. The success or the failure of their plantation is not determined by their ability or techniques, but by their luck and supporting media they can rely on.

This component has three alternatives, i.e., establishing a farmer training center, a fortification of existing extension network and entrusting it to processing enterprises.

1) Training Centers for Producer Farmers

This alternative may be the most popular means to offer technical transfer and training for the producers, but it has many shortcoming, as well. First of all, it requires fairly amount of building costs, but even if they are met by donors, very few of them can also provide running costs for a decade or two after it is handed over to central or local government. Can it be maintained without collecting fee from users? Can trainees be afford to pay for training costs and willing to participate the training courses living in a dormitory? If it is managed under a province, can trainees from other provinces participate in the training without any maintenance cost allocation among user provinces? The costs for a training center can be alternatively utilized to strengthen currently running extension service. As discussed in institution building and human resource development, training centers too often suffer from low level utilization due to lack of adequate instruction staff, lack of spareparts delivery, budgetary limitation for buying fuel, material, for paying salary etc..

2) Re-training of Extension Staff in Existing Facility

An alternative of training center is brushing-up of extension wing. If specialized extension workers to industrial crops are provided with their deep experiences and know-how, their techniques can be diffused among industrial crop growers. In this case, financial support is needed to train workers up to the required level, to equip them with materials and means of visiting producing areas and extend their activities. It takes a couple of years to provide qualified workers with full expertise, and the diffusion activity requires such running costs as fuel for motorcycles, audio-visual sets, seedlings etc.. In this case, the existing training service in the Institute of Agricultural Science in South Viet Nam in HCMC and universities in Hanoi and HCMC should be streamlined or expanded. As a World Bank report comments, hither-to functioning extension wing has now largely collapsed due to budgetary shortfalls and bureaucratic way of support services. So, it can never be relied on unless a radically renovated system is employed with up-dated technology.

3) Farmers Training Arranged by Processing Enterprises

Another alternative, which seems to be more practical, calls for the effort of processing enterprises dealing with industrial crops as their processing materials. Since they need to satisfy certain standard of quality and to procure required quantity of processing materials, they have to provide contracted farmers with minimum inputs and techniques through commercial routes. Actually, many industrial crop growers have received inputs and instructions from contracted enterprises in southern part of the study area. Typical cases thereof can be seen in sugarcane growers in Quang Ngai province. Not every enterprise but a few well-managed ones can offer such a complete package of input to growers.

4) Comparison of the Three Alternatives

Comparing these three alternatives, the first alternative has serious drawback, that is uncertainty of gathering trainees to the center. Both settlers in the new economic zones and ethnic minorities are always busy in earning daily expense, by collecting fuelwood for domestic use and for sale, by raising, watering garden crops, cater for livestock. The trainees can attend the course if travel and staying allowance are paid and their daily earning is compensated in a form of wage during their absence from their village. Provinces concerned evidently can hardly afford to prepare such expenditures, neither can many donor countries be involved. The third alternative has stable ground but in many cases industrial crops have already started their debut but processing enterprises have not yet been established. So, it is only applicable to the case where antecedent processing units have been already located but farmers wait for the

provision of production contracts or technical transfer. Some cases of expanding sugarcane area and mulberry growing fall in this category.

In conclusion, the second alternative does not have any serious difficulty and is in harmony with currently developing institution and structure. To realize rapid supply of specialists to be engaged in industrial crop promotion, a special in-service and post-graduate training course for converting mainly ordinary extension staff as paddy specialists into industrial crop ones (most probably at the sacrifice of number of workers for flat zone where paddy land predominates) and for training candidates for the replacement of retiring extension staff are proposed. The Hue University will call for the supply of such equipment (listed in Table 1 10) as technical cooperation by donor countries. A part of equipment for field training can be installed in the Agricultural College in Tam Ky (Quang Nam-Da Nang Province) where test plots are available for the training and professors of Hue University actually instruct college students.

For smooth operation of in-service training and better management of equipment therefor, it is advised to establish inter-provincial liaison system, or better to incorporate it into program management framework (CRDC). Advisory experts of industrial crops from donor countries station in CRDC in closer contact with instruction staff of the training courses for technical and information transfer.

2.3 BENEFICIARIES AND PROGRAM COVERAGE

The conception of rational dividend among different zones in land use in conformity with environmental conditions is shown in Table 2.1.

Table 2.1 Dividend in Farm Production by Zone

Rural Community	Flat Plain	Hill / Mountain	Forestry Area
Traditional Villages	Paddy Field	Paddy + Upland Field	Bare Hills + Forest
New Settlement Zone	Crop Pattern II (CP II)	Crop Pattern I (CP I)	Production Forest
Crop Composition	in the New Settlement	Zone	
Southern Provinces	CP II ; Cashewnut	Tea, Cinnamon, Cocoa	Rubber, Pine for Resin
Northern Provinces	CP II ; Sugarcane	Coffee, Mulberry	Rubber, Log-wood

The crop combinations as shown above merely indicate common criteria and other factors like soil, inclination and direction of main slope should be taken account of for practical crop selection.

2.3.1 New Economic Zones and Resettlement Project Areas

Construction of New Economic Zones were initiated after 1975, and now two decades have been passed since they were introduced. However, most settlers have not yet been well off owing to handicapped conditions in hilly and mountainous areas. Similarly, permanent settlement (or resettlement) of ethnic minorities who remove their houses from a place to another every four or five years accompanying with their habit of slash and burn (shifting cultivation) system have been encouraged since mid 1980s in an effort to advise them to abstain from burning forest and to settle in a permanent way. Many groups of minorities appear to have successfully shifted from traditional migrant system to permanent way of residence, but still we can observe burning smoke and burnt patches of open forest in the mountains. Anyway, settlers and resettlers but nobody else who should restore rural economy by means of industrial crop cultivation. The distribution and population of new economic zones are listed in Table 2.2.

Table 2.2 New Economic Zones and Resettlement Area

Unit : Upper part ; square meters per HH for the bottom two columns
Middle part : thousand households, thousand ha, thousand persons
Lower part ; thousand hectare, but wind break is not included

Item of Statistics	Q.Tri	T.T.Hue	Q.N.D.N.	Q. Ngai	Study Area
Number of NEZs in Province	11	9	10	13	43
of which mountainous	11	5	7	5	28
of which flat plain	0	4	3	6	13
of which island	0	0	0	2	2
Total Household (H.H.)	630	1,800	1,450	3,100	6,980
Total Population	3,450	9,927	7,800	14,103	35,280
Labor Force	1,805	3,466	3,289	7,808	16,368
Area Allocated as Forestland	1,682	2,190	11,963	27,012	10,712
Farmland Allotted to Settlers	5,985	5,400	6,963	15,500	8,462
Out of which Industrial Crop	5,670	4,500	6,750	14,468	7,847
Out of which Foodcrop Area	315	900	213	1,032	615
Estimated Resettled HH*	6.0	4.6	11.5	17.9	40.0
Estim.Resettled Population	29.9	22.9	57.5	89.4	199.7
Cultivable Area per HH	15.0	10.0	30.0	50.0	105.0
Of which Industrial Treecrop	6.7	2.5	7.5	19.0	35.7
Area for Reforestation	105.9	115.0	253.2	164.9	639.0
Envisaged Tree Plantation					
cinnamon trees by N.E.Z.	0	0	0.0	0.0	6.5
by resettlers	0	0	7.0	18.5	25.5
by old village people*	0	0	2.0	13.5	9.0
rubber trees by N.E.Z.	0.0	0.8	0	0.0	0.8
by resettlers	4.0	2.5	0	1.2	7.7
by old village people*	5.6	2.7	0	0.0	8.3
coffee trees by N.E.Z.	0.4	0	0	4.5	4.9
by resettlers	1.2	0	0	0.0	1.2
by old village people*	0.0	0	0	0.0	0.0
cashewnut trees by N.E.Z.	0	0	0.5	0.0	0.5
by resettlers	0	0	0.5	0.5	1.0
by old village people*	0	0	2.8	1.0	3.8
mulberry trees by N.E.Z.	0.0	0	0.5	0.0	0.5
by resettlers	1.5	0	0.0	0.0	1.5
by old village people*	2.4	0	1.3	0.6	4.3

Note : HH : Household Figures of the allocated area are only the estimation based on the data collected by interviews for new economic zones. Resettlement data are also derived from estimation from ethnic minority data and information on bareland where slash and burn system already disappeared by permanent resettlement.

* Kin people living in old villages and plantation enterprises, late state enterprises etc.

Resettlement project implementation in central and southern provinces, delayed by the war, also began in 1975 but the details of the performance has not been obtained so far. The expected contribution in this program will be even greater than that of settlers in new economic zones, because resettled ethnic minorities has wider land for farming than that allocated to settlers in new economic zones. However, resettlers live in remote area away from economic sphere, where stony soils predominate and water availability for daily life and for crop irrigation is worse than that in new economic zones.

Some of the figures are not available in the provincial statistics but estimated by the study team. According to a farm interview result in some new economic zones, many immigrant households went back to their home villages because of shortage of means of livelihood or of natural calamities that deprived them of the base of daily life. If this tale is true, it appeals us of the acute needs of technical and financial assistance for their survival. It also implies that

the remaining settlers are immune to various constraints or tolerant to hardship they have experienced so far, likely capable of developing new economic media like industrial crops only if they are accessible to resources of investment to them. The table shown above indicates that the area reserved as industrial crop expansion accounts for only one third of the total target acreage to be expanded during 1996-2000, but new economic zones will be increased from now on and a part of the area allocated as forest plantation can be appropriated for tree crops like rubber, provided that the location is suitable for labor intensive land use or to favorable growth of saplings. Although the new economic zones play major role in the development of tree crops, areas of ethnic minorities and rural areas in flat plains also take part in it.

Ethnic minorities in the study area, Van Kyu, Pa Co, Kor and others, have tried to develop such industrial crops as arabica coffee (mainly in Quang Tri Province), tea and cinnamon (observed in Quang Ngai Province), choosing convenient places for their husbandry. This tendency is welcomed because it greatly contributes their permanent settlement for managing what they invested, thus leading to less dependency on slash and burn system and overgrazing of their cattle and goats, that is undesirable causes of forest destruction.

2.3.2 Industrial Crop Components

Species of industrial crops are selected as shown in table 2.3, taking account of the currently existing acreage, importance in the provincial agricultural plan, and suitability to the climatic and pedological conditions prevailing in the provinces. There are many other species of industrial crops in the study area that are not selected in this study, but most of them are cultivated in minor scale or not economically viable. For example, cassava has been deemed as a material of starch. Though a plan of establishing a mill in Quang Nam-Da Nang Province might be launched, we must remind of the fact that Germany has lifted up to import cassava for feed from Thailand that gave a serious damage to Thai farmers. Also, there are many poor households in the study area that rely on cassava for daily food. Tung tree gives fruit containing tung oil which is used as painting material, and some trees are found in western part of Quang Tri province. However, it takes a long gestation period to grow for economic yield, and demand in the international market only booms up in the war time. Sesame and peanut account for fairly a big acreage as oilseed but it is mainly raised for home consumption, or even if some portion of the harvest is marketed, there finds little room for expanding their acreage, because they are catch crops in a traditional annual crop-rotation. Tobacco is another industrial crop grown by farmers in these provinces, but the recent trend shows the acreage under tobacco is yearly diminishing and the government does not have expansion strategy for its production due to the concern for nuisance to health. Dong Nai province and some other southern ones account for more than half of national tobacco production and acreage, but central provinces have much smaller share in its production as compared with these ones.

Among the selected nine species, only sugarcane is not a tree crop that can be harvested in 12 months or so after the first planting. Usually, many farmers in the study area follow traditional ratooning, a way of using aftermath shoots without planting cane every year. This system is rational because the labor and seed cane costs are fairly heavy burden for farmers, but if ratooning continues more than four years, cane yield would be affected in many cases. Sugarcane is generally planted in flat and irrigable land, but in the central Vietnam it has been often planted in hill-sides and terraces above narrow mountain streams. Economic return from sugarcane depend chiefly on labor cost and yield, and it is presumable lower in such slope land as compared with the crop in flat plains. However, domestic sugar will have competitiveness against world market given the labor wage is kept constant at current level and cane yield reaches 70 tons/ha., and in the processing sector has reasonable capacity and level of processing cost. Every province follows the supreme decision of expanding acreage of sugarcane until domestic production can meet the internal demand, dispensing any white sugar imports from abroad.

Among tree crops, cinnamon and rubber trees have the longest gestation period after transplanting at least seven years before economic harvesting begins. These trees also have the effect of forming vegetation canopy just as other forest trees, contributing much to

watershed conservation limiting runoff of rainwater, thus preventing flood damage in down-stream areas. They can be used as timber when the plantation is regenerated. Ethnic minorities who have permanently settled already initiated planting of these trees in the light of these advantages even if they are subject to longer gestation before harvesting. In most cases, they are planted on the roadside, since it is convenient to gather labor force, and rubber plantation requires intensive labor input to collect latex every day or every other day.

In order to gain temporary income, industrial tree growers often practice cultivation of such catch crops as pineapple, cassava, beans, yam, sesame for maximum three years after saplings of industrial trees are planted. However, in this case irrigation or manual watering is advised during dry period to avoid competition of soil water between trees and catch crops. Also, augmented doses of chemical fertilizers and farm manure are essential to keep favorable, vigorous growth of both crops employed. Yet, this component is not considered in this program for the sake of concentrating on the tree crop and sugarcane production.

After all, industrial crops as shown in Table 2.3 were chosen to study in this program. The geographic distribution of these plantation areas are illustrated in Figure 2.1. In this figure, the distribution of natural cinnamon trees etc. is also presented. Planned areas for new planting are mostly located in and around the existing producing areas, except for some cases in which new land for plantation is being reclaimed for the new planting by the inhabitants in NEZ.

