CHAPTER 4 CURRENT SITUATION RELATED TO AGRIBUSINESS

4-1 AGRICULTURE/ LIVESTOCK/ FISHERIES PRODUCTION

4-1-1 Farming System

About 600,000 ha of land is suitable for crops and livestock production, in which 67,000 ha are considered to be suitable for wetland rice, 160,000 ha for other crops and the remainder is suitable for grazing pasture. Agriculture production is dominated by low-input and low-output subsistence farming. The main farming system can be broadly classified as follows.

- Rainfed subsistence agriculture/ up-land food crops, predominantly maize mixed with root crops and rice
- Cultivation of rice in lower flat areas, either rain-fed or irrigated
- House gardens of around 0.5 ha with rain-fed crops of maize, cassava, beans and other vegetables and fruits along with a few chickens, pigs and goats and some times a buffalo in some areas
- Raising of buffaloes and cattle, with buffaloes being used to puddle the paddy fields
- Coffee plantations in high lands and coconut in low lands
- Harvesting of forest products including tamarind, candlenuts, yams and fuel-woods.

In many cases, two or more of the farming systems are mixed in their respective area, taking balance of seasonal labor requirements and crop diversification to avoid crop failure into consideration. Most farming is self-subsistent farming style, in which farm household produces food crops for their self-consumption, sells the small surplus when required, except for coffee which is the dominant commercial crops in the mountainous area. In their cultivation, required labor force are the unpaid family and community based labor force in their small communities, farming practice applies a few non-farm inputs and relies mainly on rainwater. The use of inputs such as fertilizer and pesticides is limited to a few farmers. (Policy and Strategic Framework, MAF, 2004, The State of the Nation Report, MAF, 2008)

There is no data related to the number of farm household. It is estimated at 145,275, assuming that total population is 1,066,582 and the population who engage in agriculture/ forestry/ fishing is estimated 842,599 (79% of total population) and average household size is 5.8 persons (data is based on the Population and Housing Census 2010 Preliminary Results.).

4-1-2 Food Crops

(1) Rice

Rice is one of the staple crops for nation people, and a major source of income and employment in the rural areas. Together with other food crops such as maize, cassava and potato, its production system absorbs more than 50% of the total labor force in the whole agriculture sector.

According to the recent production data, paddy production was estimated to be 120,775 ton in 2009 and 112,925 ton in 2010 (see Table 4-1-1). The productivity was from 2.1 to 3.6 ton/ha. Looking at the district production, Baucau district is the top producer, production of 34,024 ton in 2010. Next producer is the Bobonaro district, production of 21,127 ton. The production is expected to rise further through the effective use of improved seeds and fertilizers and the continuous irrigation rehabilitation schemes.

According to the statistic data for the number of household growing food crops in each district, Baucau with 12,967 households (27% of the country's total) and Viqueque with 11,743 households (19%) are the first and second largest rice producing districts, as shown in Table 4-1-5.

(2) Maize

Maize is the second most important cereal crop grown in this country. Significant planting area is placed on fragmentary soils in sloping lands. Food crops such as maize and cassava are complemented crops by a range of other food crops grown in mixed farming, inter-cropping systems to secure food security. Although there is high potential to increase yields by varietal change, its yield is relatively low and post harvest losses are likely to be large. Therefore, even reductions in post harvest losses and improvement of cropping could have a large impact on food security.

According to the recent 2009/2010 data, total planted area and production is 70,255 ha and 148,891 ton. Most large producing district is the Lautem, production of 42,106 ton occupies by 28% of the country's total production. Although almost all country's farmers grow maize, three districts of Ermera, Baucau and Bobonaro have more farm households growing maize than any other districts.

(3) Other main crops (cassava/ sweet potato/ potato)

Cassava, sweet potato and potato is the other subsistent crops which are planted in the mixed farming with other food crops which can reduce the risk of food insecurity and ensure food availability throughout the year. According to the production data in 2008, production of cassava is 35,500 ton, sweet potato 9,000 ton, potato 2,600 ton. As for the number of the households growing cassava, almost all country's farmers produce it, among the districts, Ermera district has 18,638 households representing 14% of the total households, more households than any other district.

(4) Legume (soybean, mungbean, peanut)

Legumes in rotation with rice and other crops are of particular importance in improving soil fertility, reducing or eliminating the need for nitrogenous fertilizers, improving animal nutrition. According to the production data in 2008, total production is around 800 ton for soybean, 1,200 ton for mungbean and peanut is, and 1,300 ton, respectively. Bobonaro district is the main producer.

(5) Horticulture crop

Vegetables such as cabbage, onion, tomato and potato are also planted, depending on the individual farming conditions. Cultivation area and production of them are shown in Table 4-1-3. A wide range of fruits have potential in this country. Among them, mango and banana are the predominant crops as shown in Table 4-1-4.

Planted area and production of the above food crops by districts are shown in Tables from Table 4-1-1 to Table 4-1-4, although the data reliability is low due to lack of accumulated data since the conflict of independent.

Table 4-1-1 Paddy and Maize Production (2009/2010)

[Paddy]		2009					2010				
	District	Potential area (ha)	Cultivated area (ha)	Harvested area (ha)	Productivity (ton/ha)	Total prodcution (ton)	Potential area (ha)	Cultivated area (ha)	Harvested area (ha)	Productivity (ton/ha)	Total prodcution (ton)
1	Aileu	776	750	745	2.50	1,862.50	776	438.67	438.67	2.12	929.98
2	Alinaro	6,076	1,394	1,394	3.17	4,418.98	6,076	779.50	733.00	3.62	2,651.88
3	Baucau	15,191	9,567	9,200	3.20	29,440.00	15,191	12,508.27	12508.27	2.72	34,024.15
4	Bobonaro	7,662	4,280	4,280	3.72	15,922.64	7,662	5,789.00	5564.00	3.80	21,127.57
5	Covalina	5,003	4,050	4,050	3.31	13,405.50	12,281	3,879.00	3679.00	3.98	14,642.42
6	Dili	67	67	67	3.00	201.00	150	80.00	34.00	3.24	110.16
7	Ermera	2,345	1,192	1,192	2.27	2,704.93	2,345	1,297.50	1157.00	3.10	3,586.70
8	Lautem	3,864	2,330	1,581	2.50	3,951.88	3,864	2,310.50	1901.75	3.42	6,503.96
9	Liquisa	1,866	1,325	870	2.50	2,175.00	1,866	143.25	127.25	2.41	306.67
10	Manatuto	12,731	4,265	4,265	3.00	12,795.00	12,731	1,576.42	1576.42	2.46	3,883.65
11	Manufahi	3,102	1,362	1,218	2.00	2,436.60	3,102	1,138.00	1138.00	2.43	2,765.34
12	Oecusse	5,705	5,705	5,182	3.06	15,856.92	5,705	2,200.00	2200.00	2.50	5,500.00
13	Viqueque	9,273	5,504	4,954	3.15	15,603.84	9,273	5,929.27	5490.65	3.08	16,892.93
	Total	73,661	41,791	38,998	3.16	120,774.79	81,022	38,069.38	36,548.01	3.09	112,925.41
	Equ. Rice					72,464.87					67,755.25

[Maize]		2009					2010				
	District	Potential area (ha)	Cultivated area (ha)	Harvested area (ha)	Productivity (ton/ha)	Total prodcution (ton)	Potential area (ha)	Cultivated area (ha)	Harvested area (ha)	Productivity (ton/ha)	Total prodcution (ton)
1	Aileu	13,000	2,720	2,720	1.00	2,720.00	13,000	1,653.98	1644.00	1.35	2,211.40
2	Alinaro	9,000	4,680	2,500	1.50	3,750.00	9,000	603.00	595.00	3.60	2,141.09
3	Baucau	16,000	3,388	3,388	2.15	7,284.20	16,000	9,894.00	9894.00	2.33	23,036.40
4	Bobonaro	25,477	11,726	11,726	1.03	12,078.12	25,477	10,733.00	10632.00	1.57	16,722.21
5	Covalina	56,113	8,295	8,295	2.05	17,004.75	56,113	8,700.00	8700.00	2.34	20,334.88
6	Dili	3,200	1,245	1,080	2.00	2,160.00	3,200	902.00	717.00	2.28	1,634.76
7	Ermera	5,000	2,710	2,710	1.80	4,878.00	5,000	779.70	764.50	1.80	1,376.10
8	Lautem	20,000	14,390	11,360	2.30	26,128.00	20,000	15,898.00	14036.50	3.00	42,106.16
9	Liquisa	5,000	1,530	1,530	1.50	2,295.00	5,000	1,328.50	1328.50	1.66	2,210.62
10	Manatuto	19,896	4,230	4,213	2.10	8,847.30	19,896	4,162.36	4153.36	1.62	6,728.02
11	Manufahi	10,000	5,510	4,367	2.00	8,734.00	10,000	2,372.00	2211.00	1.73	3,822.27
12	Oecusse	19,435	7,500	7,440	2.30	17,112.00	19,435	8,740.00	7440.00	1.50	11,160.00
13	Viqueque	12,500	10,037	10,011	2.17	21,723.87	12,500	10,037.00	8139.00	1.89	15,406.88
	Total	214,621	77,961	71,340	1.88	134,715.24	214,621	75,803.54	70,254.86	2.12	148,890.79

Source; National Direcorate for Agriculture & Hoticulture

Table 4-1-2 Cultivation Area and Production of Major Food Crops (2008)

[Cassava]

No.	District	Cultivation area (ha)	Harvested area (ha)	Productivity (ton/ha)	Total production (ton)
1	Aileu	843	840	3.5	2,940
2	Alinaro	870	868	3.0	2,604
3	Baucau	715	715	3.3	2,360
4	Bobonaro	970	965	3.8	3,667
5	Covalina	952	948	3.7	3,508
6	Dili	332	332	3.4	1,129
7	Ermera	630	625	3.7	2,313
8	Lautem	523	520	3.5	1,820
9	Liquisa	435	432	3.5	1,512
10	Manatuto	545	540	3.7	1,998
11	Manufahi	920	915	4.1	3,752
12	Oecusse	1,436	1,436	3.1	4,452
13	Viqueque	873	870	4.0	3,480
	Total	10,044	10,006	3.6	35,533

[Sweet potato]

No.	District	Cultivation area (ha)	Harvested area (ha)	Productivity (ton/ha)	Total production (ton)
1	Aileu	130	126	2.7	340
2	Alinaro	325	323	2.6	840
3	Baucau	437	432	2.5	1,080
4	Bobonaro	340	338	2.8	946
5	Covalina	322	314	2.6	816
6	Dili	53	43	2.3	99
7	Ermera	250	247	2.5	618
8	Lautem	195	190	2.5	475
9	Liquisa	126	121	2.4	290
10	Manatuto	253	247	2.3	568
11	Manufahi	287	280	2.3	644
12	Oecusse	591	591	2.4	1,418
13	Viqueque	322	315	2.6	819
	Total	3,631	3,567	2.5	8,954

[Potato]

No.	District	Cultivation area (ha)	Harvested area (ha)	Productivity (ton/ha)	Total production (ton)
1	Aileu	312	305	2.3	702
2	Alinaro	400	392	2.4	941
3	Baucau	95	90	2.3	207
4	Bobonaro	85	85	2.2	187
5	Covalina	2	2	2.1	4
6	Dili	0	0		
7	Ermera	45	45	2.5	113
8	Lautem	5	5	1.9	10
9	Liquisa	32	30	2.2	66
10	Manatuto	24	21	2.2	46
11	Manufahi	118	117	2.3	269
12	Oecusse	5	5	2.0	10
13	Viqueque	27	26	2.4	62
	Total	1,150	1,123	2.3	2,616

[Soybean]

No.	District	Cultivation area (ha)	Harvested area (ha)	Productivity (ton/ha)	Total production (ton)
1	Aileu	116	110	0.6	66
2	Alinaro	85	81	0.7	57
3	Baucau	72	68	0.8	54
4	Bobonaro	345	340	1.0	340
5	Covalina	20	18	1.0	18
6	Dili	16	13	0.7	9
7	Ermera	22	22	0.7	15
8	Lautem	65	42	1.0	42
9	Liquisa	39	35	0.8	28
10	Manatuto	35	35	0.8	28
11	Manufahi	98	91	1.2	109
12	Oecusse	0	0		0
13	Viqueque	43	37	0.9	33
	Total	956	892	0.9	800

[Mungbean]

No.	District	Cultivation area (ha)	Harvested area (ha)	Productivity (ton/ha)	Total production (ton)
1	Aileu	-	-	-	-
2	Alinaro	22	20	0.7	14
3	Baucau	37	32	0.8	26
4	Bobonaro	452	445	0.9	401
5	Covalina	457	450	0.9	405
6	Dili	8	5	0.6	3
7	Ermera	20	16	0.7	11
8	Lautem	55	52	0.8	42
9	Liquisa	5	5	0.6	3
10	Manatuto	200	200	0.7	140
11	Manufahi	99	90	0.8	72
12	Oecusse	5	5	0.7	4
13	Viqueque	160	128	0.8	102
	Total	1,520	1,448	0.8	1,222

[Peanut]

No.	District	Cultivation area (ha)	Harvested area (ha)	Productivity (ton/ha)	Total production (ton)
1	Aileu	60	54	1.2	65
2	Alinaro	90	90	1.1	99
3	Baucau	170	135	1.3	176
4	Bobonaro	165	162	1.1	178
5	Covalina	82	80	0.9	72
6	Dili	19	19	1.0	19
7	Ermera	40	40	0.9	36
8	Lautem	85	85	1.0	85
9	Liquisa	87	83	0.9	75
10	Manatuto	30	27	1.0	27
11	Manufahi	153	129	1.2	155
12	Oecusse	178	178	1.3	231
13	Viqueque	54	47	1.1	52
	Total	1,213	1,129	1.1	1,269

Source; National Directorate for Agriculture & Horticulture, 2008

Table 4-1-3 Estimated Cultivation Area, Productivity and Production of Vegetables (2007) (1/2)

	District	Onion			Garlic			Cabbage		
		Cultivation area (ha)	Productivity (100kg/ha)	Production (ton)	Cultivation area (ha)	Productivity (100kg/ha)	Production (ton)	Cultivation area (ha)	Productivity (100kg/ha)	Production (ton)
1	Aileu	31.3	29	90.8	31.3	20	62.6	33.8	81.0	273.8
2	Alinaro	63.8	26	165.9	51.3	19	97.5	116.8	84.0	981.1
3	Baucau	135.0	31	418.5	113.3	26	294.6	43.3	74.0	320.4
4	Bobonaro	48.8	27	131.8	31.3	24	75.1	25.0	86.0	215.0
5	Covalina	25.0	33	82.5	11.3	19	21.5	6.3	77.0	48.5
6	Dili	1.3	30	3.9	-		0.0	25.0	80.0	200.0
7	Ermera	11.3	31	35.0	13.8	21	29.0	50.0	78.0	390.0
8	Lautem	20.0	28	56.0	12.5	19	23.8	10.0	80.0	80.0
9	Liquisa	3.3	20	6.6	2.0	15	3.0	5.5	70.0	38.5
10	Manatuto	15.0	26	39.0	11.3	22	24.9	3.8	73.0	27.7
11	Manufahi	18.8	24	45.1	11.3	23	26.0	21.3	80.0	170.4
12	Oecusse	16.3	22	35.9	23.8	23	54.7	5.0	85.0	42.5
13	Viqueque	25.0	29	72.5	12.5	17	21.3	8.8	81.0	71.3
	Total	414.9	29	1,183.4	325.7	23	733.8	354.6	81	2,859.3

	District	Mustard			Carrot			Water melon		
		Cultivation area (ha)	Productivity (100kg/ha)	Production (ton)	Cultivation area (ha)	Productivity (100kg/ha)	Production (ton)	Cultivation area (ha)	Productivity (100kg/ha)	Production (ton)
1	Aileu	78.8	78	614.6	28.8	78.0	224.6	11.3	62	70.1
2	Alinaro	41.3	61	251.9	11.3	65.0	73.5	-		
3	Baucau	91.3	64	584.3	36.3	71.0	257.7	-		
4	Bobonaro	13.8	64	88.3	-			-		
5	Covalina	8.3	61	50.6	-			50.3	78	392.3
6	Dili	43.8	61	267.2	-			-		
7	Ermera	31.3	72	225.4	6.3	70.0	44.1	-		
8	Lautem	10.0	61	61.0	-			-		
9	Liquisa	26.3	58	152.5	-			-		
10	Manatuto	10.0	63	63.0	-			-		
11	Manufahi	18.8	63	118.4	2.5	70.0	17.5	-		
12	Oecusse	27.5	64	176.0	1.3	70.0	9.1	-		
13	Viqueque	15.0	58	87.0	2.5	70.0	17.5	-		
	Total	416.2	66	2,740.4	89.0	72	644.0	61.6	75	462.4

	District	Beans			Snow pea			Cucumber		
		Cultivation area (ha)	Productivity (100kg/ha)	Production (ton)	Cultivation area (ha)	Productivity (100kg/ha)	Production (ton)	Cultivation area (ha)	Productivity (100kg/ha)	Production (ton)
1	Aileu	1,403.8	4.3	603.6	55.0	29	159.5	17.5	67	117.3
2	Alinaro	607.5	5.5	334.1	12.5	25	31.3	0.0		0.0
3	Baucau	308.8	6.3	194.5	13.8	26	35.9	5.0	63	31.5
4	Bobonaro	2,603.8	6.0	1,562.3	2.5	30	7.5	5.0	68	34.0
5	Covalina	37.5	5.7	21.4	5.0	28	14.0	12.5	63	78.8
6	Dili	-			1.3	30	3.9	0.0		0.0
7	Ermera	60.0	5.4	32.4	7.5	25	18.8	11.3	66	74.6
8	Lautem	8.8	4.3	3.8	-			2.5	60	15.0
9	Liquisa	167.5	5.6	93.8	21.3	25	53.3	6.3	60	37.8
10	Manatuto	16.3	3.8	6.2	-	0		5.0	65	32.5
11	Manufahi	801.3	4.9	392.6	6.3	30	18.9	12.5	60	75.0
12	Oecusse	3.8	5.0	1.9	2.5	20	5.0	11.3	63	71.2
13	Viqueque	6.3	6.0	3.8	3.8	20	7.6	2.5	60	15.0
	Total	6,025.4	5.4	3,250.5	131.5	27.0	355.5	91.4	64	582.6

Source; National Directorate for Agriculture & Horticulture, 2008

Table 4-1-3 Estimated Cultivation Area, productivity and Production of Vegetables (2007) (2/2)

	District	Pumpkin			"Kang kung"			Spinach		
		Cultivation area (ha)	Productivity (100kg/ha)	Production (ton)	Cultivation area (ha)	Productivity (100kg/ha)	Production (ton)	Cultivation area (ha)	Productivity (100kg/ha)	Production (ton)
1	Aileu	13.8	60	82.8	11.3	36	40.7	10.0	55.0	55.0
2	Alinaro	2.5	55	13.8	2.5	30	7.5	6.3	48.0	30.2
3	Baucau	13.8	58	80.0	23.8	38	90.4	17.5	49.0	85.8
4	Bobonaro	112.5	65	731.3	8.8	36	31.7	10.0	53.0	53.0
5	Covalina	11.3	57	64.4	10.0	34	34.0	3.8	50.0	19.0
6	Dili	0.0	0	0.0	10.0	43	43.0	10.0	59.0	59.0
7	Ermera	17.5	59	103.3	3.8	33	12.5	13.8	48.0	66.2
8	Lautem	2.5	65	16.3	10.0	39	39.0	2.5	50.0	12.5
9	Liquisa	26.3	64	168.3	2.0	30	6.0	5.0	60.0	30.0
10	Manatuto	12.5	62	77.5	13.8	37	51.1	12.5	51.0	63.8
11	Manufahi	7.5	52	39.0	12.5	36	45.0	8.8	54.0	47.5
12	Oecusse	0.0	0	0.0	2.5	35	8.8	3.8	53.0	20.1
13	Viqueque	5.0	65	32.5	18.8	41	77.1	12.5	58.0	72.5
	Total	225.2	63	1,409.1	129.8	37	486.7	116.5	52.8	614.6

	District	Potato			Tomato			Chili		
		Cultivation area (ha)	Productivity (100kg/ha)	Production (ton)	Cultivation area (ha)	Productivity (100kg/ha)	Production (ton)	Cultivation area (ha)	Productivity (100kg/ha)	Production (ton)
1	Aileu	0.3	1.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
2	Alinaro	708.0	2.0	1,416.0	3.0	0.4	1.2	21.0	2.5	52.5
3	Baucau	0.0	0.0	0.0	18.0	1.2	21.1	8.0	3.2	25.6
4	Bobonaro	38.0	3.2	121.6	20.0	3.0	60.0	4.0	2.8	11.2
5	Covalina	0.0	0.0	0.0	3.5	0.5	1.8	4.0	2.0	8.0
6	Dili	0.0	0.0	0.0	7.0	1.1	7.4	6.0	9.0	54.0
7	Ermera	98.0	2.8	274.4	11.0	1.9	20.9	0.0	0.0	0.0
8	Lautem	1.5	4.5	6.8	2.5	2.0	5.0	1.9	2.3	4.4
9	Liquisa	1.0	0.3	0.3	7.0	0.3	2.1	7.0	3.5	24.5
10	Manatuto	100.0	2.5	250.0	5.0	5.0	25.0	10.0	4.3	43.0
11	Manufahi	1.0	1.5	1.5	5.0	1.5	7.5	5.0	3.2	16.0
12	Oecusse	1.5	1.0	1.5	4.5	2.0	9.0	2.5	2.5	6.3
13	Viqueque	3.5	1.5	5.3	5.0	1.5	7.5	5.5	3.0	16.5
	Total	952.8	2.2	2,077.6	91.5	1.8	168.4	74.9	3.5	261.9

	District	Long bean			Bitter gourd			Lettuce		
		Cultivation area (ha)	Productivity (100kg/ha)	Production (ton)	Cultivation area (ha)	Productivity (100kg/ha)	Production (ton)	Cultivation area (ha)	Productivity (100kg/ha)	Production (ton)
1	Aileu	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2	Alinaro	2.0	0.4	0.8	2.0	0.3	0.6	32.0	0.02	0.6
3	Baucau	29.0	1.5	43.5	9.0	0.6	5.2	2.5	0.5	1.3
4	Bobonaro	15.0	2.0	30.0	5.0	3.0	15.0	2.0	1.4	2.8
5	Covalina	0.0	0.0	0.0	1.2	0.5	0.6	0.0	0.0	0.0
6	Dili	10.0	1.5	15.0	4.0	1.5	6.0	5.0	1.5	7.5
7	Ermera	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
8	Lautem	5.0	0.8	3.8	1.2	0.5	0.6	0.5	1.0	0.5
9	Liquisa	15.0	0.1	1.5	0.5	0.3	0.2	1.0	0.2	0.2
10	Manatuto	156.0	2.0	312.0	2.0	1.2	2.4	4.0	0.3	1.2
11	Manufahi	2.0	1.5	3.0	5.0	1.5	7.5	0.1	0.1	0.0
12	Oecusse	5.0	1.5	7.5	4.5	0.7	3.2	0.0	0.0	0.0
13	Viqueque	5.5	1.3	7.2	4.5	0.5	2.3	0.0	0.0	0.0
	Total	244.5	1.7	424.2	38.9	1.1	43.5	47.1	0.3	14.1

Source; National Directorate for Agriculture & Horticulture, 2008

Table 4-1-4 Estimated Planted Area and Production of Fruits (2007)

Crop production (fruits)

	District	Avocado		Mango		Jackfruit		"Citrus"	
		Cultivation area (ha)	Total Production (ton)	Cultivation area (ha)	Total Production (ton)	Cultivation area (ha)	Total Production (ton)	Cultivation area (ha)	Total Production (ton)
1	Aileu	8.13	94.31	75.09	506.84	18.90	127.58	22.68	140.62
2	Alinaro	53.55	621.18	138.17	932.65	11.25	75.94	23.55	146.01
3	Baucau	2.73	31.67	43.74	295.25	7.67	51.77	18.69	115.68
4	Bobonaro	5.20	60.32	108.75	734.10	23.76	160.36	11.90	73.78
5	Covalina	5.25	60.90	34.05	229.84	7.05	47.57	3.99	24.74
6	Dili	0.53	6.15	11.03	74.45	4.40	29.70	5.25	32.55
7	Ermera	15.96	185.14	34.13	230.38	9.78	66.02	24.75	153.45
8	Lautem	5.67	65.77	74.90	499.50	110.10	743.18	22.32	138.38
9	Liquisa	78.50	910.60	43.65	294.64	23.85	160.90	26.05	161.51
10	Manatuto	43.56	505.30	48.60	328.05	0.00	0.00	8.51	69.10
11	Manufahi	16.35	189.66	91.43	617.12	16.11	108.74	8.09	50.15
12	Oecusse	0.03	0.35	28.36	56.43	5.40	36.45	11.25	69.75
13	Viqueque	3.68	42.69	25.80	174.15	0.00	0.00	7.88	48.86
	Total	239.14	2,774.04	757.70	4,973.40	238.27	1,608.21	194.91	1,224.58

	District	"Jambu"		Papaya		Banana		"AIATA"	
		Cultivation area (ha)	Total Production (ton)	Cultivation area (ha)	Total Production (ton)	Cultivation area (ha)	Total Production (ton)	Cultivation area (ha)	Total Production (ton)
1	Aileu	0.30	1.5	1.0	22.5	15.2	410.6	0.0	0.0
2	Alinaro	0.10	0.5	4.3	80.6	10.3	309.0	0.0	0.0
3	Baucau	10.10	40.5	1.2	30.0	8.0	240.0	0.6	3.6
4	Bobonaro	1.10	4.9	8.5	191.3	31.7	855.9	3.0	13.5
5	Covalina	2.50	11.3	4.9	91.9	9.8	294.0	1.4	8.4
6	Dili	0.50	1.2	1.8	45.0	6.7	201.0	0.2	1.1
7	Ermera	0.50	1.4	25.2	567.0	20.1	542.7	3.8	20.5
8	Lautem	0.90	4.1	4.6	103.5	18.8	564.0	2.4	12.9
9	Liquisa	0.20	1.0	9.9	185.6	24.4	658.8	17.4	39.2
10	Manatuto	2.20	9.9	1.9	42.8	37.3	1,119.0	0.0	0.0
11	Manufahi	0.11	0.6	8.3	186.8	11.2	336.0	1.5	8.5
12	Oecusse	0.00	0.0	3.0	67.5	17.5	472.5	0.0	0.0
13	Viqueque	0.80	3.6	4.1	92.3	12.6	340.2	0.0	0.0
	Total	19.31	80.50	78.7	1,706.8	223.6	6,343.7	30.3	107.7

Source; National Directorate for Agriculture & Horticulture, 2008

Table 4-1-5 Number of Households Growing a Range of Crops

	District	Total Number of Households	Rice		Maize		Cassava		Vegetables	
			No. HH	No. Person	No. HH	No. Person	No. HH	No. Person	No. HH	No. Person
1	Aileu	7,745	1,847	9,400	7,042	34,852	6,983	34,573	5,686	28,857
2	Alinaro	11,527	1,531	7,116	10,686	49,059	9,284	42,609	9,735	44,789
3	Baucau	22,659	12,967	59,636	15,360	69,246	13,721	60,982	8,830	40,506
4	Bobonaro	18,397	7,166	33,628	14,459	65,322	13,093	59,280	8,274	38,249
5	Covalina	11,820	3,980	18,324	9,891	44,990	9,877	44,912	8,129	36,797
6	Dili	31,575	658	3,761	6,866	36,580	7,813	42,814	4,132	23,622
7	Ermera	21,165	3,641	18,172	18,766	92,797	18,638	92,115	14,686	73,911
8	Lautem	12,998	5,526	24,481	10,854	47,892	9,921	44,145	8,490	38,026
9	Liquisa	11,063	607	3,122	9,500	47,750	9,236	46,302	6,914	35,279
10	Manatuto	8,338	4,507	19,930	5,158	23,660	5,100	23,375	4,273	19,762
11	Manufahi	8,901	2,415	12,487	7,617	38,970	7,873	40,199	7,164	36,619
12	Oecusse	13,659	4,378	19,390	2,694	11,816	9,662	41,268	6,804	29,243
13	Viqueque	15,115	11,743	51,801	12,623	54,977	13,032	56,702	10,662	46,942
	Total	194,962	60,966	281,248	131,516	617,911	134,233	629,276	103,779	492,602

	District	Total Number of Households	Fruit(seasonal)		Fruit (permanent)		Coffee		Coconut	
			No. HH	No. Person	No. HH	No. Person	No. HH	No. Person	No. HH	No. Person
1	Aileu	7,745	5,836	29,265	6,140	30,709	6,044	30,099	2,970	15,436
2	Alinaro	11,527	10,154	46,760	10,262	47,252	8,313	38,938	4,115	18,686
3	Baucau	22,659	13,536	61,775	15,115	68,422	3,529	15,813	15,778	71,353
4	Bobonaro	18,397	10,892	50,013	13,290	61,160	5,715	26,279	13,315	61,604
5	Covalina	11,820	8,138	36,870	8,285	37,763	2,995	13,085	9,082	41,913
6	Dili	31,575	10,468	60,024	11,205	65,064	1,257	7,096	11,046	63,910
7	Ermera	21,165	15,382	76,918	16,484	82,326	17,943	89,269	7,081	35,745
8	Lautem	12,998	9,081	40,506	9,025	40,109	1,027	4,944	10,420	46,239
9	Liquisa	11,063	8,367	42,169	8,999	45,343	7,278	36,270	8,599	43,088
10	Manatuto	8,338	4,798	22,375	4,673	21,703	2,633	12,666	4,764	21,783
11	Manufahi	8,901	6,896	35,308	7,351	37,816	5,303	27,586	5,504	27,835
12	Oecusse	13,659	8,469	36,426	7,757	33,798	1,498	6,503	10,798	46,870
13	Viqueque	15,115	12,759	55,677	13,268	57,828	3,144	13,567	13,090	57,215
	Total	194,962	124,776	594,086	131,854	629,293	66,679	322,115	116,562	551,677

	District	Total Number of Households	Other seasonal crops		Other permanent crops					
			No. HH	No. Person	No. HH	No. Person				
1	Aileu	7,745	5,170	25,798	5,399	27,017				
2	Alinaro	11,527	9,686	44,471	9,994	45,983				
3	Baucau	22,659	13,400	61,024	15,204	68,791				
4	Bobonaro	18,397	10,902	49,826	12,876	59,193				
5	Covalina	11,820	7,444	33,809	7,972	36,306				
6	Dili	31,575	8,910	51,083	9,698	55,705				
7	Ermera	21,165	14,892	74,246	15,654	78,060				
8	Lautem	12,998	8,360	37,398	9,005	40,245				
9	Liquisa	11,063	8,292	41,965	8,676	43,871				
10	Manatuto	8,338	4,212	19,598	4,416	20,495				
11	Manufahi	8,901	6,631	34,124	7,129	36,696				
12	Oecusse	13,659	7,464	32,274	8,450	36,657				
13	Viqueque	15,115	12,800	55,926	13,096	57,214				
	Total	194,962	118,163	561,542	127,569	606,233				

Source; Agricultue Data, March 2008, National Direcorate for Policy & Planning, Timor-Leste Census of Population and Housing 2004

4-1-3 Industrial Crops

Plantation crops are important crops in this country, providing a source of foreign exchange and raw materials for industry, and a source of employment. Main industrial crops are coffee, coconut and candlenut.

(1) Coffee

Coffee is the most important commercial crops in the country. It is a major export commodity from agriculture sector. Exported volume was 8,900 ton, of which foreign trade occupies US$8.0 million of the US$8.5 million in total export except oil and gas, according to the statistic data 2006. It also absorbs seasonal employment in the rural area. Coffee producers are distributed throughout the country in which harvestable area is 66,054 ha (2006), but mainly located in the districts of Ermera where plantation area and production are almost half of the country, 32,400 ha and 5,372 ton (2006). The other major producing districts are Manufahi, Ainaro, Bobonaro and Liquica.

It is estimated that about 66,700 households depend on coffee for cash income opportunities, according to the Population Census 2004. The coffee industry also employs seasonal off-farm labor in the processing and transportation processes.

There are a number of ongoing programs aimed at improving productivities and processing process for further expansion of coffee market. The most important private sector involved in the coffee industry is the Cooperativa Café Timor (CCT) established by USAID-funded. This coffee industry is currently the largest private sector economic activity in the country.

Table 4-1-6 Area and Production of Coffee by Major Producing Districts

District	2000	2001	2002	2003	2004	2005	2006
Production area (ha)							
Aileu	896	916	951	1,071	1,089	1,124	1,134
Ainaro	4,662	4,757	4,859	4,859	4,969	4,989	5,024
Bobonaro	2,080	2,140	2,328	2,328	2,328	2,389	2,540
Ermera	25,758	26,106	28,099	27,658	28,497	30,600	32,400
Liquica	5,555	5,985	6,420	6,859	6,741	6,853	6,756
Manufahi	5,027	7,700	9,700	10,300	10,600	16,600	18,200
Total (ha)	**43,978**	**47,604**	**52,357**	**53,075**	**54,224**	**62,555**	**66,054**
Production (ton)							
Aileu	82.60	82.60	82.60	82.60	82.60	82.60	82.60
Ainaro	1,191.00	1,191.00	1,191.00	1,191.00	1,191.00	1,191.00	1,191.00
Bobonaro	454.30	454.30	454.30	498.30	502.26	514.58	545.60
Ermera	5,372.20	5,372.20	5,372.20	5,372.20	5,372.20	5,372.20	5,372.20
Liquica	1,243.60	1,243.60	1,243.60	1,243.60	1,243.60	1,243.60	1,243.60
Manufahi	1,202.88	1,202.88	1,442.88	1,507.68	1,658.40	1,665.60	1,687.20
Total (ton)	**9,546.58**	**9,546.58**	**9,786.58**	**9,895.38**	**10,050.06**	**10,069.58**	**10,122.20**

Source; MAF, 2007, National Directorate for Industrial Crops & Agribusiness

Table 4-1-7 Planted Area and production of Industrial Crops (2004/2005)

	District	Coffee*		Coconut*		Vanila		Bitternut	
		Planted area (ha)	Total Production (ton)	Planted area (ha)	Total Production (ton)	Planted area (ha)	Total Production (ton)	Planted area (ha)	Total Production (ton)
1	Aileu	1,134	83	19	9	0	0	4	1
2	Alinaro	5,024	1,191	62	31	0	0	192	28
3	Baucau	131	22	3,275	1,401	0	0	61	4
4	Bobonaro	2,540	546	1,061	21	0	0	153	15
5	Covalina	267	42	513	1,252	0	0	229	20
6	Dili	25	5	21	9	0	0	52	5
7	Ermera	32,400	5,372	13	5	36	2	6	2
8	Lautem	16	3	5,060	3,360	0	0	53	9
9	Liquisa	6,750	1,244	294	30	24	2	5	0
10	Manatuto	692	159	238	34	0	0	694	8
11	Manufahi	18,200	1,687	351	274	0	0	468	49
12	Oecusse	5	1	288	164	0	0	597	34
13	Viqueque	0	0	6,716	4,948	0	0	4,336	342
Total		67,184	10,355	17,911	11,538	60	4	6,850	517

	District	Capoc		Cacao		Clove		Pepper	
		Planted area (ha)	Total Production (ton)	Planted area (ha)	Total Production (ton)	Planted area (ha)	Total Production (ton)	Planted area (ha)	Total Production (ton)
1	Aileu	0	0	0	0	0	0	0	0
2	Alinaro	25	9	0	0	0	0	0	0
3	Baucau	13	3	4	3	2	0	0	0
4	Bobonaro	74	18	50	22	0	0	0	0
5	Covalina	0	0	0	0	0	0	0	0
6	Dili	1	0	1	0	0	0	0	0
7	Ermera	6	2	5	0	8	1	1	0
8	Lautem	13	3	4	3	0	0	0	0
9	Liquisa	0	0	0	0	0	0	0	0
10	Manatuto	8	1	5	0	0	0	0	0
11	Manufahi	24	4	1	1	12	0	0	0
12	Oecusse	76	14	0	0	0	0	0	0
13	Viqueque	27	3	4,341	2	0	0	0	0
Total		267	57	4,411	31	22	1	1	0

	District	Candle nut*		Oil palm					
		Planted area (ha)	Total Production (ton)	Planted area (ha)	Total Production (ton)				
1	Aileu	167	18	13	5				
2	Alinaro	279	104	0	0				
3	Baucau	973	185	10	2				
4	Bobonaro	653	99	45	7				
5	Covalina	1,502	389	0	0				
6	Dili	6	2	0	0				
7	Ermera	7	1	0	0				
8	Lautem	326	586	7	4				
9	Liquisa	25	5	0	0				
10	Manatuto	162	44	1	0				
11	Manufahi	210	86	89	1				
12	Oecusse	62	28	0	0				
13	Viqueque	388	596	0	0				
Total		4,760	2,143	165	19				

Source; National Directorate for Industrial Crops & Agribusiness, 2009

*; Adjusted based on the data in 2006.

(2) Coconut

Timor-Leste has a significant coconut resource. Coconut tree can be found in almost all parts of the country, both in the highlands and lowlands, in the urban and rural areas. Although the size of resource is difficult to estimate due to scattered nature of village plantings, it is estimated that in 2006, total area under coconut tree is around 17,900 ha with total production of 11,500 ton. The number of households growing coconut is estimated at 116,562. Producing districts are concentrated in Baucau, Lautem and Viqueque. Production of those districts occupies more than 80% of the total. Coconut resource is used as source of food, for cooking oil and making soap and body oils, etc. Its leaves and wood are used for roofing and building materials.

(3) Candlenut

Candlenut has been a significant source of income for many farmers in the past, but, in recent times production has been small. Candlenut production involves collection of the fallen nuts from the forest followed by cracking off the test to remove the kernels for oil extraction. Planted area and production are estimated at around 4,300 ha and 1,000 ton, respectively.

(4) Other industrial crops

Bitternut is produced at total area 6,850 ha with 517 ton. Viqueque is the first producing district with share of around 70% of the total. Other industrial crops such as vanilla, capoc, cacao, clove, pepper and oil palm are produced in the country, although those production and area are limited.

4-1-4 Livestock

Most households have some raising animals to support their subsistence farming. These animals are chickens, pigs, goats, cattle, buffalo, horses and sheep. Basically, these serve as a store for savings in their life, as a food security and as a source of protein for individual farm households. Among them, cattle are more valuable than any other animals.

Raising animals is predominantly by smallholders in scale and incorporated into the individual household's farming systems. Chickens, pigs and goats are the common animals throughout the country. Other animals, horse and sheep are the important one in different parts of the country. According to the Census 2004, the number of animals head was counted, for example, cattle in Bobonaro (24,869 heads) and Oecusse (21,428), sheep in Baucau (26,098), buffalos in Viqueque (26,411) and Baucau (17,311). The number of raising animals is summarized as follows (Detail is shown in Table 4-1-9).

Table 4-1-8 Number of Households and Animals

Animals	No. of households who raise animal	No. of head
Chickens	141,343	659,066
Pigs	140,683	331,895
Goats	41,899	126,977
Cattle	39,711	133,577
Buffalo	22,127	95,921
Horses	34,312	63,234
Sheep	7,895	38,965

Source: Census of population and Housing 2004

Live cattle are exported to Indonesia through West Timor. (The number of exported cattle in 2005 is accounted 2,400 heads with value of $680,000, according to the commodity profile “Cattle”, 2008).

Native pastures are widespread throughout the country, covering over 200,000 ha or 10% of the country’s land area. Farmers have freely grazed their animals on such common native or introduced pastures which provide a cheap source of feed. However, it is said that raising animals, especially goats, with no grazing management may cause loss of vegetation cover and surface soil erosion, hence, native pastures and their management are important issues for sustainable animal production in the future.

As for future development, sanitary veterinary protection measures (vaccination campaigns), construction of slaughter and its operation/ management, good management and development of bios security measures on the importation and distribution of animals have to be improved in order to promote this sector, improving the diet of the people and promising future export capacity.

Table 4-1-9 Raising Animals and Households by Districts

	District	Chickens			Pigs			Goats		
		No. HH	No. Person	No. Animal	No. HH	No. Person	No. Animal	No. HH	No. Person	No. Animal
1	Aileu	5,658	28,964	17,353	5,944	30,749	9,622	2,408	12,841	4,328
2	Alinaro	8,587	40,773	28,688	8,644	41,336	16,139	2,016	10,064	4,125
3	Baucau	18,054	81,939	73,925	18,114	83,814	38,374	6,127	30,273	22,995
4	Bobonaro	14,170	65,510	70,077	14,505	67,931	38,769	4,445	21,647	12,379
5	Covalina	8,226	37,734	37,622	8,661	40,399	23,311	944	4,539	2,445
6	Dili	13,204	78,907	59,949	15,075	92,594	32,620	4,285	24,660	16,386
7	Ermera	15,551	79,745	50,871	14,917	77,622	25,389	2,779	14,854	5,458
8	Lautem	11,161	49,729	68,481	10,523	47,733	29,628	2,006	9,976	7,833
9	Liquisa	9,681	48,609	44,853	9,149	46,714	20,572	5,026	26,578	13,941
10	Manatuto	6,210	28,339	23,741	5,808	27,148	11,853	2,236	10,664	7,362
11	Manufahi	7,140	36,797	31,367	6,908	35,939	16,229	1,427	7,653	3,572
12	Oecusse	10,390	44,711	61,977	9,190	40,482	23,163	4,709	21,246	14,676
13	Viqueque	13,311	58,535	90,162	13,245	59,065	46,226	3,491	16,444	11,477
	Total	141,343	680,292	659,066	140,683	691,526	331,895	41,899	211,439	126,977

	District	Buffalo			Horses			Sheep		
		No. HH	No. Person	No. Animal	No. HH	No. Person	No. Animal	No. HH	No. Person	No. Animal
1	Aileu	828	4,555	1,604	2,296	12,289	3,088	193	966	296
2	Alinaro	1,916	9,551	5,262	4,710	23,753	7,124	224	1,094	407
3	Baucau	3,486	17,017	17,311	6,219	29,728	13,654	4,728	22,915	26,098
4	Bobonaro	1,995	9,769	7,799	2,255	11,326	3,366	268	1,350	513
5	Covalina	675	3,254	1,872	1,172	5,461	1,835	59	263	189
6	Dili	505	3,314	2,200	541	3,304	1,054	322	1,964	1,107
7	Ermera	1,692	8,743	3,775	2,850	15,362	4,172	270	1,405	461
8	Lautem	2,874	14,169	15,410	2,318	11,701	5,383	448	2,025	2,924
9	Liquisa	516	2,801	1,398	1,214	6,707	1,719	136	730	333
10	Manatuto	1,309	6,079	6,819	1,778	8,762	2,786	564	2,572	4,839
11	Manufahi	1,491	8,011	4,784	3,078	16,525	5,297	120	704	245
12	Oecusse	451	2,075	1,276	975	4,529	1,752	48	201	184
13	Viqueque	4,389	20,443	26,411	4,906	22,649	12,004	515	2,348	1,369
	Total	22,127	109,781	95,921	34,312	172,096	63,234	7,895	38,537	38,965

	District	Cattle								
		No. HH	No. Person	No. Animal						
1	Aileu	1,993	10,893	3,587						
2	Alinaro	1,563	7,912	4,365						
3	Baucau	1,719	8,367	6,468						
4	Bobonaro	6,857	33,832	24,869						
5	Covalina	4,208	20,585	14,440						
6	Dili	751	4,493	2,284						
7	Ermera	4,311	23,582	9,087						
8	Lautem	2,508	12,710	11,390						
9	Liquisa	2,592	14,196	6,137						
10	Manatuto	1,508	7,281	4,457						
11	Manufahi	1,842	10,131	5,534						
12	Oecusse	6,186	28,167	21,428						
13	Viqueque	3,673	17,806	19,531						
	Total	39,711	199,955	133,577						

Source; Agricultue Data, March 2008, National Direcorate for Policy & Planning, Timor-Leste Census of Population and Housing 200

4-1-5 Fisheries

Timor-Leste has a coastline of around 735 km and 75,000 km2 of exclusive economic zone (EEZ). The marine resources are rich. There is high potential for development of offshore fishery. According to the fish production data in 2008, there were total 2,948 fishing boats in the country, out of them, 615 motorized. Total number of fisherman in all districts was counted 5,265. Fish production is estimated at around 3,207,000 kg equivalent to 6,413,000 US$. Import amount sharply is being decreased since 2007. Fishing performance (2007-2009) is summarized as follows.