The adequacy of industrial crops employed in this program differs by their growers. Since the settlers in new economic zones are mostly descendants of farmers in flat zone who are accustomed to grow annual crops, they hardly adapt themselves in cultivating crops with longer gestation period. In contrast, ethnic minorities are enough flexible to adapt themselves to both crops with longer gestation and those with shorter gestation periods or annual ones. They are particularly good at agro-forestry practices, animal husbandry and reforestation. In this connection, livestock is fairly important in creating sustainable industrial crop production in terms of manure supply and use of unmarketable crop residue. For any industrial crop with longer gestation period, cheaper input supply is an essential precondition to sustain the planting during the growing stage without output. Nonetheless, livestock husbandry is hardly consistent with industrial crop planting because both require heavy input of manual labor, while settlers and resettlers of younger generation has only two or three labor force within a household. So, it is better to exclude animal husbandry from the component of industrial crop promotion, but it is possible to establish internal dividend between livestock households and those exclusively engaged in industrial crop production. The former can supply manure while the latter can buy it or exchange with their products or by-products obtained from crop production or processing.

Table 2.3 Industrial Tree Crops to be Employed in the Program

Item	Crop	Study Area	Q.Tri	T.T.Hue	QNDN	Q. Ngai
Current Crop	Coffee / Cocoa	2,500	1,400	0	0	1,100
Acreage in ha	Tea	1,300	0	200	1,000	100
	Rubber	6,200	5,400	0	0	800
	Cashew	3,400	0	0	200	3,200
	Mulberry	2,200	600	0	1,200	400
	Pepper	1,200	900	200	100	0
	Cinnamon	36,000	0	12,000	16,000	8,000
	Total Crop Area	52,800	8,300	12,400	18,500	13,600
Plantation	Coffee / Cocoa	13,000	3,000	0	0	10,000
Target	Tea	3,200	600	200	2,400	0
(1996 - 2010)	Rubber	23,000	15,000	6,000	0	2,000
	Cashew	8,700	0	0	4,000	4,700
	Mulberry	8,500	4,500	0	3,000	1,000
	Pepper	1,300	1,000	200	100	0
	Cinnamon	77,000	0	12,000	25,000	40,000
	Total Crop Area	134,700	24,100	18,400	34,500	57,700
Reclamation	Sugar cane	15,900	1,900	9,600	1,000	3,400
(1996 - 2010)	Rice Paddy Field	2,400	600	600	700	500

Source : Estimated by the Study Team in consultation with Agricultural Department in each Province Concerned

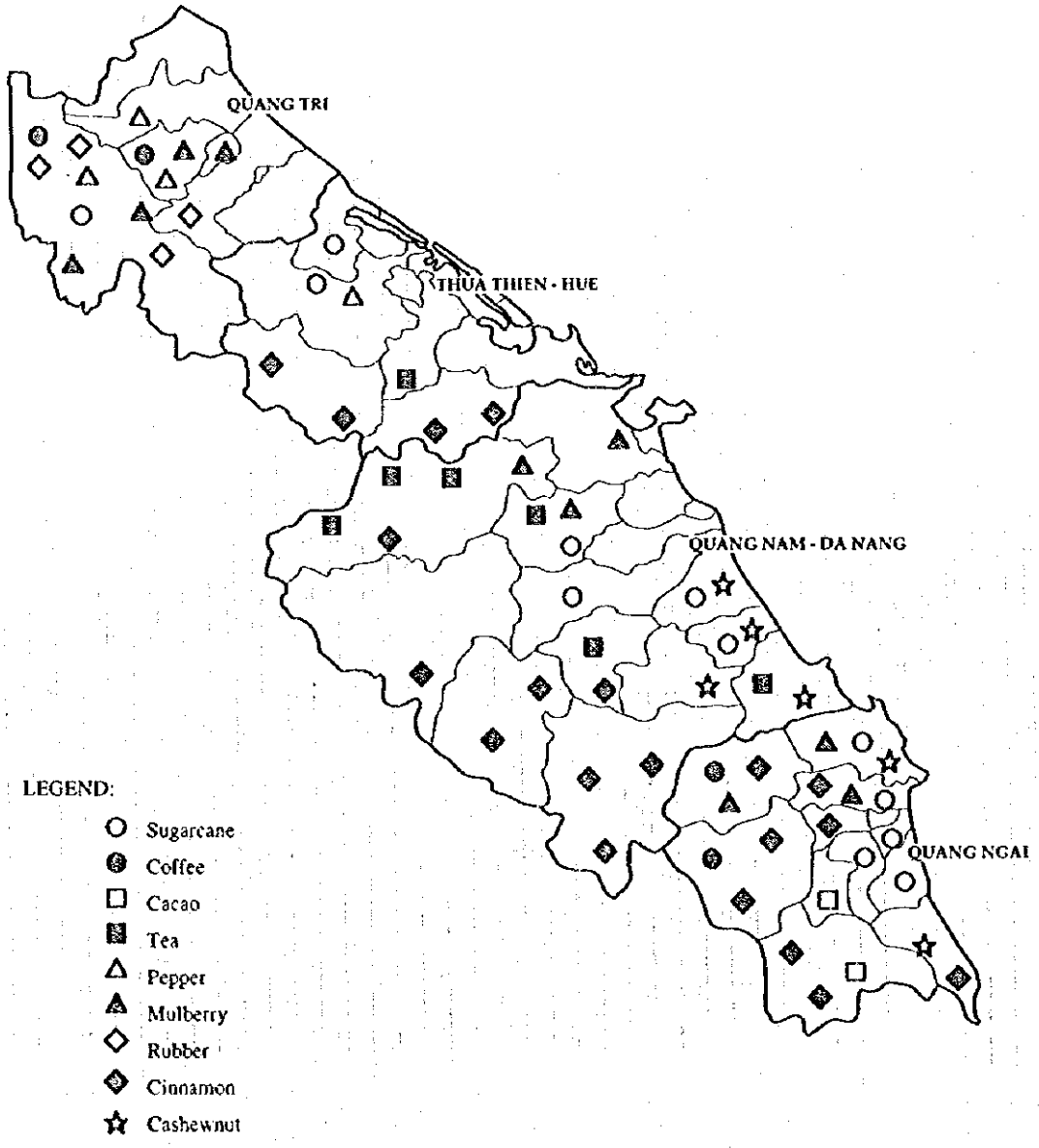
2.3.3 Contents of Program

1) Technical Support

Industrial crops were introduced in this area during the French occupation period but all the old plantation were abandoned or destroyed mainly during the war. Sericulture is different from other crops, for it has been handed down from ancestors, however, such a hereditary technique is now disappearing as food shortage accelerated the conversion from mulberry field to acreage under food crops. Consequently, most economically active population do not fully master the techniques for industrial crop management and their traditional ways of processing.

Besides, these crops have been cultivated around the world as major international market commodities that are subject to incessant renovation in varieties, husbandry techniques and demand from importers and consumers. Unless their producers are fully acquainted with these situations, the level of international competitiveness would remain vulnerable, and they would fail to receive remunerative return from the international market. In order for them to catch up with the newest expertise indispensable for modern production, relevant supporting systems and producers' organizations should assist individual producers develop their fully competitive production base. Usually, extension staff can assist producers for technical transfer but where there exist contracted production systems with some processing units, technical staff of these units can also help them.

Figure 2.1 Distribution of Industrial Crops



2) Supporting Systems

Currently available supporting systems include provincial and private sectors. The former provides extension offices, plant protection and veterinary offices. The latter, formerly belonged to public enterprise, but now privatized, provides agricultural material supply companies and such government invested enterprises an VI SERI (Viet Nam Sericulture/Silk Corporation), VINACAFE (Viet Nam National Coffee Export-Import Corporation) and VINAFOOD III (National Food Corporation Zone III, in charge of food processing, sugar industry etc.). Also, some joint-venture enterprises promote certain field of agricultural and forestry production, like VIJACHIP (Chip Producing / Exporting Enterprise, sponsored by a Japanese enterprise). GERUCO (General Rubber Corporation) has three latex mills in Quang Tri province, providing technical instruction to rubber growers in Quang Tri Province.

Table 2.4 Provincial Extension Framework

Province	Quang Tri	T.T.Hue	Q.N.D.N.	Quang Ngai
Number of Prov. Staff	40	50	120	55
Foodcrop Specialist	33	43	101	45
Industrial Crop SP.	2	1	4	4
Livestock Specialist	5	7	15	6
number of staff /district	2 - 5	4 - 8	2 - 3	5 - 7
Number of District Office	8	9	16	11

Source : verbal hearing from each district

As shown in Table 2.4, the provincial extension offices have 40 - 120 provincial extension staff, 2 - 8 district staff per district who station in district extension office, and 1 - 2 communal staff in each commune. Plant protection and veterinary are independent from extension, each section has 5 staff or so per district. Very few staff have expertise in special crops like industrial ones, only a few staff can deal with production and post-harvest techniques of industrial crops. Due to very limited means of extension, they can visit quite limited number of farm households that call for assistance from the staff. For example, motor bicycles held by the extension offices are not enough to offer to every staff and many of them use bicycle to do their duty. Each province has acute demand for strengthening industrial crop specialist as staff of local extension offices. Farmer's training courses are mainly provided for flat area (zone A). In the case of Quang Nam-Da Nang Province, the province provides farmers (25 farmers per course) with 5 - 7 day courses by 120 teaching staff (provincial and district extension staff), where direct paddy sowing system and driving skill of hand tractors etc. are instructed. However, no industrial crop course has so far been provided.

In-service training is scheduled based on the assumption that the total numbers of industrial crop specialists should be increased at the sacrifice of those who are in charge of food crops (provincial budget for maintaining agricultural extension system cannot be readily augmented), and currently existing staff assigned as industrial crop specialists are also needed to brush up their expertise by re-training so that their service for technical transfer can meet requirement from farmers' side. The trainees are not confined to provincial extension officer, but most of district and commune level workers who actually take charge of disseminating industrial crop techniques among producer farmers are to be trained. Accordingly, the total number of trainees exceeds 500 (the provincial level : 130, the district level : 120 and communal level : more than 250, refer to Table 2.5).

A training course trains 30 trainees for 6 months (1 month for general crop physiology, 5 months for field training, covering about 5 different crops, or one month for one crop). The course is to be started from 1997 until 2005 covering 18 courses accommodating 540 trainees. When the scheduled completed in the end of 2005, 540 trainees cater for 135 thousand ha of the planned acreage under industrial crops in the study area, that is to say 250 ha per worker. This figure gives a good contrast to current status, only 11 specialists covering 55 thousand ha, or 5,000 ha per specialist, who has to contact with 20 thousand households of industrial crop producers to faithfully perform his duty.

Table 2.5 Industrial Crop Promotion in the Study Area

Province	Quang Tri	T.T.Hue	Q.N.Da Nang	Quang Ngai*	Study Area
1. Crop Specie and Expansion of Acreage by 2010			unit :ha		
Sugarcane	1,900	9,600	1,000	3,400	15,900
Mulberry Silk	3,900	-	1,800	600	6,300
Rubber	9,600	6,000	-	1,200	16,800
Pepper	100	0	0	-	100
Arabica Coffee	1,800	-	-	4,500	6,300
Robusta Coffee	- 200	-	-	-	- 200
Tea	600	0	1,400	- 100	1,900
Cocoa	-	-	-	4,400	4,400
Cinnamon	-	0	9,000	32,000	41,000
Cashewnut	-	-	3,800	1,500	5,300
Total Acreage	17,700	15,600	17,000	47,500	97,800
Reforestation	3,800	3,220	3,510	9,840	20,270
2. Extension Specialist Requirement by 2010		(Cadres in	brackets)		unit :person
Diversification	(1) 18	(2) 36	(1) 18	(2) 36	(6) 108
Sericulture	(2) 36	0	(2) 36	(1) 18	(5) 90
Tree Protection	(3) 54	(2) 36	(1) 18	(3) 54	(9) 162
Spice Crop	0	0	(2) 36	(2) 36	(4) 72
Beverage Crop	(2) 36	0	(1) 18	(2) 36	(5) 90
Total Specialist	(8) 144	(4) 72	(7) 126	(10) 180	(29) 522
3. Loan Requirement to Develop the Above Shown Acreage				unit : 1,000	US$
Sugarcane	1,412	7,134	743	2,527	11,816
Mulberry Silk	2,015	0	930	310	3,255
Rubber	3,267	1,968	0	394	5,629
Pepper	215	0	0	0	215
Arabica Coffee	618	0	0	1,545	2,163
Tea	790	0	1,468	0	2,258
Cocoa	0	0	0	1,890	1,890
Cinnamon	0	0	5,910	21,018	26,928
Cashewnut	0	0	1,671	642	2,313
Reforestation	1,000	847	923	2,588	5,358
Total Amount	9,317	9,949	11,645	30,914	61,825

Note : for the requirement of initial investment, 80% of the amount required is counted for loan, and the rest 20% is self-supplied. Reforestation refers windbreak for tree crops.

Source : Estimated by the Study Team

3) Financial and Logistic Support

As for media of financial support, Vietnam Bank for Agriculture (AGRIBANK) plays by far the important role in providing industrial farmers with development resources and in some cases investing processing enterprises such as sugar mills and silk reeling factories. It has provincial branches that are responsible for loan granting and management in every province.

The industrial subsector has become a principal customer of medium / long term loans of the bank, owing to both the economic viability and relative security for amortization. However, farmers eligible for applying loans are limited to those who carry security, and majority of settlers in NEZ do not have any valid mortgage necessary for application. In the case of Quang Ngai province, an agricultural credit for farmers in short term (8 months) is available at the level of commune, with 1 % interest per month, and 50 % of this credit has been granted to livestock keepers, 25 % to fish farming and the rest 25 % to off-farm sectors as scholarship of family members in well-off farmers, piggery farms and so on.

As regards supply of agricultural inputs and materials, each province has agricultural material company located in the provincial capital, where 12 - 15 staff station for servicing inputs and materials delivery with reasonable prices. All communes purchase them to distribute among users.

4) Farmers Organizations

The reasons why farmers organizations should be established range in a wide spectrum, for example in order to manage a system like an irrigation facility, or a lease hiring system of agricultural machinery, or to maintain farm roads, to restore damaged tract of farmland by floods and so on. But the radical one should lie in the necessity of creating stronger bargaining power towards the outlet of their products like processing enterprises, trading and marketing agencies like collectors and middlemen, also towards the suppliers of farm inputs, Acquiring enough bargaining power to secure reasonable return is practically impossible for individual small-holders to exercise. In so far as farmers are engaged in sedentary farming for self sufficiency, they rarely feel it necessary to unite together, but when they begin industrial crop production, they can not dispose of what they have produced but have to sell it to others. In most cases, buyers can stand in the stronger side for price negotiations and small-holders can not wait for the visit of another buyer who offers an acceptable price. Here exploitation from weaker suppliers starts.

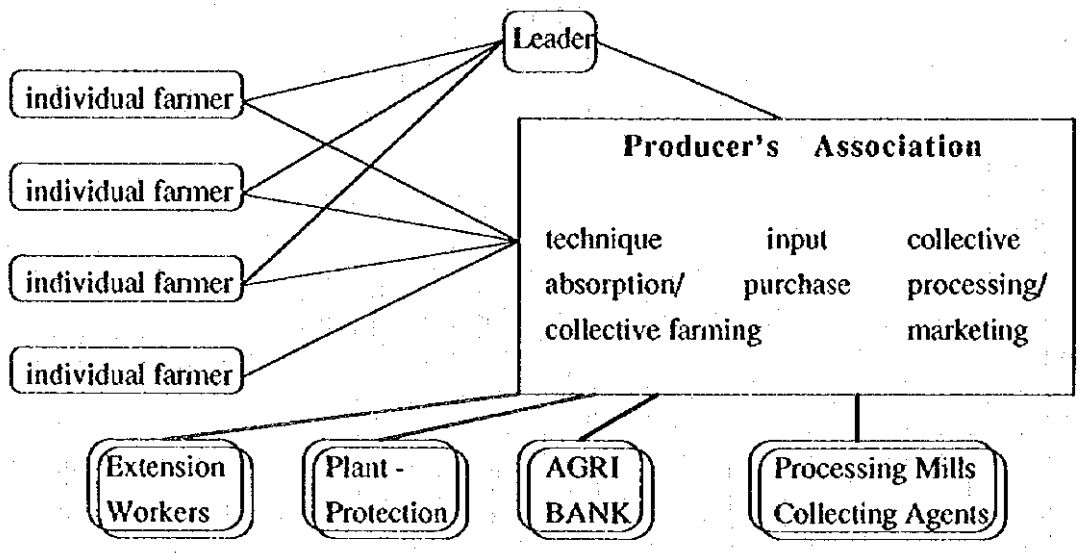
A number of farmers in many countries including Vietnam are reluctant to join cooperative unions and other types of associations, and this tendency seems particularly conspicuous in East European countries by the reason that they prefer free position rather than coersively bound just like the frame of Chinese collectivism. However, some East European agricultural countries now face serious economic crisis, evidently by the failure of adapting themselves to free market economy, one of the causes existing in lack of suitable and effective structure, or incentive of uniting smallholders, and also of efficient marketing systems. Small holders predominate in the total farm households in many socialist or late socialist countries, but most of them are not well-organized for obtaining resources and inputs, for marketing and for better position of bargaining with their trading partners.

These current situations imply that industrial crop producers should associate themselves in a form of mutual solidarity in order to strengthen their otherwise feeble business ability. Such kinds of farmers organizations have various merits as compared with individual, independent farm households, if they can operate and function as initially planned. For instance, they can enjoy such advantages as cheaper purchasing of farm inputs, much easier access to institutional loans from banks, stronger bargaining power for their products towards marketing media, larger scale merit of production including more efficient chemical spraying for pest and disease control, collective use of agricultural machinery and transportation for marketing if they exercise collective cropping under an agreement among membership of certain association or organization. It is relevant to remind that overwhelming strength of farmers in the developed world exists in well organized system of farming and marketing, while fatal vulnerability of farmers in the developing world resides with lack of structure, coordination and capital resources.

In the flat zone as many cooperatives as the number of communes have been organized, but many of them are inactive without any united marketing system. Some of them hold machinery for tilling paddy fields for rental lease. But in NEZs such organizations are hardly found, presumably because of sedentary living base. Although outsiders or even the government can hardly enforce farmers to associate together into some forms of organizations, it is administratively possible to foster, or induce them to voluntarily unite into unions, cooperatives, associations etc., through concrete incentives like conquests, awards, preferential measures on taxation, subsidies and so forth. Agricultural newspapers and journals also can play a role in motivating group formation among farmers by displaying articles of successful cases of grouping in Vietnam and other Asian countries.

Any development has to trail due process up to its achievement. In new economic zones and resettlement areas for ethnic minorities in the study area, development of industrial crops has just started sporadically, where only settlers who can afford to plant them began reclamation and planting. So, it would be too early to concern about group formation, or groups are spontaneously formed as the development process proceeds forward. But it doesn't deny the exigency to help them organize into producers' groups. Otherwise the formation of a profit exploitation system by middlemen and buyers comes earlier and that of farmers' groups to safeguard parity prices of crop production is greatly retarded. The desirable form of a producer's group in relation to input supply and output marketing system is proposed in the following figure.

Figure 2.2 Concept of a Farmer's Group



5) Post Harvesting Treatment and Processing Sector

Most industrial crops have been marketed as material (in the form of bean, chip, stalk and so on). Post harvesting treatment in the crop producer's stage is also necessary for sugar cane (defoliating), coffee (drying / threshing), cocoa (the same as coffee), cashew nut (removal of pericarp or shell of nuts), pepper (drying), cinnamon bark (drying), but for tea leaf, latex milk any treatment is not necessary since they are directly carried to their processing units within the producing area. In the case of mulberry, harvested leaves or twigs are fed to silkworm within the producers cottages and produced cocoons are sold to collectors. Processing sector planning is shown in Table 2.6, and major lines of post harvesting and mill processing of rubber, coffee and tea are illustrated in Fig 2.3.

Among the industrial crops employed in this program, sugar cane, mulberry, coffee, cacao and cashewnut need post-harvest treatment in farmyard or in the harvested field, and others can be carried directly to processing units that should be constructed at the sites as near to the planted area as possible.

Table 2.6 Processing Sector of Industrial Crops

Province	Quang Tri	T.T.Hue	Q.N.Da Nang	Quang Ngai*	Study Area
1. Estimated	Production of	Raw Materials in 2010			
Sugarcane	105,000	528,000	60,000	238,000	931,000
Mulberry Cocoon	4,680	0	2,160	720	7,560
Rubber / Latex	6,480	4,050	0	810	11,340
Pepper / Fresh	720	0	0	0	720
Arabica Coffee	2,200	0	0	6,300	8,500
Tea / Fresh Leaf	5,400	0	12,600	0	18,000
Cocoa / RawBean	0	0	0	3,740	3,740
Cinnamon Leaf*	0	0	19,800	70,400	90,200
Cashew Raw Nut	0	0	4,180	1,650	6,300
2. Processing	Units, Capacity	and Location	for these materials		Unit : ton/day
Sugar Mill	Huong Hoa 1,000	Phong Son 1,500	market to Q.Ngai	EXQ.Ngai 2,000 Pho Phong 1,000	EX 1 mill 2,000 plus 4mills 2,500
Silk Reeling Mill	EXDong Ha 25		EXDaNang 20	EXQNgai 10	EX 3 mills 55
Textile Factory			EXDaNang 1.5		
Rubber Factory	EXLatex Proc.15 3 latex mills	Phuong Dien 10		carry toBinhDinh	EX 1 mill 15 plus 1 mill 10
Pepper Refining	EXDong Ha 5				EX 1 mill 5
Coffee Depot	Huong Hoa 20 Cam Lo 15			Tra Bong 55 Son Ha 45	4 mills 135
Tea Processing			EXA Vuong 20 EXTieng 15		EX 2 mills 35 plus expansion
Cinnamon Oil-Extracting Mill			Tra My 50 Phuoc Son 25	Ba To 150 Son Ha 100	4 mills 325
Cashew Packing Mill			EXTam Ky 15 Nui Thanh 20	Q.Ngai 15	EX 1 mill 15 plus 2 mills 35

Note : EX existing mills but expansion/upgrading of capacity is planned, * cinnamon bark is direct-exported.

Just as crop husbandry, from planting, variety selection to harvesting affects the quality of harvested products, so does the post harvest treatment. There are a good many points to be improved from now on, because most of these industrial crops have been quite recently introduced and producers themselves are not fully acquainted with the best methods of post-harvest treatment practices. For example, two methods can be applied to the process of threshing cherry coffee into parchment, i.e., dry or conventional method and wet, or water soaking one. It is necessary to evaluate both methods for economic and quality comparison. Vietnamese rubber has been highly evaluated but there remains much room for the area of processing from latex milk to rubber sheet. Vietnamese rubber could be sold at higher price than it receives now, only by improving the treatment procedure of processing.

Moreover, lack of knowledge among producers and lack of nearby processing facility result in wasting or under-utilization of valuable by-product resources. For instance, cashew apple is not utilized for feed, or cashew kernel oil is not extracted. Likewise, silkworm manure and pupa (nhon) are not efficiently used. Cinnamon oil extraction from leaves has not become popular among the planters, though some producers sell leaves as material of incense.

Sugarcane has been highlighted for rapid expansion for which each province elaborates plans of development. Here, post-harvest logistic should be paid more attention, because delay of the delivery by one day of the harvested cane to sugarmills causes one per cent loss of sugar content in fresh cane. In contrast, techniques for raising cane sugar content by one per cent is rather difficult, and major producing countries fiercely compete one another to realize cane production with higher sugar content. Judging from these observations, technical transfer

coupled with financial leverage for improving key points for processing will contribute much to change crop industry into more viable one.

Figure 2.3 Post-Harvesting and Processing Lines

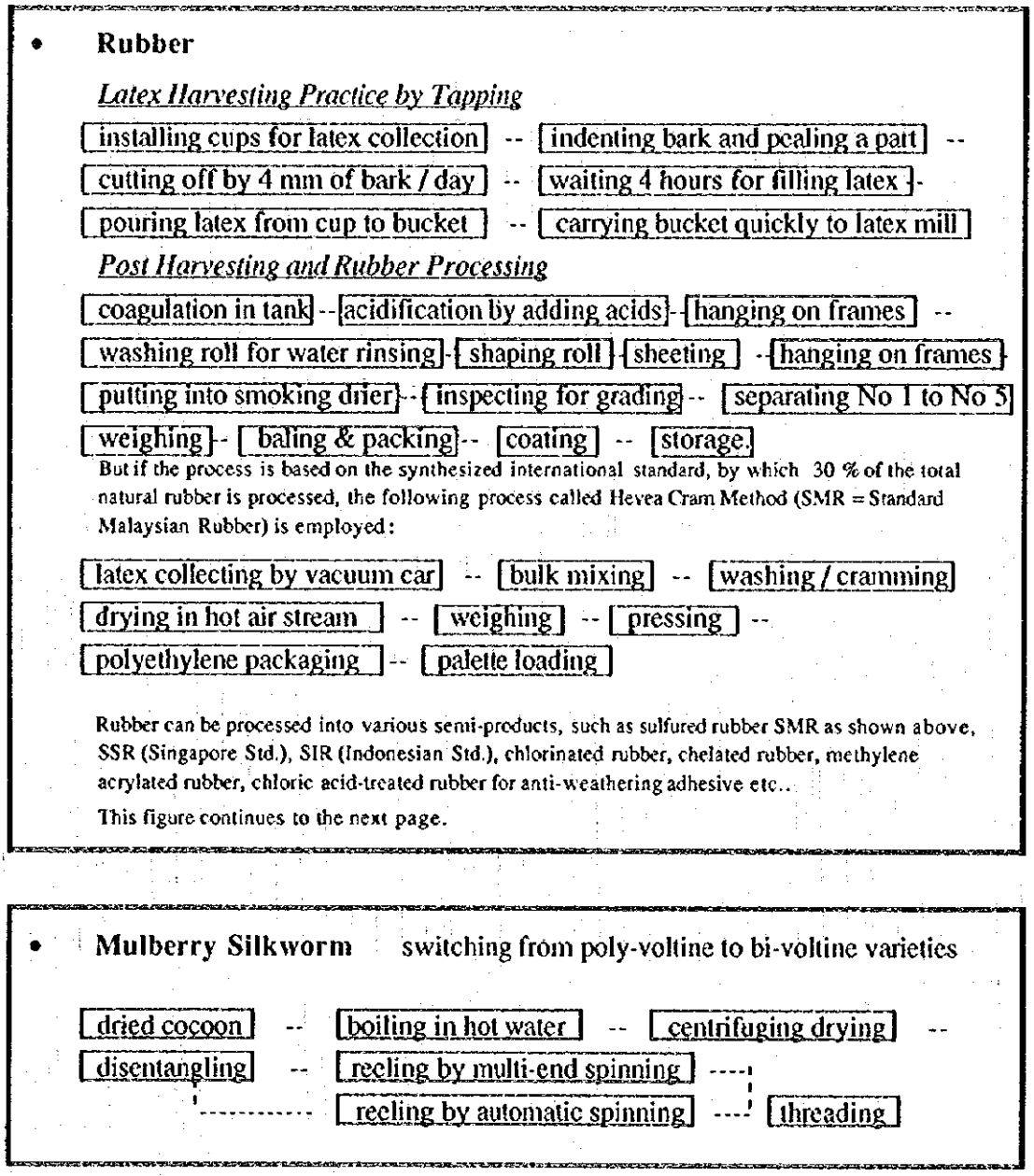


Figure 2.3 Post-Harvesting and Processing Lines (contd.)