Table 4-1-10 Summary of Fishing Performance

Indicators	2007	2008	2009
Number of fisherman	4,964	5,265	5,265
Number of fishing boats			
Motorized	448	615	615
Not motorized	2,292	2,333	2,333
Production (kg)	2,911,500	3,206,700	3,206,700
Production value (US$)	5,823,000	6,413,400	6,413,400
Imported (kg)	163,802	99,184	5,310

Source: National Directorate for Fishery. District breakdown is shown in Table 4-1-11.

Dili is the most active fishing district, occupying around 40% of country's production and fisherman. Currently, seaweed is exported from Aturo to Indonesia, exported amount of 65,000 kg with 48,750 US$ in 2008 (see Table 4-1-11).

It is mentioned in the Policy and Strategic Framework (2004) that for the National Directorate of Fisheries and Aquaculture (NDFA), there are two fields to be established, management of inshore/inland fisheries to ensure local fish supplies, and sustainable management of offshore fishery to maximize the economic benefits. Inshore, there is considerable potential, however, the local fishing industry suffers from inadequate storage, processing and marketing facilities. Further support by government is necessary to encourage private sector investment in this area, e.g. micro finance for equipment, infrastructure to improve markets.

Table 4-1-11 Fishing Performance by District

Estimated Fish Production and Value (2007-2009)

No.	District	2007		2008		2009	
		Total Production (kg)	Total Value (US$)	Total Production (kg)	Total Value (US$)	Total Production (kg)	Total Value (US$)
1	Alinaro	9,000	18,000	14,400	28,800	14,400	28,800
2	Oecussi	207,900	415,800	247,500	495,000	247,500	495,000
3	Baucau	76,500	153,000	93,600	187,200	93,600	187,200
4	Bobonaro	331,200	662,400	357,300	714,600	357,300	714,600
5	Covalima	154,800	309,600	203,400	406,800	203,400	406,800
6	Dili	1,035,000	2,070,000	1,170,900	2,341,800	1,170,900	2,341,800
7	Liquica	498,600	997,200	497,700	995,400	497,700	995,400
8	Lautem	111,600	223,200	130,500	261,000	130,500	261,000
9	Manufahi	153,900	307,800	202,500	405,000	202,500	405,000
10	Manatuto	229,500	459,000	176,400	352,800	176,400	352,800
11	Viqueque	103,500	207,000	112,500	225,000	112,500	225,000
Total		2,911,500	5,823,000	3,206,700	6,413,400	3,206,700	6,413,400
Total Import		163,802		99,184		5,310	

Source; National Directorate for Fisheries & Acuaculture, 2008

Number of Fisherman

No.	District	2007	2008	2009
1	Alinaro	25	25	25
2	Oecussi	370	370	370
3	Baucau	252	550	550
4	Bobonaro	315	315	315
5	Covalima	254	257	257
6	Dili	2,039	2,039	2,039
7	Liquica	541	541	541
8	Lautem	460	460	460
9	Manufahi	121	121	121
10	Manatuto	370	370	370
11	Viqueque	217	217	217
Total		4,964	5,265	5,265

Total export of seaweed from Atauro to Indonesia

Year	Production (kg)	Price (US$/kg)	Total Price (US$)	Total number of fisherman
2007	15,000	0.85	12,750	845
2008	65,000	0.75	48,750	1,200

4-1-6 Agricultural Supporting Services

(1) Irrigation and Rural roads

Irrigation is the most important basic infrastructure. Country's potential irrigable area is designed about 71,300 ha. Out of them, functional areas have been gradually increased to 56,300 ha, through the Agriculture Rehabilitation Programme (ARP) and other donor's projects. Then, further requirement of rehabilitation comes to about 15,000 ha. At present, in parallel with the rehabilitation, it is crucial for MAF to establish irrigation management system with farmers association in those rehabilitated areas to make irrigation scheme sustainable.

Table 4-1-12 Irrigation Areas and Rehabilitation Areas by Districts (ha)

District	Design (1)	Functional (2005) (2)	Non-Functional (2005) (3)	Total Rehabilitated (4)	Total Functional (5)=(2)+(4)	Future requirements (1)-(5)
Aileu	597	184	413	271	455	142
Ainaro	6,076	3,000	3,076	745	3,745	2,331
Baucau	15,191	9,556	5,635	3,920	13,476	1,715
Bobonaro	7,327	3,593	3,734	1,324	4,917	2,410
Covalima	5,003	2,033	2,970	3,245	5,278	(275)
Dili	350	65	285	35	100	250
Ermera	2,345	1,055	1,290	748	1,803	542
Lautém	6,658	3,593	3,070	2,491	6,084	574
Liquiçá	1,866	293	1,573	633	926	940
Manatuto	12,996	4,876	8,120	2,542	7,418	5,578
Manufahi	3,102	1,118	1,984	1,900	3,018	84
Oecussi	1,659	1,109	550	554	1,663	(4)
Viqueque	8,088	4,259	3,829	3,130	7,389	699
Total	**71,258**	**34,734**	**36,529**	**21,538**	**56,272**	**14,986**
Percent (%)	100	49	51	59	79	21

Source: MAF, 2007

Roads for surface transport of the products are the essential infrastructure to support agricultural activities. There are road network of about 6,000 km in the country. Out of them, half of which about 3,000 km are considered to be feeder roads connecting the agricultural production area with district road network. These feeder roads are in the poor condition. Besides, lack of feeder roads makes it difficult to transfer the agricultural products in inter-district. In order to realize agriculture development in the local area, feeder roads are also to be improved.

(2) Agricultural credit

Although there are three banks operation in Timor-Leste, none of them are handling agriculture sector's loan. Micro-finance Institute is the only bank who handles agricultural finance. This Institute established in 2002 with the support from Trust Fund for East Timor (TFET). It was handed over to Timor-Leste Government in 2008. The government is planning to promote the institution to be a rural bank. The initial capital was US$2million and the institution has now total asset of US$6.2 million. Currently the institution has an outstanding loan of US$4 million and cumulative loan disbursement is US$17 million. The institution has 7 branches, i.e. Dili, Gleno (Ermera), Maliana, Oecusse, Aileu, Baucau and Same. The type of loan is summarized as follows.

Table 4-1-13 Type of Loan Provided by Micro-finance Institute

Type of Loan		Loan Amount (US$)	Annual Interest (%)	Loan Period (months)
Group Loan	It is called CENTER where each center consists of maximum 8 groups. The center should have a minimum 16 members and maximum 56 members.	50-500	16	6.0
Seasonal crop loan	It finances farmers growing crops.	50-1,000	16	3.0-9.0
Market Vendor Loan	It finances venders in the market.	50-500	18	6.0
Micro Enterprise Loan	It finances small business such as restaurant, kiosk, rattan, etc. This is the biggest among the five. Trader can secure this type.	50-5,000	18	24.0
Payroll Loan	It finances government employees and private employees who get heir monthly salary paid through this institution.	50-2,000	18	24.0

Source: Interview with Micro-finance Institute

Although the applicants should provide security such as land title, vehicle, and personal guarantee, there is a problem with land title because there is still some concern about regulation on land title as well law enforcement. Many applicants still use Indonesian or Portuguese land title. Actually land title and vehicle is just used to press the clients to payback. At present the institution has a payback of 98%. In case of seasonal crop loan, there is a risk that farmers can not produce sufficient amount of paddy (rice) to enable them to payback, (actually, a case in Maliana, one of clients (farmers) who secured a loan in 2004 still cannot payback even though the contract has expired, the client only paid 70% of the loan). In term of agribusiness, the institution provides loan to only farmers. None of the fisherman client has secured a loan.

(3) Input materials supply

Although utilization of input materials such as improved seeds, fertilizers, pesticides and farming machines is essential for increasing crop productivity, supply system of them is completely disarray. Currently a small number of rice cultivation farmers have used certified seeds, fertilizers, pesticides and other agricultural inputs which are provided by MAF. However, most farmers can not access to such input materials. Retail prices of them are generally high since all input materials are imported from Indonesia and/or Singapore. This situation makes it difficult to operate productive farming practice.

(4) Major farmers' organizations related with market and processing

Small scale subsistence farmers need to organize farmers groups/ associations to take advantage in buying input materials and selling their products. If they will establish farmers groups/ associations, they can also share their experience and information among group members on new processing technologies and market channel development. Farmers have organized themselves small farmers groups in their locality in some districts. However, the scale is too small in the number of members and the volume of products to operate cooperative collection and marketing of their products. Their communication and negotiation capacity with traders are also low. There are groups who are supported by NGOs and related donors in relatively active area of production activity. Major organizations related with agribusiness between the producers and traders are as follows.

1) Agricultural Service Centers (ASCs)

Three Agricultural Service Centers (ASCs) were established in Timor-Leste, by grant from the World Bank Trust Fund, in Maliana, Viqueque and Aileu. The purpose of these centers was to support farmers by providing inputs, marketing and transport service for profit. Maliana ASC became operation in 2001 and the Viqueque and Aileu became operational in 2002. Farmers are involved as member of the ASC which are supposed to act as center for farmers training, dissemination of information and trading of their products. In the initial stage, the ASC in Maliana focused on rice, while the Viqueque was based on copra and candlenuts and Aileu focused on coffee and maize. The Maliana ASC provides a milling and transport service for farmers, buys paddy from farmers and sells inputs such as seed and fertilizers. The ASC in Maliana still operate but Aileu is closed. The ASC in Viqueque has stopped operating since wrong financial management had been found out. The ASCs is supposed to organize managers at district levels and permanent staff dealing in finance and routine duties and temporary staff operating rice mill and farm tractors. The Maliana ASC has over 4,107 farmer members consisted of 6 districts, Maliana (1,689), Balibo (346), Cailaco (595), Boborna (722), Atabae (500), Lolotoe (255).

Table 4-1-14 Major Performance in the ASC in Maliana and Viqueque

<table>
<tr><th>Commodity</th><th>Performance</th></tr>
<tr><td>Maliana ASC</td><td></td></tr>
<tr><td>Rice</td><td>ASC bought paddy $ 0.125/kg. Milled rice is 60 ton in 2004, 70ton in 2005. Milled rice was sold in the district, at $13.5/50 kg sack (below imported rice in town at $0.3 per kg).
The ASC has been the sole importer and distributor of inputs supplies, providing services to rice cultivation farmers. In 2005, the total fertilizer handled by the ASC amounted approximately 27 ton.
According to MTCT' policy, ASC bought paddy and stored it (2009).
In 2008-2009, ASC bought paddy 162 ton (US$69, 000), green bean 4 ton (US$1,875).</td></tr>
<tr><td>ASC micro-credit</td><td>Overview of micro-finance scheme (dry season 2005)
<table>
<tr><td>Type of borrower</td><td>Participating farmer number</td><td>Number of completed repayments</td><td>Number of overdue repayments</td></tr>
<tr><td>Framers</td><td>60</td><td>29</td><td>31</td></tr>
<tr><td>Non-farmers</td><td>27</td><td>7</td><td>20</td></tr>
</table>
The introduced scheme is well managed.</td></tr>
<tr><td>Other commodity trade</td><td>The ASC mainly operated rice.</td></tr>
<tr><td>Viqueque</td><td></td></tr>
<tr><td>Past performance</td><td>Copra: Not operated commercial buying and selling of rice. Copra is main income source, service and production activity. Handled more than 150 ton in 2005, exported to Surabaya.
Candlenuts: Already handled by traders.
Cattle & Buffalo: Exported 27 heads to Atambua</td></tr>
<tr><td>Present situation</td><td>ASC is not operated since wrong financial management was audited.</td></tr>
</table>

Source: Restructuring the Agricultural Service Centres to Achieve Timor Leste's Development Goals, Agribusiness Directorate April 2006

The centers have also suffered from weak management and a lack of support from the Government. In order to encourage farmers to participate in agribusiness fields and expand agricultural technology services, it might be necessary to strengthen the ASC agribusiness enterprises. Considering such conditions, the following strengthening direction of ASC agribusiness enterprises is tentatively considered. It is the precondition that ASCs in Viqueque and Aileu will reopen to do business.

Table 4-1-15 Future Tentative Strengthening Direction of the ASC

Enterprises	Maliana	Viqueque	Aileu	Market for large volumes
Rice	Strong, Ongoing	(Strong)		Domestic
Input supplies - Cash sale - Credit sale	 Strong Strong, Ongoing			 Farmers Farmers
Hard tractor services	Moderate	Moderate		Framers
Mungbeans	Strong	Strong		Indonesia
Soybeans		Moderate		Indonesia
Peanuts	Moderate (poor quality)			Indonesia
Vegetable (fresh)			Strong	Dili-Bali
Vegetable (processed)			Moderate	Export
Candlenuts	Covered by private sector			Indonesia
Copra		Moderate		Indonesia
Coffee green beans,	More than 50% covered by CCT			
Cattle	(Strong)	Strong		Indonesia
Wholesale distribution of consumer goods	(Strong)		Strong	Village kiosks

Note: Ratings in brackets need further studies and market analysis.

Source: Restructuring the Agricultural Service Centres to Achieve Timor Leste's Development Goals, Agribusiness Directorate April 2006

Besides ASC in Maliana, Cooperative Haburas Timor is doing business with 75 farmers of soybean, green bean and paddy in Maliana.

2) Centro Logistic National (CLN)

Centro Logistic National (CLN) was established aiming at promoting local rice production so named "Fo valor ba Produto National" (to improve the quality of National product). In helping farmers to increase their cash income, CLN purchases paddy from farmers and produced milled rice and sell it. Storage capacity of CLN is reported: Dili (3,500 ton), Manatuto (500), Maliana (1,500), Baucau (500), Viqueque (500).

Out of the CLNs, Centro Logistic Manatuto (Manatuto Logistic Center or CLM) was established under the following background. CLN established in Maliana in 2001 was unsuccessful because it has to compete with the ASC Maliana already established. Then, the CLN in Maliana moved to Manatuto. At present, CLM operates as a private rice trading company.

3) Cooperatives

Establishment of cooperatives is promoted by the National Directorate for Cooperatives, Ministry of economy and development (DNCOOP). In 2008, formation of total 21 new cooperatives in which include 16 new production cooperatives and 5 new credit union cooperatives had been facilitated. The cumulative number of cooperatives is counted at 38 up to 2008. DNCOOP had targeted to plan to support the formation process of another 18 new cooperatives. The total number will be targeted to become 56 cooperatives. Total beneficiaries in 2008 reached 2,504 family household, in which include of 1,545 men and 949 women. Main objective of establishing cooperatives is put to access credit system and strengthen their saving.

Cooperatives established so far and targeted number is summarized as follows.

Table 4-1-16 Number of Established and Targeted Cooperatives by Type of Cooperative

Cooperatives	Dec 2007	Dec 2008	March 2009	Targeted in 2009
Financial Cooperatives (CU)	13	20	20	20
Fishers cooperatives	0	5	5	11
Trading Cooperatives	0	1	1	1
Agro Cooperatives	0	9	9	9
Café Cooperatives	0	1	1	1
Cattle Fatling Cooperatives	0	1	1	4
Thais Women Cooperatives	0	1	1	7
Coconut oil Cooperatives	0	0	0	1
Bamboo's Cooperatives	0	0	0	1
Food Processing Cooperatives	0	0	0	1
Total	13	38	38	56

Source: National Directorate for Cooperatives, 2009

It is said that the cooperatives have some advantages such as to make it easy to develop market channel, build capacity development of members, create sense of saving and learn knowledge and skills through training programs.

There are nine (9) Agro Cooperatives established (as of March 2009). These are listed as follows.

Table 4-1-17 Established Agro Cooperatives

District	Sub district	Suco	Name	Activity/ Product/ Commodity	No. of member	Men	Female	Total $ saving
Ainaro	Hatudo	Beikala	HABANA (HAKAT BA NAROMAN)	Sea fish, Rice milling	25	25	0	$270.00
Baucau	Laga	Soba	SALGUIROS	Rice, Sea fish, Candlenut, Coconut (Copra)	25	17	8	$1,400.00
	Baucau Vila	Seisal	PESAGCOM MORIS DIAK	Sea Fish, Rice Milling, Trading	18	18	0	$486.00
Covalima	Suai	Suai Lora	HAFIFO (Halibur Fini Foun)	Mungbean	50	40	10	$0
		Holbelis	SANETI	Mungbean	30	10	20	$0
Dili	Vera Cruz	Dare	Dare Haburas (DAHAS)	Flower, Flower shop	50	40	10	$1,000.00
Manatuto	Natarbora	Aubeah	KLATAMUNA	Rice Milling	27	25	2	$295.00
Manufahi	Fatuberliu	Bitiral	NABIHOLO	Rice Milling, Cassava, Banana, Fish Mungbean, Maize	28	26	2	$521.00
	Same	Dai Sua	KADALAK SULIMUTU	Mungbean, Maize	35	30	5	$350.00

Source: National Directorate for Cooperatives, 2009

Although they are handling some products, rice milling is the key activity. Among them, DAHAS is the unique cooperative which cultures flower including medical plant and sells them in Dili. Besides the above cooperatives, National Directorate for Cooperatives is now encouraging to establish a kind of cooperatives for food processing.

Farmers are generally characterized as self-subsistent farming. They sell a part of their produce and

surplus to cash income as required. A few private traders handle food crops, livestock and fishes. In general, farmers can not reach the market places, although a number of local markets have been constructed in each district center. Almost of their produce is sold without processing for sales and consumption.

(5) Agriculture extension

The National Directorate for Agriculture Community Development (DNADCA) is responsible for agricultural extension in the country. DNADA has three Departments, Agriculture Community, Agriculture Extension and Agriculture Information. Under the development policy of MAF, DNADA is planning to expand extension services by recruiting new extension staff in the district level (see Table 4-1-18).

Table 4-1-18 Allocation of Extension Staff and Senior Extension Staff in Each District

No	Districts	Extension staff (Phase I 2008)			Extension staff (Phase II 2009)			Extension staff (Phase I+II)			Senior Extension staff (2008)			Total
		F	M	Total	F	M	Total	F	M	Total	F	M	Total	
1	Aileu	1	7	8	4	7	11	5	14	19	0	1	1	20
2	Ainaro	2	6	8	4	10	14	6	16	22	0	1	1	23
3	Baucau	2	21	23	4	21	25	6	42	48	0	1	1	49
4	Bobonaro	3	21	24	4	22	26	7	43	50	0	1	1	51
5	Covalima	1	17	18	3	15	18	4	32	36	0	1	1	37
6	Dili	1	5	6	0	0	0	1	5	6	0	0	0	6
7	Ermera	1	13	14	4	14	18	5	27	32	0	1	1	33
8	Lautem	1	13	14	0	9	9	1	22	23	0	1	1	24
9	Liquisa	0	9	9	1	11	12	1	20	21	0	1	1	22
10	Manatuto	1	20	21	1	8	9	2	28	30	0	1	1	31
11	Manufahi	0	13	13	2	17	19	2	30	32	0	1	1	33
12	Oecusse	4	9	13	2	7	9	6	16	22	0	1	1	23
13	Viqueque	1	16	17	2	16	18	3	32	35	0	1	1	36
Total		18	170	188	31	157	188	49	327	376	0	12	12	388

Note: F) Female, M) Male

Source: The National Directorate for Agriculture Community Development (DNADCA), 2009

According to the DNADCA, extension services are provided 12 senior extension staff in district level and 376 extension staff in village level, of which 61 staff is distributed as a technical extension coordinator in sub-district level and 85% of the extension staff has been working since Indonesian period. DNADCA has the budget at 1.0 million US$ as a Community Development Fund to support development activities of agriculture, forestry, livestock and fisheries fields in village or community level. It is programmed that firstly village or community provides the development plan including financial plan and proposes it to the DNADCA, secondly, it is screened by DNADA, if approved, it is financed(as of 2009). Management system of this Community Development Fund is supported by GIZ under Rural Development Program II. If this Community Development Fund is really established in village level, it makes it easy to access agricultural credit to develop their village and is also useful to create sense of commercial agriculture.

4-1-7 Agricultural Education Organization

(1) Agricultural High School

There are three agricultural high schools for agricultural technology education under the DNFA.

School	Number of schoolchild	Number of dormitory bed
Natarbora Agricultural High School (Manatuto)	270	64
Maliana Agricultural High School (Bobonaro)	258	56
Filora Agricultural High School (Lautem)	150	140

Age of schoolchild is more than 15 years old. The school has three years education period. Total about 200 students graduate ever year. The curriculum covers general agriculture including ordinary culture in which subjects related to crops, livestock, fishery, forestry and farmers organization are incorporated. Each school has dormitory so as to improve life of students. Total staff is 68, under DNFA.

USAID supports the BACET (Building Agribusiness Capacity in East Timor) aiming at strengthening of agribusiness capacity. In the BACET program, one consultant company "Land O' lakes" who is specialized to the fields of organizing cooperatives and dairy industry, has one year vocational training course with education and practice courses. Equipment and devices such as computer, GIS and livestock processing were provided to support education processes. The program also focuses to train agriculture teachers.

Specially, it is mentioned that students themselves practice to organize cooperative and act based on the followings concept.

1. Evaluate the current problems by themselves.
2. Discuss the solutions.
3. Understand necessary activity plan by using illustration
4. Act as volunteer sense independently of teacher and learn the methodology to improve quantity and quality of products through group discussions.
5. Learn making decision process of the group.
6. Execute promise of the group.

In addition, the students can experience the business practice in the CCT as outdoor training.

(2) East Timor National University

The East Timor National University has seven faculties of agriculture, education, engineering, law, pharmacy, economy, and politics and economics. Total 1,457 students exist in the university. Agriculture faculty is consisted of three subjects, agricultural economy, agriculture and livestock. Agribusiness is one of the courses. The university has four years education period. The students should learn total 148 courses to graduate. There is no food processing training room in the university. Then, outdoor course to learn the practice under the cooperation with NGO is prepared. There are 42 full-time lecturers. Besides, Part-time and contract lecturers are allocated. Operation and management of the university is covered by the national budget under the Ministry of Education and school expenses.

Graduated students are expected to play an important role for agribusiness promotion in the country. It is

the key subject to improve capacity of lecturers in order to improve farming technology of profitable crops. Then, it is important to strengthen cooperation with private sectors and interchange of lecturers between other international institutes for research and processing development of commodities.

4-1-8 Core Problems Arisen in the Production Field

Core problems which may be caused from the production field are put on the each stage for promoting agribusiness, as follows.

Table 4-1-19 Core Problems Arisen in Production Field

Core Problem	Present Situation
Core problems put on the production stage	
There is a production gap in the rural areas based on natural and physical condition.	Almost of agricultural land has sloped and there is few flat land. Sloped land is prone to be eroded. Soil fertility is generally low. Based on those conditions, crop productivity is low. Amount of rainfall is much influenced by the central mountain range. Various crops are cultivated depending on various climate conditions. But, those crops are generally cultivated in small farm lands. Its yield is unstable and very low.
Marketing amount of agricultural products is limited due to self-sufficiency farming whose only surplus is marketed.	Most farming style is self-subsistent one, in which farm household produces various food crops depending on natural/ topographic conditions for their self-consumption. Farmers produce a wide variety crops with low-input and output. In their farming system, most farmers sell the small surplus when required. Under such conditions, marketing amount is limited.
Farmers' production consciousness based on the contract with traders is week.	Most farmers produce various crops with low production for their household consumption. They have not a market oriented commercial farming sense. They are subject to rely on government and donor agencies in provision of agricultural input materials such as farm machine, fertilizer and seed.
Core problems put on the marketing stage	
Management capacity of present farmers groups/ organizations is week.	There are Agricultural Service Center (ASC) and farmers' cooperation who are dealing with development fields of production, processing and marketing. Their operating and managing capacity is very low. Extension workers are not active for organizing farmers groups.

4-2 POST HARVEST AND PROCESSING

4-2-1 Environment of Post Harvest and Processing

(1) Economical Background of Processing Industry and Government Interventions

The consumer price index of foods had increase from the forth quarterly in 2007 (137 points) to the third quarterly in 2008 (155 points). According to the National Statistics Director of Ministry of Finance, the increase of the price index was mainly caused by the price of milled rice, which was affected by the increase of international rice price together with crude oil price, but the distribution volume of milled rice was limited in domestic market in spite of high price. Therefore, the increase of production of rice including improvement of post harvest technology is prioritized challenge for the nation.

Food Security Department of Policy and Planning Directorate of MAF estimates the deficit of rice at 52,462 tons-milled rice in 2007/08 harvest season, which slightly increased at 59,019 tons comparing 2006/07, and the volume is still large. This estimation is assumed the average yield of paddy at 1.44 ton/ha

in 2007/08 and 1.66 ton/ha in 2006/07, post harvest losses with the milling loss at 40%[1] and annual consumption rate per capita at 90kg. While, the production of rice is expected 44,675 tons-rice in 2008/09 for the population of 1,061,048, which meant that the deficit will be 50,820 tons-rice. The second staple food – maize will be shortage at 9,632 tons in milled rice equivalent, and then the total required import volume is estimated at 60,451 tons-rice.

Presently, the growth rate of population is accounted for +3.4% with pyramid type of population composition. The import volume will increase at 74,000 tons-rice or more in 2015, unless production is expanded. This critical figure indicates urgency of improvement of post harvest losses and distribution system under expansion of paddy fields and upgrade of yields, as well promotion of tubers and maize as supplement foods. The neighbor country, Indonesia, is one of the largest rice importers in world and it is not expected to reach the peak of export volume in major exporters, Thailand and Vietnam. Therefore, the government should have more efforts for food security in self-reliance.

Table 4-2-1 Export of Milled Rice and Export Country

Country	2004/05	2005/06	2006/07	2007/08	2008/09 (estimated)
Thailand	7,274	7,376	9,557	10,016	9,000
Vietnam	5,174	4,705	4,522	4,649	5,200
Pakistan	3,032	3,579	2,696	3,000	4,000
USA	3,863	3,307	3,029	3,500	3,200
India	4,687	4,537	6,301	3,300	2,500
China, PR	659	1,216	1,340	945	1,300
Total-World	29,179	29,492	32,065	29,687	29,520

Source: USDA (unit: '000tons)

MTCI has implemented the policy of "Buying, promoting and supporting local product" since September, 2008, and launched government buying of the major agricultural products. MTCI possesses or arranges the warehouses in Dili, Baucau, Maubessi and Maliana, and is receiving the consultation from MAF for more effective implementation to expand other districts and other products. The system would provide marketing alternatives to farmers and farmers' groups, but may cause huge post harvest losses in storage due to unregulated buying conditions such as varieties, moisture contents, impurity ratio and broken (rice) ratio, unsuitable storing conditions and unskilled warehouse keepers. The current system is not effective to provide incentives for farmers producing high quality crops due to fixed price buying for any quality of crop, but obviously encourage to expand production in short term. MTCI's warehouse is generally old. Storage loses may be occurred. It is said that the intervention by government purchasing system prevents milling business and rice traders from their running on their own initiatives.

(2) Support to Processing and Marketing Groups

For increase of food self-sufficiency rate, MAF has paid attention and efforts on recovery of idle fields, rehabilitation of irrigation facilities, mechanization, provision of fertilizers/ improved seeds and introduction of intensive farming management. It is also important to develop capacities of local human resources on marketing or distribution such as Agricultural Service Centers and Logistic Center. For example, Manatuto Logistic Center becomes a core marketer in the area, and intends to expand Baucau, Viqueque, Suai and Same. The Center has the business model to provide to farmers for the services of short-term credit, distribution of seeds/fertilizers, threshing and milling, to sell packed milled rice in Dili and to adjust debts of farmers for provided services. Another organization, Maliana Service Center, has

24

[1] In JICA report of 'Study on Development of Agriculture, Forestry and Fisheries', 2002, the total losses estimated at 46.4% including loss in milling.

started involving government buying system as a middleman since April, 2009, by means of buying paddy in cash from farmers and selling to MTCI, but it takes 4-5 months to be paid. MAF and many donors provide rice milling machines to farmers' groups, but the processing capacity is not sufficient considering future increasing of paddy production.

GIZ has supported Fini Esperanca in Cavalima to export surplus of mungbeans and peanuts to West Timor. USAID has strengthened Cooperativa Café Timor (CCT) in terms of financing, small grant aid for processing machines and marketing. CCT is not a legal body of agricultural cooperatives but acts as NGO, and operate clinics using profits of trades. As well, USAID supports the distributor of fresh highland vegetables and the exporter to West Timor through training and small grant aids.

(3) Consuming Trends of Processed Products

Dili is a special market for consuming of processed products. The products made not only in Indonesia but also Australia, Singapore, Thailand, etc. The general consuming tends for inhabitants are speculated by area (eastern, central and western) and urban/rural according to food intakes of poverty line set by State Statistic Department, MoF and WB.

- Maize is one of staple foods, but it is rarely processed into flours.
- Milled rice is depending on import, and domestic produced rice is seldom distributed in urban in central and eastern.
- Cassava is the most important crop in root crops, but it is rarely processed into flours or tapioca.
- Consumption of chicken eggs is limited in the whole country.
- Dairy products are seldom consumed in the whole country.
- Pork meat in the whole western and chicken meat in urban are consumed more volume relatively.
- Only soybean is processed into tofu and tempe, and consumption in central urban is high.
- Consumption of coconut oil is very low comparing other food oil except eastern rural.
- The people take calories from sweet confectionary.
- Instant noodle and sweet bread are consumed in the whole country.

(4) Promotion of Processed Products

The events to promote processed products are not often hold, but festivals conducted by donors can be found with direct-sales. The biggest event is Expo in Dili. Domestic Trade Directorate of MTCI organizes the Expo co-sponsored with other ministries, which was hold in 16-21 May, 2009. It was so flourishing in order to be scheduled before/after the Independence Day. In the Expo, numbers of agricultural processed products and handicraft were on show, tais (5 groups), packaged organic coffee (3), coconut oil/soap (3), fruit jam/paste (3), rattan/bamboo furniture (2), palm leaves handicraft (2) and chips (2). Tais waving products are made by women groups with support of many Christianity donors. Furniture and handicrafts made by rattan, bamboo and palm leaves are well designed.

MAF has the outside booth in the Expo introducing cooperation projects with JICA, GIZ, Care International, AusAID, Oxfam, etc., improved/ hybrid seeds of major crops, marine resources, veterinary services and agricultural machineries. Among displayed products in Expo, 10 kinds of jams and vegetable chips are the results of the third country training for leaders of women groups conducted by JICA expert (Thailand in March, 2009). Provision of training for agricultural processing to privates would be very

effective cooperation method for fostering private sector.

4-2-2 Domestic Processed Products

Generally, the processed food products sold in markets and retailers are made in Indonesia. Domestic products are rarely existed in the local market. Under the campaign 'Buying, promoting and supporting local product', some agricultural processed products are being made by supports from donor and NGOs and local people's own efforts. Those produced ones are being found here and there.

(1) Coffee

Coffee is a domain export product affecting on national economy growth depending on fluctuation of international trading prices. By means of introduction of Arabica variety and roasting technology, the quality in fragrance and taste is improved. The international price of this product shows significant fluctuation, therefore, it is necessary for sustainable business relation with foreign importers and exploitation of clients. Taste of Timor-Leste made coffee is rich and little sour, not bitter like *Traja* or *Java*. The uniqueness are i) near original variety of Arabica due to long history during Portuguese era, ii) suitable climate conditions for coffee, daily temperature difference, humidity change & rainfall, iii) shading plant growth, iv) harvesting only ripe red cherries by small scale farmers, and v) natural sun drying of green beans.

The largest market share holder in coffee industry is Cooperative Café Timor (CCT). This organization has been established in Indonesian era and supported under the Timor Economic Rehabilitation Program implemented by USAID. The member farmers have increased from 800 households in 1994 to 22,000 in 2008, and then harvested 18,000 tons in cherry weight base in 2008. The product is differential as large scale organic coffee to foreign buyers. CCT operates collection of cherries and series of processing such as humid fermentation, drying of parchment bean, de-shelling, grading, deep roasting, milling and packaging. For improvement of living standard of members, CCT also supports growing and marketing vegetables, vanilla and cattle.

Peace Winds Japan (PWJ) and PARCRIC (Japanese NGOs) support organizing farmers and marketing as 'Peace Coffee' and 'Timor Coffee' respectively through fair-trade. Other NGOs also focus on coffee farmers and branding. There are middlemen or groups to sell in local markets, and they sold in bulk. In retailers, Indonesian Robster roasted coffee packaged in small volume is also sold.

For future promotion of coffee industry, some activities such as support of organic certification, sales campaign or participating international food festivals in consuming countries and simple documentation and quick clearance of custom for export, should be taken as the roles of the government.

(2) Milled Rice

The imported rice is generally IRRI varieties produced in Vietnam. For milling for domestic produced paddy, ASC, Logistic Center and some private farmers possess one-pass type milling machine (rubber roll type), and other farmers group or rice trader possess *Engerburg* type rice milling machines (friction type). Most of milled rice is consumed in production areas except Maliana. Methods of procurement of machines vary from donation, group purchase or private purchase. In Dili, milling machines are available made in Japan (Satake Co.) and China (copied model).

For branding, Salguerios agricultural production cooperative in Laga, Baucau starts business to mill local paddy called *Mamberamo* and package rice in 10kg. But contents of broken rice are more than 30%, therefore, it is recommended to improve moisture control even before harvest and drying, cope with imported one. Generally, Timorese prefer to local variety rice than IR variety.

MTCI has started government buying for rice, but changed to buy paddy since May, 2009 in order to avoid mixing import rice by businesslike traders. The stakeholders in paddy/rice traders and millers confuse due to change of the government policies. MAF is working to make its government system more practical with MTCI. MAF is requested for rice milling capacity survey and registration of millers in *suco* level for stable supply of rice.

(3) Coconut

Consumption of coconut oil as food oil is slowly increasing in rural area due to low price of materials especially in eastern provinces. The urgent issue is to expand market outlets of local made cooking oil because of less purchasing power of local people and competition with Indonesian made cooking oil with less smell and high quality.

Coconut food oil is manufactured by low temperature extraction method from copra. In traditional way, after extracting coconut milk from copra, it is separated into oil contained cream and water contained skim milk. The cream is heated for solidification of protein and release of oil. The mixed cream is removed solids, and it is heated again to remove moisture and filtered. Final product is tinged with brown color, smelling coconut and low purity.

By technical assistance of USAID implemented by Catholic Relief Service (CRO), natural fermentation method is developed. Differences between traditional and natural fermentation methods are to stay for 24 hours at 28℃ and scoop oil from curd made by micro-organisms (the curd is dried and taken oil again) . The oily solution is heated for 12 hours at 50℃ to remove moisture. In commercial size of factor, vacuum drier is used. The crude oil is filtered, and then the clear oil called Virgin Coconut Oil (VSO) is made as a final product.

The local company, Acelda, under support of USAID is collecting VSO from farmer groups, bottling and distributing to the selected supermarkets in Dili. In the label, it is mentioned to consumers the advantages of products, rich containing of lauric acid, non-heat fermentation method, and natural food. For export or price competition with neighbour country, the product should be added values or background stories. In the case of designer shop, they package in small bottles with tais caps in tais boxes for skin care.

DNPIAC intends to expand coconut food oil production methods for expansion of local consumption in cooperation with GIZ, USAID and PADRTL.

(4) Tofu, Soymilk and Tempe

In Dili, Tofu and soymilk are produced. The factory, Furak Tofu Co., is not large scale but sanitation is well considered. They sell tofu and soymilk directly in front of the factory and deliver supermarkets. The owner tried to sell soymilk for school feeding program to improve nutrition intakes for children, but could not be a tendering winner due to cheaper imported milk powder, so that daily production volume has not been expanded. They used to purchase imported soybeans (genetically-modified variety), but now procure

domestic produced organic beans since its quality is being improved through the support from GTZ to bean producers. It is said that domestic beans have high sugar contents and soymilk is sweet without adding imported sugar. According to the factory, the production capacity is 1,000 lit/day in soymilk base, of which 50% are used for Tofu.

Local tempe producers are operating in three (3) factories, but there are problems of sanitation and waste water. Waste water after processing is directly flowed into natural canals. By-product, residue of beans, is used for swine rising, and is not developed for human consumption. So, consumption of tofu is expected to increase, each factory owner has intention to expand production capacity and have training chances for upgrading its quality, according to the interview survey.

Tempe is produced by home industry operated by woman (widows). There is 6 women' industries in Dili. It is made in their kitchen and/or garden. The location is concentrated in Comoro area. The average of production capacity is accounted to be purchasing 50kg/day in dry bean or processing 90 packs/day of Tempe. The main problem of the producers is pointed out to be poor sanitation conditions causing food poisoning in the processing stage due to contamination of bacteria except tempe fungus (*Rhizopus oligosporus*). Labeling is required to clarify manufacturers in future.

(5) Roasted Peanut

Peanuts are produced in Baucau and Oeccuse, and sold de-husked beans with skins occasionally in markets and road sides. The roast factories are not found in this country, but fried peanuts with imported cooking oil or coconut food oil are eaten in households. Processing for peanuts such as peanut sweets or peanut butter is not developed yet.

(6) Marmalades and Chips

In Baucau, Community Development Center (CDC) who is the Catholic Cururch's NGO, has been supporting rural development projects for food processing, blacksmith and farming with cooperation of FAO, JICA and GIZ. For promotion of food processing, the CDC selects leaders from groups of farmers or women for teaching and training, and the groups produce processed products such as marmalades, pastes, fried chips and coconut oil. As the result, a women group has developed bottled marmalades in combination of papaya, bread fruit, orange, guava, tamarind, onion, egg plant, tomato and pumpkin. After those making, the test marketing to supermarkets in Dili was attempted. The result was not succeeding due to packaging and labeling. At present, those subjects are being improved. In addition, the group gets the contract with MTCI for school feeding program. Another women group has the business to produce fried chips of banana, cassava, sweet potato, taro and bread tree and sell to local retailers. In each case, CDC organizes the connection of those producers with farmers to solve stable supply of materials. The major constrains are competition with Indonesian processed foods in quality and price and costs on packaging materials.

(7) Bakery

In Dili, three bakeries are operating in small scale. So wheat is cultivated in a part of Same, Manufahi, but the production is limited, not enough to meet with country's demand. These bakeries use imported wheat from Surabaya. A heating source in making bread is fire wood, therefore. In future, they will be forced to

change the wood source to gas. In other major towns, there are bakeries operating in household-level. Made breads are sold to villages in local market days. Timor-Leste has mixed food culture with Portuguese demanding breads. Bread making is likely to have potential in this country. Sweet buns such as donuts are also consumed.

(8) Palm Wine

Palm wine, or *Tea*, is sold widely in the whole country. There are two brewing types, simply-fermented and distilled ones, which are filled in recycled PET bottles for mineral water. The palm wine is made by fermented saps cutting bunch of fruits. The quality is depending on nature and plant, and differed from sugar contents, fermenting temperature, alcohol degree, management method, ripe in storing period and contamination of impurities. The demands are very high in Timor-Leste since it is cheaper than any other imported mines. Major producing areas are distributed in the highlands in Lacto bar-Manatuto, Ossue-Viqueque, Same-Manufahi and Maliana-Bobonaro.

(9) Minor Products

Processed products which are selling in local markets although it is small quantity are picked as follows.

Table 4-2-2 Small Quantity Processed Products

Products	Processing
Honey	It is distributed filled in recycled PET bottles or glass bottles. Only Maubessi honey is bottled and labeled. Timorese honey is subtle in flavor, but different taste by areas and fermented fast.
Marine salty sauce	It is fermented small shrimps or fishes by lactic acid bacteria with salt. The taste and smell are very unique.
Dried fish	It is aimed at long storage or distribution to inland villages. The trading prices are dropped comparing with fresh fishes.
Dried beetle but	It is a product to dry fruits of a kind of palm tree having stimulant function, and very popular in Melanesia.
Candlenut oil	It is used for spicy food oil or industrial oil for painting. The trial export was carried out, but facing economically difficulties.
Roasted cashew nut	The plant had been planted since Portuguese era, but planted areas reduced to 1/3 due to disease and pest damages.
Spice powder	Various spices such as cardamom, cinnamon, clove, nutmeg, etc. are produced in small volume. There is a difficulty on procurement in fixed volume at suitable timing.
Sandal wood oil	By national crisis in 1999, many sandal woods had been cut down, so it is difficult to get materials.
Vanilla extract	Based on the economy of Tonga, PADRTL(Portugal Aid Agency), CCT and NGO promoted, but it was faced very high export cost.

(10) Possible Processed Products using Available Materials

The products which are processed in neighbour countries, but not in Timor-Leste are found. Available agricultural materials are listed below.

Table 4-2-3 Available Agricultural Materials

Materials	Possible Products	Current Situations
Mungbean	Vermicelli, Sprout, Sweets, Green tofu	Surplus of dried beans are carried to West Timor, and exported to Singapore in limited amounts.
Maize	Bread, Flake, Confection, Starch, Food oil	Maize is the second staple food, but is not processed almost.
Peanut	Peanut butter	Timor Global has produced trials organic peanut butter.

Materials	Possible Products	Current Situations
Bali cattle	Frozen cut meat, Jerked beef, Ham, Salami	Live cattle are carried to West Timor, not through Com Port or Tiber Port currently.
Pig	Frozen cut meat, Ham, Sausage, Beacon	Port sausage is prepared by households or imported.
Goat	Frozen cut meat	Goats are pastured, and damage to crops and deforestation, which is creating social problems. Goats are not exported.
Fruit	Dried fruits	Domestic demands are not high.
Cassava	Flour, Tapioca, Confection	Limited volume is floured in Same.
Chicken egg	Graded, washed & packaged eggs	Chicken eggs are imported. New Castle disease epidemics in the county.

4-2-3 Core Problems Arisen in the Agro-Processing Field

In order to promote agro-processing in the country, it is necessary to consider social aspects and specialties of Timor-Leste, besides improvement of quality of raw materials and processing technologies, Strong competiveness of imported goods makes difficult grow large scale domestic processing industry even high demanded mineral water. To cope with these situations, social and political subjects should be considered. MAF should focus on small scale processing, not on large scale. For promotion of small scale industry, consideration points/ problems are summarized as shown in Table 4-2-4.