- **Coffee**

harvesting only matured beans -- selection -- green coffee

in case of **arabica coffee :**

green coffee -- roasting -- roasted coffee

in case of **robusta coffee :**

green coffee -- blending -- roasting -- grinding -- ground coffee -- extracting -- drying -- pulverizing -- soluble coffee

Usually, two ways of processing, wet method and dry method are employed to process cherry coffee to green coffee :

in the case of **dry method,**

gradual picking of matured beans, once to fifth a year -- cherry coffee -- water rinsing -- drying on cement coated floor -- threshing by a thresher -- winnowing -- separating and removing outer crust -- serve for roasting

in the case of **wet method,**

harvesting -- soaking into water for a night in tabs letting fruit pulp ferment -- grinding outer crust & pericarp by pulper -- soaking into water flow for depulping -- drying with inner pericarp -- remove inner-pericarp with threshing grinder --- packing in 60 kg. bags

Qualitative characteristics of semi-products by wet method ; inferior appearance but superior savor with dry-method, good appearance but acidic taste with wet-method Homogenous roasting is fulfilled by using a rotary roasting machine.

- **Tea**

Vietnamese and Japanese usually consume green tea, but both black and green tea can be processed from the same tea (Camellia teasinensis L.)

Green tea is processed from tea bud through the following order :

picking buds -- weighing -- developing withering -- steaming in ovens -- rough rolling by molders/rotor vane -- ball breaker -- ladder drier -- fine rolling by heating molder -- homogenous drying in fan/oven dryers -- selection through sieves

2.3.4 Expected Improvement from the Proposed Program

1) Technical Aspect

Systematic improvement by in-service retraining of existing extension staff will enable them to instruct farmers more suitable and up-dated techniques so that the production may meet international demand, yields and quality of the products can be raised and eventual farm productivity can be ameliorated. The effect of fortified technical transfer can be expected in the following aspects :

- increased efficiency and higher response of input application
- exploration or better utilization of untapped by-products
- prevention of pests and diseases
- elevated return rate per labor hour and minimizing waste of capital by more considerate and elaborate planning in land reclamation, crop selection and labor allocation.

Presently most plantation do not have irrigation facility, but during dry period from early spring to summer soil moisture depletes in the area, where Laotian wind deprives from soil surface of moisture. The effect of irrigation on arabica coffee brings yield increase by 25 % and that on senescent pepper derives yield increment by 20 %. It also contributes to the yield improvement for inter-cropped food-crops by 40 - 50 % between the rows of young seedlings of tree crops. Introduction of appropriate type of agro-forestry and inter-cropping is another task that has not been widely proliferated by extension activities. Substantial economic advantage from inter-cropping is expected for intensive land use by tree crop planters, thus mitigating a part of hardship during the gestation period thereof, usually up to three years after planting saplings. Well trained extension workers can disseminate industrial crop diversification which can spread price risk, avoid risk of pests or disease outbreak and economization of capital.

2) Financial Aspect

The program plans to introduce a long term loan financed from external fund suppliers that has relevant grace period according to crop species. Though each province has a long term plan to develop tree crops within its jurisdiction as an outlook in 2010, it is not able to fulfill the plan without procuring the financing resources to put it into operation, because the majority of settlers and ethnic minorities presently suffer from poverty. The estimated loan requirement is estimated in Table 1.9. Loan for the crop development can be utilized in a revolving way, in which repaid amount can be used for lending, though long gestation period makes the progress of recovery sluggish.

The financial thrust may derive the largest effect among the proposed industrial crop promotion components. In other words, the program would turn out to be almost useless without any concrete proposal on program financing, and even most part of extension improvement for better technical transfer would become fruitless effort. As to interest of the loan, a half of financial rate of return of planned crops is recommended as a reasonable range from the side of repayment.

Another loan provided for the insurance of commodity price will realize a fully sustainable development of industrial crops because the provinces in the study area are not the leading industrial crop producers in Vietnam but virtually a minor ones that started planting crops well behind the principal producing provinces, beyond the reach of emergency financial leverage by the state. Especially when an international commodity market is saturated with a glut supply or with affluent end-season stock, the buyers tend to neglect collection of the commodity from minor producing areas where fewer lots are available with expensive transport charge. As a result, producers often fail to sell their products even at dumping prices and have to abandon them because local population do not consume much, or even do not have a habit to consume

them. By this reason, smallholder producers in this area are particularly vulnerable to market instability.

Once recession or slump of commodity hits the world market, the grass root producers, in particular those who neglect crop diversification and bet risky mono-culture of an industrial crop, would most probably suffer from heavy, serious loss and debt. This means the entire collapse of minor crop industries by heavier damages than that suffered by major ones.

2.3.5 Proposed Schedule of the Program Implementation

The Schedule of implementing the proposed program is shown in the following; the arrangement of technical transfer comes first in 1997 followed by the delivery of equipment in 1998, at the same time in-service training courses start from 1998 but those for candidates post-graduates of extension workers begins from 2005. Of the four items, disbursement of investment loan is carried out by AGRIBANK on private business basis but the original fund ought to be borrowed from foreign financing sources.

Priority of crop price insurance loan may be higher than that of pure farm investment loan, but it will be no use unless both of the proposed loans are simultaneously applied to the program beneficiaries.

Figure 2.4 Implementation Schedule

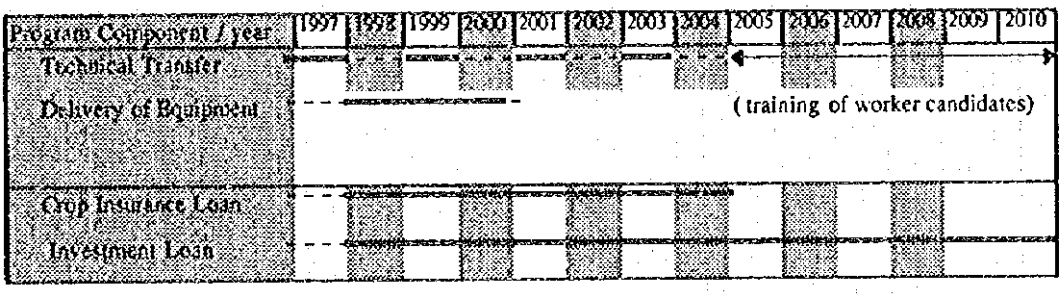
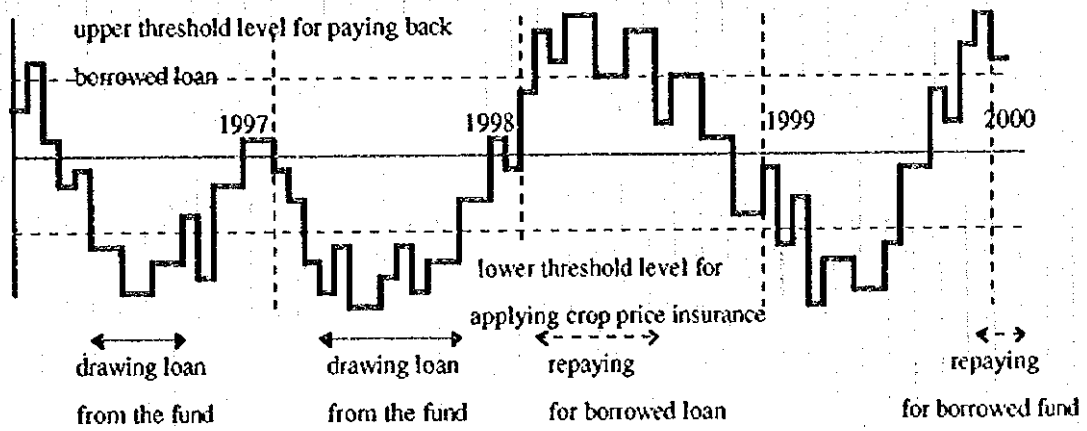


Figure 2.5 The Concept of Loan Provision

Crop Price Insurance Loan



CHAPTER 3

PROJECT COST AND BENEFIT

CHAPTER 3 PROJECT COST AND BENEFIT

3.1 COSTS OF THE PROPOSED PROGRAM

3.1.1 Dispatch of Industrial Crop Experts from Time to Time

Experts from donor countries are required for efficient technical collaboration, and the delivery of equipment, informative crop data supply and timely technical transfer. For example, Japan has ample compilation of leading techniques for sericulture, sugar industry and agro-forestry in this field. Their dispatch to the study area (not covering all the period of program implementation but on intermittent basis.) will contribute to effective and sustaining development of this program. Two experts are proposed for this purpose, dispatched from the donor country with the assignment of 53 months each, costing around 2 million US$. Their terms of reference include the proposed crop analysis in terms of cost-effectiveness and technical transfer such as domestic seed (silkworm eggs etc.) production.

3.1.2 Provision of Equipment for In-Service Training

Equipment to be delivered to Hue University and Da Nang Agricultural College for use of in-service training of extension staff is listed in Table 3.1. Basically, equipment for field trials is to be delivered to Da Nang Agricultural College, while data processing and laboratory apparatus are supplied to Hue University. Detailed specification and numbers required should be decided according to the curricula of training courses by the dispatched consultancy experts from donor countries.

The training courses provide field trip to find current issues and problems faced by producers, and for this purpose vehicles are included. Also, field experiments and trials are practiced by the trainees that require experimental equipment and apparatus.

3.1.3 Establishment of Crop Price Insurance Loan

This loan should be applicable to the producers of particular crops with wide fluctuation in international markets, i.e., coffee, silk (mulberry) and rubber. About 24 thousand households in the new economic zones and resettlement of ethnic minorities are planned to plant these crops, who need the crop price insurance during the period of dumping price. They usually have burden of repayment for borrowed capital, estimated at 550 US$ per year per household, and require the annual minimum livelihood amounting 3 million VND, or 270 US$. Provided that international price of one of these commodities has hardship, one third of the total amount of sustenance is required as the proposed fund in this occasion, say about 6.5 million US$.

3.1.4 Provision of Industrial Crop Development Loan by AGRIBANK

The loan requirement is roughly estimated in Table 2.5. Granting of long term loan from AGRIBANK accounts for less than 10 % of the total loan disbursement, since the total fund is limited while demand and priority for short term loan are much greater. The loan interest usually consists of real banking charge and portion of inflation adjustment.

Table 3.1 List of Equipment for In-Service Training

Equipment for In-Service Training	to College	to University	Amount on CIF base
1. Stationary for Data Processing			thousand US$
Computers and Printers	40	40	400
Copy Machine, Facsimile	5	15	75
2. Audio-Visual Apparatus			
Film / slide / Video Projector	2	3	600
Camera, 8 mm Camera	3	5	20
Screen and Audio-Mix Console	2	3	1,450
TV and Video Recorder, Monitor	3	5	25
Amplifier, Microphone Set	2	3	25
3. Miscellaneous Equipment, Expendable			
Cabinet	20	20	40
Office Desk	35	35	70
Floppy Disk, Film, Battery etc.	1	1	800
4. Laboratory Apparatus / Equipment			
Analytical Reagents	1	1	60
Fat Extraction & Analyzer	2	3	20
Soil Hand Auger and Test Kit	35	35	22
Red-Ox Meter	35	35	35
Water Distillator	2	3	10
Muffle Furnace	0	1	10
Amino Acid Analyzer	0	1	40
Gas Chromatography	0	1	65
Ultra Violet Spectrophotometer	0	1	35
Flame Spectrophotometer	0	1	25
pH meter	35	35	70
Centrifuger	10	5	38
Electric Incubator	10	0	800
Microtome	15	5	20
Saccharimeter	40	20	120
Binette Microscope	35	35	490
Grain / Bean Moisture Meter	35	35	420
Fiber Tension Measurement Kit	5	3	50
Analytical Balance	2	3	20
Weighing Balance, Metra	5	3	30
Refrigerator for seed and egg	5	5	40
Phyto-toron, metal frame	2	0	280
Semi-micro Kjeldahl apparatus	5	5	750
5. Field Trial Equipment			
Drip Irrigation Equipment, Pump	1	0	9,400
Colgate Pipe	1	0	50
Trelice, Vinyl Sheet, Screen Net	1	0	30
Meteorological Apparatus	1	0	95
Land Survey Apparatus, T-Level	10	0	40
Back Hoe with spare-parts	2	0	80
Angle Dozer with Spareparts	2	0	220
Speed Sprayer with Spareparts	2	0	70
Wheel Tractor and Trailer	5	0	200
6 Vehicles for Field Investigation	(Jeep)	(Mini-Bus)	
4-wheel Station Wagon /Minibus	2	2	260
250 cc Motorcycle	35	35	80
Total			17,480

The former is set at 1% per month or so, while the latter fluctuates in tandem with the rate of inflation, say 0.5 to 1% per month. On the other hand, as 70 % or more of the products of industrial crops bound for export, the earning thereof is rather linked with the value of foreign currency. This gap should be properly offset by the effort of the bank in charge of loan lending business.

Also, lending term is not as long as the gestation period plus yield developing period of tree crops, so it will be required to create a special credit institution to meet the conditions of industrial crop plantation. In the developed world, a long term farm credit has 30 to 40 years amortization period with a few year grace period without imposing any interest. In the case of heavily invested plantation, the planted field serves as valid mortgage, and within the evaluated value of the security any banks can grant a loan to the owner. In this context, it will be by far easier for small-holders groups than for individual household to get access to the loan.

3.2 BENEFITS OF THE PROGRAM

Total benefit of crop development can be estimated from the expected acreage expansion and yield increment of the component commodity crops. However, the contents of the proposed program consist of technical transfer and two types of loans to producer farmers, and these are only a part of the contribution to crop development. Out of these, technical transfer and price insurance loan do not directly linked with the derived net benefit from the calculation of production increment. However, the former can be indirectly estimated from the difference between yield increase by adopting improved husbandry methods plus high yielding varieties and that of conventional trends, though many of industrial crops have not hitherto been planted, or yield data is not available for cinnamon bark.

As regards costs for creating processing units or expanding operation capacity of the existing units, desirably added to the production costs, the analysis within the agricultural program has to exclude them to avoid duplicated benefit counting with industry sector.

3.2.1 Future Projection of Crop Production in the Study Area

The estimated acreage and production quantities are shown above in Table 2.5 . As a matter of course, the existing tree standing and plantation acreage are excluded in the Table, and the total of the production including existing acreage is larger than that tabulated in Table 2.5. The estimated return from the selected industrial crop is shown in Table 3.3. Note that a few crops have negative net return, even before deducing tax from their gross return, reflecting gloomy international market prices and cheaper labor prices for the production practices. Given the estimated average farm labor wage ranges from 0,9 to 1.2 US$ per diem per person, farmers can also earn some income by raising crops the net return of which are at present negative, yet the rates are cheaper as compared with those with positive net return.

1) Farm-gate Price and F.O.B. Price at Shipping Ports

The levels of farm-gate price and F.O.B. Price at shipping ports in Vietnam in 1996 are given in Table 3.2. Besides, farm-gate price of sugarcane is estimated at 18.2 US$ per ton of cane with delivery cost to sugar-mill gate. As prices generally vary with number of lots for shipping, quality, date of quotation, level of end-season product stock and so forth, only lumpsum levels can be illustrated here.

2) Annual Development in Values of Products

Annual increment of produced values of major products by industrial crop depends firstly on availability of resources for reclamation and planting, secondly on the yield development of crops that are presented in Table 3.6.

Table 3.2 Farm-gate Price and F.O.B. Price of Industrial Crops

Unit: 1996 US$ per kg

Term of Price / Crop	Coffee Arabica	Coffee Robusta	Tea for Export	Rubber Latex	Cocoon Dried	Pepper Dried	Cinnamon Bark	Cashew Dry Nut	Cacao Bean
Farm Gate Price for Fresh Form	0.27	0.21	0.16	0.18	2.90	1.27	1.64	0.34	0.90
Weight Rate to Processed Form	0.12	0.12	0.18	0.29	0.11	0.70	0.75	.0.45	0.43
FOB Price in Da Nang / HCMC	0.86	0.85	-	-	27.0	7.40	1.3 grEA	0.74	-
d. o. for different grade							1.8 grdA	0.90	
Estimated International Price	1.90	1.68	1.42	1.48	23.0	8.30	4.10	4.26	1.19

Note: * depending on the grade

3.2.2 Pre-Evaluation of the Program

1) Estimated Benefit Increment through the Project

Up to the target year of the evaluation, 2023, all of these crops complete the whole crop cycle, but accompanying afforestation has the cycle of 45 years. or it takes longer period to offset their initial investment costs.

In Table 3.3, the upper part I displays crop benefit on annual base, for crops with long gestation period show gradual augmentation and decline in unit yields, so it is rather difficult to clearly see their profitability. The middle part gives net benefit of the crops related to this program, and figures show the devaluation of the existing crop which should be converted into more profitable ones. In this Program, old garden of tea (100 ha) and of robusta coffee (200 ha) is to be replanted to other tree crops, like arabica coffee. These crops give very low net benefits on account of low international market prices and long gestation periods (refer to part II), yet they can change surplus labor into income as shown in the part III of the same Table.

Since the benefit calculation is based on the farm-gate prices of 1966, the result directly reflects them and future outlook hardly comes out directly from this table. Though the holding size vary with place and crop, the average size should fall in the range 1.0 - 1.5 ha per household under crop in the hilly and mountainous area, where 65,200 to 97,800 farm households are engaged in industrial crop production. Then the average increment in annual return from industrial crop will come to 158 - 247 US$ per household in 2023 or later, by the time the whole planting is completed and crops are matured for peak production. If farm tax is exempted from this increment, a household can enjoy the net income of 158 - 247 US$. However, if the tax equivalent to 400 kg of paddy or 10 % of the gross benefit is collected by the State, then the total annual net benefit from the Program nearly comes to only 7.4 million US$ in the area.

This is equivalent to 75.6 US$ per hectare, or 76 - 113 US$ / household / year and the rest 79 to 118 US$ is left as net annual increment. This amount is comparable to the annual income level of the poorest stratum of living standard in rural areas, ca. 300 US$, and this estimation tells us that industrial crops are not so profitable as we expected. If this amount of increment should be obtained from paddy field in flat zone, increment in paddy yield should be 0.97 ton per ha, assuming that a household has 0.3 ha of rice field, while current trend in paddy yield is almost stagnant. From this fact, we could say that development of industrial crop is a reasonable alternative so far as international market situation remains as stable as it does now.

At any rate, current farm-gate price levels are nothing but instantaneous, the validity of which lasts only a few months. So, the planner cannot lightly cut a crop or plant another judging from current situation only. Apart from the net benefit, a farm household growing these industrial crops can expect to annually receive 383 - 575 US$ as farm labor return for 420 - 630 man-day of farm practice. After all, farmers will become busy in offering farm labor, earning 550 - 600 US$ per year per household. By this income, the industrial crop producers

can sustain their living standard at around twice as much as that of the poorest stratum sustaining their life by sedentary agriculture only.

2) Features of Farm Production and Crop Budget

Crop production profile per hectare is compiled in Table 3.6 - 3.7. The yield levels employed here outweigh the currently recorded in this area, but are already attained in major producing areas in Viet Nam or in neighbor countries. For example, yield of coffee approaches 2 tons dry bean per hectare in major producing area in central provinces, but in the study area it is proposed lower taking account of climatic and other handicapped factors.

Depending on the efforts of producers, these levels will further be improved. Maturity and yield development pattern vary with climatic, soil conditions and husbandry techniques. Quality is another key factor for competitiveness and price, but it cannot be quantified with ease. Present price levels do not necessarily reflect real value of the farm products due partly to mal-functioning market mechanism in rural areas, partly to Viet Nam's position in the international market. Sooner or later, however, such marketing obstacles will be removed and commercial credence is established so that equitable valuation may be performed.

Labor intensiveness of a crop can be estimated from the share of labor cost occupied in the total cost. Rubber and arabica coffee exceed 70%, followed by robusta coffee, tea and mulberry keeping levels of over 50%, but those of pepper, cacao and cashew lies below 40%, owing to higher input cost, included especially in the initial investment.

3) Net Benefit by Crop and Relative Profitability

Crop return and the production cost profile for the total planned area under the program are presented in Table 3.3. As already stated, the initial investment of these crops is so huge that majority of settlers and resettlers cannot help hesitating to make up their mind to participate reclamation, even if the loan is available to them. Actually however, manual labor wage accounts for by far major portion of reclamation as seen in Table 3.6. A part of the area employed in the program does not fall in the category of reclamation but mere conversion from existing plantation (under pepper) to more profitable tree crops, for this crop diversion has actually been practiced by wise and well-off farmers in pepper area. The annual gain from old gardens with senescent trees remains nominal, but the owners who do not have access to re-investment resources can hardly afford to switch crops, despite of their consciousness that it is a real waste of land to leave as it is.

These characters imply that most of the selected industrial crops are labor intensive and such labor can hardly be replaced by machinery work. Where rural cheap labor is readily available, these crops can be produced at lower costs than the areas in tight labor supply. In central provinces where land and capital availability is quite limited, these labor intensive crops and related processing industries really fit the current conditions, until the inhabitants enough accumulate their wealth through labor work.

Profitability of industrial crops always tends to be eroded or threatened by unfair price offered by collectors, input price hike by inflation, pests and insect attack and so on. Such risk can be mitigated by organizing a group, by spreading risk through crop diversification and by employing higher labor intensive and technique extensive crops.

Initial cost for reclamation imposes a heavy burden to settlers who want to reclaim their land in a proper way so that the tree crops can develop faster and healthier. Irrigation facility is desirable for pepper, coffee and mulberry, while it is almost indispensable for sugarcane. Labor cost accounts for a major part of the total reclamation cost as seen in Table 3.5. Required loans for initial cost can therefore be limited to input materials.

Table 3.3 Industrial Crop Promotion in the Study Area

Province	Quang Tri	T.T.Hue	Q.N.Da Nang	Quang Ngai*	Study Area
I. Gross Crop Benefits Estimated as Annual Basis				unit :thousands US$	
Sugarcane	1,793	9,058	944	3,208	15,003
Mulberry Silk	2,985	0	1,378	459	4,822
Rubber	13,766	8,694	0	1,721	24,181
Pepper	192	0	0	0	192
Arabica Coffee	2,737	0	0	6,842	9,579
Robusta Coffee	(170)*	0	0	0	0
Tea	494	0	1,153	(14)**	1,647
Cacao	0	0	0	1,478	1,478
Cinnamon	0	0	6,111	21,728	27,839
Cashewnut	0	0	1,478	584	2,062
Total Amount	21,967	17,752	11,064	36,020	86,803
II. Net Crop Benefits Estimated as Annual Basis				unit :thousand US$	
Sugarcane	17	88	9	31	145
Mulberry Silk	56	0	26	9	91
Rubber	390	243	0	49	682
Pepper	2	0	0	0	2
Arabica Coffee	964	0	0	2,410	3,374
Robusta Coffee	-91	0	0	0	-91
Tea	8	0	18	-1	25
Cacao	0	0	0	133	133
Cinnamon	0	0	1,989	785	2,774
Cashewnut	0	0	185	73	258
Total Amount	1,346	331	2,227	3,489	7,393
3. Annual Labor Cost of Crop Production				unit :thousand US$	
Sugarcane	853	4,308	449	1,526	7,136
Mulberry Silk	2,439	0	1,126	375	3,940
Rubber	7,672	4,795	0	959	13,426
Pepper	23	0	0	0	23
Arabica Coffee	1,245	0	0	3,112	4,357
Robusta Coffee	0	0	0	0	0
Tea	261	0	609	0	870
Cacao	0	0	0	376	376
Cinnamon	0	0	1,428	5,078	6,506
Cashewnut	0	0	603	238	841
Total Amount	12,493	9,103	4,215	11,664	37,475

Note: * replanted to arabica, the increment counted in arabica, ** replanted in cinnamon, the increment included in cinnamon

Table 3.4 summarizes with-program profitability by crop , though these figures change from year to year as supply-demand situations in the world market fluctuate. Benefits of coffee and pepper do not differ much, but the production cost is much higher for pepper. By-product of sugarcane is cane top for feeding animals, that of silkworm rearing constitutes pupa for fish feed or pig feed and worm manure for chlorophyll extraction, that of rubber does rubber-nut for oil extraction, that of cinnamon is leaf for extracting oil to produce incense and that of cashew nut is cashew kernel for extracting oil for paint. The central columns are not presented on annual basis because initial cost and total labor cost during a cycle of planting are to be emphasized here. Annual and hectare basis costs by crop are given in Table 3.7.

Table 3.4 Crop Profitability per Hectare

Unit : US$ / ha, ratio and % of return, costs for 25 years

Industrial Crops Afforested Tree	Annual Equivalent Benefit			Initial and Recurrent Costs				Indicators	
	main product	by-product	Total benefit	initial -cost*	annual recurr*	labor cost	Total Cost**	B/C ratio	FIRR %
Sugar cane	944	24	968	8,361	4,239	11,219	23,987	1.01	8.0
Mulberry Silk	766	307	1,059	3,398	2,775	15,634	26,831	1.02	4.2
Rubber	1,434	31	1,465	410	2,431	19,979	26,482	1.38	16.4
Pepper	1,535	0	1,535	2,685	22,433	5,826	34,785	1.04	5.9
Arabica Coffee	1,521	0	1,521	2,349	2,830	17,290	26,351	1.54	16.2
Robusta Coffee	964	0	964	130	2,614	6,944	11.208	2.15	14.0
Tea	834	0	834	2,622	4,667	10.879	20,261	1.02	1.6
Cacao	336	0	336	1,074	3,620	2,230	7,764	1.10	3.5
Cinnamon	679	210	889	821	1,989	3,967	9,150	2.43	13.2
Cashewnut	389	89	478	535	5,372	3,972	10,722	1.11	5.8
Afforested Tree	1,563	0	1,563	263	72	921	1,478	1.06	0.4

Note : * initial and recurrent costs do not include labor cost portions which are totaled in the column of labor cost. ** Total cost includes tax, equivalent to 10 % of gross benefit.

Table 3.5 Reclamation Cost in Tan Lam Pepper Rehabilitation

Unit: man-day, US$ equivalent

Inputs for land reclamation	*secondary Forest*		*Shrub Land*		*Grass land*		*Open Field*	
listing only major items	number	Cost	Number	Cost	Number	Cost	Number	Cost
Labor under brushing	20	18	30	27				
felling (slash, burning)	50	45	5	5	2(20)	22		
isolation, burning etc.	12	11	10	9	2	2		
clearing around pit	18	16						
Required Labor in Total	112	102	55	50	34	31	5	5
Inputs cross-cut saw and ax set	1	10	1	7	1	3		
arboricide (litre)	0.25	2	0.25	2	0.1	10		
diesel fuel (litre)	5	1	2.5	1				
herbicide (litre)			3	19	6	38	2	13
Required Total Materials		21		37		49		
Total Land Reclamation Cost		123		88		80		25

Source : Courtesy of Tan Lam Pepper Enterprise, and Mr. Leichtmann, GTZ expert of Technical Cooperation

Agricultural tax accounts for fairly substantial amount in the production costs of industrial crops employed. It amounts to 33.6 - 153.5 US$ per year per hectare, while actually paid tax level for perennial crops in Region IV and Region V falls in 20.9 - 23.5 US$ / ha., and about 8.0 US$ /ha /year for afforested standings, in 1993. Taking inflation rate, about 70% during these three years into account, it comes to 35.5 - 40.0 US$, implying that the lower level can be reasonable but the upper level is still deviated from the result of the census.