Table 4-2-4 Core Problems Arisen in the Agro-Processing Field

Core Problem	Present Situations
Core problems put on the processing stage	
Purchasing power of local people is low.	People under the poverty line at US$0.88/person/day are occupied 73%[2]. The substance farmers who do not produce rice and coffee which are regarded as a commercial crop are accounted for approximately 50%, and rarely have any cash incomes. The barter trade is found among farmers. The processed or cooked products so as to be circulated and marketed by money in rural areas seldom exist.
Competition power of domestic products is weak in prices, quality and quantity.	It is difficult to process and manufacture products in Timor-Leste in better price, better quality and better packages comparing Indonesian mass-products having a giant market. Increase of tax tariff, as a countermeasure, is not effective since there is informal trade such as smuggling in/out West Timor.
Raw products are not satisfactorily supplied in quality and quantity for processing industry.	Agricultural production to be supplied as raw material to processing industry is unstable due to lack of production infrastructures such as limited irrigation system for crop cultivation except paddy. Only Maliana and Manatsuto have provided large scale irrigation scheme. For coffee, numbers of small scale farmers produce in Elmera and Aileu.
Set-up of processing industry is hard.	<u>No credit system</u> There is no access to credit system so that local people can provide necessary fund when they set-up processing industry. In addition, there is no commercial banks in rural areas form them. <u>Processing products are relatively expensive due to poor processing infrastructure.</u> Power sources for manufacturing products such as firewood or crude oil are more expensive than Indonesia. Small diesel generators are generally prevailed due to often occurred power blackout, but running costs are expensive for industrial uses. Transport costs and fuel are high. 40-ft trucks can not be operated due to narrow road, small radius curve and huge slops. No mass transportation system brings rather expensive marketing price. <u>Recruit of qualified and skilled workers is not easy.</u>

30

[2] Timor-Leste: Poverty in a Young Nation, November, 2008, National Statistics Department, MoF /WB

Core Problem	Present Situations
	It is very hard to recruit skilled workers for setting up processing industry. In addition, it is difficult for workers to have training opportunities to learn processing skills and technologies. Generally, calculation abilities for accounting are low. It is considered as one of cause that ratio of preschool population in more than 6 years old beyond reaches at 39.5% in 2007[3]. Development consciousness for economic activities is weak. There is a risk when private sector set-up and operate processing activities. Dependency to the government and donors is still high in people's minds. There is no cooperative and group who is running business activities by self-fund. Cooperatives and farmers' groups are not active in processing business. The private investors do not invest to business activities due to past destroying experiences by riots.
Finding and development of export products are hard.	It is too hard for individual farmers and farmer's groups to find promising export products and leading its export activities. It takes long term to arrange finding products and exporting transaction works among traders and production farmers. To export to Singapore and Australia, it is necessary to exploit propaganda activities for their countries' consumers, need to propaganda stories or added values, e.g. in the case of CCT, they appeal to consumers that you can donate to clinics if you buy coffee.
Core problems put on the selling stage	
Quality of selling products is not reliable.	Due to high packing materials costs, selling processed products are not labeled to indicate its contents. People use and sell recycled PET bottles or grass bottles for filling palm wine, chili sauce, marine product fermented sauce, powder, honey and even gasoline.
Incentives to producing high-quality products are not generated for producers.	Farm gate price of products is generally decided by buyer since there is no products' quality assessment and grading system. Especially for rice, it is traded on the amount basis of milled rice or paddy. MTCI purchase all of paddy at the same price. Therefore, rice farmers can not generate the incentives to producing high-quality rice. While, in case of coffee, there established quality grading system. Exporters make grade for green bean.

[3] Timor-Leste: Poverty in a Young Nation, November, 2008, National Statistics Department, MoF /WB

4-3 MARKETING

4-3-1 Weights & Measures

Ministry of Tourism, Commerce & Industry (MTCI) has a Department of Measures. This department is entrusted to develop laws, regulations and guidelines related to weights and measures, and then implement the related rulings. As of May 2008, the only official regulation was for the standards to be used when pumping combustible materials. The department regularly inspects fuel pumps to insure that gauges properly measure the quantities dispensed. It also checks the scales used by exporters (e.g., Timor Corp., Timor Global, NCTA) to insure their accuracy. It does not monitor the performance of importers.

However, MTCI's Department of Measures is not actively engaged in setting weights or measures for agricultural products. In fact, with the exception of coffee, there are no guidelines or regulations being applied in regard to quality grades, or standardized weights and measures for agriculture products.

Coffee standards are set by producers and divided into 4 quality stratums; (i) premium, (ii) good, (iii) acceptable, and (iv) reject. The quality gradations are based on the industry wide criteria promulgated by Café Timor. The quality assessment uses visual tests against a standard grading card.

Typically, dry crops are measured in bags for wholesale at a pre-set kg weight (e.g., import rice in 35 kg bags), or cans for retail. Can sizes vary widely, but usually fall in the range from 250 to 750 g. Fruits and vegetables are sold at a fixed price for a bunch or pile of produce. Visual inspections are required to assess quality for each transaction and no consumer protection laws are in place. Minimum export weights are set for cattle prior to export. No further quality criteria such as age or condition are used.

The use of the US dollar has a decided impact on how produce is merchandized. In most countries, farm produce is sold by weight. In fact, this method is common throughout Indonesia and was widely used during the period of Indonesian occupation. However, after the dollarization of the national economy, the method of selling produce changed with produce being grouped by fixed amounts per dollar. Presumably, it became easier to sell a fixed number of units for a set dollar price as compared to weighing produce and then selling its weight unit for so many dollars and cents. Instead of dollars/kg, sales moved to units/dollar. While round dollar sales simplify the traders' work, it is more costly and inconvenient to consumers. The use of scale in sales would make marketplace more efficient and thus reduce the buyer's costs.

4-3-2 Food Supply and Demand at the District Level

Self-sufficiency of food at district level is estimated from the balance of food supply and demand which is calculated based on the production volume and food intake or consumption of district people.

(1) Per capita food consumption

The Timorese diet is traditionally based on the rice and maize, representing two-third of total necessary calorie intake of them. Following them, root crops such as cassava and sweet potato, are the important food, representing about 20% of total food intake calorie. In general, annual per capita consumption of rice and corn is estimated based on the data from Indonesian era in which rice is 80-90 kg and corn at 70-115kg (1990-2006/07). On the other hand, the other food consumptions are not definitely. Between the staple foods, rice is becoming preferable food more than the corn in a change of peoples' taste for food.

Table 4-3-1 Assumed Annual Per Capita Food Consumption of Major Commodities by Regions

Food bundle per person per year (kg)

Region	East			Central			West		
District	Baucau, Lautem, Viqueque			Aileu, Ainaro, Dili, Ermera,			Bobonaro, Cova Lima, Oecussi		
	Rural	Uban	Average	Rural	Uban	Average	Rural	Uban	Average
Cereals									
Local rice	40.1	13.0	26.6	39.5	3.3	21.4	28.8	43.4	36.1
Imported rice	49.9	91.5	70.7	49.0	91.8	70.4	51.9	52.0	52.0
Rice total	90.0	104.5	97.3	88.5	95.1	91.8	80.7	95.4	88.1
Corn	79.7	69.9	74.8	85.0	67.3	76.1	77.7	68.9	73.3
Tubers									
Cassava	31.4	27.5	29.4	40.8	31.2	36.0	29.7	31.5	30.6
Sweet potatos	7.4	8.1	7.8	12.8	7.3	10.0	4.7	7.2	5.9
Fish									
V. small sea fish	1.2	2.6	1.9	1.3	3.1	2.2	3.8	3.5	3.7
Other fresh fish	0.8	1.5	1.1	1.2	3.3	2.2	0.8	1.2	1.0
Fish total	2.0	4.0	3.0	2.5	6.4	4.4	4.6	4.7	4.7
Meat									
Beef	1.1	2.4	1.7	1.8	2.6	2.2	1.4	2.3	1.8
Buffalo meat	0.5	0.7	0.6	0.3	0.8	0.5	0.0	0.6	0.3
Meat total	1.6	3.1	1.2	2.0	3.4	1.4	1.4	2.9	1.1
Vegetables									
Cabbage	0.9	0.9	0.9	2.7	4.4	3.6	1.6	1.4	1.5
Garlic	1.1	1.3	1.2	1.7	2.6	2.1	1.1	1.9	1.5
Legumes, nuts									
Soya bean	0.8	0.8	0.8	1.0	0.7	0.9	0.5	0.1	0.3
Mung bean	1.1	0.5	0.8	0.7	3.4	2.1	1.7	3.7	2.7
Peanuts	1.8	1.7	1.8	0.9	1.0	1.0	1.4	1.8	1.6
Tofu&Tempe	*0.1*	*0.0*	*0.1*	*0.1*	*1.0*	*0.6*	*0.0*	*0.4*	*0.2*
Soy bean equi.	0.1	0.0	0.1	0.1	0.8	0.4	0.0	0.3	0.2
Fruits									
Mango	2.5	0.8	1.6	1.5	3.0	2.2	0.8	1.0	0.9
Banana	7.3	6.9	7.1	4.9	5.8	5.3	8.5	8.7	8.6
Papaya	2.9	3.5	3.2	1.8	1.9	1.9	3.3	3.2	3.2
Oil									
Coconut oil (lt)	4.4	4.1	4.2	0.5	0.2	0.4	0.3	0.4	0.4
Other cooking oil (lt)	1.7	2.4	2.1	6.4	10.4	8.4	5.9	7.6	6.8
Dry coconut	2.2	1.3	1.7	0.1	0.0	0.1	0.5	0.1	0.3
Beverages, drinks									
Coffee	2.3	2.4	2.4	5.4	4.6	5.0	2.5	3.0	2.7

Note: Per capita counsumption of maize is adjusted based on the daily calories provided as total per person per day.
Source: Timor-Leste: Poverty in a Young Nation (Ministry of Finance, National Statistics, The World Bank)

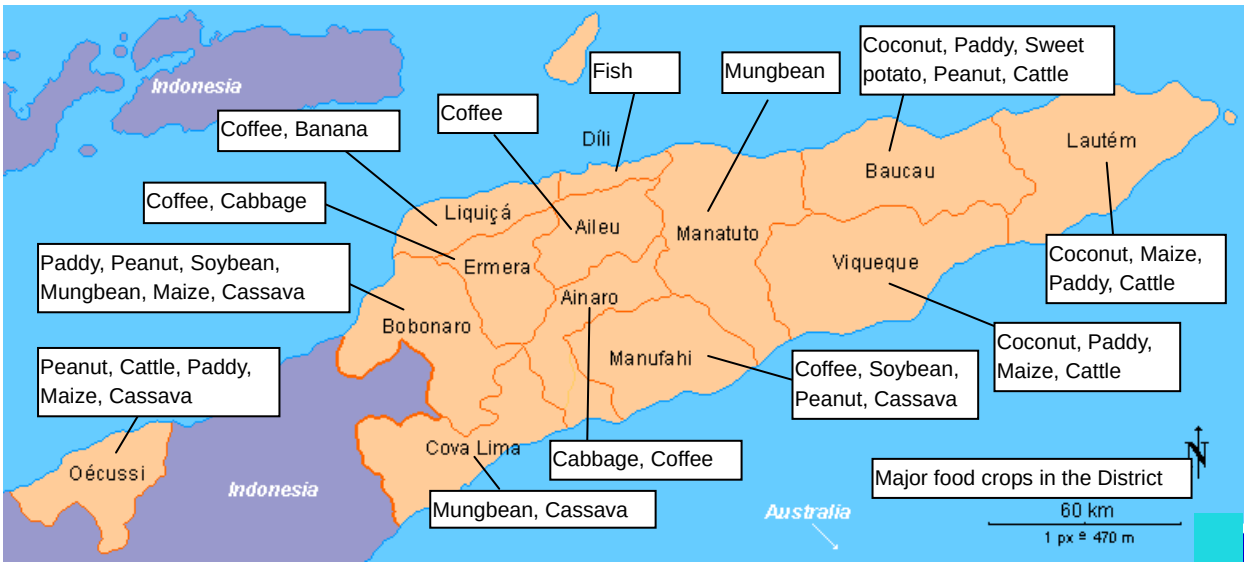
For this study, an analysis on the study "The 2007 Timor-Leste Survey of Living Standards (TLSLS)" (Timor-Leste: Poverty in a Young Nation; Ministry of Finance, National Statistic, The World Bank) was used to estimate per capita food consumption. The study shows that a food poverty line is estimated on the recommended nutritional norm of 2100 calories per person, in particular, for each of the six regions in the country, and as the results, representative food bundles equivalent to the average food consumption pattern of the poor are constructed in each region, based on the sampling survey of 300 households in the country. Based on this, annual per capita consumption of major foods/ commodities of the Timorese is assumed by the regions for this study, as shown in Table 4-3-1.

(2) Estimation of self-sufficiency at district level based on the balance of food supply and demand

Self-sufficiency at district level is estimated by food crops from the balance of food supply equal to production volume and food demand calculated from estimated annual per capita foods consumption and estimated district population in 2008 and 2010. Result of the estimation is summarized in the Table 4-3-2. Considering that some assumptions are applied in the analysis process and some data of the production are

uncertain, the following points are referred from the analysis.

- Rice self-sufficiency of the country in not attained. Among the districts, it does not meet with the demand except four dictricts of Baucau, Bobonaro, Viqueque and Covalima. Deficit rice is imported. Local rice production should be increased for food security. Looking at the rice supply and demand among the districts, for those districts of Aileu, Ainaro, Dili, Ermera and Liquisa whose self-sufficiency rate is low due to a few suitable rice cultivation land, transportation system from neighboring rice producing districts to them should be established/
- Looking at supply and demand of the corn among the districts, there is a surplus in the east region of Lautem, Viqueque and baucau districts. District supply does not meet with the demand in the districts such as Aileu, Ainaro, Dili, Ermera, Liquica whose production is relatively low. For those districts, transportation system from the surplus districts should be established with provision of infrastructures such as roads and storage houses, as well as in the rice.
- Root crops such as cassava and sweet potato which are cultivated in whole districts nearly meet the demand in the national level. However, self-sufficiency of the districts of Dili, Liquisa and Ermera is relatively low.
- Although legume crops and nuts such as peanuts, soybean and mungbean are produced in the almost all districts, Bobonaro district is the largest producers. Besides this district, Covalina and Manufahi have surplus.
- Coconut is the food source of cooking oil and copra. There is the surplus in the country. Major producers are the eastern districts of Baucau, Lautem and Viqueque, occupying 92% of the country’s production. According to the per capita food consumption, coconut oil consumption is also localized on those districts. Much vegetable cooking oil is currently imported. Coconut cooking oil for the substitution of imported one seems to be higher demand from viewpoints of promotion of agribusiness, although it is unidentified whether it suits central and western region people’s taste.
- Coffee is the important export commodity in this country. Highland in the districts of Ainao, Ermera, Liquisa and Manufahi are the major suppliers.
- Main supplier for highland vegetables such as cabbage is the highland districts such as Ainaro. To transport the fresh ones to the demand districts, it is necessary to improve present poor roads and provide any suitable cold storehouses.
- Supply of fresh fruits meets the demand in the district level except for Dili. Transportation from the supply districts to demand district Dili should be improved. The surplus is expected to use to produce processed foods such as jam, dry fruits, chips and canned foods.
- Animal meat supply which is based on the productive meat amount assumed from the heads of raising cattle, meets the demand in the districts except for Dili. Surplus of alive cattle is currently exported.
- Major supplier of fresh fish is the Dili and Liquisa. Transportation to the inland districts as Aileu and Ermera should be provided for future fresh fish demand. Considering the present poor transportation and no cold storage facilities, making simple processed products such as half-dried fish are considered as one of marketable fish foods.



No.	District	Paddy (2010) Production (ton)	Paddy (2010) Share (%)	Maize(2010) Production (ton)	Maize(2010) Share (%)	Cassava Production (ton)	Cassava Share (%)	Sweet potato Production (ton)	Sweet potato Share (%)	Coconut Production (ton)	Coconut Share (%)	Coffee Production (ton)	Coffee Share (%)
East	Baucau	34,024	30	23,036	15	2,360	7	1,080	12	1,401	12	22	0
	Lautem	6,504	6	42,106	28	1,820	5	475	5	3,360	29	3	0
	Viqueque	16,893	15	15,407	10	3,480	10	819	9	4,948	43	0	0
Central	Aileu	930	1	2,211	1	2,940	8	340	4	9	0	83	1
	Alinaro	2,652	2	2,141	1	2,604	7	840	9	31	0	1,191	12
	Dili	110	0	1,635	1	1,129	3	99	1	9	0	5	0
	Ermera	3,587	3	1,376	1	2,313	7	618	7	5	0	5,372	52
	Liquisa	307	0	2,211	1	1,512	4	290	3	30	0	1,244	12
	Manufahi	2,765	2	3,822	3	3,752	11	644	7	274	2	1,687	16
	Manatuto	3,884	4	6,728	5	1,998	6	568	6	34	0	159	2
West	Bobonaro	21,128	19	16,722	11	3,667	10	946	11	21	0	546	5
	Covalina	14,642	13	20,335	14	3,508	10	816	9	1,252	11	42	0
	Oecusse	5,500	5	11,160	7	4,452	13	1,418	16	164	1	1	0
	Total	112,926	100	148,890	100	35,533	100	8,954	100	11,538	100	10,355	100

No.	District	Peanut Production (ton)	Peanut Share (%)	Soybean Production (ton)	Soybean Share (%)	Mungbean Production (ton)	Mungbean Share (%)	Cabbage Production (ton)	Cabbage Share (%)	Cattle+Buffalo No. of head	Cattle+Buffalo Share (%)	Fish Production (ton)	Fish Share (%)
East	Baucau	176	14	54	7	26	2	320	11	23,779	10	93,600	3
	Lautem	85	7	42	5	42	3	80	3	26,800	12	130,500	4
	Viqueque	52	4	33	4	102	8	71	2	45,942	20	112,500	4
Central	Aileu	65	5	66	8	0	0	274	10	5,191	2	0	0
	Alinaro	99	8	57	7	14	1	981	34	9,627	4	14,400	0
	Dili	19	1	9	1	3	0	200	7	4,484	2	1,170,900	37
	Ermera	36	3	15	2	11	1	390	14	12,862	6	0	0
	Liquisa	75	6	28	3	3	0	39	1	7,535	3	497,700	16
	Manufahi	155	12	109	14	72	6	170	6	10,318	4	202,500	6
	Manatuto	27	2	28	3	140	11	28	1	11,276	5	176,400	6
West	Bobonaro	178	14	340	42	401	33	215	8	32,668	14	357,300	11
	Covalina	72	6	18	2	405	33	49	2	16,312	7	203,400	6
	Oecusse	231	18	0	0	4	0	43	1	22,704	10	247,500	8
	Total	1,269	100	800	100	1,222	100	2,859	100	229,498	100	3,206,700	100

Figure 4-3-1 Major Crop Production at District level

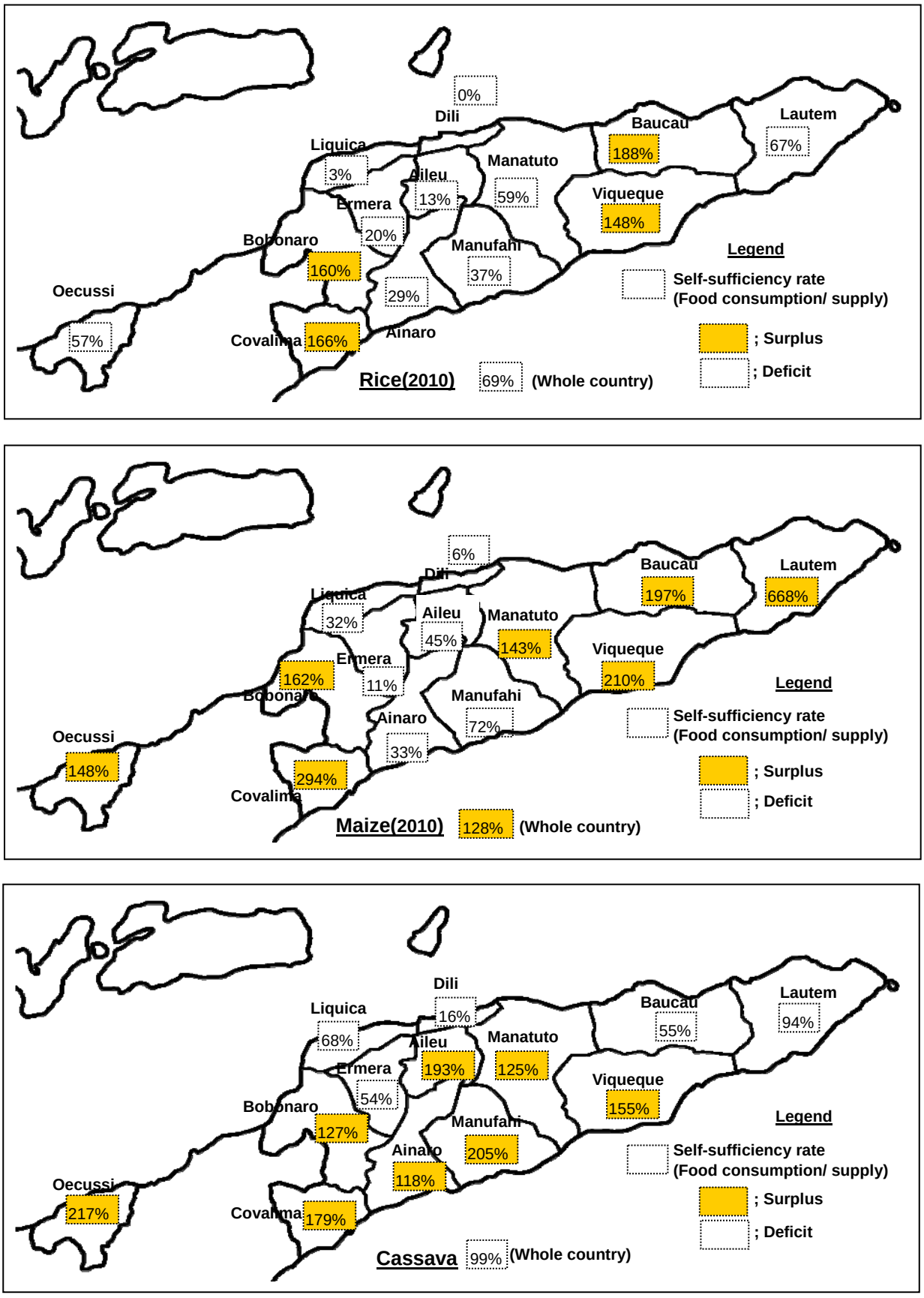


Figure 4-3-2 Self-sufficiency Rate of Staple Crops at District level

Table 4-3-2 Production and Self-sufficiency Rate of Major Crops at District level

No.	District	Production & Share	Rice	Maize	Cassava	Sweet potato	Peanut	Soybean	Mung bean	Coconut	Coffee	Cabbage	Garlic	Banana	Mango	Papaya	Meat	Fish
1	Aileu	Production (ton)	559	2,211	2,940	340	65	66	0	9	83	274	63	411	507	23	242	0
		Share (%)	1	1	8	4	5	8	0	0	1	10	9	6	10	1	2	0
		Sufficiency (%)	13	45	193	80	204	120	0	14	41	186	73	189	563	29	423	0
2	Alinaro	Production (ton)	1,591	2,141	2,604	840	99	57	14	31	1,191	981	97	309	933	81	449	14
		Share (%)	2	1	7	9	8	7	1	0	12	34	13	5	19	5	4	0
		Sufficiency (%)	29	33	118	136	214	71	11	32	401	458	78	98	713	71	540	11
3	Baucau	Production (ton)	20,414	23,036	2,360	1,080	176	54	26	1,401	22	320	295	240	295	30	1,110	94
		Share (%)	30	15	7	12	14	7	2	13	0	11	40	4	6	2	10	3
		Sufficiency (%)	188	197	55	115	108	50	28	69	8	307	212	29	159	8	798	41
4	Bobonaro	Production (ton)	12,677	16,722	3,667	946	178	340	401	21	546	215	75	856	734	191	1,525	357
		Share (%)	19	11	10	11	14	42	33	0	5	8	10	13	15	11	14	11
		Sufficiency (%)	160	162	127	170	157	719	162	13	221	157	55	109	893	65	1,517	102
5	Covalina	Production (ton)	8,785	20,335	3,508	816	72	18	405	252	42	49	21	294	230	92	761	203
		Share (%)	13	14	10	9	6	2	33	2	0	2	3	5	5	5	7	6
		Sufficiency (%)	166	294	179	216	93	56	242	224	25	52	23	55	412	46	1,116	86
6	Dili	Production (ton)	66	1,635	1,129	99	19	9	3	9	5	200	0	201	74	45	209	1,171
		Share (%)	0	1	3	1	1	1	0	0	0	7	0	3	1	3	2	37
		Sufficiency (%)	0	6	16	5	13	4	1	3	1	30	0	20	18	13	80	276
7	Ermera	Production (ton)	2,152	1,376	2,313	618	36	15	11	5	5,372	390	29	543	230	567	600	0
		Share (%)	3	1	7	7	3	2	1	0	52	14	4	9	5	33	6	0
		Sufficiency (%)	20	11	54	52	41	10	5	3	939	95	12	90	92	261	375	0
8	Lautem	Production (ton)	3,902	42,106	1,820	475	85	42	42	3,360	3	80	24	564	500	104	1,251	131
		Share (%)	6	28	5	5	7	5	3	32	0	3	3	9	10	6	12	4
		Sufficiency (%)	67	668	94	92	96	71	82	300	2	140	31	125	490	51	1,636	104
9	Liquisa	Production (ton)	184	2,211	1,512	290	75	28	3	30	1,244	39	3	659	295	186	352	498
		Share (%)	0	1	4	3	6	3	0	0	12	1	0	10	6	11	3	16
		Sufficiency (%)	3	32	66	46	158	34	2	30	408	18	2	204	219	160	480	358
10	Manatuto	Production (ton)	2,330	6,728	1,998	568	27	28	140	34	159	28	25	1,119	328	43	526	176
		Share (%)	3	5	6	6	2	3	11	0	2	1	3	18	7	3	5	6
		Sufficiency (%)	59	143	125	128	81	49	156	49	74	18	28	494	349	53	1,025	181
11	Manufahi	Production (ton)	1,659	3,822	3,752	644	155	109	72	274	1,687	170	26	336	617	187	482	203
		Share (%)	2	3	11	7	12	14	6	3	16	6	4	5	12	11	4	6
		Sufficiency (%)	37	72	205	127	407	165	70	346	688	97	25	129	572	200	818	181
12	Oecusse	Production (ton)	3,300	11,160	4,452	1,418	231	0	4	164	1	43	55	473	56	68	1,060	248
		Share (%)	6	7	13	16	18	0	0	2	0	1	7	7	1	4	10	8
		Sufficiency (%)	57	148	217	358	287	0	2	139	1	44	56	85	97	33	1,485	100
13	Viqueque	Production (ton)	10,136	15,407	3,480	819	52	33	102	4,948	0	71	21	340	174	92	2,144	113
		Share (%)	15	10	10	9	4	4	8	47	0	2	3	5	4	5	20	4
		Sufficiency (%)	148	210	155	138	50	49	174	382	0	108	24	65	148	39	2,426	78
	Total	Production (ton)	67,755	148,891	35,533	8,954	1,269	800	1,222	10,538	10,355	2,859	734	6,344	4,973	1,707	10,710	3,207
		Sufficiency (%)	69	128	99	98	120	73	63	183	261	112	41	96	273	67	831	124

Note: ; Much surplus ; Much deficit

4-3-3 Import Policy of Rice

Timor-Leste's principal staple food crops include rice, maize, cassava, other root crops (e.g., taro, yams, sweet potatoes). In 2007 domestic production for both rice and maize was not sufficient to meet demand (See Table 4-3-3). To compensate for this shortfall, in 2007, rice import requirements reached 78,000 mt., rice import in 2008 amounted 96,000 mt, of which 10,000 mt were provided directly for social welfare programs and 86,000 mt was used for market intervention. If lower cost maize were imported instead of rice, it would reduce the cost for providing food security. But, it was difficult to import maize since people prefer to rice.

Table 4-3-3 Demand, Production and Deficit for Staple Crops, 2007

No.	Category	Maize (ton)	Rice(ton)	Cassava(ton)	Total (ton)
1.	Food Use	90,000	75,000	15,000	180,000
2.	Seed, Feed. Losses	19,000	2,000	1,000	22,000
3.	*Total Demand*	*109,000*	*77,000*	*16,000*	*202,000*
4.	Production	70,000	27,000	27,000	124,000
5.	*Deficit*	*-39,000*	*-50,000*	*11,000*	*-78,000*
6.	Cross Substitution	39,000	-28,000	-11,000	0
7.	*Import Requirements*	*0*	*-78,000*	*0*	*-78,000*

Source: MAF, Commodity Profile Series: No. 1 Version 3 - RICE

The MTCI Minister's Office is responsible for purchase and distribution of imported rice and domestically produced agriculture staples. Each year, MTCI discusses with MAF the quantity of rice to be imported. Then, MTCI meets with the "Inter Ministerial Commission for the Fund for Economic Stabilization (IMCFES) ", which includes representatives from MTCI, MAF, Ministry of Finance and Public Works and puts forward its recommended rice import amount. After concurrence amongst the IMCFES members, the recommendations are forwarded to the Prime Minister's office for final approval. In 2008 MTCI was provided $40 million for procurement of imported rice. This amount could allow for an import of approximately 100,000 ton.

MTCI puts out to tender contracts to import, bag and store rice. Bag specifications, including allowed labels, are included in the tender. In 2006 the lack of bag labels was a cause of problems, as consumers felt unlabelled bags contained inferior product. In fact, the bags contained good quality rice from the WFP stocks. In 2008 sixteen tenders were awarded for rice import with an average tender size of 7,250 ton, and an average price of $480/ton for rice available at Dili warehouses. Most rice came from Vietnam. The contractors are responsible to store the imported rice until pick up by approved traders.

MTCI has developed distribution schedule of imported rice, which estimates monthly consumption needs by each sub-district. MTCI provides the consumption estimates to the District Administrators (Administrator Distrito), and requests that he appoints a competent company for district rice distribution. The selected company then comes to Dili and purchases rice according to a cost schedule which differs by districts. The cost schedule attempts to adjust rice purchase prices to compensate for transportation costs (i.e., the further from Dili, the lower the purchase price). As an example, purchase price of the Oecussi Trader was reported to be $0.25/kg (i.e., $8.65/35kg) versus a Baucau Trader at $0.26/kg (i.e., $9/35kg) or a Manatuto Trader at $0.29/kg (i.e., $10/35kg). Trader purchase prices represent subsidized rates. Since the MTCI 2008 import cost was $0.48/kg, trader's purchase prices represent only about 50 to 60% of government costs.

The trader comes to Dili and then deposits the funds needed for the amount of rice to MTCI's bank

account. He is allowed to purchase up to the maximum amount allowed district monthly allocation and receives a receipt. Based on the bank receipt and the Administrator's approval letter, MTCI issues a delivery order. The distributor can use to delivery order to obtain allocated rice stocks from an importer. The trader is required to sell imported rice at a maximum price of $0.34/kg (i.e., $12/35 kg bag). Traders are not forbidden to import directly, but effectively cannot compete at the subsidized market rates.

4-3-4 Purchasing Products by the Government

The overall role of the government is to promote agricultural policies that lead to food self sufficiency, price stability and food security. To execute its role, the government attempts to: (i) provide farmers attractive prices as an incentive to boost their incomes, and (ii) simultaneously give consumers low prices to enhance social stability. The government, consequently, is engaged in a farm product subsidy program for all major agricultural products. Farmers are also sometimes given input subsidies. For example, under the Hybrid Rice Program, the government provides rice farmers, who follow proscribed growing methods (i.e., row planting, etc.), free seed, fertilizer, herbicides and some fuel (15 liter/ha).

During the Indonesian era, there was a centralized rice purchase, collection and distribution mechanism. After independence, this was replaced by a free trade system with low tariffs on rice imports and market prices for locally produced rice. Under the new system, private traders flourished and performed well with rice imports and its distribution. However, after the political crisis in 2006 and the riots (which were partially caused by high prices of rice as a result of restrictions placed by some countries on rice exports), the new government decided to intervene in the marketplace and introduce subsidies on imported rice. This caused private traders to exit the market and the free market system broke down. Since that time, the government has largely controlled rice imports and its distribution.

MTCI with IMCFES and Prime Minster's agreement also sets purchase prices for locally produced food products in addition rice (paddy) as shown in Table 4-3-4. The purchase price levels for them are set on as a needed basis (e.g. twice in 2009).

Table 4-3-4 Agriculture Products - Minimum Purchase Prices

No.	Product	Unit	Farmer's gate	District Warehouse	Dili Warehouse
1.	Paddy	$/kg	0.30	0.40	0.50
2.	Maize	$/kg	0.30	0.40	0.50
3.	Mung Beans	$/kg	0.50	0.60	0.70
4.	Mixed Beans	$/kg	1.00	1.10	1.20
5.	Soy Beans	$/kg	0.60	0.65	0.75
6.	Peanuts	$/kg	0.75	0.85	0.95
7.	Salt	$/kg	0.05	0.08	0.10
8.	Coconut Oil (1 liter)	$/1 liter	1.50	1.60	2.00
9.	Marmalade (300 g)	$/300 g	2.00	2.05	2.10
10.	Marmalade (400 g)	$/400 g	2.50	2.55	2.60
11.	Artisanal Items		Varies	Varies	Varies
12.	Emergency Items		Varies	Varies	Varies

Source: MTCI, Fixa o preço de compra dos productos alimentares locais, para o periodo de 23 de Abril a 31 de Dezembro de 2009.

The government is also active in the locally produced markets. It seeks to: (i) provide attractive prices for farmers to boost their incomes, (ii) give an incentive to promote production, and (iii) provide market outlets throughout the nation. At present, most farmers only produce for self home-consumption. The MTCI's mechanism is designed to promote a paradigm shift and change the farmer's perspective from

production for self food sufficiency to production for market oriented. Eventually MTCI seeks to create a market outlet for farmers in each of about 65 sub-districts throughout the nation. It will help promote a cash economy in the rural areas.

It is difficult to determine what market prices would apply in the absence of floor prices as shown in Table 4-3-4. However, at an anecdotal level, Baucau paddy purchase prices by the traders from farmers in 2006 and 2007, prior to the regulation setting floor prices, was $0.15/kg or about 50% of the current minimum purchase price. Traders can pay more but not less than the posted prices. This, in fact, does sometimes occur. For example, the Cooperative Salgueiros in Laga buys paddy from its members for $0.42/kg (i.e., $5/12kg), mills and sells directly to super markets.

In 2008, MTCI was allocated $7 million to purchase them. In general, farmers consume at least 75% of their production leaving at most only 25% for sale. In fact, for example, a 2006 comprehensive JICA survey in Manatuto revealed that farmers there sold only 2.4% of their production. Because farmers consume most produce, only limited quantities are available for sale. Most products MTCI purchases are for paddy with lesser amounts of corn, soybeans and other products bought. In 2008, only about 500 mt of paddy was purchased. This paddy (rice), along with mung beans, was provided free of charge to the nation's school feeding program. All the maize purchased was given at no cost to the Ministry of Social Affairs for their humanitarian programs. Similarly, soybeans were given to the Ministry of Health for its assistance programs. Other products were only purchased in small quantities and sold to traders. MCTI is now developing export agreements with Indonesia for all its products, so that if a surplus occurs, it can be exported to that nearby country. Plans are also being considered for down stream use of products such as corn for chicken feed. Fortunately up to 2009, the volume of commodities purchased was relatively limited allowing for easy disposal of products.

MTCI plans to be able to purchase products at specified places in each sub-district. MTCI has its own warehouse in Dili and a network of private warehouses which utilizes in the districts and sub-districts. MTCI moves product between warehouses through the use of private contractors. Traders or farmers can sell product to any of the MTCI purchasing offices at pre set prices, such as those listed in Table 4-3-4.

MTCI's market procurement mechanisms are still new and its financial modalities are not as developed as the physical structures. Financial difficulties encountered include: (i) slow funds disbursements to farmers and traders, (ii) insufficient spreads for traders both at the intermediate and Dili sales levels, and (iii) lack of skilled human resources.

MTCI's system is geared to support farmers and is not generally focused on building up trader and/or processor skills and facilities. Traders are not forbidden to sell directly to other parties, but have a difficult time surviving within the modest spreads among the mandated farm purchase prices, the MTCI warehouse purchase prices and the MTCI retail sales prices. For example, traders purchase paddy at the proscribed $0.30/kg. At a 60% milling recovery rate the equivalent rice price is $0.50/kg. The trader has collection, milling, bagging and sales costs estimated at 30%, thus his effective rice cost is $0.65/kg.

Import rice sells in the market for $0.34/kg (i.e., $12/35kg bag). Consumers do differentiate rice between imported and locally produced rice with a strong preference for the locally produced varieties. However, since local rice in the retail market sells for around double price of the imported rice price, local rice is most commonly only bought in limited quantities for special uses (e.g., rice porridge, sasoro). Domestic rice is usually sold in retail markets only in very small quantities usually measured by the can. Typical can

size used for rice sales is for the weight of 750g rice. Due factors such as these, traders opportunities are often quite constrained.

Introduction of the purchasing system with price subsidy causes a range of both positive and negative market impacts.

<Positive features>

Market Availability Improved: Field interviews with Baucau farmers indicated that their primary reason for self consumption of crops was a lack of market. They reported that if a market was available they would prefer to sell 50% of their production. Availability of a local market is an important feature that could set in motion a paradigm change moving farmers into the market oriented farming and thus the cash economy.

Production Increase: The prices offered are above those typically available in the market place. Also farmers can know prior to planting that a market will exist for their crops. Both these factors related to the market will be a positive incentive to increase production.

Milling Efficiency Improved: Better quality milling equipment under improved management operating at higher volumes might allow for milling efficiency to increase from the current 50% loss rate to an optimum 35% loss rate (i.e., 65% recovery rate). Higher throughput would also create higher returns to labor and capital.

Poverty Alleviation: Sales at a high priced market can boost farmer's incomes and thereby decrease poverty.

<Negative impacts>

Expense: At present, operating expenses of the purchasing system are manageable as little crop is entering to the marketplace. However, as more farmers move to purchasing system and market based production, a large quantity crop will need to be acquired and operating expenses will grow.

Human Resources: Management of any price support system is very complex, as similar programs have struggled in advanced countries. Its management, operation and control require a high level of expertise. Skilled human resources are essential to its success.

Product Quality: Purchase of all products at a fixed price does not allow for price differences based on quality. The result is that products sold to the government may be of inconsistent quality.

Domestic Product Marketing: Up to the present, MTCI has donated most of purchased products to government institutions for their use in social programs (e.g. Ministries of Education, Heath, etc.). However, as production levels increase, it will need to develop a comprehensive program for marketing local product.

Price Differentials Between Commodities: The price differentials between products may change farmer production patterns that do not match the market. For example, irrigated rice field could grow just about any crop so that farmers there would logically switch cropping to the crop offering the best return.

Prices Differentials Between Sales Levels: The price differentials between sales points will influence trading structure. Whether product goes to district or Dili warehouses depends on the purchase price set by MTCI and not on the market.

Rice Milling: If MTCI purchases only paddy and not milled rice, local small rice millers will face strong

competition. They will be able to continue to mill rice for farmer's self consumption, but there is little chance for commercial development.

4-3-5 Marketing Profiles

(1) Overview

Each month DNPIAC collects market data for locally produced milled rice, dry maize kernels and dry soybeans in Maliana, Baucau and Viqueque. The results from May, 2008 to May, 2009 are presented in Table 4-3-5. These 3 locations were selected because they represent major marketplaces proximate to growing areas. The prices are collected at the local marketplaces and reflect the retail prices for the commodities sold. Sellers are local small scale vendors, who mostly buy directly from farmers. Farmers' prices can be roughly estimated as the retail price less 15%. MAF information collection only began in May 2008, and so full year profiles are not available. Nevertheless, it is possible to make several general inferences from the available data. Observations include:

- Local rice and maize can be found in all markets.
- Soybeans are mostly present in the Maliana market.
- Produce is more expensive in Baucau than either Maliana or Viqueque.
- Comparing April/May 2008 with April/May 2009:
  - Local rice prices have not shown a consistent price pattern. Price increased in Baucau and Maliana but decreased in Viqueque.
  - Maize prices have increased 44%.
  - Soybean prices have increased 38%.
- From April to December 2008, average prices per kg were: local rice $0.78, soybeans $0.59 and maize $0.39. Local rice costs more than double maize.
- From April to December 2008, price fluctuations were greatest for maize (80%), followed by local rice (67%) and the least for soybeans (25%).

Table 4-3-5 Local Marketplaces – Retail Prices 2008 and 2009

A. Rice Local - Milled - Retail Price, Sold in Small Quantities (US$/kg)

No.	Market	2008									
		Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	**Av.**
1.	Maliana	0.60	0.60	0.75	0.75	0.75	0.75	0.75	0.75	1.00	**0.74**
2.	Baucau	0.60	0.60	0.80	1.00	1.00	1.00	1.00	NA	1.00	**0.88**
3.	Viqueque	0.90	0.90	0.90	0.90	0.90	-	0.50	0.50	0.50	**0.75**

A. Rice Local - Milled - Retail Price, Sold in Small Quantities (US$/kg)

No.	Market	2009					
		Jan	Feb	Mar	Apr	May	**Av.**
1.	Maliana	1.00	0.60	0.60	0.75	0.75	**0.74**
2.	Baucau	1.00	1.00	1.00	1.00	-	**1.00**
3.	Viqueque	0.53	0.53	0.53	0.53	0.53	**0.53**

B. Maize - Dry Kernels - Retail Price, Sold in Small Quantities (US$/kg)

No.	Market	2008									
		Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	**Av.**
1.	Maliana	0.25	0.25	0.30	0.30	0.30	0.45	0.30	0.45	0.45	**0.34**
2.	Baucau	0.20	0.25	0.30	0.40	0.40	0.40	0.60	NA	-	**0.36**
3.	Viqueque	0.25	0.30	0.25	0.30	0.47	0.50	0.50	0.50	0.52	**0.40**

B. Maize - Dry Kernels - Retail Price, Sold in Small Quantities (US$/kg)

No.	Market	2009

		Jan	Feb	Mar	Apr	May	**Av.**
1.	Maliana	0.45	0.45	0.30	0.40	0.40	**0.40**
2.	Baucau	-	-	0.50	0.40	-	**0.45**
3.	Viqueque	0.50	0.50	0.50	0.30	0.30	**0.42**

C. Soybeans - Dry Beans - Retail Price, Sold in Small Quantities (US$/kg)

No.	Market	2008									
		Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	**Av.**
1.	Maliana	0.60	0.60	0.75	0.75	0.75	0.75	0.60	0.60	0.60	**0.67**
2.	Baucau	0.60	0.80	-	-	-	-	-	-	-	**0.70**
3.	Viqueque	0.40	-	-	-	-	-	-	-	-	**0.40**

C. Soybeans - Dry Beans - Retail Price, Sold in Small Quantities (US$/kg)

No.	Market	2009					
		Jan	Feb	Mar	Apr	May	**Av.**
1.	Maliana	0.75	0.75	0.75	0.90	0.75	**0.78**
2.	Baucau	-	-	-	-	-	**0.00**
3.	Viqueque	-	-	-	0.60	0.60	**0.60**

Source: Ministry of Agriculture, Agribusiness Directorate

During May and June 2009, the Study Team collected market price information from traditional public markets and Dili supermarkets. Data was collected for 17 items, which were popular products in the whole country, in 7 Timor-Leste traditional public markets, 4 Dili supermarkets and one (1) West Timor traditional market (Atambua). Results appear in Tables from 4-3-6 to 4-3-10. Due to the limited data, the information can only be considered as indicative. Findings include:

- Except for soybeans, it appears that most products are available widely throughout the country. This indicates that despite the difficult road conditions, product does move relatively smoothly throughout Timor-Leste.
- Cassava costs only about one third and maize half as much as local rice.
- Local rice sold by the cup is only marginally more expensive than imported rice.
- Beans are consistently more expensive per kilo than other crops.
- Cabbages fetched a relatively high price (i.e., $0.80/kg).