Crop return and the production cost profile are presented in Table 3.7, that shows six out of ten crops have marginal net return at current farm-gate price. This fact indirectly reflects present recession in international commodity price regime. Just because current net return indicates a marginal value, it does not follow that it always fails to sustain a producer's household. However, the extent of the marginality is worth paying attention, for the prices of farm inputs tend to rise keeping pace with inflation, while international commodity prices seldom boost but mostly remain gloomy, leading to so-called cost-price squeeze. The extent of marginality of pepper is outstanding, and in fact a large acreage hitherto under it has been replanted into coffee and other crops by the plantation owners. The long term economic behavior of reforestation turns out to be positive, on the contrary, only because of favorable unit price of timber, though its gestation period extends over ten years until fuelwood can be collected from the planted site.

Table 3.6 Industrial Crop Yield Profile

Unit: ton / ha as fresh product/dried product

Year	Arabica Coffee	Robusta Coffee	Rubber	Cacao	Cinna mon	Cashew nut	Pepper	Tea	Mul berry	Sugar Cane
1	0	0	0	0	0	0	0	0	0/0	60/5.5
2	0	0	0	0	0	0	0	2.5/0.5	20/1.0	65/6.0
3	3.2 / 0.3	0	0	0	0	0	0	2.8/ 0.55	25/1.3	70/7.0
4	4.2 / 0.5	0	0	0	0	0.9/0.5	0.5 / 0.4	3.0/0.6	30/1.5	65/6.5
5	6.8 / 0.8	2.4/0.3	0	0.7/0.3	0	1.4/0.8	2.2 / 1.5	3.3/ 0.65	30/1.5	60/ 6.0
6	9.4 / 1.1	4.4/0.6	0	0.9/0.4	0	2.0/1.1	2.6 / 1.8	3.3/ 0.65	30/1,5	70/ 7.0
7	11.0/1.3	7.4/0.9	0.2/0.1	1.2/0.5	0	2.4/1.3	3.1 / 2.1	3.3/ 0.65	25/1.3	65/ 6.5
8	13.6/1.6	9.0/1.1	0.5/0.2	1.6/0.7	0	2.6/1.5	3.1 / 2.1	3.3/ 0.65	30/1.5	60/ 6.0
9	15.3/1.8	10.5 /1.3	0.7/0.2	1.9/0.8	0	2.8/1.6	3.1 / 2.1	3.3/ 0.65	30/1.5	70/7.0
10	15.3/1.8	11.5 /1.4	0.8/0.2	2.1/0.9	0.8/0.4	2.8/1.6	2.8 / 1.8	3.3/ 0.65	30/1,5	65/6.5
11	15.3/1.8	13.5 /1.6	1.0/0.3	1.9/0.8	0.8/0.4	2.8/1.6	2.2 / 1.6	3.0/0.6	25/1.3	60/ 6.0
12	12.8/1.5	15.0 /1.8	1.1/0.3	1.6/0.7	1.0/0.5	2.8/1.6	1.7 / 1.2	3.0/0.6	30/1.5	70/ 7.0
13	11.0/1.3	16.5 /1.9	1.2/0.4	1.6/0.7	1.0/0.5	2.6/1.5	1.5 / 1.1	2.8/ 0.55	30/1.5	65/ 6.5
14	10.2/1.2	16.5 /1.9	1.2/0.4	1.4/0.6	1.1/0.5	2.5/1.4	1.4 / 0.9	2.8/ 0.55	30/1,5	60/ 6.0
15	9.3 / 1.1	15.0 /1.8	1.3/0.4	1.1/0.5	1.1/0.6	2.3/1.3	1.3 / 0.8	2.5/ 0.5	25/1.3	70/7.0
16	8.5 / 1.0	13.5 /1.6	1.3/0.4	0.7/0.3	1.0/0.5	2.1/1.2	1.2 / 0.8	0.0/ 0.0	30/1.5	65/6.5
17	8.5 / 1.0	13.5 /1.6	1.3/0.4	0.9/0.4	0.5/0.3	2.1/1.2	1.1 / 0.7	2.5/0.5	30/1.5	60/ 6.0
18	7.7 / 0.9	12.0 /1.4	1.2/0.4	1.2/0.5	..0	1.9/1.1	1.1 / 0.7	2.8/ 0.55	30/1,5	70/ 7.0
19	7.7 / 0.9	11.0 /1.3	1.2/0.4	1.6/0.7	..0	1.9/1.1	1.0 / 0.7	3.0/ 0.6	25/1.3	65/ 6.5
20	6.8 / 0.8	10.0 /1.2	1.1/0.3	1.9/0.8	..0	1.8/1.0	0.9 / 0.6	3.3/ 0.65	30/1.5	60/ 6.0
21	6.8 / 0.8	9.0/1.1	1.0/0.3	2.1/0.9	..0	1.6/0.9	0.8 / 0.6	3.3/ 0.65	30/1.5	70/7.0
22	6.0 / 0.7	8.0/0.9	1.0/0.3	1.9/0.8	..0	1.4/0.8	0.7 / 0.5	3.3/ 0.65	30/1,5	65/6.5
23	6.0 / 0.7	7.5/0.9	0.9/0.3	1.6/0.7	..0	1.2/0.7	0.6 / 0.4	3.3/ 0.65	25/1.3	60/ 6.0
24	5.1 / 0.6	6.5/0.8	0.8/0.2	1.6/0.7	..0	1.1/0.6	0.5 / 0.4	3.3/ 0.65	30/1.5	70/7.0
25	5.0 / 0.6	6.0/0.7	0.7/0.2	1.4/0.6	4.4/2.2	0.9/0.5	0.4 / 0.3	3.3/ 0.65	30/1.5	65/6.5
Total	205/24.1	219/26.1	18.5/5.6	30.9/13.3	11.2/5.9	41.1/25.1	33.8/22.1	70.3/13.7	680/34.3	1,625/163

Source : By Study Team

It is desirable that the rate of net profit from a crop keeps over 25% for providing the fund to purchase inputs for the next cycle of crop planting, but four crops out of ten satisfy this standard.

The time required for the response of invested inputs to output primarily determines the figures of FIRR while benefit cost ratios do not affect them significantly. Therefore, most industrial tree crops with considerable gestation span show low FIRR even though they have rather high B/C ratios. As per rubber and cinnamon, we might as well say that these have high FIRR all right, but if loans with high interest, for example 1% per month, are thrust into reclamation work for them, the major part of expected benefit will be offset with their repayment, and the producers will fail to enjoy envisaged profit. This is the main reason why a special loan system becomes essential to develop industrial crops in the target area, together with that for creating processing units or for expanding the existing ones in proportion to the expanded supply of processing materials.

The FIRR calculation does not include loan repayment since the term of lending, covering loan amount per hectare, grace period annual interest and lending term are not fixed. However, if it is put into the calculation table, most of tree crops and sugarcane will drop out with negative benefit, and even promising ones with two-digit rate of FIRR would show only marginal net gain after subtracting loan installment.

Table 3.7 Crop Return and Cost for a Crop-Cycle

Unit: thousand US$ / ha

Crop Specie	*Gross Return*	*Production Cost*	Annual Cost Base	*Tax*	*Net Return*	*Income from Labor*	*Return Rate*
Sugarcane	24.2	24.0	(0.96)	0.2	0.2	11.2	0.8 %
Mulberry Cocoon	29.4	28.7	(1.15)	0.3	0.7	15.6	2.3 %
Rubber	36.6	26.5	(1.06)	2.7	10.1	20.0	27.6 %
Pepper	38.4	34.8	(1.39)	3.8	3.6	5.8	9.4 %
Arabica Coffee	38.0	26.4	(1.06)	3.8	11.6	17.3	30.5%
Robusta Coffee	24.1	11.2	(0.45)	2.4	12.9	6,9	53.5 %
Tea	20.6	20.3	(0.81)	2.1	0.3	10.9	1.5 %
Cacao	8.4	7.8	(0.31)	0.8	0.6	2.2	7.1 %
Cinnamon	22.2	9.2	(0.37)	2.2	13.0	4.0	58.8 %
Cashewnut	11.9	10.7	(0.43)	1,462	1.2	4.0	10.0 %
Tree Replantation	1.6	1.5	(0.06)	0.1	0.1	0.9	5.4 %

Note : Rate of tax is set at 10 % of gross return)

Source : Estimated by the Study Team

As a whole, cinnamon, coffee and rubber show high economic viability, while sugarcane tea and mulberry remain in low rate of return in Table 3.7. This tendency matches with the result of benefit-cost analysis given in Table 3.4. However, rubber, mulberry, tea, arabica coffee and sugarcane require high labor costs, in other words if the producers of these crops happen to be the landholder of the field planted with the same crop, they can earn the amount of the labor return by themselves, not paying it to hired laborers. In this case, although the producers are not fully satisfied with the rate of labor return (usually less than 0.9 US$ per man-day), they can add this amount to nominal net benefits derived from these unprofitable crops.

In general, farm-gate price levels of industrial crops are less than one third of the ex-factory delivery price of the processed goods with equivalent value, because collectors or buyers of raw materials must earn at least the same amounts that farmers do, and the processing unit also earn at least the same amount as farmers and collectors do. Similarly, input sellers should get remunerative margin when they sell inputs to farmers. Then, problem arises in the calculation of the parity price level of a commodity, that should be remunerative to producers. State enterprises did this estimation when they bought raw materials from farmers. Now, the privatized processing enterprises are fully responsible for this procedure to ensure producer's interest. The tentative evaluation of the unit labor cost, i.e., 0.9 US$ per man-day for ordinary farming practice can be checked by average living expenditure of rural household in region IV. Viet Nam living standard survey in 1993 gives 5.35 - 6.45 million VND, or 486 - 586 US$ as annual household expenditure. Applying the inflation rate of 15% per annum for estimating 1996 level, it amounts 739 - 891 US$. Given a household wholly relying on tree crop and inter-cropping with 2.2 active members for farm labor working 280 days a year per person, then income from labor amounts to 554 US$, and if net return from the industrial crop ranges 185 - 337 US$ on annual basis, the household can earn the entire amount of annual expenditure from the farm income. However, the annual net benefit per hectare ranges only 9 - 516 US$ per hectare with a great variation, and only rubber, coffee and cinnamon can satisfy this requirement assuming 1 ha / household, by the price regime as of 1996. Even if the acreage of industrial crops expand to 1.5 hectares per household, the result is the same. Here, benefit from catch crops is not considered, but during gestation period, farmers can plant food crops like cassava, yam and taro for three years until shade by canopy development inhibits food crop growing in between the rows of the planted industrial crops, thereby increasing the total farm income to supplement poor benefit from tree crops.

Appendix : Agricultural Component of Investment Cost for the Integrated Rural Community Development Project

Unit : US dollars

Type of Infrastructure	Huong Tan Commune	Huong Phung Commune	Huc Commune	Average per Commune	Estimate for 20 Communes
Irrigation Facility Construction	(3 + 0)	(2 + 1)	(2 + 1)	(2 + 1)	(16 + 5)*
new reservoir and canals	33,800	16,500	35,000	28,400	568,700
rehabilitation of old dams	0	5,000	10,000	5,000	100,000
Irrigation Total	33,800	21,500	45,000	33,400	668,700
Land Reclamation	(15 + 25)	(0 + 40)	(0 + 75)	(5 + 47)	(100+940)
industrial crop plots	31,500	0	0	10,500	210,000
food crop field	27,500	44,000	82,500	51,300	1,026,000
Reclamation Total	59,000	44,000	82,500	61,800	1,236,000
Reforestation Activities	4,435 ha	2,100 ha	5,190 ha	3,908 ha	78,160 ha
watershed coverage	465,700	220,500	545,000	410,400	8.208,000
soil conservation	155,200	73,500	181,700	136,800	2,736,000
Reforestation Total	620,900	294,000	726,700	547,200	10,944,000
New Breed Animal Stock	418 head	50 head	350 head	272 head	5,440 head
artificial insemination	6,300	800	5,300	4,100	82,000
animal hygine facility	2,900	300	2,400	1,900	38,000
Livestock Total	9,200	1,100	7,700	6,000	120,000
Farm Component Total	722,900	360,600	861,900	648,400	12,968,700

CHAPTER 1

INTRODUCTION

CHAPTER 1 INTRODUCTION

1.1 GOALS AND OBJECTIVES

This Program is intended to expand over to all poor communes of ethnic minorities of mountainous regions in the four Target Area by the end of the project period, that is the year 2010. The Program targets to reach at least 70% of the total poor population of ethnic minorities of the four provinces.

This indicates that there would still be some 30% of the poor people left out of the benefits of this Program. These shall be the people live in far remote areas where access is extremely difficult and where vehicle transportation of necessary materials is impossible. Although socioeconomic difficulties of these people are well recognized, and needs for assistance are understood, one program cannot cover all levels of people. There should be another separate plan for these people who live truly isolated in remote mountains.

It is expected that approximately 190,000 to 200,000 ethnic minority population out of about 280,000 in the four provinces who are suffering from poverty, are able to be self-sufficient by the year 2010 through this Program.

1.2 JUSTIFICATION FOR PROGRAMS

Poverty alleviation is one of the most important and urgent social policies of Viet Nam now. However, the present trend is that already existing substantial disparities are further widening rapidly.

"Poverty" should be understood from two sides. One exists in the income level of a household, and the other is the degree of the provision of social infrastructure, that is, "satisfaction of basic human needs," existence of which often influences the household income.

While the people of urban areas are enjoying the fruits of the "open economy," and rapidly improving their life, many people in the poor rural area are struggling for meeting their daily needs. The situation in the mountainous regions is much worse, and the ethnic minorities who mostly live in the mountainous areas are almost totally left out of the economic prosperity observed in the cities.

The differences of incomes between the poorest farmers of the mountainous regions and those who live in large cities like Hue City or Da Nang City are generally five to six times, but they often go up to even ten times.

Also, the disparities are notable for the provisions of social infrastructure. While urban inhabitants enjoy nearly all social infrastructure and services such as road and transportation, better schools and health services. They are as well supplied with water and electricity. The urban residents, moreover, have various choices. They can choose schools to attend, good schools, higher level schools or technical schools. They can also choose health facilities. But those who live in the mountainous regions have hardly any school or health facility, not even decent roads to reach the facilities..