Table 4-3-6 Local Marketplace Prices 2009

No.	**Category**	**Retail Price Collected (US$/kg)**							
A. **B.**	**Location** **Date**	**Manatuto** **15 May**	**Maubisse** **16 May**	**Viqueque** **29 May**	**Ossu** **30 May**	**Oecussi** **4 June**	**Tono** **4 June**	**Maliana** **6 June**	**Retail Average**
1.	White Rice – Local	-	-	0.63	0.67	0.61	-	0.45	0.59
2.	Rice – Import	0.67	-	0.56	0.40	-	-	-	0.54
3.	Maize - Ears (Dry)	0.31	-	0.25	0.36	-	-	-	0.30
4.	Maize – Kernels	-	-	-	-	-	-	0.30	0.30
5.	Maize – Ground	1.00	-	0.50	-	-	-	-	0.75
6.	Soybean (Dry)	-	1.82	-	-	-	-	-	1.82
7.	Mung Bean (Dry)	-	-	1.33	2.50	2.50	-	0.75	1.77
8.	Red Bean (Dry)	2.00	1.89	2.00	2.50	2.00	-	1.50	1.98
9.	Potato	-	1.30	2.22	-	2.22	-	2.17	1.98
10.	Cassava (a	-	0.21	0.19	0.14	-	-	0.16	0.17
11.	Sweet Potato (b	-	0.37	-	0.50	-	0.37	0.31	0.39
12.	Peanuts (Raw)	2.50	-	1.67	3.33	-	-	0.75	2.06
13.	Coconut (Shell On)	-	-	-	0.10	-	-	-	0.10
14.	Papaya	0.22	-	0.45	0.10	-	-	0.25	0.26
15.	Orange	-	-	1.82	2.22	2.22	2.36	1.25	1.97

No.	Category	Retail Price Collected (US$/kg)							
A. B.	Location Date	Manatuto 15 May	Maubisse 16 May	Viqueque 29 May	Ossu 30 May	Oecussi 4 June	Tono 4 June	Maliana 6 June	Retail Average
16.	Head Cabbage	0.56	0.65	1.18	-	0.91	-	0.73	0.80
17.	White Cabbage	-	0.44	0.83	0.57	0.71	0.76	-	0.66

Notes: (a Ubi Kayu, (b Ubi Jalar.
Source: Study Team, Field Survey

Spot surveys were conducted in 4 supermarkets (see Table 4-3-7). The intent was to gain an insight into retail market sales to the high end Dili market. Most shoppers at these stores are affluent and do not represent typical Timor-Leste residents. Nevertheless, the high end Dili market is significant as it includes an estimated 2,000 households. Interestingly supermarkets mostly carried imported vegetables and only a very limited range of local agriculture products were found. This indicates potential to further increase sale of local product to supermarkets. From the spot checks, it appears that supermarket prices are about double the rural traditional market prices and an estimated 75% above Dili traditional markets. However, average supermarket products are of significantly better quality than the average found in traditional markets. A more accurate comparison of traditional versus super market costs would need to factor in consumer search costs for equivalent produce. As expected the more perishable products sell at higher markups.

Table 4-3-7 Dili Supermarket Prices 2009

No.	Category	Retail Price (US$/kg)						
A. B.	Location Date	Landmark 25 May	Leader 25 May	Kmanek 26 May	Lita 26 May	Supermkt Average	Retail Average	Percent Increase
1.	White Rice – Local	-	1.20	-	1.10	1.15	0.59	96%
2.	Rice – Import	1.00	0.98	0.68	0.90	0.89	0.54	65%
3.	Maize - Ears (Dry)	-	-	-	-	-	0.30	-
4.	Maize – Kernels	-	-	-	-	-	0.30	-
5.	Maize – Ground	-	-	-	-	-	0.75	-
6.	Soybean (Dry)	-	-	-	-	-	1.82	-
7.	Mung Bean (Dry)	-	-	-	-	-	1.77	-
8.	Red Bean (Dry)	-	-	2.75	-	2.75	1.98	39%
9.	Potato	-	1.50	-	-	1.50	1.98	-24%
10.	Cassava (a	-	-	-	-	-	0.17	-
11.	Sweet Potato (b	-	-	-	-	-	0.39	-
12.	Peanuts (Raw)	2.40	5.00	2.35	-	3.25	2.06	58%
13.	Coconut (Shell On)	-	-	-	-	-	0.10	-
14.	Papaya	-	0.77	-	-	0.77	0.26	198%
15.	Orange	-	-	-	-	-	1.97	-
16.	Head Cabbage	1.20	1.25	-	2.50	1.65	0.80	106%
17.	White Cabbage	1.95	-	2.24	1.75	1.98	0.66	198%

Notes: (a Ubi Kayu, (b Ubi Jalar.
Source: Study Team, Field survey

A spot check was also made of the Atambua, West Timor traditional market. Except for cassava, coconuts and white cabbage, all products were less expensive than their equivalents in Timor-Leste (see Table 4-3-8). Although price differentials varied widely, on average prices in Atambua were about 25 percent less than those prevailing in Timor-Leste. At the time of the survey, price differentials were particularly high for beans and cabbage, which cost only about half the comparable Timor-Leste prices. Fresh coconuts, cassava and white cabbage were more expensive in Atambua than Timor-Leste. However, those products,

which cost more in Atambua, are quite perishable and therefore difficult to transport across the border. It appears, that except for the possibility of seasonal price spikes, there appears to be little opportunity for Timor-Leste vegetable exports to West Timor, except for mung bean and cattle exports.

Table 4-3-8 Atambua, West Timor Retail Marketplace Prices 2009

No.	Category	Retail price (US$/kg)		Comparison
A.	Location	Atambua	Retail	Timor
B.	Date	3 June	Average	% Above
1.	White Rice – Local	0.55	0.59	**7%**
2.	Rice – Import	0.48	0.54	**14%**
3.	Maize - Ears (Dry)	-	0.30	**NA**
4.	Maize – Kernels	0.26	0.30	**14%**
5.	Maize – Ground	0.50	0.75	**50%**
6.	Soybean (Dry)	-	1.82	**NA**
7.	Mung Bean (Dry)	0.84	1.77	**110%**
8.	Red Bean (Dry)	1.18	1.98	**68%**
9.	Potato	1.00	1.98	**98%**
10.	Cassava (a	0.48	0.17	**-63%**
11.	Sweet Potato (b	-	0.39	**NA**
12.	Peanuts (Raw)	1.69	2.06	**22%**
13.	Coconut (Shell On)	0.20	0.10	**-50%**
14.	Papaya	-	0.26	**NA**
15.	Orange	1.67	1.97	**18%**
16.	Head Cabbage	0.42	0.80	**91%**
17.	White Cabbage	1.00	0.66	**-34%**

Notes: US$1.00 = Rp10,000
Notes: (a Ubi Kayu, (b Ubi Jalar.
Source: Consultant, Field Collection

(2) Rice

Rice in Timor-Leste is the principal staple food crop for 60% of the population. Current conditions in the rice market are very much conditioned by the MTCI's purchase scheme. Market patterns have been altered to accommodate government marketplace interventions. The situation is a fluid one and dependent on the most recent government policies.

At present, rice farmers sell into 3 principal market channels (see Figure 4-3-3): (i) Channel A – Farmer to Collector to Retailer to Consumer, (ii) Channel B – Farmer to Farmer's Group to Retailer to Consumer, and (iii) Channel C – Farmer to Retailer. For sales to collectors or MTCI (Channel A), the farmer sells paddy (i.e., unhusked rice). For sales to retailers (Channels B and C), the Farmers Group or individual must first mill paddy and then sell the polished rice. Additional costs are incurred for milling, packing and transportation. Formerly, unhusked rice was only sold to wholesalers at the peak harvest period when milling operators were so busy that waiting for milling required too much time. However, now traders usually buy paddy to sell to MTCI. Most products are sold through Channel A and the least through Channel C. The volume of sales through Channel C is very small, primarily limited to small retailers in local markets selling rice by the cup.

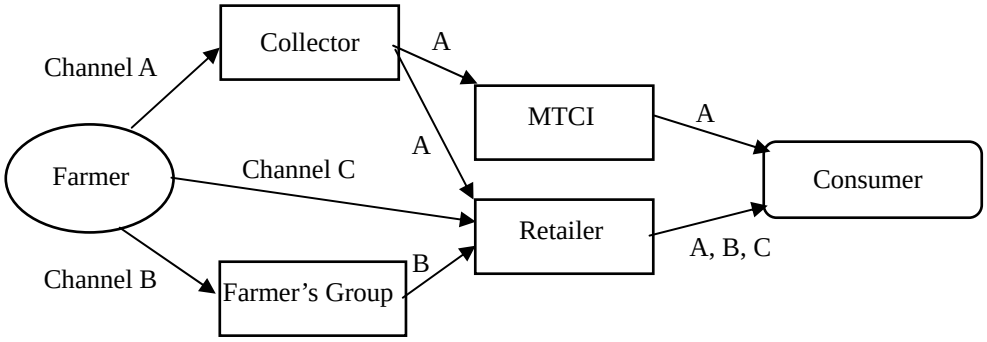


Figure 4-3-3 Rice Marketing Channels

An indicative Channel A market chain based on field interviews is shown in Table 4-3-9. Collectors must purchase paddy from farmers at the MTCI set price of $0.30/kg. Collection costs vary considerably amongst traders depending on farmer's locations, harvest times, etc. However, collection costs usually comprise their largest expense item. The cost for milling is $0.025/kg of paddy. Since it requires about 2 kg of paddy to produce 1 kg of rice, milling costs amount to $0.05/kg. Packaging costs are about $.03/kg, and transportation costs vary but average $0.05/kg. Miscellaneous small costs add another $0.04/kg.

Table 4-3-9 Channel A: Rice Marketing
(Farmer – Collector – Retailer – Consumer)

No.	Category	US$/kg	Percent
1.	Paddy Purchase from Farmers	0.30	24%
2.	Equivalent Rice Price	0.50	40%
3.	Collection Cost (Varies)	0.15	12%
4.	Milling Cost	0.05	4%
5.	Packaging Cost	0.03	2%
6.	Transportation Cost (Varies)	0.05	4%
7.	Other, Miscellaneous	0.04	3%
8.	Trader - Direct Costs (2 – 7)	0.82	66%
9.	***Trader's Margin***	***0.18***	***14%***
10.	Trader's - Sales Dili Retailer	1.00	80%
11.	***Retailer's Margin***	***0.25***	***20%***
12.	Retail Sales Price	1.25	100%

Source: Field Interview, Rice Trader, May 2009
Notes: 60% conversion rate of paddy to rice. Other, Miscellaneous is 5% of other expenses.

A marketing chain profile for Channel B is shown in Table 4-3-10. The Farmer's Group receives a margin of approximately 5% for collecting, milling packaging and transporting rice to market. A trader by comparison receives a margin of 14% for the same services. However, this difference is more than compensated for by the higher prices paid to the farmers. The cooperative buys from farmers at $0.42/kg, which is almost 40% above the MTCI mandated minimum price of $0.30 used by traders.

Table 4-3-10 Channel B: Rice Marketing
(Farmer – Farmer's Group - Retailer – Consumer)

No.	Category	US$/kg	Percent
1.	Paddy Purchase from Farmers	0.42	33%
2.	Rice Price	0.69	56%
3.	Milling Cost	0.04	3%
4.	Packaging Cost	0.10	8%

No.	Category	US$/kg	Percent
5.	Transportation Cost (Varies)	0.05	4%
6.	Other, Miscellaneous	0.04	4%
7.	Group's – Direct Costs (2 – 6)	0.93	75%
8.	***Farmer's Group Margin***	***0.07***	***5%***
9.	Farmer's Group – Sales, Dili Retailer	1.00	80%
10.	***Retailer's Margin***	***0.25***	***20%***
11.	Retail Sales Price	1.25	100%

Source: Field Interview, Rice Cooperative, May 2009

Notes: 60% conversion rate of paddy to rice. Other, Miscellaneous is 5% of other expenses.

In Channel C sales are made by the farmer's directly to retailers in a local market. As shown in Table 4-3-11, both farmer's and retailer's margins are higher under this channel than either Channels A or B. However, volumes are very low and the market extremely limited. Local rice is more costly than import rice. As a result, local rice is only purchased for specialty uses such as for infant food or rice porridge making.

Table 4-3-11 Channel C: Rice Sales Profile (Farmer – Retailer – Consumer)

No.	Category	US$/kg	Percent
1.	Paddy Production Cost	0.23	32%
2.	Milling Cost	0.06	8%
3.	Packaging Cost	0.01	1%
4.	Transportation Cost	0.05	7%
5.	Other, Miscellaneous	0.01	2%
6.	Farmer's – Direct Costs	0.37	49%
7.	***Farmer's Margin***	***0.13***	***18%***
8.	Farmer's – Sales Local Retailer	0.50	68%
9.	***Retailers Margin***	***0.24***	***32%***
10.	Retail Sales Price	0.74	100%

Source: MAF, Commodity Profile Series No. 1, Version 3 – RICE, 2008 for production cost of traditional wet season paddy with irrigation plus field interview with farmers and local retailers, May 2009

Notes: 60% conversion rate of paddy to rice. Other, Miscellaneous is 10% of other expenses.

(3) Maize:

Most maize is consumed directly by farm households and never enters the marketplace. It is estimated that of total maize production less than 10% makes it to market. Unlike rice, almost all maize sold in the local market is produced in Timor-Leste. Maize is marketed as either: (i) fresh (+/- 30% moisture), (ii) dry on the cob, (iii) dry kernels, or (iv) threshed/milled. Fresh maize is mostly typically sold sheathed whole on the cob. Fresh and dry maize are sold in lots of 6-8 ears for a fixed price, mostly commonly $1.00. Fresh maize is usually consumed roasted and dry maize by first pounding, sifting and then boiling, usually with other ingredients (e.g., beans, vegetables, etc.). Sometimes farmers bring maize to small scale millers for milling prior to self consumption. Dry corn kernels and milled maize are sold in small quantities by the tin in local markets. Dry, corn kernels are purchased in volume under the MTCI's purchasing conditions.

World market prices for maize are quite low (estimated by the World Bank at a long term average price of $250/ton). With such low prices, there is considered little potential for Timor's maize to enter the export market. MTCI farmers maize purchase price is $0.30/kg. Since the farm gate derived imported price for maize in Baucau (or Maliana) is about $0.38/kg, there is little threat to local farmers from low cost imports. As would be expected under these conditions, there is no significant importation of maize.

Imported maize meal is, however, processed in country into fortified biscuits by a local firm, Timor Global, for the UN's World Food Programme (WFP)'s feeding and nutrition programs. In the future, this scheme could offer local farmers the advantage of a contract farming plan with sales to a reliable market. Clearly, better use of milled maize could greatly enhance the cooking and eating qualities of maize and increase its consumption especially in urban areas.

Maize farmers' market channels are shown in Figure 4-3-4. Most commonly maize farmers sell their produce directly to retailers (Channel A). Less frequently, traders travel to farms and purchase maize at the farm gate (Channel B).

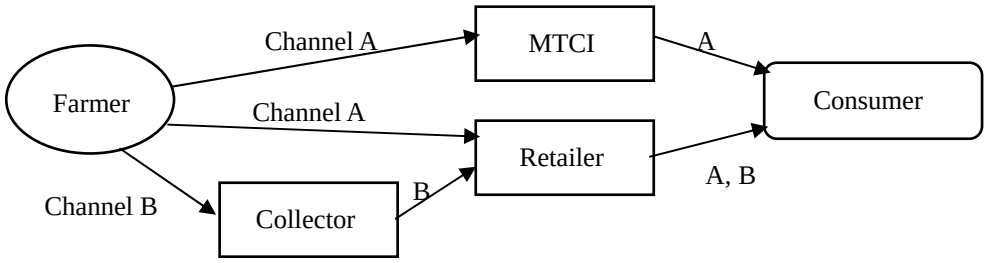


Figure 4-3-4 Maize Marketing Channels

As the MTCI's system expands, it could have a pronounced impact on farmer's cropping strategies. Currently MTCI's purchase prices for paddy and maize are the same per kg. In 2007 average paddy production was about 1.3 ton/ha versus maize production of about 1 mt/ha. However, production costs and labor use for maize production are significantly less than that for paddy. In many lowland areas, farmers are able to select for either paddy or maize in their fields. Thus, the incentive whether to crop maize or paddy will, in many cases, depend on the relative purchase price levels set by the government for these two staple crops.

(4) Soybeans

In general, the limited domestic market, rather than soybean growing capacity, seems to be the industry's largest constraint. Most domestic soybean needs are imported from Surabaya, Indonesia. In West Timor mung bean rather than soybean is mostly cropped. In 2008, domestic demand for soybeans was estimated at 600 ton versus a production of 100 ton. Imports amounted to approximately 500 ton. As there is currently insufficient product in country, and since domestic prices levels are comparable to those of imports and local beans are considered of superior quality, increased production can substitute for imports. Soybeans are fix nitrogen, which make them good candidates to integrate with cereal based crop rotations such as rice. The major demand for soybeans is from processors, there is no demand for unprocessed soybeans. The main consumption of soybeans is in urban centers such as Dili, Baucau and Maliana. Market surveys indicated only limited quantities of soybeans in local markets. Soybean farmers sell either to retailers at the local markets or collectors (see Figure 4-3-5).

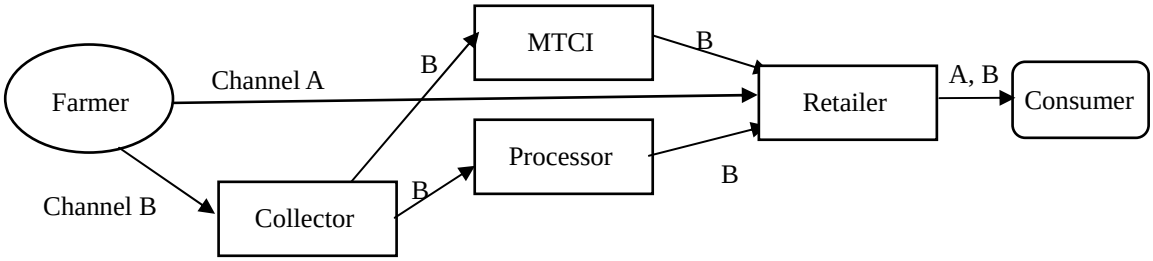


Figure 4-3-5 Soybean Marketing Channels

Although prices are high, the volume of sales through local markets (Channel A) is very limited. According to MAF Maliana data from January to May 2009, farmers, who did sell directly to retailers, received an average price of $0.78/kg. Most product goes from farmers to collectors, who transport the soybeans to Dili, where the beans are sold to tofu and tempe producers (Channel B). Local soybeans are in high demand. The collectors deliver directly to the processors facilities. Dili tofu and tempe producers are prepared to pay a premium price for medium quality local produce. The flavor of local soybeans is preferred to imports. However, occasionally local soybeans are either small or of mixed sizes, when this occurs low farmer prices or rejection can result. Introduction of improved seed quality could reduce the prevalence of small beans and mixed sizes.

The collectors also have the option to sell to MTCI. farmer's soybean price of the MTCI is $0.60/kg. However, payments from MTCI to collectors for all crops are often delayed by up to 6 months. As a result of the slow payment system, most traders prefer to sell directly to local processors.

Soybean can be processed into a wide range of products including meal, flour, milk, tofu, tempe and oil. However, at present there are only tofu, soy milk and tempe processing facilities in country. Other products are not locally produced. Tempe is mostly manufactured by small-scale producers working out of their homes selling to small retailers. Tofu production is more capital intensive and done by a limited number of firms (e.g., 3 in Dili). Tofu industry representatives feel there is a market potential for exports of premium grade organic tofu, tempe and soy milk.

(5) Mung Beans

Mung beans, like most other beans, are high in protein, easy to digest and especially nutritious when combined with cereals, which have complementary animo acids (i.e., sulphur). Mung beans positive growing features include: (i) low level of input requirements, (ii) nitrogen fixation, (iii) short production time, and (iv) can be integrated with cereal based crop rotations. In 2006 Timor-Leste produced about 1,300 ton of mung beans from about 1,200 ha. About 80% of production comes from 3 districts (Covalima- 57%, Manatuto-11%, Bobonaro-9%). Potential exists in expanding mung bean production both through intensification (i.e., improved seeds, more inter cropping with cereals) and expansion of copping area.

There is ample opportunity to increase sales to both domestic and export markets. Import substitution is an attractive option. Disaggregated data is not available for mung beans alone. Most statistics group all beans together. Due to their high protein content, mung beans are purchased locally by many NGOs (e.g., CARE, CONCERN and Oxfam). Annual NGO purchases are estimated at 100 mt. However, by far the largest purchaser of beans is WFP who imports about 2,400 ton/ year all types of beans for use in their programs. WFP does not purchase local beans. Sufficient commercial volumes do not exist in the market. In addition,

since WFP demand far exceeds local marketed production, large scale purchases would drive up prices significantly. Some beans are, however, contributed to WFP by MTCI. Total annual demand for all beans by these programs is estimated at 4,400 ton. Mung beans are also consumed by Timorese. From 1995 to 2003, dry bean production always exceeded the consumption. However, in 2004 the situation reversed itself with consumption exceeding production, since that time, bean importation has been required. No doubt, the boost in consumption was in large part due to international assistance program demand.

Good opportunity to export mung beans to Indonesia exists at selected high value periods, especially from border districts such as Covalima and Maliana. Local Timor bean varieties are preferred as their flavor is considered to be better and cooking time is faster. Since 1995, Indonesian consumption has exceeded the production with imports filling the gap. For most of the year, Indonesia imports mung beans from other countries such as Myanmar (88% of imports) at prices less than those prevailing in Timor-Leste. Also, it is generally uneconomic to ship beans from West Timor to the main markets on Java. Therefore, Timor-Leste beans imported into West Timor are almost all consumed in there. Under the rule of Indonesia, East Timor produced about 4,000 ton of mung beans per year. This was about 4 times current production levels. Of this total, it was estimated that about 50% were sent to West Timor, and presumably, marketed in Timor-Leste amounted at approximately 2,000 ton/year.

At certain times, West Timor mung bean prices exceed those of Timor-Leste. There are large seasonal differences in price. From November to February, West Timor mung bean prices reach at their highest. However, in Timor-Leste most mung bean crops are harvested from April to June in the highlands (Bobonaro) and from August to October in the lowlands (Viqueque, Covalima). Taking opportunity of the high prices would require storage of mung beans produced in Timor-Leste prior to later sale in Atambua or even Kupang. However, post harvest drying, cleaning, grading and storage facilities are not available in country.

Timor-Leste buyers include wholesalers, retailers and traders. Of local trader purchases from farmers about 25% are sold in country and 75% exported. Local traders sometimes receive cash advances from West Timor importers to buy on their behalf. Value analysis revealed that producers receive 66% of retail price, collectors 9%, wholesalers 15% and retailers 15%. Collector, wholesaler and retailer margins are rather thin. The most appealing opportunity seems to be for local collectors to sell product directly to large retailers in Atambua and/or Kupang. At least two donors, GIZ and USAID, are active in supporting export efforts by Timor-Leste farmers and traders. Assistance by GIZ is mostly geared toward production enhancement and USAID price information and marketing assistance.

The principal West Timor traders are located in Atambua and buy from Timor-Leste farmers and traders. There is also some trade from Dili to Atambua. Atambua supplies to Dili when there are large orders especially for NGO feeding programs. Dili exports after harvests to Atambua when supply amount is highest and prices lowest. Mung beans can be stored for only a few months, so farmers tend to sold as soon as possible after harvest. When NGO’s demand is high in Timor-Leste, mung beans are sometimes re-exported back to Dili.

Sales to other market such as Singapore are future possibilities. To reach these markets, export would need to be done during limited high price periods with larger sized high quality beans, preferably marketed under an “organic” label.

(6) Fruits, Vegetables and Root Crops

As seen in Figure 4-3-6, farmers sell their fruits, vegetables and/or root crops either directly to consumers (Channel A), retailers (Channel B) or collectors (Channel C).

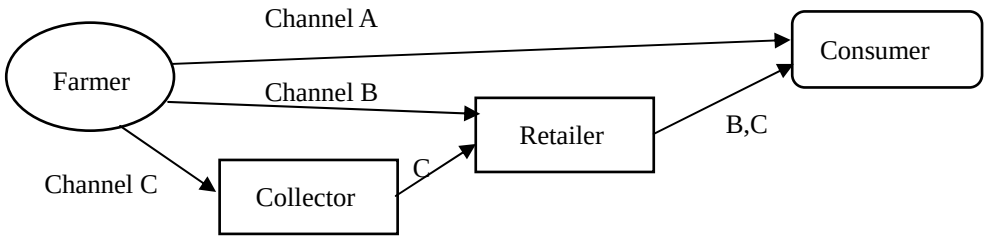


Figure 4-3-6 Fruit, Vegetable and Root Crop Marketing Channels

Fruit, vegetable and root crop collectors, retailers and often farmers are predominantly women. For sales to consumers (Channel A), farmers set up small display areas on the ground at local marketplaces during market days. They sell produce to any takers whether it is a consumer or a retailer. Farmers also sell to retailers, who often travel to their farms and buy at the farm gate (Channel B). Retailers purchase produce from farmers at the marketplaces too. Fruits, vegetables and root crops are similarly gathered by small volume collectors who carry the produce to marketplaces for sale themselves or to sell to retailers (Channel C). For example, traders interviewed came from as far as Viqueque to Dili's Taibesi market to purchase cabbage, potatoes and root crops from farmers, who also gathered there. When small retailers make these purchasing trips about once a month, they usually carry perishable fruits and vegetables for sale in Dili. Retailers interviewed employed working capital of about $200 and used their own plus family labor. They are typically allocated their spaces at a marketplace but must construct their stalls themselves. Spoiled vegetables are fed to their own livestock, usually pigs.

High end vegetables are marketed in Dili to individuals, restaurants and supermarkets by at least two firms. In 2006 USAID's Small Grants Program provided a grant to the "Zero Star" Company to build greenhouses and nursery facilities in Lequitura, Aileu, purchase a refrigerated truck and construct a cold storage facility in Dili. Zero Star with USAID Private Sector Development, selects and trains farmers in growing techniques, provides inputs, gives technical extension support, transports, processes and markets high quality vegetables. Operations began in earnest in 2007 and have continued until the present. The firm has successfully recruited and trained over 80 farmers, who raise about 20 different varieties of vegetables. In 2008, the Zero Star turned over operational control to the greenhouse farmers for crop production and has focused on processing and marketing. The firm markets under the label of "Timor Fresh". Current clients include about 50 households, most of the large Dili supermarkets and several restaurants. The Zero Star is also supplying the Ministry of Education's school feeding program. Encouraged by Zero Star's success, another firm has recently entered the same business buying from the same growers but selling mostly to the Kmanek Supermarket.

Inspections at Dili supermarkets revealed that most produce sold is still being imported. This would indicate that the further import substitution of fresh local produce for imports is still possible. Once local demand is fulfilled, these firms intend to look to the Singapore market to sell "organic" high end produce.

(7) Livestock

A range of livestock including chicken, ducks, goats and cattle are raised in Timor-Leste. Poultry are used

almost exclusively for home consumption. Goats are primarily eaten during celebrations on average 4 to 5 times per year. At celebrations, mostly male goats are used. The consequent goat population explosion has caused over grazing, and remains an environmental concern. Since there is a significant demand for goat meat in Indonesia, consideration could be given to exporting live goats there. The greatest market opportunity rests with cattle.

The prevalent cattle breed in Timor-Leste, which can be found throughout the nation, is Bali cattle (Bibos banteng). Timor-Leste enjoys a very good reputation for producing high quality cattle. No reliable statistics exist on the size of the current cattle herd, and productivity is reported to be low. Cattle production could be significantly increased through strategies such as: (i) improved forage, (ii) increased feeding at critical times, (iii) better use of crop by-products for feeding, (iv) pasture improvement, (v) improved genetic stock, and (vi) better herd management.

For domestic sales, farmers sell cattle to traders, who usually transport and slaughter the cattle themselves. After butchering, traders sell to retailers. Retailers sell fresh meat in local markets. There is no cold chain or abattoirs. Hygiene standards for killing animals and marketing meat are not in effective use. Producers' share of the market price is higher for local sales than export. The exact scope of the market for high quality meat has not been estimated. However, Dili imports about 200 ton of frozen beef per year. If quality product were available, it could substitute for a portion of these imports.

The export market is for live animals, usually males with horns on. Most cattle exports come from the border districts of Maliana, Suai, Same and Oecussi. All exported animals go to West Timor with most of these further exported to Surabaya and other Java ports. Good potential exists to expand cattle exports to Indonesia, where demand at current price levels is strong and growing by 6 to 8% per year. It is estimated that by 2010 Indonesia will need to import nearly 40% of its beef requirements.

Live cattle are exported by traders who come from Indonesia (mostly Atambua) to purchase cattle for export in Timor-Leste, and by Cooperativa Café Timor (CCT)/National Cooperative Business Association (NCBA). CCT/NCBA purchase steers of about 150 kg locally, distribute the steers to contracted farmers for an average year long stall feeding period and then buy back steers at a minimum weight of 280 kg. CCT/NCBA deducts its steer purchase cost, vaccination and administrative costs at the time of purchase from the farmers. CCT/NCBA then exports the cattle by truck to Atambua and sells the cattle there. The paperwork required for cross border trade of live animals is significant (see Section 3-5-7 "Imports and Exports"). To date, it appears that only CCT/NCBA has been able to surmount these bureaucratic hurdles and obtain legal export documentation. CCT/NCBA supported farmers can earn about $100/head and CCT/NCBA about $50/head.

Premiums are paid for heavier animals as charges for shipments from Timor to Java are made on a per head basis thus more profit can be gained by shipping heavier animals. Shipment of cattle from West Timor is usually done through either Kupang, Atapupu or Wini on ships bound for Surabaya. Presumably shipments from Atapupu have a higher percentage of Timor-Leste sourced animals.

(8) Fisheries

Fish are a highly perishable commodity, and as such their handling requires a specialized distribution chain. Local fish distribution and marketing channels are completely separate from those of other products.

Frozen imported fish are sold in the major Dili supermarkets. Fresh fish is mostly consumed in the populous region of the north coast. In the highlands, almost no fresh fish are consumed. However, for salted and/or canned fish, the highland districts consume these preserved fish products at an equivalent level to the coastal districts.

Fish are landed throughout Timor but there are concentrations of fishers in Atauro, Laga and Heera. Usually fishers sell to buyers nearest to their point of landing. The fishers consider their main occupation as fish capture, and not marketing, so that they have little motivation to spend significant time marketing. Also time is of the essence since they can only hold the fish for about a day without refrigeration. The result is that most commonly fishers sell to specialized collectors. These buyers may be individuals, local restaurants or collectors. Dili traders visit landing sites between Liquica and Manatuto, and Baucau traders from Manatuto to Baucau. Fishers in other areas usually need to bring their catches to the closest market. Fishermen and fish traders have difficulty transporting fish especially to and from remote areas due to the ineffective and expensive transport network.

Collectors travel to landing sites, gather fish in plastic buckets and then carry the fish to retailers in Dili or towns. The collectors bring the catch to well known sales points where they either set up stalls themselves or sell to fish retailers. A powerful Laga trading cartel controls most of the fresh fish marketed in Dili. Fish retail areas can be found at specified points along the Dili coastal roads. Fish are sold to the public and/or to other traders or peddlers carrying fish on poles. Small fish are sold in bunches of five to ten pieces, and large fish by the piece. Weighing scales are not used. Ice is in only occasional use, mostly for transport of fish from Atauro. No ice is used at any point in the distribution chain from the fisher to the retailer. The retailers' stalls also have no direct access to either power or freshwater. As a result, the quality of fresh fish sold is extremely variable. Since no cold chain exists fish deterioration begins as soon as the fish are landed, and continues until retailers feel the fish does not present well. After the fish are beginning to spoil, the retailers pull them from the fresh fish display and either dry the product or sell to others to dry. The consequence is that most fresh fish and nearly all dry fish are of questionable quality.

4-3-6 Imports and Exports

As can be seen in Table 4-3-12, Timor-Leste's Total Trade Balance (exports less imports) has been in deficit since 2007. Moreover, the growing trade deficit is cause for concern. The Non-Oil Trade Balance has been consistently negative.

Table 4-3-12 Trade Balance

No.	Category/ Year	Yearly Trade Amount ($'000)				
		2004	2005	2006	2007	2008
1.	Non Oil Exports	6,972	8,093	8,455	7,734	12,899
2.	Re Exports	98,682	35,358	52,231	11,445	36,308
3.	Est. Oil Exports	96,000	96,000	96,000	96,000	96,000
4.	*Total Exports*	*201,654*	*139,451*	*156,686*	*115,179*	*145,207*
5.	Merchandise Imports	113,489	101,619	87,695	199,367	258,430
6.	Non Mer'dise Imports	32,619	7,508	13,107	6,814	10,155
7.	*Total Imports*	*146,108*	*109,127*	*100,802*	*206,181*	*268,585*
8.	Total Trade Balance	55,546	30,324	55,884	-91,002	-123,378
9.	*Non Oil Trade Balance*	*-106,517*	*-93,526*	*-79,240*	*-191,633*	*-245,531*

Sources: Timor-Leste, Overseas Trade Statistics, 2006; Quarterly Statistic Indicators, March 2009

In the next table, export quantities of green coffee, copra and spices, whose annual quantity of export was over 100 ton, were collected from FAO's export data of agricultural products from 1997 to 2006. The latest data in 2006 seem to be incomplete but we can grasp the trend of their amounts by the data up to 2005.

Table 4-3-13 Major Agricultural Products of Export

Unit: ton/year

Item	1997		1998		1999		2000		2001		2002		2003		2004		2005		2006	
Coffee, green	9,000	F	9,500	F	11,000	F	12,000	F	13,000	F	13,000	F	13,000	F	13,000	F	13,000	F	1,172	R
Copra	1,000	F	1,100	F	1,300	F	1,500	F	1,800	F	1,800	F	1,800	F	1,800	F	1,800	F	1,800	F
Spices	150	F	170	F	180	F	200	F	220	F	250	*	350	F	350	F	350	F	350	F

Source: FAOSTAT

Note: * = Unofficial figure, F = FAO estimate, R = Estimated data using trading partners database

On the export side, the only agricultural product of note is coffee. Coffee's contribution to exports is very significant representing over 90% by value of all non oil exports. Exports from the country require completion of: (i) a customs declaration for all products and, (ii) an export permit for live plants and animals.

The Ministry of Finance's Customs Department requires a copy of the Exporters Trading License and, if live animals or plants, a copy of the Export Permit produced by MAF's Directorate of Quarantine and Bio-security before providing a Customs Declaration. The Customs Declaration states the country of origin, volume and value of the goods to be exported. The Customs Office does not charge a fee for providing the Customs Declaration. However, in Dili the paper work has to be prepared by a Customs Broker, who charges a fee. For containers sent by sea, the typical charge is US$35 per container and US$20 per Customs Declaration. If goods are exported overland, the Customs Office at the border can issue a Customs Declaration directly, without the need for a Customs Broker.

For export of live plants and animals, MAF's Directorate of Quarantine and Bio-security produces an Export Permit. Quarantine officers inspect the quarantine items at their place of origin. For cattle, a minimum of 50 head need to be processed at one time to be issued with an Export Permit. The minimum weight for exporting cattle is 280kg/head. No charges are made by MAF to produce an Export Certificate. After inspection, the Directorate of Quarantine and Bio-security certifies that the animals are healthy and free from disease, or that the crops are free from contamination by pests and disease. Authorization is then provided for export.

Officially, if cattle are exported from Timor-Leste to Indonesia, authorization is required from the Director General of Livestock in Jakarta. However, to date, cattle exported overland to Indonesia have been allowed over the border without this authorization. For cattle shipped directly from Dili to Indonesia (i.e., Surabaya), an official authorization is required. Currently, Timor-Leste Quarantine services are unable to comply with international phytosanitary obligations under the World Trade Organization Agreement on Sanitary and Phytosanitary Measures (WTO-SPS) and the new revised text of the International Plant Protection Convention (IPPC), to produce 'Health Certificates' for livestock or 'Phytosanitary Certificates' for plant materials (source: Oxfam, Oecussi Market Research Report, 2008). Timor-Leste currently judges itself to be free from avian influenza, foot and mouth disease, brucellosis and anthrax.

On the import side, rice, beans, pasta (i.e. noodles), and crude palm oil play an important role. Table 4-3-14 shows the 2008 agriculture imports sorted by value and country of origin.

Table 4-3-14 Agricultural Imports in 2008

No.	Item	Country of Origin	Value (US$ '000)	No.	Item	Country of Origin	Value (US$ '000)
1.	Rice (Paddy)	Indonesia	547,352	3.	Rice (Broken)	Thailand	6,207
		Italy	402,232			Indonesia	3,468
		Vietnam	162,855		*Total (3)*		*9,675*
		Thailand	50,625				
		Monaco	41,311				
		China	22,425	4.	Pasta	Indonesia	826,731
		Japan	21,316			Australia	4,408
		Singapore	18,214			Singapore	2,773
		Australia	6,213			China	2,125
		USA	5,375			Thailand	118
		Korea	65		*Total (4)*		*836,155*
	Total (1)		*1,277,983*				
2.	Beans	Indonesia	150,000				
		Italy	67,522	5.	Crude Palm Oil	Indonesia	396,880
		Singapore	2,404			Singapore	870
		Monaco	1,717		*Total (5)*		*397,750*
		China	994				
		Australia	681				
	Total (2)		*223,318*				

Sources: Timor-Leste, Overseas Trade Statistics, 2008

All 5 of the agriculture import products have good import substitution potential. Their production in country would generate significant foreign exchange savings.

Table 4-3-15 Major Agricultural Products of Export (ton/year)

Item	1997		1998		1999		2000		2001		2002		2003		2004		2005		2006	
Rice Milled	35,000	F	36,000	F	38,000	F	25,000	F	36,000	F	36,500	F	48,000	*	55,831	F	57,000	F	8,557	R
Rice, paddy	0	F	0	F	0		0		0		0		0	F	4,857	*	4,857	F	4,857	F
Sugar Refined	2,500	F	2,500	F	2,500	F	3,000	F	4,500	F	4,000	F	4,000	F	2,988	R	10,178	R	8,227	R
Maize	0	F	15,000	F	4,544	*	9,912	*	11,000	F	4,500	F	4,000	F	9,000	F	7,000	F	7,000	F
Fruit Fresh	6,000	F	6,000	F	6,000	F	6,000	F	6,000	F	6,000	F	6,000	F	6,000	F	6,000	F	25	R
Fruit Preserved	1,200	F	1,400	F	1,600	F	1,800	F	1,800	F	1,800	F	1,800	F	1,800	F	1,800	F	1,800	F
Flour of Wheat	9,500	F	20,000	F	10,000	F	11,000	F	12,000	F	2,000	*	6,000	*	6,000	F	6,000	F	6,000	F
Vegetables fresh	3,300	F	3,800	F	4,000	F	4,865	*	4,700	F	4,700	F	4,700	F	5,000	F	5,000	F	7	R
Vegetables Preserved	1,400	F	1,500	F	1,600	F	1,600	F	1,700	F	1,700	F	1,700	F	1,700	F	1,700	F	4	R
Milk Whole	4,000	F	4,000	F	4,000	F	4,000	F	4,500	F	4,800	*	5,000	F	5,000	F	5,000	F	16	R
Milk Skimmed Dry	0	F	0	F	0	F	0	F	0	F	0	*	1,397	R	1,397	F	1,397	F	1	R
Chicken meat	4,000	F	4,000	F	4,000	F	4,100	F	4,300	F	4,500	F	4,500	F	4,500	F	4,500	F	2	R
Cattle meat	200	F	200	F	200	F	200	F	200	F	200	F	200	F	200	F	200	F	200	F
Beer of Barley	3,300	F	3,500	F	3,500	F	3,600	F	3,650	F	3,700	F	3,500	F	3,500	F	3,500	F	87	F
Beverage Non-Alc	450	F	500	F	550	F	600	F	600	F	615	*	635	R	187	R	88	R	209	R
Wine	150	F	140	F	120	F	110	F	110	F	100	*	106	R	78	R	67	R	104	R
Food Preserved	1,300	F	1,500	F	1,100	F	1,500	F	1,500	F	1,500	F	1,500	F	1,500	F	1,500	F	47	R
Oil of vegetable origin	900	F	950	F	1,000	F	1,238	*	1,200	F	1,200	F	1,200	F	1,200	F	1,200	F	200	R
Coffee, green	-		-		700	F	800	F	900	F	1,000	F	1,000	F	1,000	F	1,000	F	1,000	F
Beans, green	-		-		300	F	500	*	500	F	500	F	500	F	500	*	500	F	500	F
Beans, dry	0	F	0	F	0	F	0	F	0	F	0	*	17	R	408	R	141	R	2,120	R
Nuts, nes	0	F	0	F	0	F	0	F	0	F	0	*	0	R	140	R	140	F	140	F
Cotton lint	0	F	0	F	0	F	0	F	0	F	0	*	0	F	117	R	117	F	117	F
Breakfast Cereals	0	F	0	F	0	F	0	F	0	F	200	*	16	R	0	R	0	R	540	R

Source: FAOSTAT

Note: * = Unofficial figure, F = FAO estimate, R = Estimated data using trading partners database

Products whose quantities of import in 2005 were over 100 ton were collected from FAO's import data of agricultural products from 1997 to 2006, and arranged in the order of their import amounts. The latest data in 2006 seem to be incomplete but we can grasp the trend of their amounts by the data up to 2005.

Domestic rice, beans and palm oil are promoted to process and sell; however, prices of imported products are lower than those of domestic products and quality of imported products is higher than that of domestic products, generally. Domestic production is operated by a farming family in small scale though mass production and processing are operated based on the investment in plant and equipment in exporting countries.

4-3-7 Core Problems Arisen in the Marketing Field

Core problems caused fro the marketing field for developing agribusiness activities are summarized based on the above study, as follows.

Table 4-3-16 Core Problems Arisen in the Marketing Field

Core Problem	Present Situations
Core problems put on the marketing stage	
It is very hard to set up agribusiness industry.	The requirement for a minimum capital contribution of $5,000 for company establishment is unreasonably high, representing more than three times the national average income. Effectively this prohibits almost all rural residents from starting a business. Another major constraint is the lack of secure land titles. The dearth of land titles causes a disincentive to investment and an additional credit barrier for setting up of new business, since land cannot be used as a collateral item.
Market information on agricultural products in not sent to agribusiness stakeholders.	There is no system to collect market information on agricultural products and supply it to stakeholders. If MAF had a reliable agribusiness database, it could better assist with agribusiness policy formation, program determination and investor recruitment.
Market infrastructures such as transportation, warehouse, cold storage and communication facilities are not provided.	Access to market availability is major problem. The networks of transportation and communication throughout the country are limited. Repercussions from deficient transportation and communications links are manifold. Poor road transportation may cause relatively expensive transportation cost of products. Farmers have difficulty in obtaining household supplies and agricultural inputs, learning about market prices and moving crops to market. From the marketplace onward facilities are also lacking. There is a shortage of post harvest drying, cleaning, grading and storage facilities at all levels. There are no storage and transportation facilities for perishable crops, fish and meat. For some crops, such as maize and beans, this results in severe post harvest losses and additional income reduction from not being able to take advantage of seasonal price fluctuations.
Core problems put on the production stage	
Farmers' management sense for commercial agriculture is poor.	Timor-Leste farmers have developed agricultural systems based on food security rather than market orientation. Their primary objective is provision of food for direct household consumption with a minimum of risk. Cropping systems are well adapted to a low input, low cost, low technology, non-market orientation. In any case, Timor-Leste's rudimentary transportation system does not easily allow for movement of people, inputs or produce. Subject to these constraints, agricultural systems have evolved to produce a wide variety of low yield but secure crops. These low risks, self consumption systems have allowed farm families for centuries to successfully survive rigorous social and environmental challenges. Changing the self consumption pattern to a market orientation requires the building of confidence in market systems. Behavior modification is

Core Problem	Present Situations
	hampered by low education levels, where approximately half of farmers are illiterate; and, of those educated, very few have more than a primary education. This lack of education contributes to inexperience with the use of any kind of contracting or credit.
Core problem put on the selling stage	
Government products-purchasing system is not functional.	MTCI's commodity purchase schemes undermine market confidence. Under this, payment to traders and farmers can take as long as 6 months after product delivery. This is a major disincentive and causes loss in confidence in the current market system. This purchasing program has the significant positive feature of provision of a guaranteed market with high farmer prices. However, it suffers from some serious constraints such as lack of a financial management system that allows quick release of funds, insufficient human resources and inability to insure product quality. To make the system effective, MTCI will need to modify its current operation system.

4-4 SELLING OF AGRICULTURAL/ LIVESTOCK/ FISHERIES PRODUCTS

4-4-1 Public Marketplaces

During the Indonesian occupation, basic marketplaces where built in most municipal centers. Additional marketplaces, such as those in Maliana, were constructed by the Ministry of Economic Development. The marketplaces generally consist of a concrete floor, concrete trader tables and a roof. Retailers concentrate near access roads, which connect towns and marketplaces, because many people pass those roads, which leads to collect shoppers more. Therefore, there are many temporary shops, which were built by retailers, around those roads. In some marketplaces, the inner parts are not used well because the temporary shops attract shoppers. The management of these market places is formally entrusted to the local government under the direction of the District Administrator. However, in reality, the District Administrator often devolves authority to run the marketplaces to either the market traders, who use the facilities, or local MAF staff. MAF staff give advises to small committee who control hygiene management and sales of the marketing products/ commodities. Provisional police may instruct to clean the marketplaces. The facilities are in active use with the traders themselves (or in the case of Maliana, local MAF staff) managing allocation of space, maintenance, repairs and cleaning. The market traders usually select a leader, who organizes their activities. Hygiene management have not inspected by Ministry of Health. But, a campaign for creating hygiene sense such as dealing in fresh products and washing hand is conduced. There is no inspection of a balance utilized in the marketplaces for fair trade.

Various functions such as wholesale trade, retail and free market farmers, are mixed in the public marketplaces. Besides marketplaces, peddlers who buy vegetable, fruits and fresh fish from producer and sell them to consumer also act in the marketing activities. Almost all sellers are women in the marketplaces. Those marketing activities including selling generate labor opportunity.

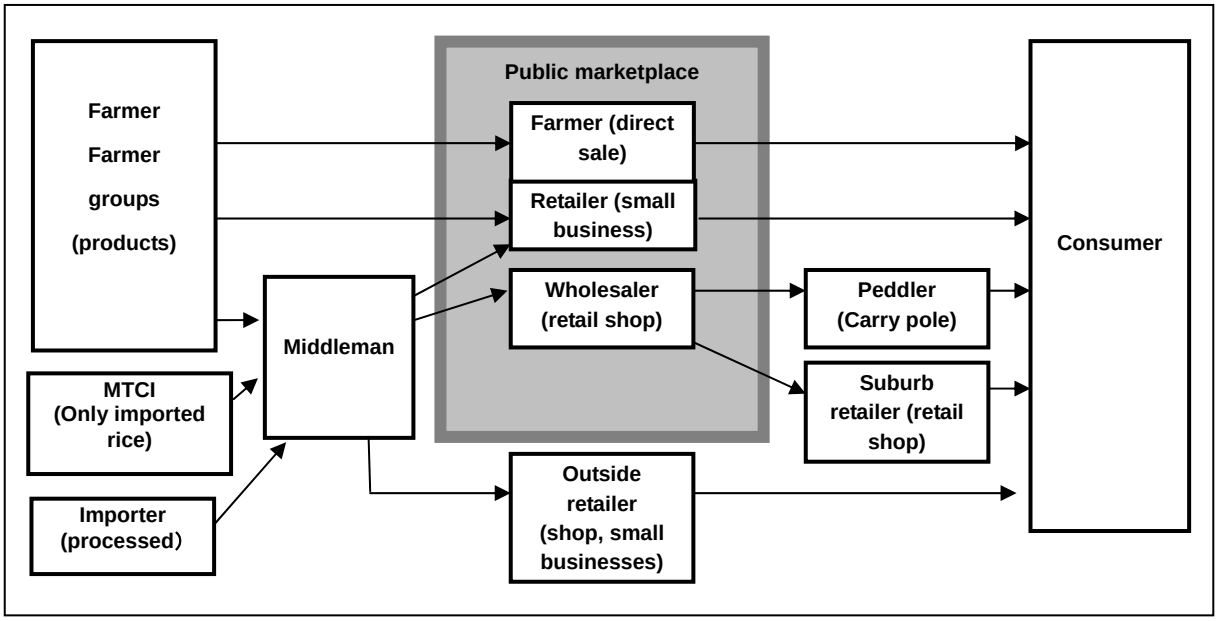


Figure 4-4-1 Market Channel of Agricultural Products through Public Marketplace

(1) Public marketplace in Dili

There were three public marketplaces in Dili as key marketing base of agricultural product. The public marketplace was placed in the area of the "export exhibition" before independence. It moved into he Taibesi Harilala in and around city because of traffic jam and rubbish problem. Comoro market is active, although it was damaged by the 2006 disturbance. There are many retail shops along the road in and around the marketplace. Former Becora market does not function since its area has utilized as the area for dwelling house for refugees, although some retail shop exist remain in the area. As the results, two public marketplaces of Taibesi Harilala and Comoro are the key markets. Five small marketplaces function as complement market.

There are no infrastructures such as water supply, electricity and drainage facility in the marketplaces. No plan which deals in environment problems has prepared yet. As for the environment problem, sellers are forced to clean around their retail shop and dump fixed rubbish to the fixed place. In Dili, "Clean Day" is set officially in every Friday. In that day, fixed rubbish form the marketplace are supposed to take out.

There are various market styles such as free market of direct sales, open shop, retail shop with simplified building structures, shops with large scale building constructed by MoE and shopping place prepared by private sector "Manlitu" whose operation and management is entrusted at US$ 2.0 per month in a plot to borrower and shelter is constructed by borrower. Retailers who are forced to move from former marketplace by government exist in the market. Therefore, land title and ownership of building in the marketplace is complicated.

As for the Comoro market, it was managed by government until 2006. Since the 2006 disturbance, however, government withdrew to manage it. In actual, retailers who opened the shop in the marketplace have vested rights of sales.

It is proposed as future management direction that a management committee is organized by stakeholders related with marketing in the marketplaces, and rules/ regulations for utilization of that marketplace is

prepared by related people themselves. It is also proposed that responsibility of government is put on inspection of fresh products/ food, monitoring of fair trade, environment such as rubbish problem. It is expected that daily management such as hygiene management, intervention of trouble and safety management is entrusted into the management committee. Management committee is expected to promote provision of infrastructure.

(2) Local public marketplaces

Operation and management of the local public marketplaces are entrusted to district governor. A " Market day" is set in one or two days in a week . In that day, farmers can sell directly their products. Infrastructure in the marketplace is summarized as follows.

Government, MoF, is planning to construct 24 public marketplaces in the year 2009 to 2010, as the priority national plan. The plan covers the construction of building with shelter, not include provision of drainage, water supply and electricity supply service.

Table 4-4-1 Infrastructures in the Major Local Marketplaces

Place	Infrastructures
Maliana	Area size is relatively large at 3ha. There are two building in which shop with shelter is opened, 200-300 retail shops. 200-300 farmers are opened their free market in the Market Day. Drainages ditches are provided in the area. Market operation committee is organized by retailers. MAF staff supports their operation and management. Electricity supply service is limited in the night time. A part of water supply is provided. Access to marketplace from rural area is easy for rural people because bus service is provided in front of the marketplace.
Baucau	Market space is relatively small at 1.0 ha. There are 100 shops. Besides the marketplace, retailers are located along the road close to the marketplace. No water supply and electricity supply service. Access to the marketplace is easy because the marketplace is located at the junction with Dili-Los Palos road and Baucau-Viqueque road.
Los Palos	It is relatively provided. There are two building, 80 shops, one meat shop and free market place. No electricity supply service. Groundwater is use as water supply. Drainage ditch is provided. Access is relatively worse because it is 1.0 km distance from the center of the city.
Ermera	There are about 100 shops opened in front of the church. Electricity service is limited in the nighttime. No water supply system.
Liquicia	Area space is 0.8 ha. There are 50 shops opened in the market day. No free marketplace. No electricity and water supply services. Access is easy because it is located along the main road of Dili-Maliana.
Maubissi	Area space is 0.3 ha. There are about 30 shops in the building with shelter. Free market place is provided. No free marketplace. No electricity and water supply services. Access is easy because it is located along the main road of Dili-Ainaro.
Manatuto	Area space is 0.4 ha, relatively narrow. There are about 30 shops. Small area for free market is provided. No electricity and water supply services. Access is easy because it is located in the center of the city.
Viqueque	Area space is 0.4 ha. There are about 50 shops. No electricity and water supply services. Area space is narrow. Access is easy because it is located in the center of the city.
Oecussi	Area space is 1.0 ha. There are about 10 shops. There are two building with shelter. Free market place is provided. No electricity and water supply services. Access from Panto located the government office is easy. Trade is not active because trade with West Timor is decreased and Oecussi district is detached territory.

Responsibility for the design and construction of new market places rests with MTCI's Directorate of Domestic Commerce. After market places are constructed, they are turned over to the districts under the direction of the District Administrator for operations. MTCI has plans to construct municipal marketplaces in each of the nation's 13 districts. Marketplaces are designed by Public Works and tendered by MTCI if the amount is less than $250,000 or Ministry of Finance if greater than $250,000. Private contractors

actually build the marketplaces. After construction, its operation is transferred to local governor. MTCI plans to construct marketplaces in Taibesi, Phase II, Maliana and a special market in Dili for weavings.

(3) Border marketplace

In 2008 MTCI constructed a border marketplace to west Timor in Oecussi and partially completed another border market in Mata Ain. Neither border market has yet been opened. The Oecussi market lacks water, and the Mata Ain market, although physically complete, has yet to be inaugurated.

(4) Abattoir

One abattoir existed in the Tibar in the Liquica District, 10 km west from Dili. The abattoir was located close to the port. It was effective to collect cattle by ship, process in that abattoir and ship to the West Timor and other islands. But, that abattoir was closed because market channel to Indonesia was closed after independence. Animal meat of cattle, pig and goat is usually made in the garden of farmhouse. In the marketplace of Pos Palos, meat is sold. Chicken is sold as a living body.

It is important to cooperate with Ministry of Health and DNQB and DNPV, MAF in order to protect food poisoning caused by salmonellas and other serious fungi.

(5) Fish marketplace

Seafood marketing also faces other barriers. There is no central Dili fish landing site or auction center. This constrains fishers' sales options, which depresses fishers' sales prices and raises consumer costs. It also indirectly helps to reinforce the existing informal near monopoly on shore side retail sales. Although there is a demand for high quality seafood, to produce the necessary supply, a cold chain and a high quality retail outlet would be required. At present, even the use of ice for fish preservation barely exists.

4-4-2 Current Selling Products in the Marketplaces

Typical agricultural/fishery products that are sold in the marketplaces commonly are shown in the following table with their ways of post harvest, supply chain and sales conditions. Some products in some marketplaces are sold by simple packaging, such as plastic bag/string, though most products are just piled up and waiting for customers.

Table 4-4-2 Marketing Commodity in Public Marketplaces

No.	Product	Post Harvest a)	Supply Chain b)	Sales
1.	Milled Rice – Local	T – D - M	F - C - P - R	by Cup
2.	Milled Rice – Import	T – D - M	D - R	by Cup
3.	Maize - Ears (Dry)	D - U	F - R	Pile
4.	Maize – Kernels	D - U - T	F - R	by Cup
5.	Maize – Ground	D - U - T - G	F - P - R	by Cup
6.	Soybean (Dry)	D - U	F - C - R	by Cup
7.	Mung Bean (Dry)	D - U	F - C - R	by Cup
8.	Red Bean (Dry)	D - U	F - C - R	by Cup
9.	Potato	W	F - R	Pile
10.	Cassava c)	W	F - R	Pile

No.	Product	Post Harvest a)	Supply Chain b)	Sales
11.	Sweet Potato d)	W	F - R	Pile
12.	Peanuts (Raw)	D - U	F - C - R	by Cup
13.	Coconut (Shell On)	-	F - R	Pile
14.	Papaya	-	F - R	Pile
15.	Orange	-	F - R	Pile
16.	Head Cabbage	-	F - C - R	Pile
17.	White Cabbage	-	F - C – R	Pile
18.	Beef - Meat	C	F - C - P - R	by Weight
19.	Fish	-	F - C – R	Pile

Notes: a) T (Threshing), D (Drying), M (Milling), U (Unshelling), G (Grinding), W (Washing), C (Cutting)
b) F (Farmer), C (Collector), P (Processor), D (MTCI Distributor), R (Retailer)
c) Ubi Kayu, d) Ubi Jalar

The shortage of packaging material and equipment is a marketing problem as even plastic bags and plastic string are imported from Indonesia. As a minor example, packaging of milled rice by 10 kg plastic bags is implemented but the plastic bags are ordered to the Island of Bali. Also, cut-vegetables for easy cooking, such as cabbage, carrot and gourd are sold in some marketplaces in recent years; however, it is worried about the food hygiene because those are perishable.

4-4-3 Core Problems Arisen in the Selling Field

Core problems caused from selling field in marketplaces are summarized based on the above study, as follows.

Table 4-4-3 Core Problems Arisen in the Selling Field

Core Problem	Present Situations
Core problems put on the selling stage	
Quality of marketing products is not reliable due to hygiene management in the marketplaces.	There is no hygiene facility in the public marketplaces. In addition, low temperature storage facilities are not provided for perishable foods. It is hard to guarantee the quality of selling products since no food safety inspection system in the marketplaces. Especially for perishable foods, consumer can not get food safety.
Purchasing power of local people is limited and market amount is of market	Although farmers/ sellers sell produced products on the market day of the local public marketplace, trading unit is small using cup and small pile. Purchasing power of local people is limited.

4-5 DISTRIUBUTION INFRASTRUCTURES

4-5-1 Transportation System

(1) Road Network in Timor-Leste

The overall road network in Timor-Leste is about 6,000 km (see Table 4-5-1). Its condition is generally poor. Therefore, it is necessary to rehabilitate in the many section. Up to now, the rehabilitation and maintenance of the road have been carried by the support of international donors such as ADB, JICA, UNDP and GIZ, etc.

At present, a Master Plan for the rehabilitation of the road network and bridge construction in Timor-Leste for middle and long term target was formulated by ADB. Government expects that the rehabilitation work will be carried based on this master plan. Ideas of the master plan, therefore, should be put on the planning

for promotion of agribusiness.

Table 4-5-1 General Length and Density of Road Network in Timor-Leste

Region	Length(km)		Road Density	
	Core roads	Total	(km/1000km2)	(km/1000peole)
Baucau	643	1,611	324	7.0
Dili	450	1,475	596	5.5
Maliana	452	1,432	429	8.3
Same	587	1.204	422	9.7
Oecussi	164	314	385	6.7
Total	2,296	6,036	417	7.2

Baucau : Baucau, Viueque, Lautem Dili : Dili, Liquica, North of Manatuto
Maliana : Ermera, Bobonaro, Cobalima Same : Aileu, Ainaro, Manufahi, South of Manatuto
Oecussi : Oecussi

Source: MTCPW (Ministry of Transport, Communication & Public Works)

The core road network in Timor-Leste represents 2,217 km, corresponds to 38 % of the total road network. It is consisted of national roads and district roads. National roads connect the nation's capital, Dili, with the 12 district capitals. Its total length is estimated 1,405 km, 24% of the total road length. In the core road network, district roads are to connect the each sub-district capital. Total length is counted 812 km in the country, 14% of the total road network. According to the classification of surface condition, about 1,200 km of the core road network is classified in poor or very poor pavement or unsealed road, over half of the total (see Table 4-5-2 and Table 4-5-3).

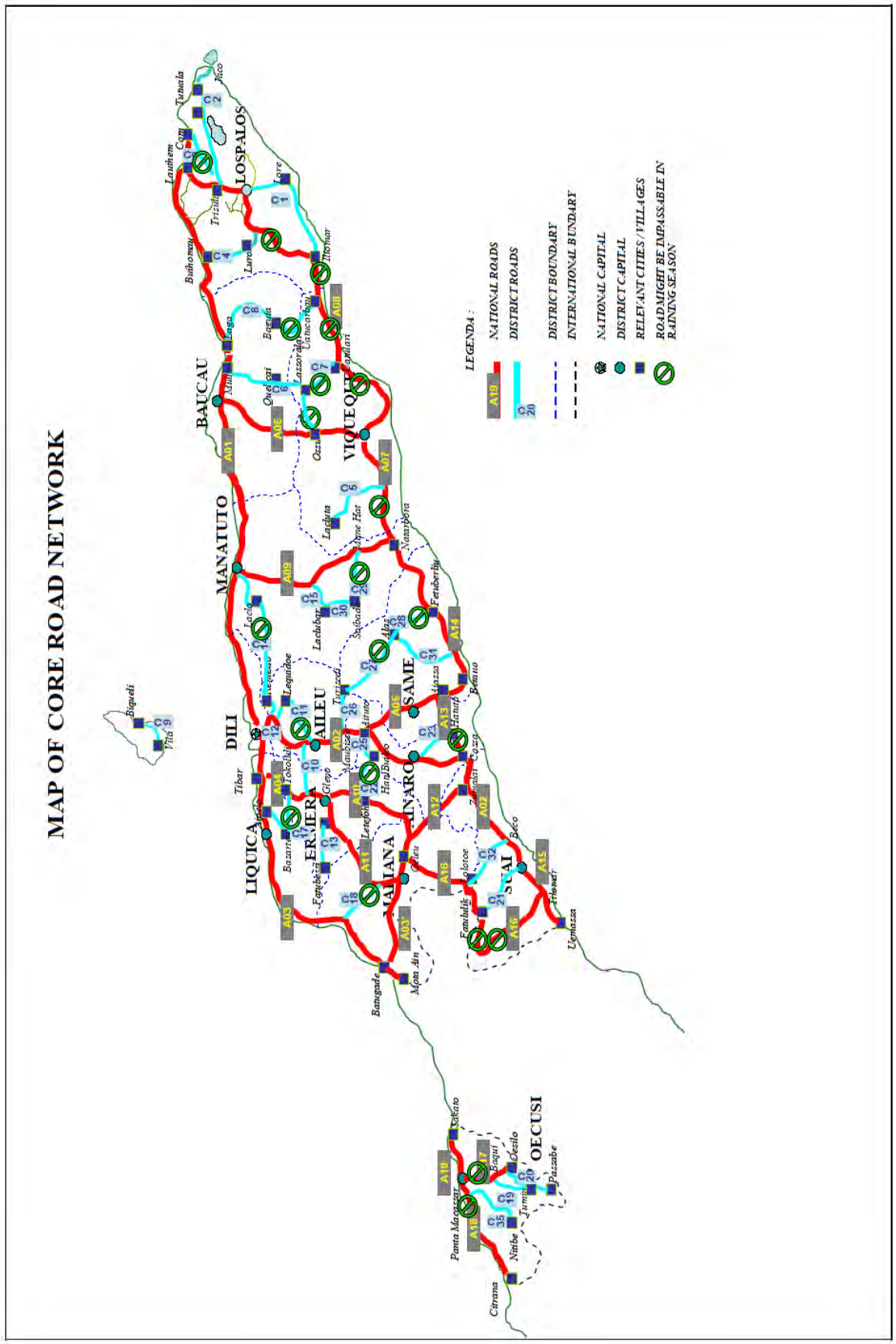
Rural road and Feeder road connect the sub-district capitals with villages and/or more remote agricultural areas. According to the compiled data by the Ministry of Transport, Communications & Public Works (MTCPW), its total length is estimated 3,025 km. It occupies slightly over 50 percent of the total road network. Urban roads are defined as the roads inside towns and cities. Although these roads are sometimes overlapped with national or district roads, they serve rural living people. According to the MTCPW's data, total length is estimated 716 km (12% of the total road network).

Table 4-5-2 Surface Type of the Core Road Network in Timor-Leste

Surface Type	National (km/%)		District (km/%)		Total (km/%)	
Paved	**1,297**	**92%**	**502**	**62%**	**1,799**	**81%**
- Asphalt / Concrete	564	40%	0	0%	564	25%
- Surface Treatment	734	52%	502	62%	1,236	56%
Unsealed	**108**	**8%**	**310**	**38%**	**418**	**19%**
- Gravel	0	0%	109	13%	109	5%
- Earth	108	8%	201	25%	309	14%
Total	**1,405**		**812**		**2,217**	

Table 4-5-3 General Surface Condition of the Core Road Network in 2005

Surface Condition	National (km/%)		District (km/%)		Total (km/%)	
Paved	**1,297**		**502**		**1,799**	
- Good of fair	797	61%	210	42%	1,007	56%
- Poor or very poor	500	39%	292	58%	792	44%
Unsealed	**108**		**310**		**418**	
- Good of fair	0	0%	44	14%	44	5%
- Poor or very poor	108	100%	266	86%	374	14%
Total	**1,405**		**812**		**2,217**	



Source: Transport Sector Improvement, ADB TA 3731 – TIM

Figure 4-5-1 Map of Core Road Network

Table 4-5-4 Features of National Roads in Timor-Leste

Road No. (From/To)		Length (km)	Traffic Volume (No.veh/day)	Pavement width (m)	Roughness (IRI)	Condition
A01	Dili-Com	196	510	4.8	5.3	Good to Fair
A02	Dili-Suai	176	320	4.6	6.5	Fair to poor
A03	Dili-Mota Ain.Maliana	150	450	4.4	6.5	Good to Fair
A04	Tibar-Ermera	45	380	4.6	4.7	Good to Fair
A05	Aituto-Betano	55	320	4.1	4.7	Fair to very poor
A06	Baucau-Viqueque	58	270	4.0	6.2	Fair to poor
A07	Viqueque-Natarbora	43	70	3.2	10.0	Fair
A08	Viqueque-Lauthem	154	140	3.3	11.2	Fair to very poor
A09	Manatuto-Natarbora	81	25	3.7	12.8	Poor to very poor
A10	Gleno-Loirba	69	140	3.5	9.0	Very poor
A11	Ermera-Maliana	64	110	3.4	12.0	Very poor
A12	Maliana-Zumalai	51	320	4.1	9.2	Fair to very poor
A13	Aiassa-Cassa	25	160	3.5	8.0	Poor
A14	Natarbora-Betano	47	160	2.5	7.0	Good
A15	Suai-Wemassa-Bobmeto	27	90	4.1	7.0	Good
A16	Oeleu-Tilomar	77	20	3.3	16.5	Very poor
A17	Pante Macassar-Bobometo	28	40	4.0	9.0	Fair
A18	Pante Macassar-Citrana	47	40	4.0	9.0	Fair
A19	Pante Macassar-Sakato	15	25	4.0	9.0	Fair
Total/ Average		1,408	260	4.0	8.4	

Most of the core roads were constructed during the 80's. After the construction, second layer of them had been repaved in 1990 – 96. Consequently, at present, about 80% is counted as paved road. The thickness of pavement layer is set at 5 cm typically. Since the road network has not been maintained for many years, much of surface seal has been worn off and the surface becomes unsealed. Of the paved road, good of fair condition account for 56%. Most of unsealed surface road is mostly under the worst running condition. An original pavement width of national roads is 3.2 m or 4.5 m in compliance with Indonesian road standard. But, there are many sections where pavement width has became small due to repeated erosion, edge cracking and soil washed out of road shoulders.

Mountain roads are prone to erosion and landslides in rainy season, while coastal plains roads, especially in the South, are prone to flooding. For the six-month long term rainy season from November to June, a large part of the road network usually becomes impassable after heavy rains. This situation occurs in many sections of such as national roads, especially A07, A08, A13 and A16, and related district roads.

During rainy season, many sections of the roads are frequently washed away, so that those sections hardly become passable by cars except 4-wheel driving vehicles. Such poor roads often restrict to transport opportunities seriously from/into local area. Many local people often have no access to district towns and markets in rainy season. Poor roads are certainly one of crucial constraints for agribusiness promotion in local area.

Moreover, since large scale public transport system is very limited in this country, transport costs become so high that it can not to get suitable benefit through distribution business of possible products. From a macro perspective viewpoint, connectivity between north coast and south coast is crucial for product distribution. South coast area is characterized as rich agricultural potential area and north coast is the

distribution base due to import/ export and consumption in capital Dili. Therefore it is desirable to rehabilitate the present connection roads between the south and the north into a year-round road.

DRBFC is responsible for maintaining and managing the roads. However, it would be hard for DRBFC to operate every roads including rural and feeder roads because of limited information and executing capacity. Then, local communities can be expected to put rehabilitation priorities on their rural and feeder roads. It is proposed that the Government provide necessary fund of maintaining rural and feeder roads with beneficial communities linked to the roads, through rural development programs.

In Timor-Leste, traffic volume is generally low. Therefore basic measure for road network is to make connectivity more effective rather than to cope with increased traffic capacity. Especially it is required to secure the road network in rainy season. If road network would become more effectively connective, it would be possible to increase the distribution of agricultural products forming a nucleus of local market.

Registration Number of Vehicles in Timor-Leste as of mid-2004

Type of vehicle	Number
Motorcycles	11,012
Private cars & taxis	3,614
Jeeps & 4WD	1,800
Pickups & vans	1,756
Micro- and mini-buses (up to 20 seats)	1,547
Medium & large buses (more than 20 seats)	200
Light trucks (less than 5 tons,)	453
Medium trucks (from 5 to 10 tons)	1714
Heavy, oil & articulated trucks (more than 10 tons & 3 axles or more)	61

Source: Transport Sector Improvement, ADB TA 3731 – TIM

(2) Sea Transport

There are commercial ports in Dili, Caravela, Com, Tibar, the enclave of Oecussi and the island of Atauro. Except for Dili port, they have only small wharfs or jetties. There is a facility for ferry in Dili, Atauro and Oecussi. A ferry service between Dili and Oecussi (two ships a week), Dili and Atauro (once a week) is provided by a private company entrusted by the Government.

Source: Timor-Leste District Atlas Version 02, August 2008

Figure 4-5-2 Location Map of Seaport and Airport

Table 4-5-5 Transportation Cost in Timor-Leste

District	Sub-district	US$	Hours to Dili
Covalima	Tilomar	160	
	Suai	160	7
	Fatolulic	170	
	Fohorem	170	
	Fatumean	170	
	Mape	150	
Ainaro	Hatoudo	130	
	Ainaro	110	4.5
	Hatobuilico	120	
	Maubisse	90	
Manatuto	Barique	150	
	Soibada	120	
	Laclubar	100	
	Laclo	80	
	Manatuto	70	1.5
	Laleia	80	
Manufahi	Same	110	4.5
	Alas	120	
	Fatuberliu	130	
	Turiscai	120	
Viqueque	Lacluta	150	
	Viqueque	140	5
	Ossu	130	
	Uatolari	150	
	Uatocarabau	170	
Aileu	Aileu	70	1.5
	Liquedoe	80	
	Remexio	60	
	Laulara	50	
Lautem	Iliomar	140	
	Lospalos	120	5
	Luro	110	
	Lautem	120	
	Tutuala	140	
Baucau	Vemasse	90	
	Venilale	110	
	Quilicai	140	
	Baguia	140	
	Laga	110	
	Baucau	100	3
Liquica	Maubara	70	
	Liquica	50	2
	Bazartete	60	
Ermera	Atsabe Subditrct	110	
	Letefoho	100	
	Hatolia	80	
	Ermera	70	
	Railaco	60	
Bobonaro	Lolotoe	150	
	Bobonaro	140	
	Maliana	120	3
	Balibo	100	
	Atabae	80	
	Cailaco	130	
Dili	1 Day Rental	50	
	1 trip	25	

Source: AMCAP Market Feasibility Study, 2005

Present situation of major ports is surveyed as follows.

1) Dili Port

The Dili port was previously a local domestic use in Indonesian era. After independent, it becomes only an international port of entry to Timor-Leste. Although the port is located along the seaside road in the center of the Dili town, its land working area is narrow. The port facilities constructed during Indonesian time are used, but, some have been rehabilitated under the support of donor agencies such as Government of Japan and ADB after independent. Now, the port has loading container facilities. The container yard was also developed with all weather type. The ship can be landed in 24 hours operation.

It is the most important port for this country since daily use materials of nation's people depends on much import, and it is the base port for transportation to Oecussi and Atauro. Therefore the Dili port is an important infrastructure to support social and economic activities.

Regular direct shipping services are currently provided to Darwin (Australia), Kota Kinabalu (Malaysia), Surabaya (Indonesia) and Singapore. Other services also operate to other Indonesian ports. Cargo from other countries is delivered through Surabaya. Export and import amount in Timor-Leste is shown as following table. Export is only 10 % of the import.

Export (US$1,000)			**Import (US$1,000)**		
USA	3,447	(41%)	Indonesia	37,733	(43%)
Germany	2,042	(24%)	Singapore	17,001	(19%)
Indonesia	1,146	(14%)	Australia	10,951	(12%)
Singapore	642	(8%)	Vietnam	4,406	(5%)
Australia	303	(3%)	Thailand	3,031	(3%)
Other country	875	(10%)	Other country	14,573	(18%)
Total	8,455		Total	87,695	

Source: TIMOR- LESTE OVERSEAS TRADE STATISTICS 2006

A new international port construction plan to replace the current Dili port is considered so as to cope with future increase of sea transport amount and alleviate some problems caused by geographical and social conditions of the location in the center of the town. However, there are some subjects such as much construction cost requirement for a new port and provision of suitable road links. It would be unlikely to be justified in the near term future. It would be necessary to conduct feasibility study from social, economic, technical, and environmental viewpoints. It is considered that the best candidate site of a new cargo port would be at Tibar, about 12 km west of Dili.

2) Caravela Port

Caravela port, which was constructed for immigration policy in Indonesia time, is located 100km east of Dili, Between Manatuto and Baucau. In the present, this port is used as a private port for import of the cement.

3) Com Port

Com port is located at 170km east of Dili, 70km east of Baucau. This port was the naval port in Indonesia time. Currently it is not used, however, it is said to be used for illegal export of fish. It is considered that the port will be used for export of alive cow in eastern region of Timor-Leste to directly Surabaya port. There is a small resort hotel near the port, so that, it might be used as a port for coastal eco-tour

4) Tibar Port

Tibar port is located 12km west of Dili. A private company uses for import of the oil. This port is one of the candidates for a new international port to replace by Dili port in future.

5) Hera Port

Hera port, constructed in 1990, is located 27km east of Dili. It was rehabilitated by ADB in 2002. It is presently used as fishing port. This port is also one of the international port candidates because of good topographical location with deeper water depth at the east part of this port.

(3) Air Transport

There are four airports in Timor-Leste, Dili, Baucau, Viqueque, and Suai. In Dili, Presidente Nicolau Lobato International Airport can accommodate to B737 aircraft payloads with 1,850 m long and 30 m wide pavement runway. Regular direct air services are now provided between Dili and Darwin (Australia), Denpasar (Indonesia) and Singapore. Except for the Presidente Nicolau Lobato International Airport, no other regular public air transport services in Timor-Leste.

Baucau airport was previously used by Indonesian military. It has the runway that can be usable for B747 and similar class aircraft. Suai airport has the 1,050 m pavement runway. Oecussi airport is a gravel runway. None is now operational. However, and

4-5-2 Electricity, Water supply and Telecommunication

(1) Electricity

The power supply service in Timor-Leste consists of 58 local isolated grids and diesel-powered electricity supply centers: Dili (29 MW nominal capacity, expansion plan 39MW in 2009), 11 district stations (600 kW - 3MW nominal capacity each) , and 47 sub district or village level power stations (50-270 kW each). Most of the district capitals have diesel generators providing electricity from 6 to 12 hours per day, except for Baucau and Dili where have supplied generally 24 hours. Under such conditions, establishment of nationwide power distribution network is being planned for effective power supply service in the country.

Dili power system consists of 20kV main high voltage distribution network and 400/230 V low voltage distribution network. The system supplies power into the covering area of about 110km distance between Maubara located 20km east of Liquica and Manleu located 12km east of Metinaro. Even in both 24 hours power stations of Dili and Baucau, power outages frequently occurs due to power failure at the power generation and transmission/ distribution lines especially in rainy season.

The current tariff of 12 cents/kWh was set by Ministerial Decree No.22/2006 for all consumers from March 1, 2007. For consumers who have not provided meter and located outside the Dili system, the Decree set a flat rate of charge based on the duration of daily supply service and amperage of connection.

The flat rates vary from $2.25 per month for low income consumers with a two ampere connection and 6-hours service to $18.25 per month for available consumers with connection above four amperes and 24-hours access to power. The current tariff is far bellow the estimated cost of about 37 cents/kWh.

Nationally, the percentage of population with access to electricity has increased from 25.6% in 2001 to 36.1% in 2007. However, the country's electrification has a very limited; about 80% of the present capacity is used to supply only Dili. In 2007, only 19.7% of rural population had access to electricity as compared with 82.1% in urban areas. Many rural areas have no access to electricity at all. There are only 54 villages where all household are electrified. 272 villages have no electricity at all and other villages which are expecting to access, but not receive sufficient capacity to cover all households.

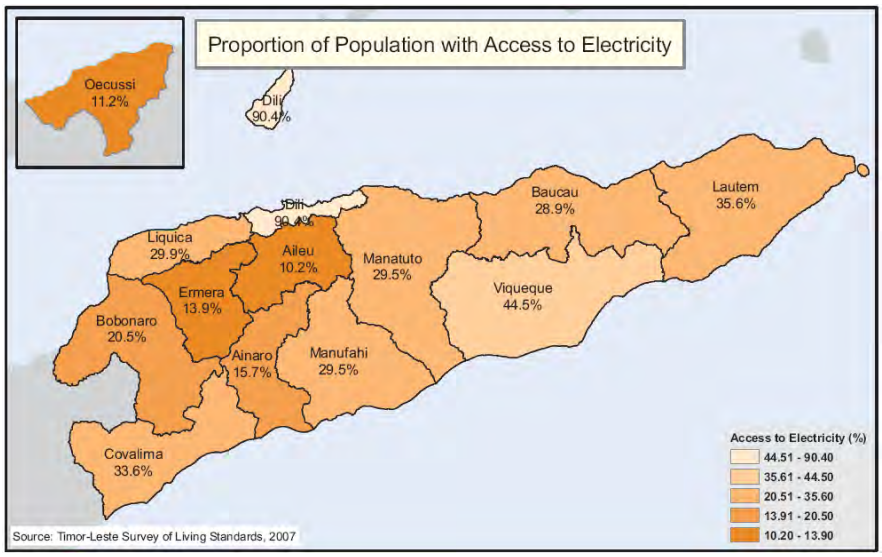


Figure 4-5-3 Proportion of Population with Access to Electricity

Except for Dili and Baucau, power supply (supply amount and time) is limited in many areas. Generator is necessary in case of using the electrical processing machine. Even in Dili and Baucau, the generator is required for emergency due to frequent power outages. When processing machine equipped with power is introduced, availability of its power resources should be considered.

(2) Water Supply

Water supply and sanitation system in Timor-Leste is problematic in both rural and urban areas. Only about 13% of households have house connection and 16% community taps in the country.

Water supply system which was built during the Indonesian era is almost completed system in the principal urban district. But they are generally in poor condition, due to poor design and construction, suffered damage during the post independence time and lack of regular and adequate maintenance works. Some of them have been rehabilitated by financial cooperation with the Japanese government and other donors.

The Dili Water Supply System had been severely damaged and not functioned well due to the conflict and disorder occurred during the independent civil war. The system was urgently rehabilitated by various international aid agencies such as Japan. Some partial functions have been restored. But, present conditions such as water supply quantity and water distribution pressure are insufficient in most of the service areas.

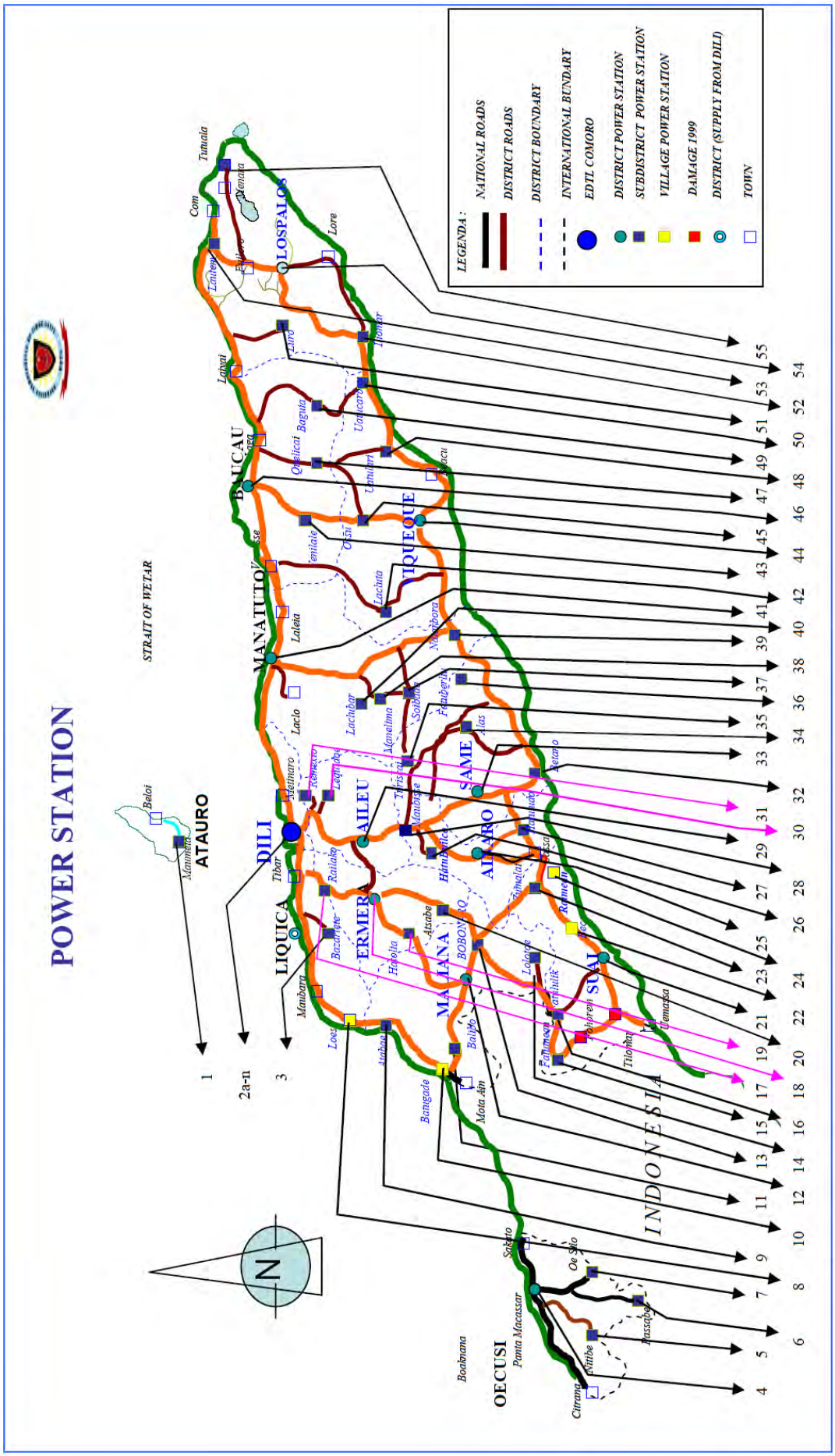
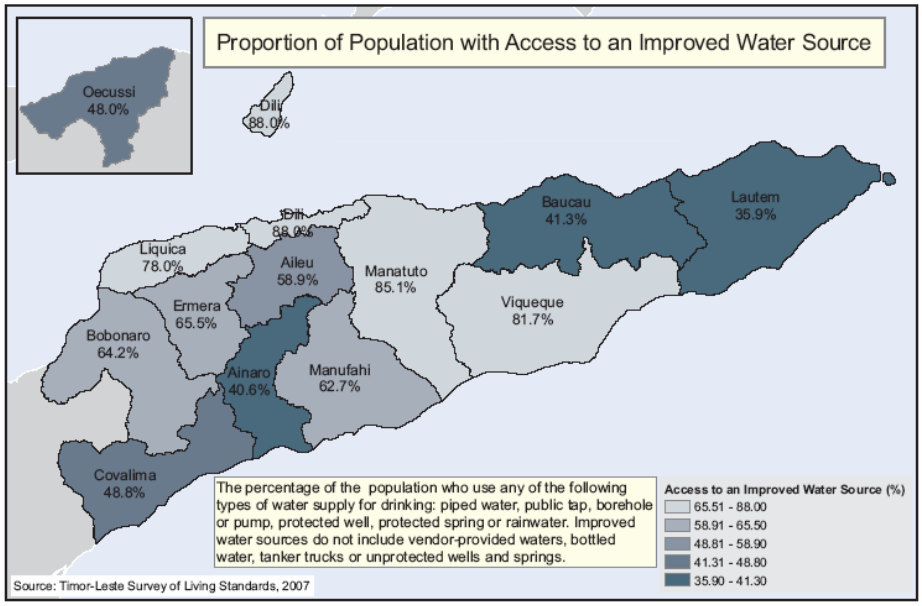


Figure 4-5-4 Location of Power Station

Source: SNR Chapter 9.3 Power

Present operating Dili Water Supply System takes raw water from river and deep wells in the suburbs and supplies treated water of 32,000 cubic meters per day in May 2007 for approximate 160,000 citizens estimated as of March 2006. Current water treatment plant capacity is expected to be 11,200 cubic meters per day. The shortfall in supply comes from 12 deep wells which can supply adequate quality water with chlorination.