When Vietnamese as a whole are enjoying the high literacy rate of about 88%, these people in the mountain are facing illiteracy of 30 to 40%, and many of older people do not speak Vietnamese language.

These situations should be corrected, and the social and economic inequalities must be quickly adjusted. The plans for social development are geared towards the reduction of these inequalities.

1.3 PRESENT CONDITIONS

The present conditions of social sector; poverty and provision of infrastructure and services, and the conditions of ethnic minority shall be briefly presented.

1.3.1 Ethnic Minorities in the Target Area

Available data reveals that there are 53 ethnic minorities in Viet Nam. The majority of them are inhabitants of the northern mountains and central highlands.

Major ethnic minorities living in the target area are Xo-Dang, Hre, Bru-Van Kieu, Co-Tu, Gie-Trieng, Pa Co-Ta Oi, and Co peoples.

A large number of Bru-Van Kieu people and Pa Ko-Ta Oi people live in the mountainous regions of Quang Tri Province and Thua Thien-Hue Province, Co-Tu people inhabit the western mountains and southwestern region of Thua Thien-Hue Province. Co-Tu people are also in the northwestern mountainous region of the Quang Nam-Da Nang Province. Gie-trieng and Hre people are in Quang Nam-Da Nang and Quang Ngai Provinces.

1.3.2 Poverty and Incomes

The situation of poverty in the rural area, particularly in the mountainous regions is extremely severe compared with the situation of the urban area or rural areas neighboring large cities. The following statistics tell the situation.

1) Quang Tri Province

The socioeconomic condition of the Quang Tri Province can be said as one of the poorest, if not poorer, Provinces in Viet Nam. The provincial government indicated that in 1995, 65% out of 535,000 people were classified as "poor" and "starving." Of these, about 30% were under "poor" category and the rest, 35%, were under "starving." Only approximately 35% of the total population of the Province were classified as average or better. The majority of these poor people live in mountainous area of Huong Hoa District, and Trieu Phong and Gio Linh Districts that include coastal areas. They are, for example, Van-Kieu people and Ta-oi people in the communes in Huong Hoa District. An average annual income per capita of some of the poor communes of Van Kieu people is around 33 U.S. dollars.

2) Thua Thien-Hue Province

Approximately 17% of the total population of the Province are classified as "poor" and "starving." The majority of those who are classified as "poor" and "starving", live in the western and southwestern mountainous areas of A Luoi and Nam Dong Districts. Many of them are Co-tu and Ta-oi ethnic minorities. Some of the poor people also live in the lagoon and coastal areas, where land for cultivation is limited and areas are disaster-prone by typhoons and floods.

3) Quang Nam-Da Nang Province

There are many high mountains of more than 1,000 meters above sea level in large areas of the western and southern part of the Quang Nam-Da Nang Province, where various ethnic minorities still practice shifting agriculture.

Out of 258 villages of Quang Nam-Da Nang Province, 78 villages and about 30% of the total population are considered "poor." And there are six poor Districts including four mountainous Districts of Hien and Giang on the west, and Phuoc Son and Tra My Districts on the south. Then, Hiep Duc and Tien Phuoc Districts are in the mid south. Fifty six percent of the total population of the poor six Districts were classified as "poor" and "starving." Out of these constituting 56%, 64% were classified as "poor," and the rest, 36%, were under the category of "starving." Many of these "poor" people are the Xo-dang, Co-tu, Co and Gie-trieng ethnic minorities.

4) Quang Ngai Province

In the Quang Ngai Province, 35% of the total households were classified as "poor" and 30% were classified as "starving." Of the above, 50 to 55% households are living in the mountainous areas, such as Son Ha, Tra Bong and Ba To Districts. For instance, 83% of the entire population of the Ba To District consists of the Hre ethnic minority, who are engaged in agriculture and forestry.

A survey that was recently conducted by the Quang Ngai Province revealed the reasons for the poor remaining poor. The result suggests that people need, first, income sources, then the knowledge of effective use of money. The result of the survey is shown next.

Table 1.1 Reasons for Remaining Poor

Reasons	Percentage
No money	72 - 90
Don't know how to use money	49 - 60
No plan for expenditure	25 - 30
Many children but less workers	52 - 63
Lack of job	60 - 70
Lack of land	5 - 10
Bad luck and sickness	20 - 28
Lazy	5 - 7
Too old	18 - 25

Source: Department of Labor, Invalids and Social Affairs, Quang Ngai Province.

Social Survey Result: An average annual income per capita in the households in a ward in Hue City is around 3 million Viet Nam dong (VND) while in a mountainous commune is more or less 900,000 dong per capita. The households in a ward of Da Nang City is 4.6 million VND, but a commune in the mountainous region is about 400,000VND.

1.3.3 Provision of Infrastructure and Services

The situation provision of infrastructure for the mountainous regions in the four target provinces is considerably lower than the situation of the urban and lowland areas where almost all infrastructure have been already provided.

1) Health Clinics and Services

Most communes are provided by the health clinics and services. However, many villages in the mountainous regions where roads are in poor conditions and located far from the commune centers have difficulties in receiving health services.

Out of 132 communes (as of December 1996 by Ministry of Public Health data) 21 communes of the Quang Tri Province do not have any kind of health facilities. However, at the time of our study, it was explained that 95 communes and villages have health facilities, and 41 more villages have only health teams, but no buildings. The communes without clinics are in the Districts of Gio Linh and Huong Hoa, the poor Districts.

Except for 8 communes in A Luoi District, all communes (145 communes at the time of our study) in the Thua Thien-Hue Province are provided with health clinics. Out of 145 clinics, 125 are in sufficient condition, but 20 are in poor condition.

Out of 258 communes in the Quang Nam-Da Nang Province, 30 communes are without medical facility. The government has already decided to construct 26 additional commune clinics, leaving only four more communes in need of health facilities. Of those four, two are required in Hien District and the other two are required in Tra My District, both of which are in the mountainous region of the Province.

The ratio of the communes without clinics in the Quang Ngai Province is the highest among the four Provinces. The communes, which lack health services are, again, mostly in mountainous Districts: Tra Bong, Son Ha and Ba To. Ba To District, for example, have 17 communes but only 4 communes are distributed with some medical points or clinics; Tra Bong has 19 communes and only 4 medical facilities are available.

2) Education and Schools

School education and literacy rates are very high in Viet Nam, and the universalization of primary school education has already achieved its goal in the urban areas. However, the situation of rural areas is still meager, especially among the ethnic minorities and mountainous regions.

Although almost all communes in the Quang Tri Province are distributed with primary schools now, many schools are applying a shift system, due to a lack of a sufficient number of school buildings and class rooms. For example, 9 villages in a mountainous District where 200 classes are required, have only 115 classes. Huong Hoa District in the mountainous area, has shortages in classes and has the lowest distribution rate of secondary school in the Province. Only 16.7% of the total communes have secondary schools.

Out of 134 villages, 98 villages have already achieved the national goal of eradication of illiteracy. Those villages are mostly located in the lowland areas. There are still 12,000 illiterate people in the Province, many of who are concentrated on the mountainous areas and on the coastal regions.

Result of Interview: An interview survey conducted by the study team to communes in Huong Hoa District, Quang Tri Province revealed that some 40% of the commune people among Van Kieu minority group are illiterate. Those are typically older people, particularly women, and there are people who have no idea about their age.

The distribution rate of primary school in the Thua Thien-Hue Province is 100%. But the rate of secondary school distribution to the commune level is the lowest in the A Luoi District, 9.5%, and lower in Nam Dong District, 22.2%. These two Districts are in the mountainous areas, where minority people live in large number. Out of 9 Districts in the Province, 6 Districts and out of 145 communes and villages, 101 have already solved the problem of

illiteracy, but there are still 18,000 illiterate people in 3 poor Districts. Those Districts are A Luoi and Nam Dong in the mountain, and Phu Vang District in the lagoon and coastal area.

The distribution rates of primary school in Quang Nam-Da Nang Province to communes are 100%, but the rates of lower secondary school in some mountainous Districts are still low. Those are the communes in Hien, 13.3% and Tra My, 10.5%. The rates of other Districts are much higher between 60 to 80%. The Districts with 100% of lower secondary school distribution to communes are Hoa Van and Dien Ban that are situated adjacent to Da Nang City, and the District of Nui Thanh, the southern most of the Province on the Highway No. 1. The illiteracy rate is some 8% of the total adult population between 15 to 35 years of ages, which counts approximately 6,000 people. Most of these people are in the mountainous regions and coastal areas. The Province plans to eliminate illiteracy by the year 1997.

All communes of the Province of Quang Ngai have primary schools and classes of some kinds. There are 210 primary schools, of which 58 are distributed in the mountainous areas; 108 lower secondary schools, of which 11 schools are in the mountainous areas: There are also 30 upper secondary schools that include 4 schools of the mountainous areas. To facilitate school attendance for children of mountainous areas, boarding schools are prepared for minority people. More than 1,100 students are studying in the boarding schools. In 1986, there were some 37,000 illiterate people in the Province of Quang Ngai, but by the year 1995 the number has decreased to 22,000 people among the population of between 15 and 35 years old. This will be 1.5 to 2% of the total population of the Province. Again, these illiterate people live in the mountainous Districts and communes. Thirty percent of the school buildings in the Province are built with palm stems and thatched roof, and are rapidly deteriorating.

3) Clean Water

Reliable data on the availability of clean water at the District and commune levels is difficult to collect. Some data indicate that a national average of the households equipped with piped-water or running water is some 1% out of the total rural households.

The situation of four target provinces appeared to be lower than the national average. In Quang Tri Province, out of the total rural households only 0.6 % have access to piped-water or running-water. Thua Thien-Hue Province has very high percentage of using running water among four Provinces, 3.4%, Quang Nam-Da Nang 0.5 and in Quang Ngai 0.6%.

It is estimated that a majority of rural households of Viet Nam, including the four Provinces, more or less 80% are using various kinds of well water. The statistics on well water indicates that 86% of the total rural households in the Province of Quang Tri, 72% households in Thua Thien-Hue, 85% of Quang Nam-Da Nang Province and 90% of Quang Ngai Province are using water from wells of various kinds.

4) Power Supply

According to the statistics of the General Statistical Office, 1995, approximately 60% of the all communes of Viet Nam are provided with electricity, highest found in the Red River Delta Region.

Within the four target Provinces, the provision of power supply is higher in the urban areas and in the Districts where National Highway No. 1 is running through. Many communes in the Districts on the Highway has 100% of power services.

The average of power supply in Quang Tri Province is 37.5%. This is much lower than the national average. While about 37.5% of the total communes have electricity, the households that are provided with electricity are only 30% of the total number of households in the Province. Further, the households actually using electricity are concentrated on Dong Ha Town, where about 80% of the households have access to power supply. The lowest distribution can be seen in the households in Gio Linh District, where only 8.5% have access to

power, and Huong Hoa District with 6.4%. The situation at the commune level is the same. The lowest rates of access to electricity is seen in the communes of Huong Hoa, where only 6.7% of the communes have, and 15.8% of the communes in Gio Linh Districts, while all communes in Dong Ha Town enjoy power service.

For the Province of Thua Thien-Hue the situation is similar. While all communes in Hue City have access to electricity, only 11.1% of the communes in Nam Dong District, 20% of communes in Phong Dien, and 28.6% of A Luoi have electricity. Also, roughly 70% of the households in Hue City can enjoy the service, yet, only 1.5% households in Nam Dong, 7% in A Luoi, and 12% in Phong Dien are using electricity.

While all the communes within the Districts situated on the National Highway No. 1 are provided with electricity in the Province of Quang Nam-Da Nang, many communes in mountainous areas lack the service. The lowest access can be seen in the communes in Tra My District, where out of 19 communes only 1 commune has electricity. In the Districts of Phuoc Son, 12.5% of the communes, and Hien 13.3% of the communes have power supply. Out of more than 6,000 households in the District of Tra My, only 5 households, which accounts for 0.1% of the total households are using electricity. In the District of Giang, 12% of the households and in Hien District 13% of the households use electricity.

The power service of the Quang Ngai Province seems better. Out of 12 Districts in the Province, all communes of 5 Districts have been already supplied with electricity. The low rates of distribution are seen in the communes in the mountainous areas. In Son Ha District, only 1 commune out of 16 communes has the service, 20% of all the communes in Minh Long District, and 21% of communes in the Tra Bong District have power supply. The situation of Ba To District, which is considered one of the poorest Districts, is unknown. The rates of using electricity at household level are nearly the same as the rates of communes. The lowest is in Son Ha, where only 6% of the total households are using electricity, while in Minh Long the rate is 14%.

CHAPTER 2

DEVELOPMENT PLANS

CHAPTER 2 DEVELOPMENT PLANS

2.1 APPROACHES AND STRATEGIES FOR FORMULATING PLANS

In compliance with the government plans and policies for socioeconomic development, poverty alleviation, eradication of illiteracy and provision of social services shall be the focuses of the social sector. The plans for poverty alleviation and provision of social services, including construction of various social infrastructure such as schools and clinics, necessarily select rural farmers as the target people, and the people and communes in the mountainous regions in particular, that is ethnic minorities, because these are the poorest people in terms of income and the people who enjoy the least degree of social services. Thus, development assistance should come to them first.

Special approaches and strategies are required for the development of ethnic minorities because their living conditions are considerably different from that of the urban dwellers and communities or lowland areas.

Many government services only reach as far as communes where commune centers exists. However, each commune has a number of villages that are scattered around several kilometers away from their administration centers. Because of the physical isolation and difficult access, the services are often not reaching the villages. These are the people who most need such services.

This program attempts to make the fruit of implementation to reach the needy families and people. In order that the most needy people receive a part of social services, and such services be truly useful to them in appropriate ways, the following approaches and strategies should be taken into consideration.

2.1.1 Agricultural Development

Poverty alleviation of the farmers in the mountainous regions requires the expansion of production base and the change of farming systems; Production of more cash crops, diversification of crops, intensification of animal husbandry, and VAC and tree plantation. There are only very limited choices other than by agriculture to generate income for the mountainous communities where no indigenous industry exists. Thus, agricultural development should be the key for rural development.