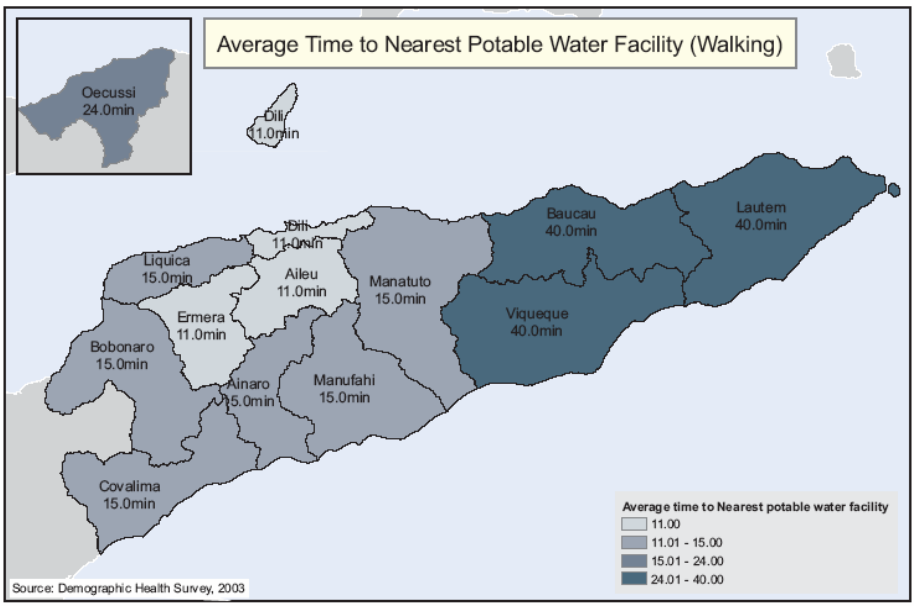


Figure 4-5-5 Present Condition of Access to Drinking Water System

In Dili water supply system, it is said that 50% of supply water would be lost through leakage and pilferage water. Average per capita daily consumption in Dili is estimated at 208 liters/person/day with water losses. It is essential to reduce water losses and non-revenue water.

Water supply service in rural areas is much lower than the urban areas. It is said that the number of household who can access to safe water is estimated less than a quarter of total rural households. Factors such as mountainous geography, poor road infrastructure and frequent occurrence of drought would be closely related with such water supply problems in rural areas. Under such conditions, the government and donors currently intend to assist rural communities to establish low-cost improved water supply systems - usually with the community providing either financial or labor contribution - , so that ownership sense and operational and maintenance responsibilities can be put on beneficial communities.

As for sewerage system, it has not fully provided yet, since government and related donors put more focus on water supply system rather than sewerage. Consequently, sanitation condition even in urban centers is poor. In Dili, environmental health situation is becoming unacceptable level. This situation might be

brought from large and rapid increase of population and high population density combined with poor on-site sanitation systems. As other physical problems, there are high groundwater tables. And, lack of drainage management system and limited capacity of solid waste management are pointed out. The present situations might cause negative impact on the ecosystem in the surrounding rivers and coastal area. Considering those conditions, when food processing facilities are introduced, it is required to take necessary sewerage and environment protection measures.

(3) Telecommunication

Telecommunication infrastructure is limited in Timor-Leste and its service charge is rather expensive. Only 5% of Timorese, most of them living in Dili, have access to basic service such as telephone or data transmission. Internet access is costly and data communication capacity is limited.

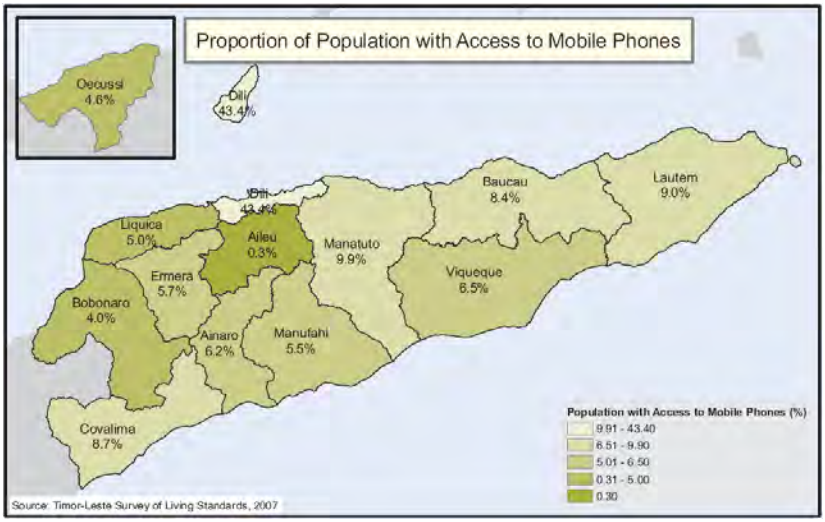


Figure 4-5-6 Proportion of Population with Access to Mobile Phone

When Indonesia withdrew from East Timor in 1999, the telecommunication facilities was destroyed and Telkom Indonesia ceased to provide services. At present, Timor Telecom (TT) is the only company for fixed and mobile telephone and internet services in Timor-Leste. The TT was awarded for the concession contract, after an international competition which was arbitrated by the United Nations and the Government of Timor-Leste. The TT obtained the 15-years monopoly in this contract.

Fixed telephone service is limited only in the capitals of district. Its users are 3,000 (source: Portugal Telecom press-release, Aug 2008). If the telephone line installed, an internet is available by dial-up method. It is available to connect private line with ADSL for internet in Dili. Mobile telephone service covers most of area in Timor-Leste except for mountainous area. Mobile cellular are 103,000 (source: Portugal Telecom press-release, Aug 2008). According to the TT, total capacity of mobile system is estimated to cover 69.5% of total population, whole district and 57 % of sub district in this country.

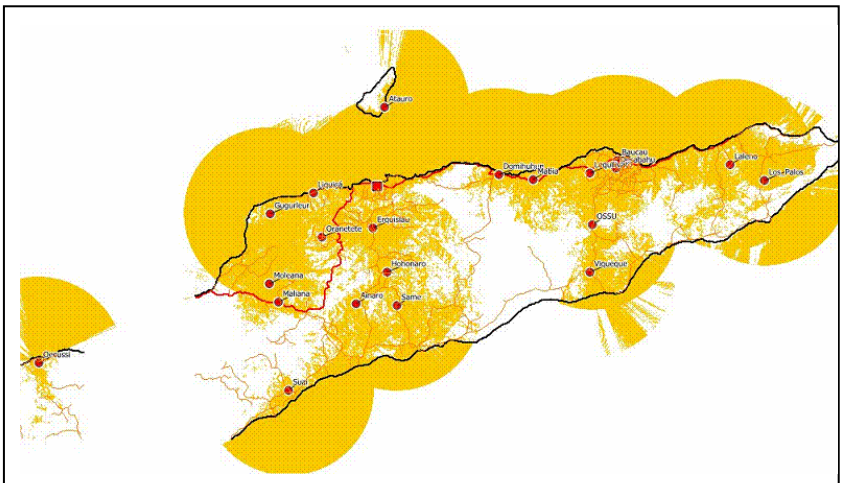


Figure 4-5-7 Service Area of Mobile Phone

On the other hand, according to TLSLS2007, it is estimated that only 0.1% of rural population have the fixed telephone and 3.4% of them use the mobile phone in rural area, as compared with 34.6% in urban area. Each service charge is rather higher than other countries. Under such conditions, it is rather difficult for agribusiness stakeholders to communicate timely each others.

It will bring entire society the social economic benefit to provide reliable, easily-available and cheaper telecommunication service. Easiness of the access to various information will generate other benefit. This can help local agribusiness stakeholders to get business information such as market prices and availability of products/ goods.

Price down of the service charge is desirable for business promotion. Reducing service charge of text messaging (SMS) is important. Telegram service by using SMS and village phone is expected as public service in rural areas.

Price per minute for National Calls (within Timor-Leste)

Type	Normal	Economic	Super Economic
Fixed - Fixed	$0.12	$0.08	$0.06
Fixed - Mobile	$0.29	$0.20	$0.15
Mobile - Mobile	$0.32 / $0.25	$0.22 / $0.19	$0.16 / $0.13
Mobile - Fixed	$0.37 / $0.29	$0.25 / $0.22	$0.19 / $0.15
SMS National	$0.10	$0.10	$0.10
SMS International	$0.20	$0.20	$0.20

Price is Post Paid Contract type / Pre Paid type

Price per minute for International Calls

Type	Normal	Economic	Super Economic
Group 1	$0.41 / $0.42	$0.35 / $0.36	$0.31 / $0.32
Group 2	$0.55 / $0.58	$0.47 / $0.50	$0.42 / $0.44
Group 3	$0.96 / $1.00	$0.82 / $0.96	$0.72 / $0.84
Group 4	$1.00 / $1.12	$0.85 / $0.96	$0.75 / $0.84
Group 5	$1.70 / $1.90	$1.45 / $1.62	$1.28 / $1.43

Price is the fee from Fix type phone / fee from Mobil phone

In 2007, Ministry of State Administration provided a satellite TV, DVD player and solar power system for almost all Suco. As the result, it became available for rural people to watch the Timor TV. With watching TV, they can get various social information and education opportunity through TV program.

4-5-3 Core Problems Brought from Current Distribution Infrastructures

Core problems brought from current distribution infrastructure are summarized based on the above study.

Table 4-5-6 Core Problems Brought from Current Distribution Infrastructures

Core Problem	Present Situations
Core problem put on the markeing stage	
Infrastructures which are required to promote processing and marketing industries are not provided.	Efficiency of products distribution is low and its cost becomes relatively expensive sine road network and its traveling conditions are not provided. Electricity supply service is not reliable. Power source should be provided for processing machine or equipment in which operation power is required. There are areas where tele-communication system does not cover and/or communication fee becomes relatively expensive. Those conditions obstruct smooth and timely exchange of agribusiness information among farmers/ processors/ traders.

4-6 BASELINE SURVEY

4-6-1 Methodology

(1) The Outline of the Baseline Survey

The baseline survey aimed at grasping the current situation of agribusiness in the country, and identifying the promising agribusiness activities. The baseline survey is divided into two surveys; A) the Research on the State of Agribusiness in Districts, and B) the Research on the Processing/Marketing Organizations of Agribusiness.

The Study Team had entrusted the survey implementation to the "Small Research Consultant" (SRC) of the UNTL (National University of Timor-Leste). The researches were conducted in the district offices and the organizations' offices/workshops/factories, under the instructions of the Study Team and the DNPIAC.

(2) The Research on the State of Agribusiness in Districts

This research was conducted in the whole 13 districts plus Atauro. SRC prepared the questionnaire, used to the interviews with the related local officers. The agent formed five research teams and carried out training of the teams with the questionnaire. After the completion of the training they dispatched the research teams to the designated districts and conducted the interviews. As the research proceeded, the questionnaires filled by the enumerators were gathered and arranged by the Agent. The results of the research were collected into their report.

Question Items for the Research on the State of Agribusiness in Districts

Items	Contents of the questionnaire
In the officers of Agriculture/ Livestock/ Forestry/ Fishery	Name
	Post name
	Mobil phone number
	Education (University/College, High school, Junior high school, Elementary school)
	Work Experience (years in the present/former post/job)
	Training already conducted (content, period)
	Training helpful for future operations (content, period)
	Number of the full-time staff in your division (separating number of men and women)
	Number of the part-time staff in your division (separating number of men and women)
Target Product	Annual yield (ton)
	Volume of the self-consumption (ton)
	Volume of the marketing (ton)
	Proportion of the consumption in the district (%)
	Proportion of the shipment to other districts (%, district name)
	Proportion of the shipment to other countries (%, country name)
	Introduction of promising companies (name, phone number)
Agribusiness in the District	Advantages (low price/ abundant resources, organic farming, etc.)
	Problems including legal and regulatory constraints (description)
	Needs of consumer (commodities, quantity, price)
	Dissatisfaction of consumer (commodities, quantity, price, quality, packaging, hygiene, etc.)
	Plan in the next year/season (description)
	Foodstuff of general home/traditional cooking (description)

Items	Contents of the questionnaire
	Disease that occurs constantly (description)
Environmental Issues	related to agribusiness (description)
Social Issues	related to agribusiness (description)
Research	Agriculture/Livestock/Forestry/Fishery research most needed
Three Recommendations	How the district's agricultural/livestock/forestry/fishery marketing could be improved

(3) Research on the Processing/Marketing Organizations of Agribusiness

This research was planed to conduct on 36 organizations for the 12 target-agricultural/forestry/fishery products. Three organizations, whose activities were recognized to be going well as business, were researched in the each target product. SRC prepared the questionnaire, used to the interviews with the staff of the organizations. They are farmers/fishermen and regarded as a proxy for the farmers/fishermen who practice agribusiness.

Question of Research on Processing/Marketing Organizations of Agribusiness

Items	Contents of the questionnaire
Basic Information	Name of the organization
	Full address
	Phone number
	Organization status (Public institution, Association, NPO, Family group)
	Number of the full-time staff (separating number of men and number of women)
	Number of the part-time staff (separating number of men and number of women)
	Staff training already conducted (description)
	Staff training helpful for future operations (description)
	Main commodities
	Annual sales volume (ton/year)
	Annual sales amount ($/year)
	Sub-commodities
	Annual sales volume (ton/year)
	Annual sales amount ($/year)
	Capital amount ($)
	Bank account (Yes/No)
Leader	Name
	Mobil phone number
	Education (University/College, High school, Junior high school, Elementary school)
	Term of the leader (years)
	Procedure for the selection (election, heredity, appointment by the former leader, etc.)
Statute	(Yes/No)
	When and by whom
Meeting in the organization	Frequency (daily, weekly, monthly, annually)
	Record of the meetings (Yes/No)
	The percentage of attendance (%)
Main Properties	Land (ha)
	Facilities (Workshop, Factory, Warehouse, etc.)

Items	Contents of the questionnaire
	Machines (Vehicle, Processing/Packaging equipment, etc.)
Purchasing	Main materials
	Annual volume of the purchase (ton/year)
	Unit price ($)
	get from (Farmers/Fishermen, Farmers'/Fishermen's group, Dealers)
	in (Sub-district name/ District name/ Country name)
	by (Walk, Animal, Bicycle, Motorbike, Vehicle)
	Sub-materials
	Annual volume of the purchase (ton/year)
	Unit price ($)
	get from (Farmers/Fishermen, Farmers'/Fishermen's group, Dealers)
	in (Sub-district name/ District name/ Country name)
	by (Walk, Animal, Bicycle, Motorbike, Vehicle)
Processing	Main processing (Drying, Milling, Unshelling, Cutting, Smashing, Extracting, Boiling, Steaming, Baking, Frying, Smoking, Fermenting, etc.)
	Sub-processing (ditto)
	Packaging (Plastic, Polystyrene, Paper, Glass, Can, Wood, Leaf)
Selling	Main customers of the main commodities (Consumer, Dealer, Producer)
	Unit price ($)
	in (Sub-district name/ District name/ Country name)
	by (Walk, Animal, Bicycle, Motorbike, Vehicle)
	Name of the main dealer/producer
	Their phone numbers
	They sell to (Consumer, Dealer, Producer)
	Main customers of the sub-commodities (Consumer, Dealer, Producer)
	Unit price ($)
	in (Sub-district name/ District name/ Country name)
	by (Walk, Animal, Bicycle, Motorbike, Vehicle)
	Marketing activities (description)
Financing	Does the organization use credit?
	If yes, from where (members, bank, supplier, etc)
External support	When, by whom, contents
Results in the Five Years	X years in deficit operation
	Y years in surplus operation
Advantages	(description)
Problems	including legal and regulatory constraints (description)
Plan in the Next Year/Season	(description)
Three Recommendations	How operations could be improved

(4) Target Products and Districts

With regard to the target products of the baseline survey, it was tried to cover all the products that have significant agribusiness potential. DNPIAC and the Study Team determined comparatively probable products based on former studies and from consideration of current supply and demand conditions.

Table 4-6-1 Considered Products List

Items	Products
"Commodity Profiles" by DNPIAC	Rice, Soybean, Mung Bean, Cattle, Maize, Coconut
Ideas of DNPIAC	Duck, Goat, Betel Nut
Idea of the Study Team	Rice, Maize, Peanut, Soybean, Copra, Coffee, Beef, Banana, Mango, Cucumber, Carrot, White Radish, Eggplant, Cabbage, Ginger, Tomato, Sweet Potato, Seaweed, Small and Medium Fish, Chicken, Egg, Goat, Milk, Cashew, Candlenut, Aroma/Medical Plant, Wheat

Duck (meat and eggs), goat (meat and milk) and betel nut were raised since they seemed to have high demand. On the other hand, the necessity of analysis of candlenut in the Study was decided to be low because it was already enough researched and a lot of measures in the processing and the marketing fields were being carrying out. Similar conditions apply to coffee as well. Coffee, which was recognized as the most developed agricultural product in this country, had been decided to be omitted from the detailed survey of the Study. However, it was included in the target products of the baseline survey because it was considered that the information from coffee was able to provide advanced examples to the Study. Through the discussions and the considerations, the target products of the baseline survey were categorized into the following 12 groups.

a) Rice, b) Legume, c) Livestock, d) Maize, e) Coffee, f) Root Crops, g) Nuts, h) Wheat, i) Fruits, j) Vegetables, k) Aromatic/Medical Plants, l) Fishery

Three target districts were selected for each target product from two points of view. In the selection of target districts, firstly, it was considered to select producing area where production is popular and which provide the product to other areas. Secondly, the districts where have major market cities/towns such as Dili, Baucau and Maliana, were focused. Dili is a much bigger market than Baucau but most agricultural products are provided from out of that district. Baucau and Maliana also have large production areas in their districts. Each target district and the reasons for their selection are mentioned below.

Table 4-6-2 Target Districts of the Baseline Survey and the Reasons for Their Selection

Target Products	Target Districts	Reasons for the Selection of the Target Districts
Rice	Baucau Bobonaro Manatuto	Baucau, Bobonaro and Viqueque are considered as the primary group of rice production areas. However, the current condition of irrigation facilities in Viqueque is bad, which is considered to become a restriction factor in the production, therefore we chose Manatuto, where there is also a rice production area and it is next to Dili, instead of Viqueque.
Legume	Baucau Bobonaro Covalima	Baucau and Bobonaro are considered as the main legume production and consumption areas. Also, Covalima, next to Bobonaro, is the production area for mung bean, soybean and peanut. Bobonaro and Covalima are on the border of Indonesia, so the exportation of legumes to West Timor is doing well.
Livestock	Covalima Oecussi Viqueque	Covalima, Oecussi and Viqueque have significant grazing lands for cattle and horses. Especially, a lot of cattle are exported to Indonesia from Oecussi.
Maize	Covalima Lautem Viqueque	Maize is cultivated on both flat and highlands. Lautem was selected as maize production area in the flatlands. Viqueque was selected as maize production area in the highlands. Covalima was selected as a maize production area with both flat and highlands.
Coffee	Ainaro Ermera Liquica	The production center of coffee is Ermera and the neighboring districts are also production areas (i.e., Ainaro, Liquica).
Root Crops	Aileu Baucau	Baucau is a major potato production area and also has a big market. Aileu and Manufahi, which are the producing areas of taro and sweet potato, are selected

Target Products	Target Districts	Reasons for the Selection of the Target Districts
	Manufahi	as they supply to Dili. Aileu is next to Dili, and the road condition between Dili and Manufahi through Aileu is comparatively good.
Nuts	Baucau Covalima Lautem	Baucau and Lautem in the eastern area and Covalima in the western area are production areas for coconuts. Viqueque in the eastern area is also a production area but Covalima was selected as the western production area in order to collect the information in a wide area.
Wheat	Aileu Ainaro Manufahi	The production area of wheat is in the center of the country, which is the backyard of Dili. Therefore, the districts, Aileu, Ainaro and Manufahi, were selected.
Fruits	Aileu Ainaro Liquica	Aileu, which is next to Dili, is the producing area of oranges, guavas, avocados and passion fruit. Ainaro, which is next to Aileu, is the producing area of avocados, pomelos and bananas. Liquica, which is next to Dili on the west, is the major producing area of bananas, sour sop, guavas and oranges.
Vegetables	Aileu Baucau Ermera	Aileu and Ermera were selected because they are the main suppliers of vegetables to Dili. They are the producing areas of cabbage, mustard, watercress, etc. Baucau is the producing area of a great variety of vegetables, and also a big market of them.
Aromatic/ Medical Plants	Baucau Bobonaro Lautem	Baucau, Bobonaro and Lautem were considered as they represent production areas for sandalwood. Also, Baucau is a producing area for pepper, Bobonaro is the producing area for cinnamon and Lautem is the producing area for nutmeg.
Fishery	Dili Atauro Manatuto	Dili, Atauro and Manatuto are the primary group of fish, squid, octopus, lobster, shellfish and seaweed producing areas. And Dili is the biggest market for them in Timor-Leste.

The target products and their target districts are arranged in the table below.

Table 4-6-3 Target Products in Each District

District	Rice	Legume	Livestock	Maize	Coffee	Root Crops	Nuts	Wheat	Fruits	Vegetables	Aromatic/ Medical Plants	Fishery
Lautem				○			○				○	
Baucau	○	○				○	○			○	○	
Viqueque			○	○								
Manatuto	○											○
Dili												○
Atauro												○
Aileu						○		○	○	○		
Manufahi						○		○				
Ainaro					○			○	○			
Ermera					○					○		
Liquica					○				○			
Bobonaro	○	○									○	
Covalima		○	○	○			○					
Oecussi			○									

(5) Selection of Organizations for the Research on the Processing/Marketing Organizations

With regard to find the promising organizations, next three rules were decided to apply to the selection.

a) The organization is operating at present not just planed.
b) The status of organization is a public institution or cooperative or NGO or farmers'/fishermen's group or company.
c) The operation is going well relatively in comparison with other organizations.

At the beginning, it was planned to interview with 36 organizations, the interviews were finally conducted on 40 organizations since more information was gained in the research on the state of agribusiness in

districts. They are listed in the following table with the number of full-time staff and their commodities. It is considered that there are not a few organizations which were organized in order to receive support from MAF or donors or NGOs because many organizations received support though most organizations are young, founded a few years ago.

4-6-2 Results of the Research on the State of Agribusiness in the Districts

(1) Profile of the Respondents

The interviews with local officers were carried out in the 13 district capitals plus Atauro. The total number of the respondents is 28. Therefore, the average number of the respondents in an interview is two. The period in their current position is only seven months and even that working in their local offices is only three years and two months.

Profile of the District Officer Respondents

Division	Position	Number	Total duration in the position (months)	Average duration in the position (months)	Total duration in the local office (months)	Average duration in the local office (months)
Agriculture	Director	9	28	3	485	54
	Chief	6	58	10	275	46
	Staff	5	58	12	67	13
	Extension	2	15	8	15	8
Forestry	Chief	1	5	5	41	41
	Staff	1	1	1	73	73
Fishery	Chief	2	11	6	59	30
	Staff	2	13	7	49	25
Total	-	28	189	7	1,064	38

Note: Livestock section is included in agriculture division.
Data Source: *Agribusiness Promotion in Every District*, June 2009, SRC

(2) Training Experience of the Respondents

The contents and the period of the trainings, which were attended by the respondents are arranged in the next table. We can see that the trainings of general management including financial management take the most days. It is considered that most attendants of those trainings are directors or chiefs in each division.

Contents and Period of the Attended Trainings

Contents of Trainings	Total Period (days)
Leadership	127
Administration management	155
Laws for stabilizing society	90
Management of sustainable foodstuff, food security	28
Financial management	100
Data base, Statistics	74
Agribusiness and Marketing	48
Good examples of extension, General extension orientation	74
Agriculture systems, Farming analysis, Chemical analysis	40
Upland farming	90
Crop management	30
Rice intensification systems	25
Plantation and marketing of horticulture plant	14
Selection of leguminous variety	12
Plant diseases	7
Making of chips	7

Contents of Trainings	Total Period (days)
Animal surveillance system	12
Feed formulation	7
Artificial insemination	30
Meat processing	21
Animal health training, Comparative study on animal health	31
Ways of handling avian flu	37
Livestock agent	14
Agro-forestry	30
Land conservation, Biological control, Stock assessment	35
Protection of coral	3
Climate change	3
Fisheries resource management, Fisheries water management	13
Fishing management	6

Data Source: *Agribusiness Promotion in Every District*, June 2009, SRC

(3) Advantages and Problems of Agribusiness

Organic farming is raised as an advantage in six districts and three districts raise "low wages in the agriculture sector" as their advantage. Also, the officers in Ermera mentioned that foreign businessmen and investors found it comparatively easy to find agribusiness opportunities. As a problem, "lack of marketing information" is raised in four districts and three districts raise "price fluctuations of agricultural products". "Low demand for agricultural products" in Viqueque shows their high potential for agricultural development.

Table 4-6-4 Advantages and Problems of Agribusiness in Each District

District	Advantage	Problem
Lautem	- Plentiful natural resources - Plentiful agricultural production	- Low prices of candlenut & coconut - Lack of marketing information
Baucau	-Plentiful production of candlenut, peanut and coconut - Huge land resources	- Lack of marketing information
Viqueque	- High agricultural production - Low price of agricultural products - Organic farming	- Low demand for agricultural products - Bad road conditions
Manatuto	- Plentiful natural resources - Organic farming - Low prices of agricultural products	- Lack of marketing information
Dili	- Plentiful fishery resources	- Shortage of marketing facilities
Atauro	-	- Restrictions on fishing zones, methods and species
Aileu	-	- Bad road conditions
Manufahi	- Plentiful production of potatoes, onions and carrots	- Low quality of agricultural products - Shortage of agricultural production - Low farming willingness of farmers
Ainaro	- Plentiful natural resources - Organic farming - Low wages in the agriculture sector	- Lack of a marketing system -Price fluctuations of agricultural products - Shortage of marketing facilities
Ermera	- Intensive farming - Organic farming - Business chances for foreign dealers and investors	- Price fluctuation of agricultural products -Lack of regulation on reckless deforestation
Liquica	-	-
Bobonaro	- Plentiful natural resources	- Shortage of coordination for marketing activities

District	Advantage	Problem
	- Organic farming - Low wages in the agriculture sector	- Shortage of marketing facilities - Price fluctuations of agricultural products
Covalima	- Plentiful natural resources - Organic farming - Low wages in agriculture sector	- Bad road conditions - Shortage of capital - Low education levels
Oecussi	- High agricultural production - Low price of agricultural products	- Lack of marketing information

Data Source: *Agribusiness Promotion in Every District*, June 2009, SRC

(4) Needs and Dissatisfaction of Consumers

"Continuous supply of agricultural/fishery products" is raised in three districts and Atauro. The officers in Baucau mentioned that agricultural products with unique characteristics one of the needs of consumers. The number of the districts which raised "low level of food hygiene" as dissatisfaction of consumers is four. Also, two districts raise "lack of marketing information".

Needs and Dissatisfaction of Agribusiness in Each District

District	Needs	Dissatisfaction
Lautem	- Big sizes of coconuts	- Low quality agricultural products
Baucau	- Agricultural products with unique characteristics - Low prices of agricultural products	- Lack of marketing information
Viqueque	- High quality agricultural products - Low prices of agricultural products	- Low level of food hygiene - Poor hygiene in marketplaces
Manatuto	- High quality agricultural products - Continuous supply of agricultural products - Low prices of agricultural products	-
Dili	- High quality fishery products - Proper prices of fishery products based on the quality - Central landing of fishery products	- High-price & low-quality products
Atauro	- Continuous supply of fishery products - High quality fishery products	- Seasonal shortage of some fishery products - High-price & low-quality products
Aileu	-	-
Manufahi	- High quality agricultural products - Low prices of agricultural products	- High-price & low-quality products
Ainaro	- High quality agricultural products - Continuous supply of agricultural products	- High prices of agricultural products - Low level of food hygiene
Ermera	- Arabica coffee - High quality agricultural products - Stable prices of agricultural products	- Low quality agricultural products - Low level of food hygiene
Liquica	- High quality agricultural products - Low prices of agricultural products	- Low quality agricultural products - High-price & low-quality products
Bobonaro	- High quality agricultural products - Low prices of agricultural products	- Low quality agricultural products - Lack of marketing system - Low level of food hygiene
Covalima	- Stable prices of agricultural products - High quality agricultural products	- High-price & low-quality products - Seasonal shortage of some agricultural products
Oecussi	- High quality agricultural products - Low prices of agricultural products - Continuous supply of agricultural products	- Lack of marketing information

Data Source: *Agribusiness Promotion in Every District*, June 2009, SRC

(5) Promotion Plan and Necessary Research on Agribusiness

Five districts plan to hold an exposition at the national level, which seems to be popular throughout the whole country since many expositions on domestic products are held these days. Fishery landings are planed to be introduced in five districts, which are expected to make a big impact to fishery markets. Also, a program to create good relationships between businessmen and farmers is planed in Bobonaro.

Promotion Plan and Necessary Research on Agribusiness in Each District

District	Promotion Plan	Necessary Research
Lautem	- National expo on local products - Introduction of fishery landings	- Processing of coconut oil - Market surveys
Baucau	- National expo on local products	- Quality control - Market surveys
Viqueque	- National expo on local products	- Market surveys
Manatuto	- National expo on local products - Capacity building of the farmers	- Identification of agribusiness potentials - Production cost analysis
Dili	- Introduction of fishery landings	- Income generation of fishermen
Atauro	-	- Quality analysis of dried fish and seaweed - Comparison of fish sales between Dili and Atauro
Aileu	-	-
Manufahi	- Promote cooperatives' activities	- Farming systems - Marketing systems
Ainaro	-	-
Ermera	- National expo on organic coffee	-
Liquica	- Applying mass media	- Obstacles in agribusiness promotion
Bobonaro	- Expansion of leguminous plantations - Collaboration between businessmen and farmers - Increasing knowledge and skills of farmers - Introduction of fishery landings	- Seed quality test - Consideration of farming advantages - Appropriate farming systems
Covalima	- Expansion of legume plantations - Improvement of farming technology - Introduction of fishery landings	-
Oecussi	- Labeling on local products - Introduction of marketplaces - Introduction of fishery landings - Applying mass media	- Market surveys - Survey on agribusiness activities

Data Source: *Agribusiness Promotion in Every District*, June 2009, SRC

4-6-3 Results of the Research on the Processing/Marketing Organization of Agribusiness

(1) Sample Organizations of Agribusiness

Basically the sample organizations were selected from the organizations whose main product is the target product in each district. However, the information on the organizations who deal with the target product was not found in four districts, Baucau, Aileu, Manufahi and Bobonaro. In that case, another organization whose main product was another target product was selected instead of the organization who dealt with the original target product.

Table 4-6-5 Sample Organizations of Agribusiness in Each District

District	Name	Full-time Staff (male/female)	Commodity
Lautem	Amal Kasih Darah Muila	6/5	Comfrey Oil
	Wataara Coivau	40/20	Coconut Oil
	11 de September	8/7	Maize
Baucau	Uai Teki Buras	15/15	Paddy, Cabbage, Maize, Goldfish
	Hadomi Product Local	0/20	Coconut Oil, Marmalade
	CTID	0/5	Coconut soap, Fish
	Waihiku	9/1	Cabbage
	Uta Mau	3/3	Peanut, Sweet Potato
	Naumori	6/4	Sweet Potato, Peanut, Paddy
Viqueque	Ade Cerida	42/10	Maize, Paddy, Mung Bean
	Animal Raising	20/20	Cattle
Manatuto	Rai Kiak	10/8	Paddy, Cabbage, Water Spinach
	Liku Rai	28/22	Dried Fish
Dili	BSA	5/1	Fish
Atauro	Telu Ana	0/6	Dried Fish
	Ketu Ana	6/3	Dried Fish
	Cattoni	6/0	Seaweed
Aileu	Aiasa	7/8	Cassava Chips
	Crito	15/10	Cabbage
	Aticaro	2/10	Carrot Chips, Pineapple/Papaya Syrup
Manufahi	Cooperativa Moris Kiak	15/14	Candlenut, Maize, Coffee
	Espinhos da Rosa	22/11	Sweet Potato, Paddy, Cassava, Soybean
	Feto Maniko	0/50	Roasted Peanut, Maize, Red Rice, Cassava, Banana
Ainaro	Benca Au Ama	10/1	Coffee
	Barley “Fatuk Laran”	10/10	Wheat, Taro, Sweet Potato
	Zero Star	12/10	Avocado, Banana, Tomato, Chili
Ermera	Kuhak	28/8	Coffee
	Berludu	10/2	Cabbage, Broccoli, Cut Tomato, Eggplant
	Lao Neneik	11/1	Cut Cabbage, Cabbage
	Bil Grupu	4/4	Coffee, Vegetable
Liquica	Wehale	9/3	Coffee
	Tomeo Nana	1/14	Fruit
Bobonaro	Cooperative Haburas Timor	5/0	Soybean, Green Bean, Paddy, Rice
	ASC	7/0	Paddy, Green Bean
	CDEP	9/0	Rice
Covalima	Fini Esperansa	9/0	Maize, Mung Bean
	Raflima Unipesoal Ld	5/0	Cattle, Buffalo
	Centro Procesamento Café	25/3	Candlenut, Coconut, Betel Nut, Coffee
Oecussi	Foin Moris Bibesi	8/2	Cattle
	Onen Mat Meup	0/10	Chicken

Data Source: *Institutional Processing and Marketing of Agribusiness Product*, June 2009, SRC

(2) Plan of Activities of the Organization and Improvement Items of Agribusiness

Plan of activities and improvement items of agribusiness, which are raised by the each organization, were arranged in the table below from the four view points; 1) activities of production, processing, distribution and sales, 2) training and utilization of human resource and organization, 3) building facilities and introduction of material and equipment, and 4) securing and procurement of funds.

With regard to the “activities”, it can be inferred that processing activities are weak because there are no concrete activity plan and improvement item though many activity plans and improvement items of

production, distribution and sales are raised. Regarding institution, an organization in Atauro mentions the relaxation of restriction on fishing varieties and methods, such as usage of gill net or engine capacity of fishing boat, an organization in Ermera mentions the streamlining official procedure of business licenses, and the simplifying marketing institution is mentioned by an organization in Bobonaro.

Capacity development of staff training and organizing cooperatives are raised as the "human resource and organization". Introduction of facilities and equipment of production, processing, distribution and management is raised as the "building facilities and introduction of material and equipment". In regard to the "funds", securing a repair fund and capital increase are raised in the improvement items, however, there is no activity plan related to the "funds", which seems to show the lack of means to procure funds from their outsides.

Table 4-6-6 Plan of Activities of the Organization & Improvement Items of Agribusiness

Division	Plan of Activities	Improvement Items
Activities of production, processing, distribution and sales	- Utilizing natural resources - Increasing agricultural production - Introduction of new varieties/commodities - Trial of new varieties - Expansion of plantation area - Replanting of coffee tree - Preparation of feedstuff - Fencing around grazing area - Renovation of fishing ways - Improvement of product quality - Pricing based on market price - Proposal to the Government for protecting agricultural production - Exportation of product - Improvement of marketing system - Marketing promotion and expansion of marketing area - Collaboration with other organizations	- Environmental protection - Improvement of weeding - Countermeasures on plant disease - Increasing good seeds - Improvement of product quality - Relaxation of restriction on fishing varieties & methods - Well managed operation system - Increasing number of buyers - Stabilizing market prices - Simplifying marketing institution - Streamlining official procedure of business licenses - Collaboration among farmers, dealers and the Government - Simple guidance of clear policies
Training and utilization of human resource and organization	- Training of staff, e.g. operation training on machines - Request of training to the Government or NGOs - Introduction of secretary - Increasing number of staff - Organizing a cooperative - Renovation of a statute	- Capacity development of staff - Technical improvement on farming - Organizing farmers/fishermen into cooperatives - Strengthening activities of women's groups
Building facilities and introduction of material and equipment	- Introduction of a processing machine - Introduction of a refrigerator - Introduction of greenhouse - Setting up an office	- Introduction of more equipment - Introduction of tractors & threshers - Improvement of storage and transportation - Improvement of water supply - Introduction of chemical fertilizer - Introduction of marketing facilities
Securing and procurement of funds	-	- Securing repairing money of fishing boats - Increasing capital

Data Source: *Institutional Processing and Marketing of Agribusiness Product*, June 2009, SRC

4-7 SCOCIAL AND ENVIRONMENTAL CONSIDERATION

4-7-1 Gender in Agricultural Sector

Men and women share nearly an equal role in the agriculture sector. However, gender related duties are often culturally defined. For example, nearly all rice/maize traders and millers are men; whereas, nearly all fruit and vegetable traders/retailers are women. These gender roles are probably based on the fact that women are often needed to tend to their children's' needs. Consequently, there is a strong preference for work which does not entail travel. Vegetable market stall management can be undertaken while looking after children, as compared to rice and/or maize collection which cannot. Vegetable selling has the added advantage of being relatively clean as compared to meat and/or fish selling, thus minimizing children's exposure to health hazards. Table 4-7-1 depicts most prevalent gender roles in the agriculture sector. As is apparent, women play a vital role in both agricultural production and marketing.

Table 4-7-1 Gender Roles in the Agriculture Sector

No.	Activity	Male	Female
1.	Clearing/Cultivating	Responsible	-
2.	Planting	Secondary	Primary
3.	Weeding	Share	Share
4.	Harvesting	Secondary	Primary
5.	Storing	Responsible	-
6.	Threshing	Secondary	Primary
7.	Selecting Seed	Secondary	Primary
8.	Pounding	-	Responsible
9.	Cooking	-	Responsible
10.	Rice/Corn Trading	Responsible	-
11.	Rice/Corn Milling	Responsible	-
11.	Vegetable Trading	Secondary	Primary
12.	Retail Trading	Secondary	Primary

Source: Base Maize Production and Storage in Timor-Leste, Oxfarm 2006, Expanded by Consultant

However, despite, their important contribution women are usually under represented in both government and donor programs. Typically, when projects attempt to rectify this disparity they identify women related activities, and then gear programs to them. This often only has the effect of institutionalizing women's inferior role in society.

Probably the easiest method to address gender inequality is to introduce a target guideline for women's participation throughout the sector and/or project. For example, in the World Bank, Asian Development Bank and Australian assisted COREMAP projects in Indonesia, the donors and government mandated that women should fill 30% of all posts including those of government, consultants and local beneficiaries. Although the goal appeared very difficult at project inception, by project completion five years later, the women's representation target was actually exceeded. All categories had over 30% women's participation except field extension agents.

4-7-2 Environmental Considerations in Marketplaces

In general, legislation and enforcement of environmental laws and regulations related to agricultural markets in Timor-Leste is weak. Also, as described in the Section "4-4-1 Public Marketplaces", most markets are managed directly by the traders themselves. The result is that markets' environmental impacts

vary widely between locations. Although many are in acceptable condition, field visits indicated lack of comprehensive environmental management programs. Major environment concerns for marketplaces include:

- Correct site location (e.g., flood area, distance to road, near to well/clean water sources, etc.).
- Safety inspections of old buildings to prevent collapse, sharp edges, holes in walkways and other safety concerns.
- Solid and liquid waste disposal systems with vermin control programs (especially important for livestock and fisheries areas).
- Controlled areas for burning for solid waste and burial of ashes.
- Safe electrical installations with contact breakers.
- Functioning freshwater system from a sustainable aquifer.
- If wells are used, they should be covered, lined wells with above ground castings to prevent seepage back into the well.
- Covered storage tanks.
- Floor and work area cleaning programs with access to adequate fresh water.
- Proper storage of hazardous cleaning materials.
- Properly functioning drainage systems.
- Malaria control features incorporated into the water/drainage systems.
- Organized parking areas with run off distant from the marketplace.
- Dust and mud control.
- Well operating latrines with maintenance programs.
- Access to first aid materials and trained personnel.

Each marketplace is unique subject to very specific environment issues. Expectation is that the newly MTCI constructed marketplaces will be an improvement and be developed in an environmentally sound manner with practical environmental management plans.

4-8 RELEVANT PLANS/ PROJECTS BY INTERNATIONAL ASSISTANT AGENCIES

4-8-1 Similar Implementation Projects

(1) Rural Development Program: Second Rural Development Programme for Timor-Leste (RDP II)

Outline of the current ongoing Rural Development Programme for Timor-Leste (RDPII), funded by EU and Germany is as follows.

Counterpart	Ministry of Agriculture and Fisheries (MAF) Ministry of Infrastructure (MOI/ Public Works)
Source of Funding	European Union Federal Republic of Germany
Budget	EURO 9,750,000
Duration	5 years (until the end of 2011)
Location	Districts of Bobonaro and Covalima with later expansion to adjacent Districts in the western region
Implementation Agencies	GIZ and Partners

Objective	The target group is the rural communities, with emphasis on women and youth in the districts of Bobonaro and Covalima. They shall benefit from improved food security, reduced poverty and better economic and social opportunities. The Programme provides organizational development support MAF and MoI and implements through the ministries' district structures and collaborating NGOs. The synergetic impact of all programme components is realized by concentrating initial interventions at the sub-district level. However, the programme also supports MAF to up-scale proven technologies within the target districts, and depending on progress, to other districts as well.
Strategy	Programme comprises 6 components. 1) Support to MAF and MoI 2) Agricultural Extension 3) Agribusiness and related services 4) Community Development 5) Forestry and Watershed Management 6) Rural Infrastructure

Source: Brochure and interview with GIZ

As for the component of agribusiness and related services, it is defined as follows.

Context	Public and private rural service providers, input supply (seed, fertilizers) and output markets do not function well because of limited demand for such services. Agricultural processors and traders are only active in the area of rice milling and marketing. Rural finance services are underdeveloped and access to micro credit by producers, input suppliers, processors and traders is very poor. The general potential for the establishment of private sectors in the next future is very limited. Value-adding processing has hardly been developed. The private services that are required for the development of agriculture production and marketing require a significant boost.
Objectives	Agriculture input suppliers and traders provide improved services as part of new, more effective agriculture-based and/or forestry-based value chains.
The Approach	The program follows a community-based, value-chain approach. An inventory of existing agro-service providers was prepared and an assessment has been carried out. Areas for support and capacity building measures are identified. Related staff is being qualified to facilitate value chain development and provide targeted support to different areas. The grogram assists in organizing interested farmers and facilitating the linkage of these producers or marketing groups to suppliers of inputs, processers and traders. Selected commodities are analyzed for their potential. The program supports the formation of producer groups to reach a viable scale of economy for organized input supply and marketing. Main activities supported are: - Establish and improve selected value chains so that micro-credit, input supply, and output markets are provided. - Strengthen MAF's agribusiness departments so that it can better service the selected value chains. - Improve existing, and establish new, private agricultural service and input providers in the project areas.

Products handling in the projects are candlenuts, coconut, rice mungbean and soybean. ASC in Maliana is involved as one of the trader.

Rural Development Program (RDP III) with the same components was launched in the Manufahi district in 2009. The RDPIII is implementing as of 2009.

(2) One Village One Product (Suco Ida Product Ida: SIPI)

The project "One village One product (OVOP)" called "SIPI" (Suco Ida Produti), funded by JICA, was implemented from December 2008 to May 2010 with the assistance of JICA. The performance is summarized as follows. (Source: Completion Report (2010, May) and Progress Report on the activities from December 2008 to 14 May 2009, by Agricultural Advisor, the MAF/ JICA)

1) Establishment of Taskforce

Taskforce of OVOP was organized in the MAF. DNPIAC is nominated as a implementation body.

2) Selection of 2008 target groups

Seven (7) candidate groups were picked by taskforce and young leaders trained in Oita. After this, taskforce screened the plan, organization and feasibility of the seven groups, and finally selected three groups and one group as next winner.

Name of group	Products	Place	Target group/ Nest winner
Hadomi Productu Local	Jam & Coconut oil	Baucau	Target group
Hadomi Saboko	Saboko	Liqusa	Target group
Cocamau	Fried Favas	Maubisse	Target group
TRM OKA	Chips	Baucau	Next winner

Logo mark of SIPI which means "Pride of Local Identities and Local Products" was prepared by the Taskforce to demonstrate widely the SIPI products.