However, it must be emphasized that agricultural development should be considered and planned in a way linked with current problems and needs.

2.1.2 "Satisfaction of Basic Human Needs"

The provision of social infrastructure and services to satisfy basic human needs is definitely very low in the mountainous regions. The provision of social infrastructure is basically the responsibility of the government, but due to budget shortage such services are not sufficiently reaching the mountainous regions. Then, the strategy to satisfy these needs is to mobilize local resources and the use of people's participation.

The construction of infrastructure in the mountainous regions of ethnic minority groups requires some kind of financial sources, because the people are unable to pay even small amount of money due to the severity of their poverty. However, local people are able to participate in the construction with minimum assistance, such as "food for work," and they are willing to do so.

2.1.3 Think and Plan "in Linkage"

The problems and needs faced by the people and communes in the mountainous regions and ethnic minorities are not simple. Many problems are intertwined each other. Thus, their development should be considered in linkages of various problems and constraints, potentials and choices, and possible solutions.

For example, the introduction of a cash crop to farmers who have no sufficient knowledge of the crop would not help them to bring the expected results, but rather, it might cause problems. The introduction of a new crop requires the farming knowledge of its cultivation in advance as to if they fit the farmers' soil and climate, how much water and fertilizers needed, how may times of weeding required, or where to sell it and so on.

By the same token, just constructing a clinic facility would not mean that the people have services. In the surveyed communes where commune health clinics were constructed by external assistance, had no equipment and medical kits in the clinics. In addition, the clinics were built in the commune centers where people's committees are located. But these locations are several kilometers away from many villages and access roads to the clinics are in bad conditions. There is no way for sick people to reach the existing clinic. Moreover, no water is available in the vicinity of the clinic where maintaining hygiene is extremely important. It is inconceivable that any clinic can operate reasonably without clean water. As a result, the function of, and people's reliance on the clinic are extremely low.

2.1.4 "Bottom-Up Approach" and "Participatory Approach"

Rural development may be best achieved when development is contemplated and participated by the farmers themselves. Thus requests for development have to come from the bottom, the farmers, as they know best their wishes, problems, needs and resource availability. The "bottom-up" approach and "people's participation" from the stage of planning are essential for sustainable development.

Even after the open economy, and government's policy of decentralization of authority, there is still a tendency that higher authorities make various decision for lower administration without due consultation. The underlying rationale for the strong government involvement is that "farmers don't know anything because they don't have education." This claim has not without ground. However, if people are not informed of, involved in and participated in decision making, or not participated in implementation, they shall not bear responsibility over their matter. The result would be loss of sustainability. Accordingly, people's involvement, that is, "bottom-up" and "people's participation" approaches should be basic principles of community development.

2.1.5 "Life Size Development" and "Sustainability"

Commune level development should be planned in life size with minimum budget and appropriate technology. Unsuitably large size plans and facilities or too sophisticated equipment should be avoided. So that, projects do not require unnecessarily huge amount of budget but something that the people can accept easily, and development and projects can be sustainable.

When ODA is involved, unnecessarily large scale facilities with over sophisticated technology and equipment that are not appropriate for the people tend to be utilized. Such facilities and equipment are not repairable once they get out of order because the parts are not readily available and the maintenance capacity of local people is far below.

In order for farmers of ethnic minority people to operate, repair or maintain projects or facilities, they should suit the local conditions and people's needs, that is "life size" projects. They should match with their technical and educational standards, and the use of, as much as possible, locally available resources.

2.1.6 "Local Specific"

Natural, social and economic conditions and the level of development are different from location to location, and from commune to commune. Accordingly, the development of each commune and different people be best considered in a different way. It should be recognized that no one commune is equal to others.

By the same token, the development of ethnic minorities should be considered and planned based on their existing conditions separately from general rural development, because the conditions that ethnic minorities are facing are significantly different from the situation of the Kinh or lowland residents.

Quite naturally, many people who are in the development field seek the so-called a "model project" that can be replicated to a wide range of the rural area in any community or villages. However, as repeatedly stated, flexibility is the key for rural development because the conditions of each commune and each village are different. A problem for one commune may not be a problem in other commune, and an advantage of other commune may not be so in the neighboring commune. Development plans and projects should be formulated differently in the recognition of locally specific conditions from commune to commune, upon confirmation of the conditions, availability of resources and people's wishes and so on.

2.1.7 Activate Economies in Local Towns

Acceleration of economic activities in communes and district towns shall eventually contribute to the expansion of agricultural production of farmers, because local towns and district towns are the limit of the poorest farmers to travel to sell their products.

Small-scale industries, such as processing in local towns shall: secure the outlets of agricultural products, provide job opportunities, and can trigger further economic activities.

The farmers in remote areas are presently relying on the sales of their cash crops such as coffee and black pepper to the so-called "middlemen" or brokers whoever come around to their villages to purchase the products. The reasons are that the farmers choices for sales of own crops are limited as there are no storages or collection centers to store the products, or means of transporting products are not available, and roads are in poor condition, in addition, markets are far away. Moreover, they need cash immediately whatever the amount they can receive. As a result, they are typically exploited by these buyers.

Establishing small scale industries for crop processing may help farmers escape the exploitation such as above, and farmers may be able to receive reasonable profits.

2.2 MAJOR DEVELOPMENT PLANS

The plans are aimed at the achievement of the stated goals by overcoming the constraints faced by the poor peoples and communes of mountainous regions. The underlying constraints causing the above conditions are "physical and social isolation" and "risks" burdened by crop failures, disasters and sickness; "lack of productive resources;" "lack of sustainability" and "inadequate participation". The plans are formulated also in consideration of the aforementioned approaches and strategies.

2.2.1 Poverty Alleviation

The existing conditions of poverty in the mountainous regions are attributable to two major factors. One is that the income of the poorest people is absolutely too low. The other is that these farmers are unable to secure enough food to feed themselves.

Accordingly, plans should be concentrated on the income generation and income diversification, and increasing of the productivity of food crops.

Incomes in rural areas are generated through the production of cash crops in almost all developing countries. Unless farmers produce some cash crops, they are unable to build up savings by only producing food crops. The production of diverse crops is also very important in order to disperse risks.

Farmers should be able to secure their own food. Thus, increasing the productivity of food crops should also have priority, but this may not be possible in the mountainous regions.

Lowland areas have higher potentials for increasing food productivity by the introduction of new varieties, new farming methods and by the improvement of production environment, because their natural and social conditions are generally more favorable for improvement.

However, potentials for increasing productivity of food crops are very low in the farm land of the mountainous areas because soil fertility is low and rice fields are located on steep mountain slopes. The construction of irrigation facilities is difficult and the effects of irrigation are limited.

Thus, it is more reasonable for mountainous regions to concentrate on the production of cash crops including industrial crops, fruits, and vegetables, and buy necessary food with the incomes generated by the production of cash crops.

1) Income Generation and Income Security through Agricultural Development

Agricultural and forestry projects shall be the principal measures of income generation and income security, that is "Poverty Alleviation."

(1) Production Expansion and Diversification

- Production of cash crops - coffee, mulberry, rubber, pepper, pineapple and so forth.
- Production of fruit trees - banana, mango, citrus trees or whatever suitable to each area.
- Production of vegetables
- Intensification of VAC
- Intensification of animal husbandry - cows, buffaloes, pigs, chickens and so forth.

However, the situation of poverty of these people is such, that they are unable to expand their production without some sort of financial assistance. Thus, some form of loan should be made available.

(2) Provision of Financial Assistance

- Make credit loans available through banks with reasonable grace period with a low interest rate
- Make credit loans available through various associations
- Assist through provision in kind - materials, equipment, agricultural inputs
- Establish a special fund for development of ethnic minorities, for example, within the "Viet Nam Bank for the Poor."

Although the government has established the "Viet Nam Bank for the Poor" to assist the poor, many poor households are not eligible for the loan because they do not meet the conditions set by the bank. Under the present bank conditions, loans are available only for the households who already have land to expand, knowledge to grow certain crops and who have sufficient labor but only lack capital. This means that the poorest of poor who need the assistance most are excluded from the loan. Besides, the monthly interest rate of 1.2% for all borrowers regardless of the financial state of the households is extremely severe for the poor farmers to

pay. Some loans with softer conditions and lower interest rate to assist the poorest of the poor need to be made available.

(3) Provision of Extension Services

Land is still available in the mountainous areas of the study area, and soil and climate are suitable for the above crops. Thus, expansion of production base is possible. However, projects for production expansion and diversification should be accompanied by elaborate extension services. Many ethnic minority farmers have been only growing traditional crops such as wet rice, upland rice, sweet potatoes, cassava and maize until recently. Although many of them do plant cash crops such as pepper and coffee, they are using very simple and low farming practices because their knowledge and experience are limited. They are unable to cope with any serious problems such as insect damages, unusual low temperature, or draught that often occur and that can easily wipe out their crops. Particularly, when farmers are producing completely new crops, strong extension services should be readily available.

The present condition of extension services is too weak to be useful for farmers in the remote or mountainous regions in their quality and quantity, and the extent of knowledge. In order to serve the needy farmers, the existing extension services need to be improved.

- Expand and intensify extension services.
- Provide better extension services to mountainous regions for crop production, animal husbandry, fish culture, tree plantation and so forth.

The plans for agricultural development are discussed in details in the agriculture sector of this report.

2) Establishing Small Industries

The production expansion and production of industrial crops shall only bring profits to the farmers when the products are marketed at reasonable prices. Thus stable outlets of the products are essential.

- Establish small industries in local towns for processing of agricultural products
- Establish cottage industries to commune centers - such as coffee husking, rice milling

Along with the establishment of small processing industries to secure stable outlets of the products, the method of marketing of the products should be more seriously considered.

There is a good potential for establishing cottage industries to each commune center such as coffee husking which will add values to the commodity, and simultaneously reduces the daily workloads of women who are burdened with heavy workload.

3) Necessity of a Farmers' Organization

Ethnic minorities seem to be reluctant to organize themselves because they have some negative images about cooperatives. However, the present situation of the farmers are likely to be exploited by the brokers who come to the villages to buy their products.

If ethnic minorities are moving towards the production of cash crops such as coffee in large amount, collective purchasing of agricultural inputs and sales of the products shall undoubtedly benefit them better. Presently they have no bargaining power because each individual farmer is buying and selling at the spot at the prices given by the brokers.

If reasons for not having organized themselves because of the negative images of former cooperatives, they may use whatever appropriate names they may prefer to use, but it is their benefit to have an organization.

2.2.2 Construction and Improvement of Social Infrastructure and Provision Services

Because the results of the agricultural and forestry projects can generally come out after a few to several years of the initiation, there should be some way to generate incomes during the initial years.

A short-term income generation to complementary to the above plans may come from the starting of public works by "money for work" or "food for work" method. Mountainous communities lack almost all kinds of social services and infrastructure, but as commune level social infrastructure do not need to be large scale facilities, they may be constructed by the people themselves with some financial and technical assistance.

If remuneration for work is not possible, some method should be established to assist them for first three years or more.

1) Construction and Improvement of Necessary Social Infrastructure by Participatory Method

- Construction and improvement of commune roads and bridges
- Construction and improvement of primary schools
- Construction and improvement of health clinics or provision of equipment and medicines
- Construction of water supply - wells
- Construction of irrigation to paddy and coffee or other cash crops
- Provision of electricity - extension of cables or construction of mini hydro-stations

The construction of national roads is discussed in details in the section of "Road and Railway."

2) Provision of Services and Materials

In addition to the above projects that need to be carried out, there are cases that schools and clinics have been constructed by the government but necessary numbers of qualified teachers or necessary health workers are not assigned, or necessary materials and equipment are not provided. Those are need to be promptly provided by the government.

- Sufficient number of qualified teachers to schools
- Sufficient numbers of qualified health workers to clinics
- Necessary equipment and materials, medicines to the above

3) Training of Villagers

Accompanied by the provision of social infrastructure, training of villagers have to come for road and bridge construction, school and health clinic construction, cable extension and construction of mini hydro-station and construction of wells. So that the villagers may assume the responsibility for operation, management and maintenance of the infrastructure later on.

2.2.3 Capacity Building and Provision of Social Services

The education level and general intellectual level of ethnic minorities are extremely low comparing with the people of the urban area and the rural inhabitants of lowland areas. Many people, especially women and elderly people have no formal education, or do not speak Vietnamese. They do not have such communication means as a radio, a television or newspapers, of receiving various information and education. Lack of education and knowledge is greatly exacerbating their ability to improve their economic and social conditions.

Women of ethnic minority groups particularly need basic education in order for them to be able to participate in social and political procedures. Another important feature of education to women is to reduce health problems including child-malnutrition that is so common in the mountainous regions or other problems such as goiters, bronchitis and tuberculosis.

1) Capacity Building

Under the circumstances, the capacity building component for ethnic minorities and women should be given special attention and be largely strengthened.

The capacity building is also required for local government authorities who are not familiar with the concept of community development and participatory method, because to bring up the poorest people who have not been a part of major stream until recently to a certain standard, requires earnest commitment of the government.

The actual instruction and training shall be, first, the education and familiarization of the project concept to leaders of the province and district levels. Then, to commune level and village level chiefs and leaders. The education shall then be expanded to farmers. This shall need the assistance of various experts and NGOs. Necessary plans for capacity building are listed next.

- Education on development and projects - participatory method, creative approach, project cycle management, planning, implementing, operating, monitoring, evaluating and managing projects
- Training of government authorities and trainers
- Provision of out-of-school education to villagers in various fields - general basic knowledge, farming, health, diet and food preparation, simple bookkeeping, tree planting, animal husbandry, and simple carpentry and so on.
- Special education for women
- Establishment of technical and service support system within the District People's Committee to assist communes for roads and bridges, school and health clinic, power supply and wells, as well as health services.

CHAPTER 3

PRIORITY PROGRAM AND PROJECTS