3) Inviting OTOP experts to Timor-Leste, OVOP seminar/ Study tour to OTOP

OTOP (One Tambon One Products in Thailand) experts were invited to exchange the ideas and learn lessons from the past experiences during 8 to 18 February 2009. Under the participants from invited experts, a seminar with OVOP and OTOP was held in 16 February 2009 to introduce the OVOP and exchange SIPI activities. A study tour on OTOP in Thailand was carried out during 14 to 23 March 2009, to learn past experiences in OTOP and obtain knowledge and skills and share each experience. Participants from Timor-Leste were the SIPI taskforce member, two senior extension workers, representatives of three target groups and one next winner.

4) SIPI activities

Equipments and machines to make products were provided by JICA, and target products were processed as SIPI-made products. The products were exhibited on the events of "World Food Day", "EXSPO" and "Trade Expo" from October 2008 to October 2009. In order to strengthen their activities, trainings related to group management and bookkeeping were conducted for four groups.

5) Selection of 2009 target groups

Eight (8) candidate groups were picked from Baucau and Bobonaro districts. Those groups were screened by taskforce from viewpoints of feasibility including intention of the groups. As the screening results, six (6) groups were selected as target groups.

Name of group	**Products**	**District**	**Sub-districts**
Betulate	Milling Rice	Baucau	Vemmasse
Haburas	Coconut Oil	Baucau	Baguia
Hametin Rua	Chips	Bobonaro	Maliana(Ritabou)

Name of group	Products	District	Sub-districts
Hadomi Moris	Chips	Bobonaro	Maliana
Migir	Milling Rice	Bobonaro	Atabae
Habras Lourba	Peanut Products	Bobonaro	Bobonaro

6) Inviting OTOP experts to Timor-Leste, Opening of cooking class/ Seminar/ Training

OTOP experts were invited to open cooking class. The cooking class was opened from 13 October to 21, 2009. Seminar and trainings were conducted to strengthen their activities through exchanging their ideas and experiences.

7) Support for marketing activities/ Public relations of SIPI/ Preparation of guideline

In order to support sales activities of the target products, a shelf for SIPI products was provided in the supermarket and the SIPI products were displayed on it. Public relations were conducted through reporting of SIPI activities to government and showing their products to government staff and consumers. Based on the implementation process and outcomes, technical guideline for SIPI activities was prepared.

From surveying SIPI activities in Baucau districts, it was observed that women of the target group were active in making jam and chips, since those products were listed as a government purchasing product. (Howevwe, those were excluded from the list in 2010.) In the interview survey to women, they said that hard work was the wrapping method of chips for sales, and JICA provided technical support including in providing wrapping machine for them. Through such support from JICA, SIPI-made chips could be displayed in the supermarket to sell it. It seemed the activity generates income source of women group, and lead them to their self-sufficiency.

DNPIAC plans to expand the SIPI to other districts/ groups as a basic development policy. The SIPI project under the assistance with JICA was completed. Therefore, current SIPI activities were not active. It is crucial for existing target groups to support their activities such as setting sales target, developing market channel and sales promotion.

4-8-2 Programs by Other Relevant International Aid Agencies

(1) USAID

Regarding agribusiness, USAID supports CCT and implement two programs, private sector program including promotion of marketing activities of agro-products and capacity development though education in agricultural schools.

<Agribusiness Horticulture Program>

The consultant of USAID provides horticultural farmers technical services in terms of production planning, cultivation technique and post harvest treatment), focused on stable shipping of high quality of crop in sustainable methods such as crop rotation. For marketing, the local trader, Zero Star, is supported through management training and provision of refrigerated truck, and delivers to major supermarkets in Dili such as Kmanek, Lita, Landmark, etc. The major criteria are to consider value chain of fresh horticultural products from the planning stage, to coordinate private distributors and to link between market outlets and production farmers. For the training to farmers' groups, they got cooperation with the private company 'Bali Fresh' in Indonesia. For the selected leaders and the distributor, the training in Asian Vegetable Research and Development Center, Thailand was conducted. In the project, the inputs are quality seeds

provision, nursery production and green house construction, and also coaching fair transactions in pricing by weight scales and introduction of minimum buying price system. One of supermarkets appreciates effectiveness of the project, and he starts investment on vegetable nursery garden to supply farmers.

For capacity building of Timorese traders, the linkage of farmers' groups and West Timorese traders in Atambua is also conducting. High demanding crops in West Timor are dried mungbeans and peanuts.

In circumstance of disadvantage of communication infrastructure, the Timorese trader agrees in advance the minimum volumes and minimum prices with Indonesian traders and collecting time, collecting volume and grading with farmers' groups. These projects impact to local economy, but will be completed in the mid 2010.

<Agribusiness Capacity Development Program>

The program has been started in 2006 aimed at capacity development of youths for agribusiness though education to the graduates of three agricultural schools. Under the program, USAID supports procurement of educational equipment, one-year education of agricultural technologies/ practices and training of school teachers. In the practical classes, the students are coached to form assumed agricultural cooperatives and to lean marketing and processing techniques. Through implementation of the program, the education curriculum will be standardized including subjects of technologies of three focused sectors, accounting, financial management, lows related in agriculture and ethics. The targets are 50 youths per school annually. For the future plan, three sectors will be focused on business, small scale sustainable dairy products for Folio School in Lautem, apiculture for Natarbora School in Manatuto and Horticulture in Maliana School in Bobonaro., and the students will survey value-chains of products in Dili market and other buying institutions with certain quality and price.

(2) GIZ

GIZ has been contributed large achievements to agricultural production and processing though the second Rural Development Program. (RDPII). Major activities in 2008 were in Bobonaro and Covalima Districts, namely i) policy making for agricultural extension services, ii) practical farming using ICM technologies, iii) value-chains survey of major crops, iv) capacity development, v) forestation management in farmer participatory method, and vi) small scale rural road rehabilitation. The third program starting in 2009 will be focused on Manufahi District.

In regards with processing, supply of quality and uniform products is a critical matter and soybeans and mungbeans are highly improved. This is coincided with the comments of the director of Furak Tofu Ltd regarding high grades of the 2009 harvested soybeans. In the target districts, the strategic products such as mungbean, soybean, rice and cattle were selected as the results of value-chain analysis survey.

Mungbean: It is exported to West Timor by means of supporting NGO Fini Esperanca. Soybean: It is promoted production as import replacement, imported at 500 tons while demanded at 600 tons. Rice: It is promoted through ICM (or SRI) cultivating technologies to produce maximum harvests from limited water and resources. For example, the case introduced ICM technologies in Salguirous Agricultural Production Cooperative in Soba and Laga, Baucau which is one of 38 legal formed cooperatives in 2008/09 is shown below.

Table 4-8-1 Comparison of ICM Farming with Traditional Farming

Working Items	ICM Farming (per ha)	Traditional Farming (per ha)
Seeding	6kg × 0.30US$/kg＝1.80US$	24kg × 0.30US$/kg＝7.20US$
Nursery growing	12days	17-18days
Weeding for nursery	No weed found due to putting leaf and stalk under the surface of nursery bed	2days × 9persons × 3.00US$/person/day＝54.00US$
Transplanting	2days × 10persons × 3.00US$/person/day＝60.00US$	3days × 8persons × 3.00US$/person/day＝72.00US$
Weeding using mechanical weeder	4days × 6persons × 3.00US$/person/day＝72.00US$	－
Harvesting	4days × 6persons × 3.00US$/person/day＝72.00US$	5days × 5persons × 3.00US$/person/day＝75.00US$
Gross income	2,497kg × 0.30US$/kg＝749.10US$	1,870kg × 0.30US$/kg＝561.00US$
Balance	749.10US$－205.80US$＝543.30US$	561.00US$－208.20US$＝352.80US$

Source: Case study in Laga from workshop conducted by Cooperative Directorate of MoE, 12 June, 2009

The above case is not show accurate economical comparison because the costs of seed, fertilizer and fuel were granted for pilot projects of ICM farming. But it is expected to gain much more margins by using ICM technologies than the traditional cultivation methods. In order to upgrade quality of milled rice, it is necessary to improve seed, cultivation method, water management, harvest timing and grading.

(3) AusAID

For agricultural processing, the improvement of raw materials in quality and quality is essential. The significant program of AusAID in agricultural sector is the “Seed of Life Program” (Fini ba Moris) to provide extension seeds for staple crops to individual farmers. This contributes food security of the country. Distributed seeds are shown in below.

Table 4-8-2 Distributed Seeds in Seed of Life Program

Crop	Variety	Source of Seed	Description
Paddy	NAKROMA	International Rice Research Institute (IRRI, the Philippines)	IR116, growth height 86cm, yield 4.4-4.9ton/ha, milling recovery 69.1%
Maize	SELE	CIMMYT (India)	LYDMR, growth height 2.0m, yield 3.12ton/ha, increased at 40% than yield of traditional seed
	SUWAN5	Kasetsart University (Thailand)	SW5, growth height 1.9m, yield 3.52ton/ha, increased at 54% than yield of traditional seed
Peanut	UTAMUA	International Crops Research Institute for Semi Arid Tropics (ICRISAT, India)	ICGV88438, growth height 54cm, yield 1.82ton/ha, weight of nut in seed pot 71%, increased at 50% than yield of traditional nut
Sweet Potato	HOHRAE1	International Potato Center (CIP, Kenya)	CIP-1, yield 12.7ton/ha, growth height 25-30cm, vitamin C contain 20.65mg/100g, increased at 128% than yield of traditional potato
	HOHRAE2		CIP-6, yield 13.22ton/ha, growth height 25-30cm, vitamin C contain 0.89mg/100g, increased at 138% than yield of traditional potato
	HOHRAE3		CIP-7, yield 13.27ton/ha, growth height 25-30cm, vitamin C contain 1.26mg/100g, increased at 138% than yield of traditional potato

Source: Seed of Life Pamphlet, MAF, March 2007

Generally, the yields and productivities have increased and quality of harvested crops has upgraded. According to the appraisal report prepared by the Australia International Agricultural Research Center

(ACIAR) in January, 2009, the improved seeds had been distributed to 26% of *Suco* in the country, especially in Aileu, Baucau and Liqica Districts since September, 2005. The number of beneficiaries is accounted for 15,000 households distributed the seeds through this program or via other institutions such as USC Canada, GIZ, Care, Oxfam and USAID. It is evaluated that the distribution of the improved seeds, which are resistant to weeds, contributes reduction of workforce for women, because weeding period for crops overlaps with hunger period. For the countermeasure of environmental negative impact, ACIAR suggests to conduct study and research for genetic resources of indigenous species and protection of rare plants such as sandal wood due to expansion of new cultivation areas.

(4) JICA

JICA is implementing small scale projects related with agribusiness in the agriculture field, besides "One Village One Product (SIPI)" Campaign. Project for Rehabilitation and Improvement of Maliana is the implementation project covering target area 1,050ha and US$6.6 million. Irrigation and Rice Cultivation Project (IRCP) in Manatuto aims to improve rice cultivation method.

Table 4-8-3 On-going Relevant Plans/Projects by JICA

Type	Name	Target Area (District)	Implementation body
Grant Aid	Project for Rehabilitation and Improvement of Maliana Irrigation System	Bobonaro	DNIGUA , MAF
Technical Cooperation	Manatuto Irrigation and Rice Cultivation Project	Manatuto	DNIGUA , MAF
Technical Cooperation	Community-based Integrated Watershed Management in Lacro and Comoro River	Dil、Manatuto	DNF, MAF
Grass root aid	Coffee Growers Support Project in Maubisse	Ainaro	PARCIC（NGO）
	Promotion of Self-reliance for Coffee Growers Cooperative in Letefoho	Ermera	Peace Winds Japan（NGO）
	Fishery Rehabilitation Project at the North East Coast	Lautem	IKUEI（NGO）

Source: JICA pamphlet, etc.

4-8-3 Lessons Learnt from the Past Performance

Supporting projects from the related donors to stabilize food security and improve farming systems in rural areas has operated so far in the country. Especially, related with rural area development including agribusiness, farmer participatory based programs implemented by GIZ have helped farmers and government staff to strengthen their capacity in planning and managing small-scale development. Lessons learnt from the programs are picked from the performance reports as follows.

Table 4-8-4 Lessons Learnt from the Rural Development Project by GIZ

Farming systems-developing improved practices together
Lessons learnt/ advantages
- The participatory technology development encourages farmers to take ownership over the activities and become progressive farmers. - The participatory technology development identifies most appropriate farming technologies The technologies are easier to disseminate to other farmers.
Lessons learnt/ limitations
- Time consumption needed to engage in a full participatory process is significant. - Farmers are working with individual farmers rather than with farmer groups. - It is difficult for subsistence farmers to invest their productive time. - The technical and facilitation skill of available staff in Timor-Leste is limited. - Quality implementation is low and farmers' skills are limited.

Infrastructure- strengthening village council's capability for transparently organizing communal works
Lessons learnt/ advantages
- Constructive interaction through stakeholder meeting leads to self-confidence. - It provides a wider vision of transparency and sound decision making. - It improves the ability to mobilize human and local resources for community works. - It makes village council members become more progressively active in local affairs.
Lessons learnt/ limitations
- Stakeholder meeting process is required more time. - Long-term lethargy or inactivity may be difficult to overcome. - The situation exist leaders not supported by their communities. - Village leaders may be perceived as acting in an arbitrary and unpredictable manner, which creates a sense of futility or hopelessness among the village population. - Leaders may have lost sight of their role and functions in the construction works as they can be burdened with governmental obligations to the exclusion of other activities.
ICM- improving rice production through farmer field schools
Lessons learnt/ advantages
- Farmers can take ownership and become progressive farmers through filed schools. - Participating farmers can create capable technology champions. - Farmer field school forms foundation for further dissemination. - It trains capable, certified, extension agents, multiplies impact on other rice production improvement activities.
Lessons learnt/ limitations
- It does not address larger social issues - Facilitators need diversity of skill and commitment. - Dedicated time is demanded for training of extension agents. - There is lack of trainers. - Farmers are working with individual style rather than with groups. - It requires he existence of basic good governance structures.
Empowering women as community mobilzers
Lessons learnt/ advantages
- Empowering process increases the self-confidence of individuals by becoming useful to others. - It can change people's behavior, and make the receiver-mentality change to greater self-reliance. - Community mobilizers can become a good access point for other development initiatives.
Lessons learnt/ limitations
- Community mobilization does not show fast, striking results. - The women are volunteers and do not necessarily what they might be expected to do. - Every community do not develop at the same speed. - Long-term lethargy of community and of individuals cannot be overcome. - It requires he existence of basic good governance structures.

Source: Lessons Learnt 2003-2007, Farming System, ICM, Empowerment Women as Community Mobilizer, GIZ

Besides the above projects by GIZ, lessons learnt from the implementation projects/ programs are compiled based on the interview survey with related actors as follows. (These are not based on the official report.)

Table 4-8-5 Lessons Learnt from the Past Projects by USAID, AusID and JICA

Agribusiness Horticulture Program (USAID) (vegetable cropping in the vinyl house)
Lessons learnt/ advantages
- Training in Bali, Indonesia and Asian Vegetable Research and Development Center, Thailand were useful to understand the quality level for shipping into supermarket. - Trade becomes sustainable through clarification of expected shipping amount and its seasonal timing, kind of vegetable and minimum prices of them in the contract with trader and farmers. - Target of quality and quantity could be set easily since trade target was specified only supermarket in Dili. - Farmers could understand that it was necessary to make cropping plan with seed with high germination for stably supply to the supermarket.

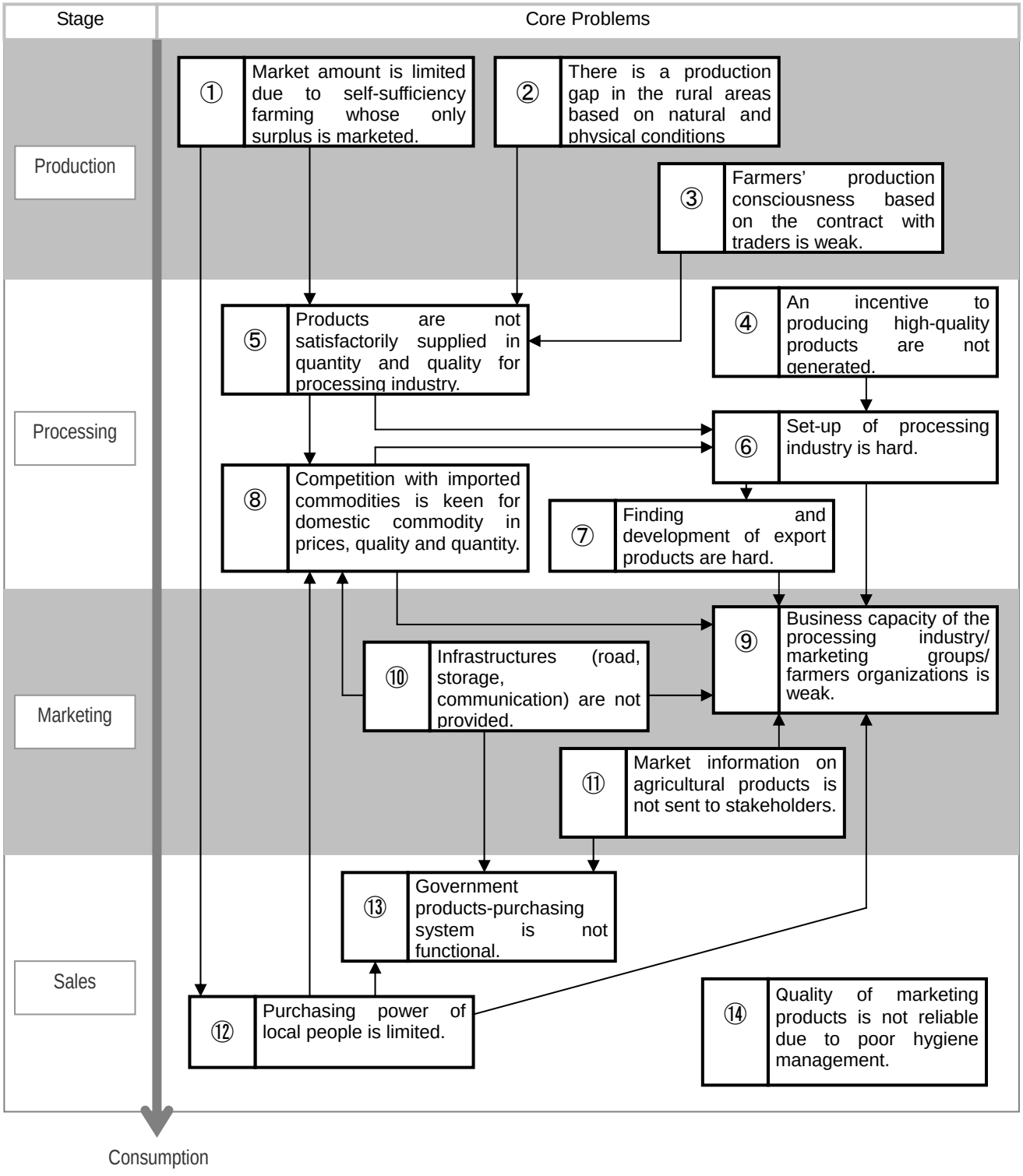
Agribusiness Horticulture Program (USAID) (vegetable cropping in the vinyl house)
- Certification on organic farming could be procured as the result of positive studying and practice on making organic soil. - Private sector could be involved in making seed bed in cooperation with supermarket. - Besides the supermarket, local trader could start to deal in the vegetable under this program.
Lessons learnt/ limitations
- Inputs of materials for vinyl house construction and seed are dependent on import. It is difficult to seek substitute for them. - It is not expected that extension workers of MAF act to support in farming technology and agribusiness information. - It is not easy for farmers without having fund to set up of this kind of agribusiness.
Agribusiness Horticulture Program (USAID) (Border trade for West Timor)
Lessons learnt/ advantages
- It was found that demand of mungbean and soybean in West Timor was concentrated in from November to February, so that temporary storage facilities were needed so as to promote trade in those seasons. - Trader could understand the relation with check of quality and trade prices. - Trade with traders in West Timor was launched.
Lessons learnt/ limitations
- It was difficult to promise contract with production farmers. Contract sense of farmers is weak. - Export to Indonesia is dependent on relation between US dollar and Indonesian rupee. - It was difficult to procure operation fund although more than 10,000 US dollars was demanded.
Seeds of Life (AusAID)
Lessons learnt/ advantages
- It was found that productivity was increased in the farm plot where fertilizer input was managed properly and it could covered input cost for them. - It was useful for dissemination of farm technology to neighboring farmers to select excellent seed under the criteria incorporated in farmers' ideas. MAF issues 7 varieties among 250 varieties. - It was effective to cooperate with international NGOs such as World Vision East Timor, Catholic Relief Services and Australian Volunteers International in the beginning stage of the project. - It was effective to cooperate with the International Agricultural Research Center (International Maize and Wheat Improvement Center-Mexico, International Center for Tropical Agriculture-Colombia, International Rice Research Institute-Philippines, International Crops Research Institute for the Semi Arid Tropics-India, International Potato Center- Peru) to examine various crops and varieties.
Lessons learnt/ limitations
- It was considered in future to change the present seed supply system which is free of charge. - Farmers who applied local variety exist among those participated in crop examination. The reason was that taste of local variety is favorable, harvest time is early, and it belongs to other variety. - It was not evaluated to make effort to collect seed of local variety and multiply them. - It is needed to consider environment impact since it is expected to increase of slash –and –born farming.
One Village One Product: SIPI (JICA)
Lessons learnt/ advantages
- It contributes to capacity development of local human resources, especially women groups, in production activities. - MAF evaluates as effective projects for human resources development in creating product making sense and sales method on their own initiatives.
Lessons learnt/ limitations (based on the field observation, not discussed among stakeholders)
- It is the subject to get processing materials, although it is desirable to get from the local products. - Wrapping materials such as grass, cover and polyethylene have to be imported, so that production cost increase. Products without proper wrapping can not be sold. Competition with imported ones which are properly wrapped and designed. - It is hard to find stable market channel.

CHAPTER 5 FORMULATION OF MASTER PLAN

5-1 PROBLEM ANALYSIS

5-1-1 Core Problems and Their Relation

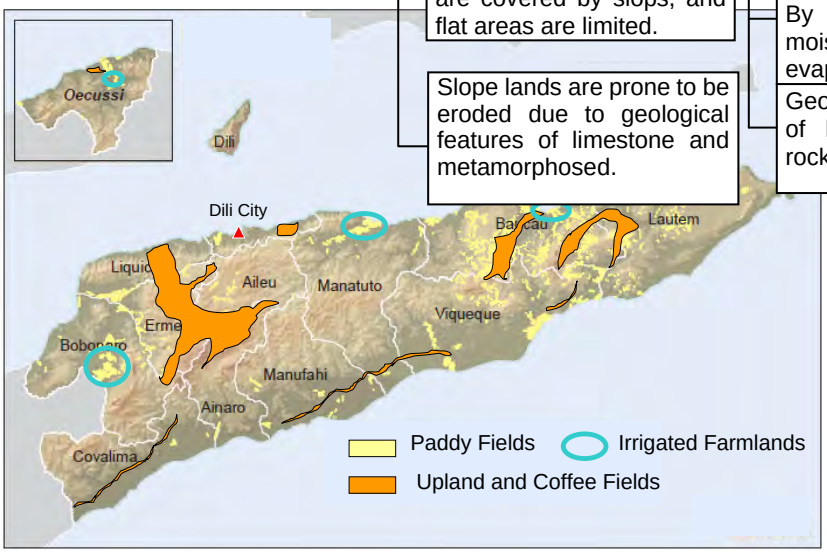
Core problems and their relation for promotion of processing/ marketing industry are compiled based on the present conditions in line with the stages from production to processing, marketing and sales of agricultural/ livestock/ fishery products.

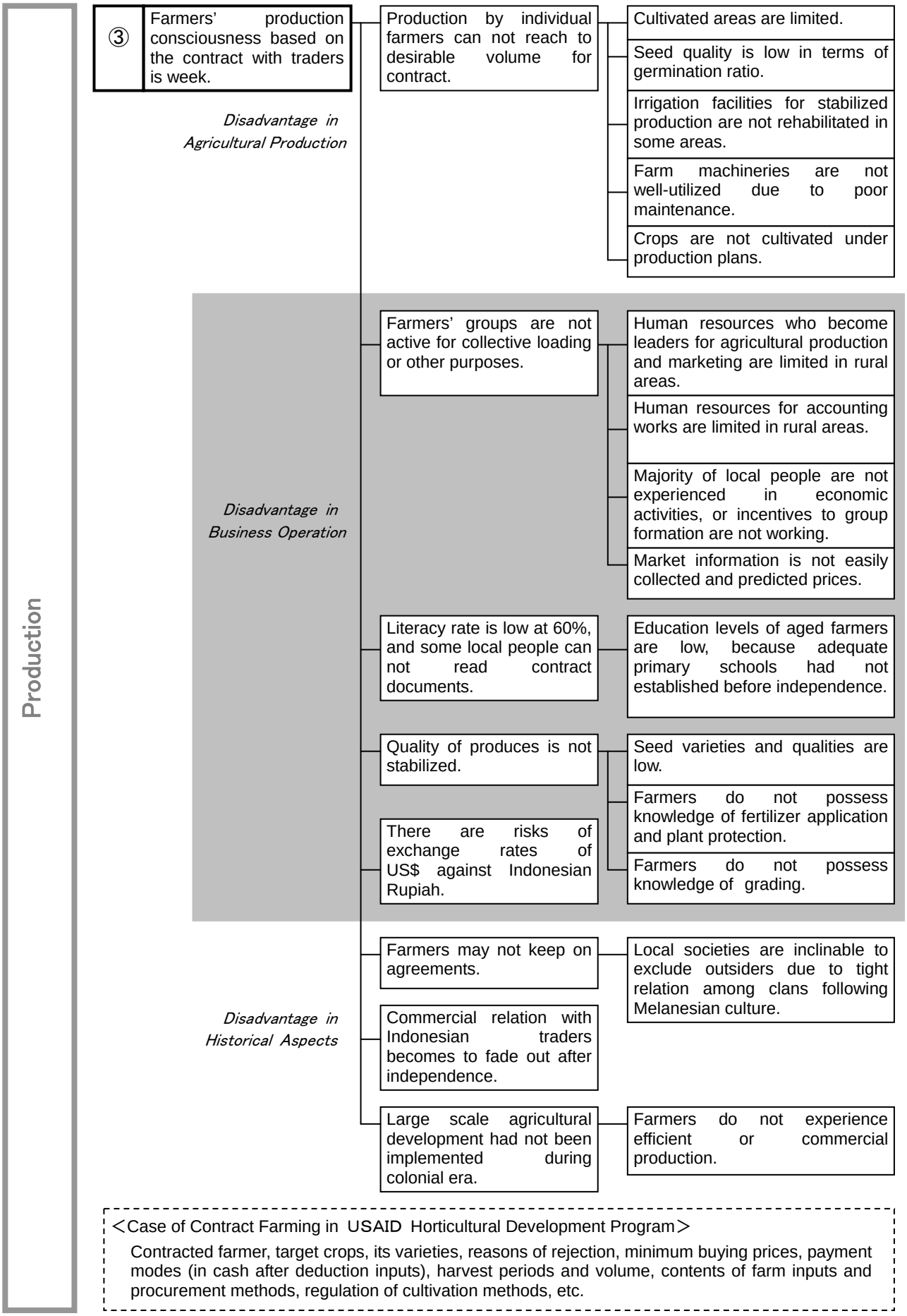


5-1-2 Analysis of Each Core Problem

Causes of each core problem are found in the each stage.

Stage	Core Problems	Causes	
Production	① Market amount is limited due to self-sufficiency farming whose only surplus is marketed.	Farmers are commonly cultivated by slash-and-burn in many slope areas of hills.	Forest areas are not protected perfectly.
			Farmers do not possess knowledge of soil conservation
			Farmers do not posses knowledge of crop rotation.
		Farmlands are located far places from residences.	Available farmlands in or near villages in hills are limited.
			Time for cultivation and management is limited for women due to collection of fire woods.
		Generally yields are low.	Farmers do not posses knowledge of fertilizers.
		Paddy and upland fields are divided into small plots.	Chemical fertilizers are rarely used.
			Compost and green manure are not prevailed.
		Purchasing power in rural areas is low.	It is rarely to have opportunities for cash incomes in villages.
	② There is a production gap in the rural areas based on natural and physical conditions	Utilization of water is not improved except Maliana, Manatuto.	Run-off in northern lowlands of country is low.
			Irrigation facilities are not rehabilitated in some areas.
		Soils are not fertilized.	Conglomerates and rocks in surface cover in north highlands of country, not by bacteria rich soils.
		Most of lands of country are covered by slops, and flat areas are limited.	By over-grazing of goats, soil moisture can be easily evaporated.
		Slope lands are prone to be eroded due to geological features of limestone and metamorphosed.	Geographic conditions consisted of limestone and metamorphic rock conducts to erosion.




Production
③
Farmers' production consciousness based on the contract with traders is week.
Production by individual farmers can not reach to desirable volume for contract.
Cultivated areas are limited.
Seed quality is low in terms of germination ratio.
Irrigation facilities for stabilized production are not rehabilitated in some areas.
Farm machineries are not well-utilized due to poor maintenance.
Crops are not cultivated under production plans.
Disadvantage in Agricultural Production
Farmers' groups are not active for collective loading or other purposes.
Human resources who become leaders for agricultural production and marketing are limited in rural areas.
Human resources for accounting works are limited in rural areas.
Majority of local people are not experienced in economic activities, or incentives to group formation are not working.
Market information is not easily collected and predicted prices.
Disadvantage in Business Operation
Literacy rate is low at 60%, and some local people can not read contract documents.
Education levels of aged farmers are low, because adequate primary schools had not established before independence.
Quality of produces is not stabilized.
Seed varieties and qualities are low.
Farmers do not possess knowledge of fertilizer application and plant protection.
There are risks of exchange rates of US$ against Indonesian Rupiah.
Farmers do not possess knowledge of grading.
Farmers may not keep on agreements.
Local societies are inclinable to exclude outsiders due to tight relation among clans following Melanesian culture.
Disadvantage in Historical Aspects
Commercial relation with Indonesian traders becomes to fade out after independence.
Large scale agricultural development had not been implemented during colonial era.
Farmers do not experience efficient or commercial production.
＜Case of Contract Farming in USAID Horticultural Development Program＞
Contracted farmer, target crops, its varieties, reasons of rejection, minimum buying prices, payment modes (in cash after deduction inputs), harvest periods and volume, contents of farm inputs and procurement methods, regulation of cultivation methods, etc.

Processing

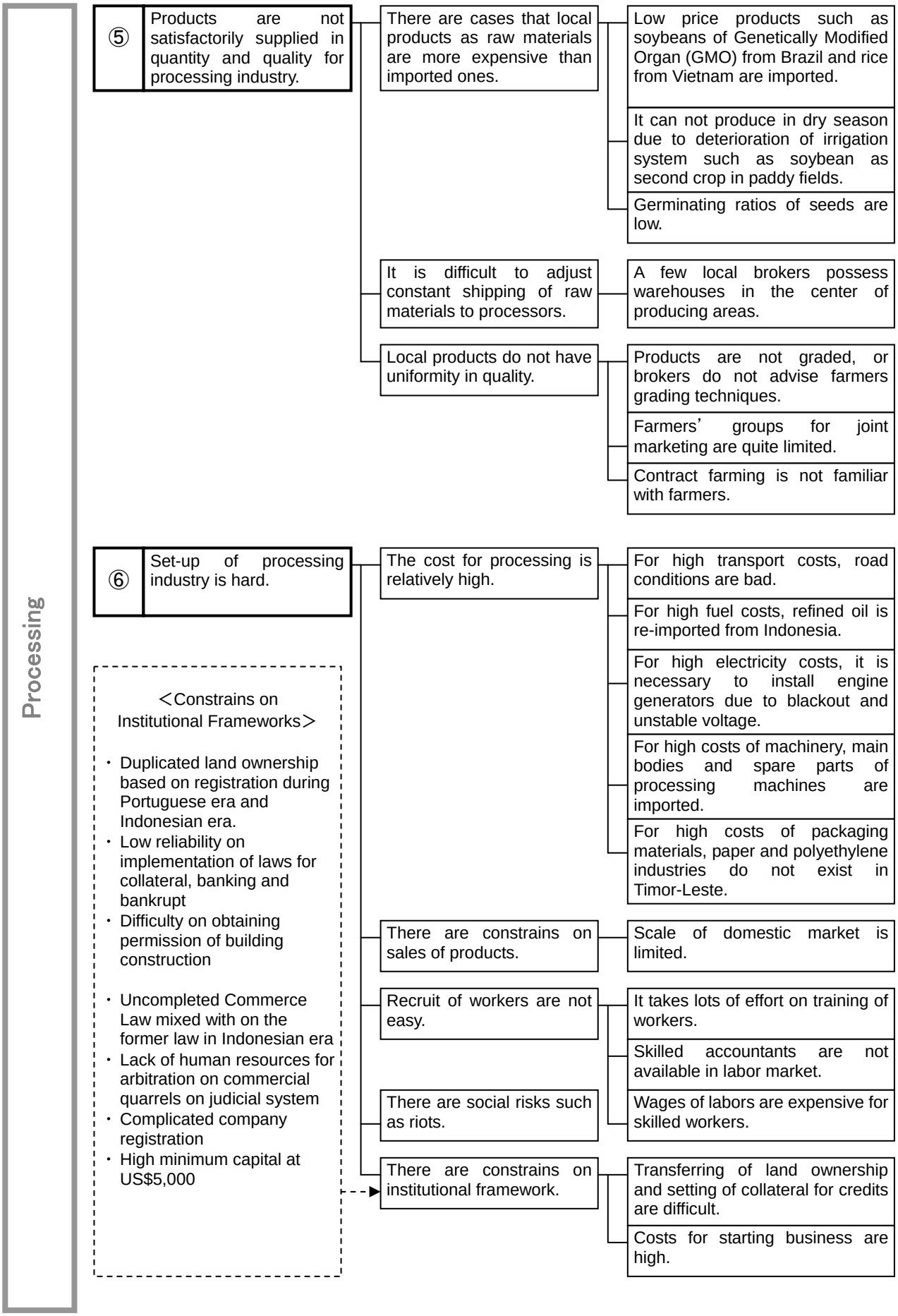
④ Incentives to producing high-quality products are not generated.	There is no grading system of crop quality especially for milled rice.	Quality standards are not settled.
		Analytical laboratories are not set up.
		Many specialists for evaluations of crops are not existed.
	It is not easy to find markets.	It is difficult to manufacture cheaper products with higher quality than Indonesian ones.
		Local people may not know what kinds of products and where they sell, using local materials
	Processing techniques are in low level.	Local people do not have experiences on processing, or can not buy machines.
		There is no power supply, power only supplied in night, or power blackout often happen.
		Local people do not possess knowledge of agro-processing except milling, natural fermentation and oil extraction.
	Branding of local products is not recognized by consumers.	Local specialty products are not promoted by both MAF and district administrators.
		Movement of “Local Products, Local Consumption” is not penetrated to consumers.
		Limited numbers of farmers’ groups and women groups start business of agro-processing.
		It is difficult to purchase package materials and package machines in low prices.

＜Trial of Branding of Local Rice＞

The prices of local rice are affected by ones of imported rice. The people of Timor-Leste prefer taste of local rice, but it is difficult to identify origin of products due to non-packaging and non-labeling using recycled MTCI grain bags. One agricultural production cooperative has started to sell their original brand and package as ‘Baucau Rice’. The indications are as follows:

Low Pricing ⟷ **High Pricing**

Imported Rice (common)	Local Rice (white, red & black rice)	Imported Rice (branded)
MTCI grain bag No rice brand No import country Broken rice 15% less Trader name Net weight 35kg MTCI approval Government symbol	MTCI grain bag (recycled) No origin of rice producer No origin of rice producing place No specifications (grade, broken rice ratio, moisture content) No weight indication (Consumers can not know the details of rice.)	Paper bag or vinyl bag Kind and brand Trademark Country of origin Producing farm (for some brands) Rice miller Broken rice ratio Net weight Ingredients for some brands


Processing
⑤
Products are not satisfactorily supplied in quantity and quality for processing industry.
There are cases that local products as raw materials are more expensive than imported ones.
Low price products such as soybeans of Genetically Modified Organ (GMO) from Brazil and rice from Vietnam are imported.
It can not produce in dry season due to deterioration of irrigation system such as soybean as second crop in paddy fields.
Germinating ratios of seeds are low.
It is difficult to adjust constant shipping of raw materials to processors.
A few local brokers possess warehouses in the center of producing areas.
Local products do not have uniformity in quality.
Products are not graded, or brokers do not advise farmers grading techniques.
Farmers' groups for joint marketing are quite limited.
Contract farming is not familiar with farmers.
⑥
Set-up of processing industry is hard.
The cost for processing is relatively high.
For high transport costs, road conditions are bad.
For high fuel costs, refined oil is re-imported from Indonesia.
For high electricity costs, it is necessary to install engine generators due to blackout and unstable voltage.
For high costs of machinery, main bodies and spare parts of processing machines are imported.
For high costs of packaging materials, paper and polyethylene industries do not exist in Timor-Leste.
There are constrains on sales of products.
Scale of domestic market is limited.
Recruit of workers are not easy.
It takes lots of effort on training of workers.
Skilled accountants are not available in labor market.
There are social risks such as riots.
Wages of labors are expensive for skilled workers.
There are constrains on institutional framework.
Transferring of land ownership and setting of collateral for credits are difficult.
Costs for starting business are high.
＜Constrains on Institutional Frameworks＞
・ Duplicated land ownership based on registration during Portuguese era and Indonesian era.
・ Low reliability on implementation of laws for collateral, banking and bankrupt
・ Difficulty on obtaining permission of building construction
・ Uncompleted Commerce Law mixed with on the former law in Indonesian era
・ Lack of human resources for arbitration on commercial quarrels on judicial system
・ Complicated company registration
・ High minimum capital at US$5,000

Processing

- ⑦ Finding and development of export products are hard.
  - Appeal of specialty as natural farming products is not extended.
    - There are no certificate organizations for natural farming products in Timor-Leste.
    - There are no laboratories to analyze chemical residue levels, ingredients, micro-organisms, etc. in Timor-Leste.
    - There is no regulation to define natural farming.
  - Shipping units are 20ft. container for ocean freight or 5ton truck for West Timor.
  - There is no originality with Balinese products for tourism industry.
    - Demands for tourists are limited at present.
    - Specialty products only in Timor-Leste are not developed.
  - Manufacturers or producers are not indicated for agro-processed products.
    - Obligation of indication of products is not regulated.
  - Network of foreign traders with forwarders is not yet tight.
- ⑧ Competition with imported commodity is keen for domestic commodity in prices, quality and quantity.
  - Competition power of Indonesian products in domestic markets is overwhelmingly strong.
    - Indonesian firms have the market of 230 million people, but Timorese market is only 1.2 million.
  - Price competition is very hard.
    - Costs for materials, fuel, electricity, labor and machines are expensive in Timor-Leste.
  - Quality competition is very hard.
    - Research, marketing, commodity design, processing and packaging are not developed.
    - Quality of raw materials is low.
  - Large scale production is not feasible in Timor-Leste
    - Stable procurement of uniformed quality raw materials is difficult.

＜Indonesian Products in Timorese Markets＞

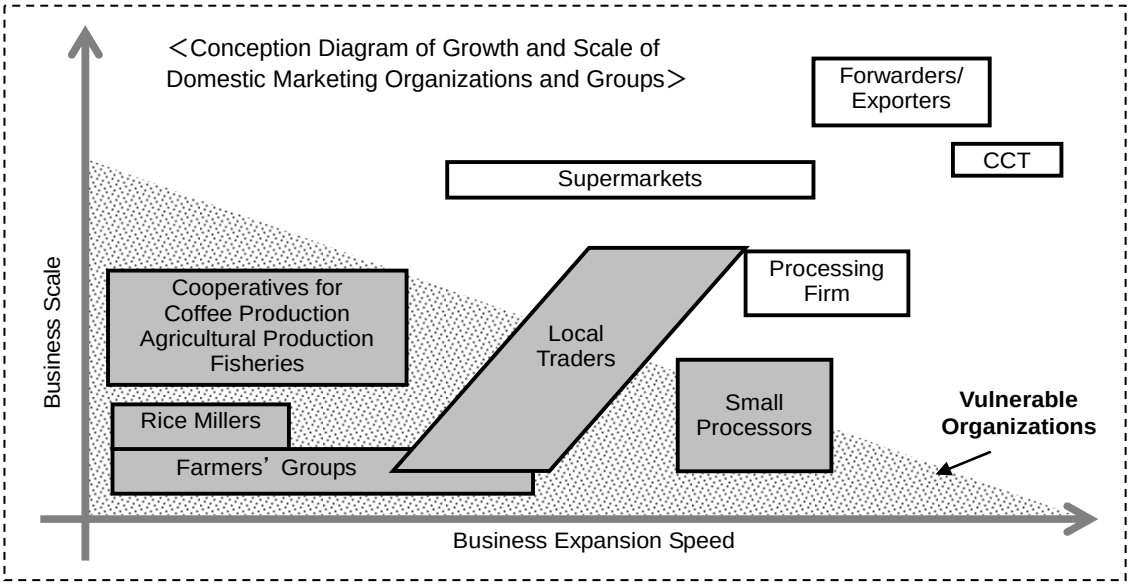
Indonesian made agro-products sold in public markets and retailer shops（*Kiosk*） are show in below:

Kinds	Indonesian Products in Markets and Retail Shops
Beverage	mineral water, paper packed juice, canned sparkling beverage
Grain	wheat flour, instant noodle
Meat/ Egg	chicken egg, sausage
Food oil/ Dairy products	food vegetable oil, long-life milk, milk powder, margarine
Seasoning	Ionized salt, ketchup manis, tomato ketchup, spice, cooking powder, ajinomoto
Canned products	fish, meat, fruit, bean, corn
Coffee/ Tea	Robusta roasted coffee powder, Javanese tea
Confectionery	brisket, snack, candy, etc.
Alcohol drinks	beer, rice whisky

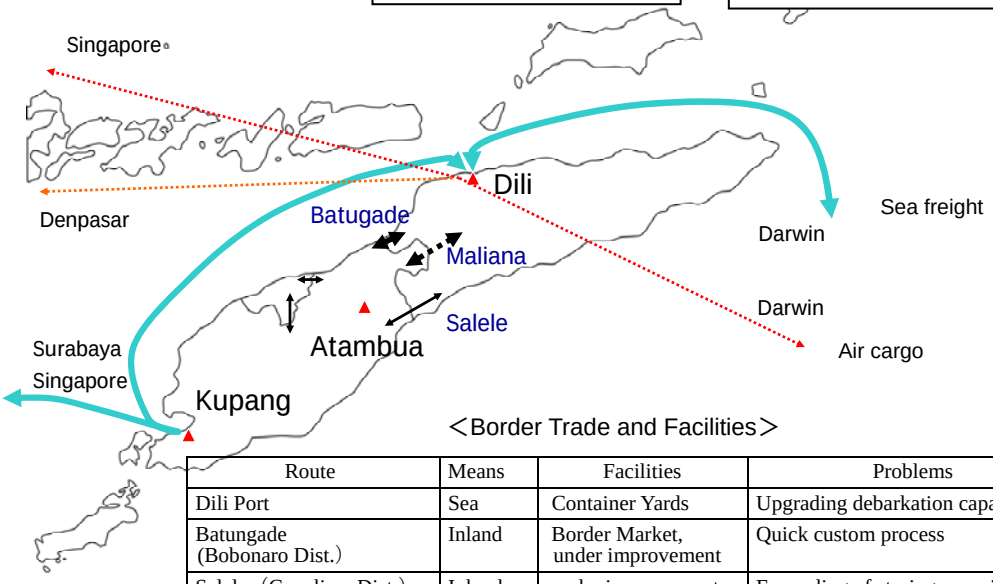
Remarks: Sugar made in Thailand, Milled rice made in Vietnam

Marketing

⑨ Business capacity of the processing industry/ marketing groups/ farmers organizations is weak.	Joining to cooperatives for agriculture and fishery is not attractive.	Incentives to members of cooperatives are not clear for members.
		Capacities of leaders are not developed.
		Supports from Ministry and district administration are not sufficient due to lack of human resources.
		Cooperatives do not experience product development and marketing.
	Independent rice millers can not get benefits.	Imported rice is inflow to markets and set in lower prices for food security purpose.
	Local traders can not purchase crops from farmers to meet demands from traders in West Timor.	Traders do not have accumulated capitals.
	Traders do not have quality seeds and fertilizer, technicians and warehouses required for contract farming.	
	Groups of farmers and women are not active economically.	Techniques of cultivation, raising and processing are not prevailed.
		It is difficult to create cash flow.
		It is difficult to find outlets to sell. (eg. Tais)
		Women should waste time for collection of fire woods and drinking water.
	Market amount decreased. (eg. coconut virgin oil, candlenut oil)	Indonesian traders have not come to buy (low quality).
		There is no large scale processing factory in Timor-Leste.



⑩	Infrastructures (road, storage, communication) are not provided.	Distribution system of products is not efficient due to bad road conditions.	Heavy trucks and truck-tractors are not passable due to curves.
			It should drive in low gear shift.
			There are climbing roads with high degree.
			Pavement conditions are bad.
		Ports and ferry lines are not improved.	For east and south parts of country, distribution is costly due to lack of operating ports except DIli Port.
			Ferry boat between Dili and Oecussi is stopping operation.
		Logistics costs are relatively expensive because related industries are under development.	Diesel and gasoline are refined in Indonesia and re-imported.
			Public transport means are not developed between major towns and Dili.
			Handling charges for documentation of exports and imports are more expensive at 30% than Indonesian cases.
		Facilities of cold storage and low temperature transport are not developed.	There are blackout or no power supply.
			There are no cold storages in markets.
		Communication facilities are not improved.	From production areas, it is difficult to communicate with markets in consuming areas to obtain information.
		There are not many storage houses for export.	There is disadvantage in export trading.



＜Border Trade and Facilities＞

Route	Means	Facilities	Problems
Dili Port	Sea	Container Yards	Upgrading debarkation capacity
Batungade (Bobonaro Dist.)	Inland	Border Market, under improvement	Quick custom process
Salele（Covalima Dist.）	Inland	under improvement	Expanding of storing capacity
Maliana (Bobonaro Dist.)	Inland	Informal trade	Expanding of storing capacity
Olesiro (Oecusse Dist.)	Inland	under improvement	Improvement of access road

Marketing

⑪ Market information on agricultural products is not sent to stakeholders.

- Most of 388 extension staff of MAF does not have agricultural information.
  - Magazines issued by MAF Agribusiness are not distributed to all extension staff.
  - Effective mass media is only radio broadcast because newspaper and magazines are not distributed to rural areas.
- Market prices in Atambua of West Timor affect on price fluctuation in Timor-Leste, but the information is not available generally.
  - It is not easy to obtain data due to transaction mode by volume or batch, not by weight.
- Since production data is not accurate, it is difficult to estimate marketed volume.
  - Agricultural census is not carried out.（MAFwill implement under support of FAO.）
- Marketing activities of agricultural cooperatives and farmers' groups are not active.
  - It is not easy to find reliable business partners, who can be a source of information.
  - Dissemination rate of mobile phone is less than 10% in the country except Dili District. (in August, 2007)

Sales

⑫ Purchasing power of local people is limited.

- Cash incomes are quite limited in rural areas.
  - Population under poverty line at US$0.88/day is accounted at 73%.
  - There is no industry which can employ local labour force.
    - Jobless people are many due to fewer opportunities of cash incomes.
    - Migrant labors to other countries are limited, therefore money transfer to Timor-Leste is limited.
- It is difficult to sell milled rice in higher prices.
  - Milled rice prices are affected by selling prices of imported rice by MTCI.
- It is difficult to sell cow meat and swine meat in higher prices.
  - Farmers do not posses vehicles to transport products for long distance.
  - There is no meat processing factory.
- It is difficult to sell other surplus products in higher prices.
  - Quality of surplus products is low and lost freshness.

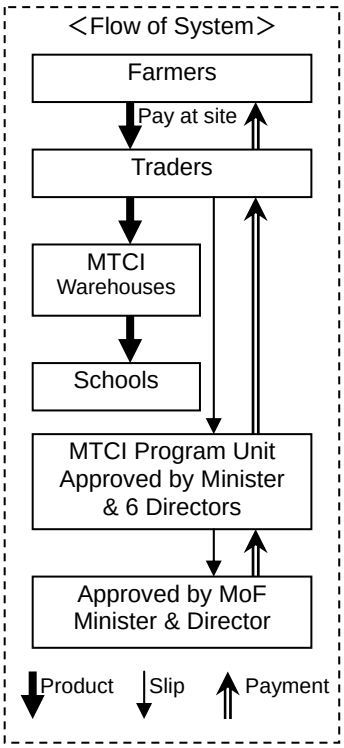
＜Marketed Local Products＞

In 'Market Days' of local public markets, **farmers especially women sell the following cash crops.**

Common Cash Crops	Cash Crops only for High Quality Products
coffee, rice, maize, soybean, mungbean, peanut, other beans, chili, garlic, cow, swine, fighting cock, chicken	Tomato, onion, cabbage, cucumber, aubergine, white guard, capsicum, cassava, irish potato, taro, sweet potato, carrot, arrowroot, rice bran, French bean, snow pea, kangkong, salad leaf, other leaf veg., herbs, orange, banana, mango, papaya, other fruits, copra, honey

Sales

⑬ Government products-purchasing system is not functional.



- It takes time from sales of products to payment for 4-6 months.
  - Human resources of MTCI are insufficient.
  - Quality control is not appropriate due to lack of capacity of inspectors and one flat unit price by weight.
  - Small scale rice millers and traders can not participate the system due to shortage of money.
- The system is unstable for market economy regime.
  - The system affects on pricing of local products.
  - Excessive production can be conducted in the future.
- Management costs of the government increase.
  - Decision of buying minimum prices is set without cost calculation.
  - According to increase of buying volume, costs for storing and wages will increase.
- Experiences, knowledge and human resources of MAF are not utilized effectively for production and post harvest.
  - Measures of anticorruption are required.

⑭ Quality of marketing products is not reliable due to poor hygiene management.

- Food inspection system and Food Sanitation Law do not set in forth.
  - Food sanitation inspectors are not allocated in MoH.
  - There are no laboratories for micro-organisms inspection and food poison analysis.
- Abattoir houses are not established to create sanitary meat distribution system.
  - Stakeholders of slaughtering and traders for meat business do not have opportunities to learn sanitary education.
    - Slaughter men cut meat outside markets and do not properly handle internal organs and intestines.
  - Normally consumers do not have consciousness on sanitation and knowledge of relation of diseases and food sanitation.
- Sanitary facilities are not constructed in public marketplaces.
  - There are no public toilets.
  - Water supplies for cleaning of facilities and washing hands are insufficient..
  - Drainages of market compound are not functioned and dusty.
  - There are no power supplies for refrigeration of products to depress bacteria.
  - Garbage are not properly treated.

5-2 APPROACH TO PROBLEM SOLUTION

5-2-1 Basic Concept for Problem Solution

Solutions for the core problems arisen in the stages from production to processing, marketing and sales mentioned in the previous section are analyzed as approach to problem solution. Basic concept for subjects to be solved in the Master Plan, approach to solutions and measures to cope with the core problems and causes in the core problems are examined as shown in Table 5-2-1. Basic concept for problem solution is formulated based on the followings, considering the framework of processing and marketing sectors.

Table 5-2-1 Basic Approach to the Problem Solution for Master Plan Formulation

Items	Basic concept for examination and analysis
Core problems and Causes in the core problems	Core problems and causes in the core problems are shown in the section "5-1-2 Analysis of Each Core Problem".
Subjects to be solved in the Master Plan	Those subjects are formulated by the "Causes in the core problems" under the screening works to pick up the subjects for the Master Plan Formulation. The following subjects are not incorporated into the subjects to be solved in the Master Plan. - Those subjects under the influence of non- processing/ marketing industries' sector operation (ex. subjects which are required to conduct a large scale environment impact assessment, and invite industries such as large scale tourism and marine development) - Those subjects required to frame any laws, regulations and institutions in advance (ex. related with land tenure, commercial law and credit system)
Approach to solutions	Approach to solutions is formulated by integration of the subjects to be solved in the Master Plan.
Measures	Measures to solve the subjects are formulated based on the present conditions by the subjects.

The results brought from such approach are put on the framework of Master Plan formulation.

5-2-2 Approach to Master Plan Formulation

Measures shown in the Table 5-2-2 are classified into the stages from production to selling of agricultural products for approach to Master Plan formulation (see Table 5-2-3).

Table 5-2-2 Approach to Solutions of Core Problems

Stages	Core problems	Causes in the core problems	Subjects to be solved in the Master Plan	Approach to solutions	Measures
Production	① Market amount is limited due to self-sufficiency farming whose only surplus is marketed.	Farmers are commonly cultivated by slash-and-burn in many slope areas of hills.	To cope with the problems, it is necessary to control slash-and-burn farming and zoning of conservation forest. But, its forest approach is not in the framework of Master Plan. For the Master Plan, it is targeted to increase of crop productivity in slope areas of hills through provision of production infrastructures and improvement of cropping technology. Its approach indirectly contributes to decrease of slush- and- burn farming.	**Productivity is improved so that surplus can be produced and marketed.** Self-sufficiency of food crops is not reached. Farmers provide production for home consumption. In order to promote agricultural products market, it is necessary to increase surplus and market them through increase of agricultural productivity. It is important for increasing productivity to improve cropping technology, provide infrastructures and manage them properly. It takes a long-term to attain such target. For short term priority, it is important to give an incentive to increase production for farmers by making use of government products-purchasing system.	- Provision of production infrastructures - Improvement of cropping technology - Supply of seed and input materials
		Farmlands are located far places from residences.	Provision of farm road for farmlands far from residences is incorporated in the provision of production infrastructures.		- Provision of production infrastructures
		Generally yields are low.	Crop yields are increased by means of provision of production infrastructures, improvement of cropping technology and stable supply of seed and input materials.		- Provision of production infrastructures - Provision of irrigation facilities - Improvement of cropping technology
		Paddy and upland fields are divided into small plots.	To increase yields in farm plots, it is generally effective for effective production activities to integrated small plots. But, it is difficult to do so due to unclear land tenure. Then, for the Draft Master plan, it is targeted to increase crop productivity under the present farm plots with provision of irrigation facilities, improvement of cropping technology.		- Provision of production infrastructures - Improvement of cropping technology - Supply of seed and input materials
		Purchasing powering rural areas is low.	In order to make purchasing power of rural people strong, it is required to generate cash income opportunity in rural areas. In practical, but, such opportunities are not provided due to no employment industry except agriculture. Under the present situation, it is effective to make use of government products purchasing system which may give production incentives to farmers. By purchasing system, it is expected to increase crop production, increase of surplus production and its marketing in cash.		- Making use of government products purchasing system

Stages	Core problems	Causes in the core problems	Subjects to be solved in the Master Plan	Approach to solutions	Measures
Production	② There is a production gap in the rural areas based on natural and physical conditions.	Utilization of water is not improved except Maliana and Manatuto.	When production infrastructures provided, provision of water source and irrigation facilities based on the locality of geographical conditions are incorporated in the development plan.	**Productivity is improved on the locality and local products can be distributed each other by improved transportation system.** Productivity of crops which are diversified on the local natural and physical conditions is increased. Improvement of transportation system can make it easy to distribute them among production and consumption sites.	- Provision of water source and irrigation facilities
		Soils are not fertilized. Most of lands of country are covered by slopes, and flat areas are limited. Slope lands are prone to be eroded due to geological features of limestone and metamorphosed.	To cope with these problems, it is necessary to provide nation-wide land use plan and farmland conservation measures based on the geographical conditions (water, land, soil). But, it is not in the framework of Master Plan. For the Master Plan, it is planned to increase productivity on locality through improvement of cropping technology with provision of production infrastructures in prioritized high potential farmlands. Then, transportation with roads is improved so that produced surplus in the areas can be sold in other non-production areas.		- Provision of production infrastructures - Improvement of cropping technology - Provision of roads
	③ Farmers' production consciousness based on the contract farming with traders is weak.	Production by individual farmers can not reach to desirable volume for contract.	Farmers' crop production group is organized. A certain crop production volume is ensured by contract farming between the crop production group and traders/ processing/marketing industries.	**An incentive to production can be given to farmers/ farmers groups through teaching awareness of contract sense and advantage to them.** An incentive to production is given to farmers/ farmers groups by teaching advantage of contract farming. Original products for processing and marketing industries can be stably supplied in quality	- Promotion of contract farming
		Farmers' groups are not active for collective loading or other purposes.	Advantage of the group activities is educated to same crop production farmers. Crop production farmers groups are educated so that collective loading or shipping can be collaborated with them through organizing farmers groups.		- Organizing farmers groups
		Literacy rate is low at 60% and some local people can not read contract documents.	It is necessary for farmers/ framers groups to create contract and commercial sense when contract farming is promoted between them.		- Education for creating contract and commercial consciousness

Stages	Core problems	Causes in the core problems	Subjects to be solved in the Master Plan	Approach to solutions	Measures
Production		Quality of products is not stabilized.	Quality of products is ensured in a certain level by educating cropping technology and stable supply of seed/ input materials to contract farmers and provision of production infrastructure.	and quantity through promotion of contract farming in the proper production areas. To make execution of contract farming smoothly, farmers/ farmer groups are taught so that they become aware of advantage and create contract and commercial sense. And they are supported to organize themselves to get negotiation power with traders/ processing/ marketing industry	- Improvement of cropping technology - Supply of seed and input materials - Provision of production infrastructures
		There are risks of exchange rates of US$ against Indonesian Rupiah.	Trading capacity is strengthened for traders so that they can cope with foreign exchange fluctuations.		- Strengthening of trade capacity for traders
		Framers may not keep on agreements.	Commercial consciousness of crop production is created for contract farming farmers through teaching advantage of the contract farming (stable farming practice) to them. And, their contract farming operation is supported with promotion of the contract farming.		- Education for creating contract and commercial consciousness - Support for agribusiness operation of farmers groups
		Commercial relation with Indonesian traders becomes to fade out after independence.	Business condition is provided so that Timor-Leste business person can take initiatives to lead border trade to West Timor.		- Human resources development for marketing industry.
		Large scale agricultural development had not been implemented during colonial era.	Agricultural development with production incentives are given to farmers through provision of production infrastructures, dissemination of cropping technology and supply of seed/ input materials in the high production potential farmlands.		- Provision of production infrastructures - Improvement of cropping technology - Supply of seed and input materials
Processing	④ An incentive to producing high-quality products are not generated.	There is no grading system of crop quality especially for milled rice.	Produce grading system based on the quality is provided so that high quality products can be sold at high-prices.	**High-price sales of high-quality products can be supported by issuing quality certification.** An incentive to making	- Introduction of produce grading system

Stages	Core problems	Causes in the core problems	Subjects to be solved in the Master Plan	Approach to solutions	Measures
Processing		It is not easy to find markets.	Sales opportunity for produced agricultural products and processed commodities is provided for producers/ processors/ traders so that they can exhibit and sell to consumers.	commodity is created for producer. To develop making high-quality products, it is necessary to support producers through supplying developing technology of high-quality products and helping sales by issuing quality certification, branding them and developing domestic products consumption campaign.	- Provision of sales promotion opportunity - Supply of market information
		Processing techniques are in low level.	Learning opportunity is provided for processing industry/ farmers groups/ women groups so that they can learn processing skill. And, it is necessary to provide institutional mechanism for them so that procurement process of processing machine or equipment and commodity development process can be supported technically and financially.		- Provision of learning opportunity to obtain processing technology - Support for procurement of processing machine/ equipment - Support for commodity development
		Branding of local products is not recognized by consumers.	Conditions are provided so that local people can find/ develop local specialties and promote to sell them by themselves. By making an appeal to its advantage, it is expected to expand its local consumption.		- Support for finding local specialty and support for processing and sales promotion - Domestic products consumption campaign
	⑤ Products are not satisfactorily supplied in quality and quantity for processing industry	There are cases that local products as raw materials are more expensive than imported ones.	Raw materials can be marketed at low price as its marketing volume is increasing with increase of crop production. The increase of crop production is attained by introducing dry season crops with irrigation facilities and stable supply of seed/ input materials for them.	**Products can be supplied stably through improvement of crop productivity, promotion of contract farming and effective products distribution.** It is indispensable for processing industry to make supply of original products stable in price, quality and	- Provision of irrigation facilities - Improvement of cropping technology
		It is difficult to adjust constant shipping of raw materials to processors.	It is necessary to construct storage facilities for raw materials to adjust shipping to processors and train traders so that they can trade it by making use of the constructed storage facilities.		- Construction of storage facility - Training on trading business for marketing industry

Stages	Core problems	Causes in the core problems	Subjects to be solved in the Master Plan	Approach to solutions	Measures
		Local products do not have uniformity in quality.	Contract farming between farmers groups and processors is promoted so that uniformity in quality of products can be ensured. To homogenize quality of the product, it is necessary to introduce produce grading standard.	quantity. It makes possible to supply products stably through increasing agricultural productivity, introduction of dry season cropping, promoting contract farming with introduction of grading system of crop quality.	- Promotion of contract farming - Introduction of produce grading standard
Processing	⑥ Set-up of processing industry is hard.	The cost for processing is relatively high.	Processors are supported financially in procurement and O/M of processing machine or equipment, provision of processing infrastructures such as electricity and water supply), and transportation including in packaging of products so that the necessary processing cost can be reduced for processors.	**Setting-up of small scale processing industries in which local agricultural/ livestock/ fishery products are used as original materials can be supported.** It is required for setting-up of large scale processing industry to cooperate with other industry such as tourism and marine development, improve present institutional system including in company register, justice and credit system and provide physical infrastructures. But, it might be difficult to realize them, considering present situation. It is proposed to set up small scale industries in which local products are used as original materials. To realize it, it is encouraged farmers groups/	- Support for procurement of processing machine or equipment and its operation and maintenance - Support for provision of processing infrastructures - Support for packing method of products - Support for transportation method of products - Technical support for commodity development
		There are constraints on sales of products.	Sales opportunity is provided for processors so that processed commodity can be exhibited and sold to consumers.		- Provision of sales promotion opportunity of local processed commodity
		Recruit of workers are not easy.	Human resources are trained so that processing industries can be operated and managed.		- Nurturing human resources for processing industry
		There are social risks such as riots.	Such social situation is not considered in the Master Plan.		

Stages	Core problems	Causes in the core problems	Subjects to be solved in the Master Plan	Approach to solutions	Measures
		There are constraints on institutional framework.	Improvement of present institutional framework such as land tenures and credit system which is essential subject for setting up/ operating of processing industry, is not grappled in the Master Plan formulation. It is dealt with for Master Plan to provide financial and administrative supports in setting up and operating processing industry. Administrative environment is provided so that processing industries/ farmers groups/ women groups can be set up and operated small scale processing industries with local agricultural/ livestock/ fishery products. In the Master Plan, administration might support financially and technically finding local products, setting up and operating its processing industry including in commodity development processes.	cooperatives/ women groups to set up processing industry. It is necessary to support setting-up and operating processes technically and financially.	-Financial and administrative supports for setting up of small scale industry - Support for finding products - Support for setting up and operating and managing processing industry - Support for commodity development
Processing	⑦ Finding and development of export products are hard.	Appeal of specialty as natural farming products is not extended.	It is necessary to provide conditions so as to find and develop possible export product and make an appeal of its features which is characterized as natural farming of Timor-Leste to overseas consumers. Certification system of natural farming products is considered to be effective for making an appeal to them in promoting its export.	**Natural farming products can be found through collection and analysis of overseas market research including trend of consumers taste and exported smoothly.** It is not easy to find export products following coffee considering international competitive power of Timor-Leste. It is important to find possible products from natural farming which are characterized as specialty of Timor-Leste, and direct toward export. In order to realize it, it is required to collect and	- Introduction of certification system of natural farming products
		There is no originality with Balinese products for tourism industry.	Supporting system is provided so that exportable products regarded as natural farming products in Timor-Leste can be found. In addition, it functions so as to study export possibility and develop value-added development process.		- Finding exportable products - Possibility study of product export - Support for value-adding technology of export products
		Shipping units are 20ft container for ocean freight or 5 ton truck for West Timor.	Necessary export shipping volume is secured by promoting to make crop production groups and collect each production. Administration system is improved so that domestic products can be exported smoothly without any volume limitation.		- Improvement of export documentation system - Improvement of quarantine system

Stages	Core problems	Causes in the core problems	Subjects to be solved in the Master Plan	Approach to solutions	Measures
		Manufacturers or producers are not indicated for agro-processed products.	It is regulated for export promotion to put a label indicated manufactures or producers and quality certification on the products to make an appeal of its features to overseas consumers.	analyze overseas market research including trend of consumers taste and find products which are fit for natural farming products and target country. It is supported to add high value and develop export channel. For promotion of export, it is required to prepare quality certification system and improve export documentation system.	- Development of export promotion campaign
		Network of foreign traders with forwarders is not yet tight.	Communication network with foreign traders are established in collaboration with public and private sectors so that export information on overseas market trend and consumers taste for natural farming can be collected and analyzed. In addition, by making use of the network, it can be prepared to collect and analyze import condition of targeted country and product, aiming at finding exportable product.		- Provision of export promotion system for studying overseas' market and consumption trend - Provision of export promotion system for collecting and analyzing import condition of export targeted country
Processing	⑧ Competition with imported commodities is keen for domestic commodity in prices, quality and quantity.	Competition power of Indonesian products in domestic markets is overwhelmingly strong.	It makes competition power of domestic products make strong in prices, quality and quantity by providing financial and technical supports of commodity development process. Sales opportunity is provided so that advantage of domestic products such as food safety and quality certification can be made an appeal to consumers.	**Competitive position can become strong through improvement of processing/ marketing processes and appeal of safety by issuing quality certification.** To cope with price competition, it is required to support development of processing/ marketing technology and sales expansion through appeal of safety of domestic products by issuing food safety certification. For sales promotion, opportunities such as cooking class by women groups and supply of products to school feeding. It is important for support sales channel	- Support for commodity development technology - Provision of sales promotion of domestic products (opening of cooking class by women group, supply of products to school feeding, opening of agribusiness fair - Introduction of food safety standard - Introduction of produce grading system

Stages	Core problems	Causes in the core problems	Subjects to be solved in the Master Plan	Approach to solutions	Measures
				development to open trade fair regularly in which appeal domestic products and its food safety to traders/ consumers.	
Marketing	⑨ Business capacity of the processing industry/ marketing groups / farmers organizations is weak.	Joining to cooperatives for agriculture and fishery is not attractive.	Training cooperative members such as manager and accountants and supporting commodity development and market channel development for cooperatives make its operation and management capacity strengthen and more attractive to farmers. It is necessary to nurture administrators so that they can train cooperative members in strengthening operation and management capacity of cooperatives.	**Management capacity of them can be strengthened through training on capacity building for agribusiness operation.** Weakness of them is due to lack of capable human resources. Management capacity can be strengthened through capacity building of human resources. It is required to nurture manager and train accountant. For industry/ marketing groups/ farmer's organization, it is also required to strengthen trading capacity. Especially, it is important for set-up industries and women groups to continue train them in financial fields. It is also encouraged them to become a member of cooperative who can provide learning opportunity and capacity development training.	- Nurturing cooperative members (manager, accountants) - Nurturing administrators for strengthening cooperatives
		Independent rice millers can not get benefits.	It is important to make an appeal of advantage of domestic rice in quality against present marketing of cheap imported rice. To realize such sales in quality, it is required to provide grading system of rice so that rice can be sold on its quality.		-Introduction of produce grading system (rice)
		Local traders cannot purchase crops from farmers to meet demands from traders in West Timor.	Local traders can purchase necessary trade volume through collecting products with contract farming. Trading volume can be increased by increasing production of each contract farming groups.		- Promotion of contract farming
		Traders do not have quality seeds and fertilizer, technicians and warehouses required for contract farming.	It is supported to supply seeds/ input materials and technical know-how of cropping when contract farming carried out. Common use storage facility is constructed for traders who have no warehouses for trading.		- Supply of seed and input materials - Improvement and dissemination of cropping technology - Construction of storage facilities
		Groups of farmers and women are not active economically.	It is supported technically and financially that farmers and women groups set up and operate processing industry including development and sales of processing commodities.		- Support for setting up and operating processing industry by farmers and women groups
		Market amount decreased.	In order to maintain and increase market amount of export products(candlenut, etc), it is necessary to provide technical		- Provision of technical support for quality

Stages	Core problems	Causes in the core problems	Subjects to be solved in the Master Plan	Approach to solutions	Measures
		(example: coconut oil, candlenut oil)	support to improve quality of the products for producers and processors		improvement of agricultural products and raw materials for processing industry
Marketing	⑩ Infrastructures (road, storage, communication) are not provided.	Distribution system of products is not efficient due to bad road conditions.	It is necessary to improve road condition to make distribution system of products more effective. But, it takes long-term to promote nation-wide road improvement. Then, for Master Plan, priority of road improvement would be set from viewpoints of promotion of processing and marketing industry. Provision of roads is planned based on the priority.	**Infrastructures (road, storage, communication) are provided to distribute agricultural/ livestock/ fishery products timely.** It is a basic requirement to provide infrastructures for smooth distribution of products. Improvement of roads contributes to reduction of transportation cost and activation of distribution. Construction of storage facilities is important to take advantage for export. Priority for provision of them is set from market promotion viewpoint, since large investment and long term implementation are required to provide them.	- Provision of roads
		Ports and ferry lines are not improved.	It is required to take long term implementation and large investment as well as the roads. Road improvement should be prioritized rather than the ports, considering overall improvement planning of distribution system. Priority is not set on the Master Plan since any ports except Dili port can not be prioritized. Then, it would be recommended in the Master Plan that distribution system from the viewpoints of processing and marketing industries in the country might be incorporated in the provision planning of ports.		- Provision of ports
		Logistics costs are relatively expensive because related industries are under development.	Logistic costs can be reduced through improvement of road network which can realize large volume transportation and effective distribution. It is necessary to improve export/ import documentation system for traders in order to reduce necessary expenses.		- Provision of roads
		Facilities of cold storage and low temperature transport are not developed.	It is planned to provide cold storage facilities and low temperature transport facilities based on the present condition and future implementation plan of electricity supply network.		- Provision of cold storage facilities and low temperature transport facilities
		Communication facilities are not improved.	Communication system among producers and consumers (marketplaces) is established based on the present communication facilities. Market information would be exchanged among them through the established communication system.		- Establishment of communication system for exchange of market information based on the

Stages	Core problems	Causes in the core problems	Subjects to be solved in the Master Plan	Approach to solutions	Measures
					communication facilities
		There are not many storage houses for export.	Construction of storage facility is planned to negotiate border trade profitably.		- Construction of storage facilities
Marketing	⑪ Market information on agricultural products is not sent to stakeholders.	Most of 388 extension staff of MAF does not have agricultural information	Communication system is established so that extension staff of MAF can get agricultural/ market information. The agricultural/ market information which may cover the data/ information on processing/ marketing fields are sent to extension staff in district and sub-district levels.	**A system for information supply service of agricultural production and market information is established for stakeholders.** Uncertain and untimely agricultural production and market information are one of constraints to promote marketing industry. As for market information, price information of marketplace is collected and compiled to supply and share it to and among stakeholders. Agribusiness Directorate is now collecting price of major products in the main three marketplaces. It should be added to collect and compile data in the Atambua marketplace in West Timor.	- Provision of agricultural/ market information - Establishment of agricultural/ market information supply system
		Market prices in Atambura of West Timor affect on price fluctuation in Timor-Leste, but the information is not available generally.	Market prices in Atambura of West Timor are regularly collected, compiled as database and incorporated into the database on domestic market information. Those collected and compiled information are sent to stakeholders through communication system.		- Preparation of database for market information (including in Atambua market) - Preparation of database for agricultural production
		Since production data is not accurate, it is difficult to estimate marketed volume.	Master Plan does not take an approach so as to make the production data accurate. It is necessary for Master Plan to make use of result of agricultural census which is planning under the support of FAO and incorporate it into collection and compilation system of marketing products and their distribution amount. Market data collection system including market amount in district level is established.		- Making use of agriculture census - Collection and compilation of marketing products and their distribution amount

Stages	Core problems	Causes in the core problems	Subjects to be solved in the Master Plan	Approach to solutions	Measures
		Marketing activities of agricultural cooperatives and farmers' groups are not active.	Market information is distributed to agricultural cooperatives, farmers' groups and other marketing groups/ organizations so that they can deal with market activities on their own initiatives.	As for agricultural production information, it should be provided as useful information when finding processing products and setting-up of processing industries. Collected data is complied as database files.	- Provision of distribution system of agricultural/ market information - Provision of communication system among agribusiness stakeholders - Nurturing human resources for capacity development of trading
Sales	⑫ Purchasing power of local people is limited.	Cash incomes are quite limited in rural areas. (There is no industry which can employ local labor force.)	Other development approach such as introduction of public works and related industry into rural areas is necessary, in order to increase income of local people through provision of cash income opportunity in rural areas. Master Plan aims to increase cash income opportunity through promotion of marketing agricultural/ livestock and fishery products, promotion of contract farming, setting-up of processing industry in rural areas, further promotion of on-going SIPI.	**Purchasing power of local people becomes strong through income generation by marketing of agricultural production, introduction of contract farming and promotion of small scale processing.** Purchasing power becomes strong through increase of income generation for local people. Cash income opportunity can be provided in marketing activities of agricultural products on the	- Support for setting up and operating small scale industry - Promotion of SIPI - Promotion of contract farming
		Cash incomes are quite limited in rural areas. (It is difficult to sell milled rice in higher prices.)	By making use of government products purchasing system, the sale price of rice of imported and domestic ones are properly set putting stress on sales promotion of domestic rice.		- Proper setting of sales prices by making use of government products purchasing system

Stages	Core problems	Causes in the core problems	Subjects to be solved in the Master Plan	Approach to solutions	Measures
		Cash incomes are quite limited in rural areas. (It is difficult to sell cow meat and swine meat in higher prices.) (It is difficult to sell other surplus products in higher prices)	It is necessary to improve transportation method of fresh agricultural products such as meat, fish and vegetable to marketplace. By maintaining freshness of the products, these can be sold at higher prices. Provision of abattoir makes livestock market cashed.	increase of crop productivity and infiltration of commercial agriculture sense among farmers. Promotion of processing industry contributes to generate income opportunity through labor employment. Sales promotion of agricultural products also helps to create income generation. The SIPI provides income generation for women groups in local area. Increase of income through such income generation activities may be expected to link with increase of purchasing power of local people.	- Improvement of transportation method of agricultural fresh products to marketplace - Provision of abattoir
Sales	⑬ Government products-purchasing system is not functional.	It takes time from sales of products to payment for 4-6 months.	Operating system is improved so that payment to traders is brought the date forward by improving documentation procedures. To do it, it is necessary to strengthen business capacity of operating staff of MTCI.	**The purchasing system can be improved aiming at creating incentives to production and awareness of market oriented agriculture among farmers.** Government products purchasing system contributes to an incentive to production for farmers and putting agricultural products	- Improvement of operating system - Strengthening of business operating capacity of operating staff
		The system is unstable for market economy regime.	Operating system is improved so that it should be well-balanced with the market economy system. To do so, it is necessary to incorporate these subjects into the operation system, a) purchasing products are based on the quality, b) purchasing prices are set so as to avoid overproduction, and c) purchasing amount is set by products.		- Introduction of grading system of government purchasing products

Stages	Core problems	Causes in the core problems	Subjects to be solved in the Master Plan	Approach to solutions	Measures
Sales		Management costs of the government increase.	Operation system is improved so that purchasing prices can be set properly on the market economy and operation period of the system can be set in advance. It is necessary to establish monitoring system of the operation process to ensure the operation system.	on the market. There are problems in operating system. It is urgent to cope with the problems and get reliance in market system. In order to do so, it is required to establish practical operation system. The system includes in clarification of their roles between MAF and MTCI. It is necessary to improve payment process to traders and train administrators for proper operation of the system, considering capacity limitation of present operation staff. It is also required to set purchasing prices considering market system and introduce grading system of the products. It is noticed that operation period of the purchasing system should be fixed by setting target indicator such as production and purchasing volume.	- Establishment of monitoring system of the operation system - Setting operation period
		Experiences, knowledge and human resources of MAF are not utilized affectively for production and post harvest.	MAF staffs are appointed as an operation staff so that their experiences and knowledge can be put on the operation processes such as quality grading, storage and marketing of the products.		- Improvement of operation system based on the responsibility between MTCI and MAF
	⑭ Quality of marketing products is not reliable due to poor hygiene management.	Food inspection system and Food Sanitation Law do not set in forth.	Food safety inspection system is introduced so that foods can be inspected in the distribution process. It is promoted to introduce necessary equipment and devices for inspection and nurture inspectors, in parallel with introduction of food safety inspection system.	**Food safety in the marketplace can be realized through equipment of sanitary facility and cold storage facility in the marketplace, and introduction of food safety inspection system.**	- Introduction of food safety inspection system - Introduction of equipment and devices for food safety inspection - Nurturing inspectors

Stages	Core problems	Causes in the core problems	Subjects to be solved in the Master Plan	Approach to solutions	Measures
Sales		Abattoir houses are not established to create sanitary meat distribution system.	In order to put safe meat in the market, it is required to provide abattoirs and strengthen its sanitary management. Food safety inspection system including in nurturing inspectors and introduction of equipment and devices for inspection is established.	Lack of sanitary management in the marketplaces cause to distrust food quality. It is required to introduce food safety inspection system, improve marketplace equipped with sanitary facility and cold chain facility and establish proper operation/ management of them. Abattoir is improved to promote domestic meat market. Sales spaces of fresh products and low-temperature facilities and fish auction are provided for the marketplaces based on the provision of electricity supply service to promote sales of fresh foods.	- Provision of abattoir and strengthening sanitary condition (including in introduction of equipment and devices)
		Sanitary facilities are not constructed in public marketplaces.	In order to provide sanitary management in the public marketplaces, it is necessary to provide sanitary facilities and establish the operation and management system for sanitary management. Marketplaces are improved depending on the electricity supply condition, so that freshness of foods can be maintained and sold them to consumers.		- Provision of marketplaces and strengthening sanitary conditions - Establishment of operation and maintenance system of the marketplaces. -Installation of sales spaces of fresh foods and low-temperature storage facilities - Opening of fish auction

Table 5-2-3 Grouping of Measures and Framework of Master Plan

5-3 FORMULATION OF MASTER PLAN

5-3-1 Agribusiness Development Direction

(1) Integrated Development Approach with Production/ Processing/ Marketing/ Selling

Timor-Leste farmers have developed agricultural systems based on food security rather than market orientation. Their primary objective is provision of food for direct household consumption with a minimum of risk. Cropping systems are well adapted to a low input, low cost, low technology, non-market environment. In any case, Timor-Leste's rudimentary transportation system does not easily allow for movement of people, inputs or products. Subject to these constraints, agricultural systems have evolved to produce a wide variety of low yield but secure crops. These low risks, self consumption systems have allowed farm families for centuries to successfully survive rigorous social and environmental challenges.

In order to promote overall agricultural/ livestock/ fishery fields which are regarded as a core industry in this country, it is required to shift from subsistence farming style for home consumption to market oriented commercial agriculture style for buying and selling of products. To cope with this, government products purchasing system is introduced by MTCI. But, there are problems to be solved. It should be improved to make it sustainable and reliable for farmers.

Changing the self consumption pattern to a market orientation requires the building of confidence in market systems. For producing farmers, it is required to generate market orientated sense with processing/ marketing/ selling after production of their crops.

In order to promote processing/ marketing industry in the country where self-sufficient agricultural style is prevailing and marketing amount is limited, it is crucial for processors and traders to deal in produced crops in quantity and quality stably as raw materials for their processing/ trading activities. It is required for promoting agribusiness to take integrated approach with production, post-harvest processing, marketing and selling stages.

In order to promote production activity under the self-suffcient farming, it is required for prodcution farmers to generate market orientated sense with forward processing/ marketing/ selling direction after production of their crops. To do so, it is necessary to infiltrate market oriented commercial sense into farmers through strengthening cultivation activity to increase their production. They are encouraged to cultivate target crops directed to shipping target. In the cultivation process, it is important to provide farmers technical support to cultivate the crops. In order to shift from self-sufficient farming to market oriented commercial farming, it is necessary to accumulate small production activities directed toward post-harvesting, marketing and selling process of their produced products. Farming activity should be conducted under the basic concept of value chain improvement. Farmers' commercial sense would be generated by accumulating such small activities.

(2) Promoting Small Scale Processing and Marketing Industries with Domestic Products

Imported commodities are widely sold with cheap prices in the marketplaces. It is necessary to promote domestic commodity processing industry making use of domestic agricultural/ livestock/ fishery products, although competition with imported commodities is keen in price, quality and quantity. It is the important subject for Timor-Leste whose major industry relies on the agriculture/ livestock/ fishery production. Under such conditions, it is required to prepare strategic approach so as to encourage local people to establish processing industry making use of local resources including agricultural products produced in

and around their areas. Considering the present poor social infrastructures such as roads, electricity and water supply, the possible commodity processing industry is limited to a type of labor-intensive small scale home industries with farmers groups/ farmer organizations/ cooperatives.

Relevant donor agencies are grappling with promotion of processing industry in local areas. Those are the commodity development with value-chain concept such as coconut oil production and increase in soybean production implementing by GIZ, commodity production through One Village One Product (SIPI) by JICA, Agribusiness Horticulture Program by USAID, and NGOs' grass root activities. As the results of those supporting activities, there is a growing tendency for local people to set up small scale processing industries, although it is in the limited areas. It is important for administration to provide political and social environment for promoting small scale processing industry in the local areas, reading such growing tendency. To do so, it is required to prepare strategic development approach to supporting establishment processes of small scale industry in various stages of setting up, operating and managing itself.

(3) Promoting Agribusiness Envisaging Customer Target

For setting up of small sale industry as mentioned ablve, it is required to meet with the conditions that raw materials can be procured stably in quantity and quality; it is easy to get processing/ marketing skills and technologies; it is expected to profit from its business in the stages from production to selling. Considering the present situations, it is also necessary to analyze business feasibility, envisaging customer target of products/ processed commodities. For agribusiness promotion in this country, customer target is classified as follows.

Rich people	:	Rich people in urban area who has purchasing power.
Consuming public	:	Genral consumer in rural and urban area, included self-suffient farmers. Purchasing power is small.
Overseas consuming public	:	Overseas consumers who favor the agricultural/ livestock/ fishery products produced in Timor-Leste.

Promoting direction of agribusiness and necessary supports are drawn from viewpoint of those consumers, as follows (see Table 5-3-1). Action plan should be planned based on the promoting direction. In the planning, it should be prepared envisaging selected target products in line with promotion direction.

Table 5-3-1 Consumer Target and Agribusiness Promotion Direction

Customer Target	Agribusiness Promotion Direction (*Promoting type)*	Current Targeted Products*	Development Subjects and Expected Effect	Expected Necessary Supports
Rich people	High quality products whose raw materials are domestically produced are made by adding values, and sold them at high prices to rich people who have purchasing power. (*High quality products processing/ marketing industry*)	Agricultural products added high quality value for sales: High quality rice, Tofu, Soymilk, Foliage / aroma/ medical plants	It is required to support value adding process, sales expansion technically and financially. It is important support to analyze cost-benefit for setting up of the business. If customer target is put on rich people and its sales price is set to be high, expected effect is limited.	Technical supports for cost and benefit analysis, Technical/ financial supports for setting up and managing industries., Commodity development for supermarket (natural farming product, value adding process, wrapping/ labeling)

Customer Target	Agribusiness Promotion Direction (*Promoting type)*	Current Targeted Products*	Development Subjects and Expected Effect	Expected Necessary Supports
Rich people, Consuming public	Fresh products are marketed by maintaining freshness. The products are stored and transported in cool conditions. New fresh products are found and sold to rich people and consuming public maintaining its freshness for sales. (*Fresh products processing/ marketing industry*).	Products required freshness: Soybean products, fresh vegetable/ fruits, fresh fish, animal meat	Financial support to provide cool storage facilities and cool transportation system is the first priority. It is important to analyze cost-benefit, setting customer target. If sales price is set at high judging from the cost-benefit, promotion effect is limited since customer target is only on rich people.	Provision of cool storehouse/ transportation system, Organizing food safety system and its inspection
Consuming public	Many agricultural products are imported at cheap prices. Import substitute products are found, developed and shipped to markets. It is important to cope with keen competition with imported one. (*Import substitute commodity processing/ marketing industry*)	Agricultural/ livestock/ fishery products or processed commodities in competition with imported: Rice, Corn products, livestock (meat, chicken egg), Cooking oil	There are keen competition with imported one in price, quantity and quality. Promotion activity is effective. If raw material of the target product is widely produced, promotion effect will be expanded to the production field.	Finding possible import substitute products, Supporting commodity development and sales promotion, Diffusion of know-how of making use of present available agricultural/ livestock/ fishery products (Cooking class, New products development for nutrition improvement such as starch from corn and root crops, protein foods, iron foods, and mineral foods.
Consuming public	Staple food crop, corn and root crops, are widely produced. But, processing method of these crops is limited. Domestic demand of them may be expanded through disseminating the way how to process and make use of them. (*Demand expansion products processing/ marketing industry*)	Domestic agricultural crops/ livestock products which are possible to expand consumption: Root crops (cassava, potato, taro), Corn, etc.	Technical support so as to stimulate consuming public to further consumption of target products is required. Promotion activity of this type is effective since the target product is public ones. Promotion effect is also expanded to its production stage.	
Rich people, Consuming public, Overseas consuming public	Local products which are characterized as specialized product are found and developed/ sold as new local products through adding values. Production and sales amount is limited. (*Local special products processing/ marketing industry*)	Local special products: Palm wine, Honey, Seaweed	Technical support in finding target special products and providing skills and technologies of know-how of processing, marketing and selling. Promotion effect is dependent on the usefulness, valuables of target products/ commodities and its productivity.	Support for SIPI campaign, Technical/ financial supports to local production groups/traders/ processors/ women groups.
Overseas consuming public	New exportable products which are characterized as a natural farming product is	Industrial crops: Coffee, Candlenuts	It is required to provide various supports in such as finding products and	Technical support for long term challenge from finding of

Customer Target	Agribusiness Promotion Direction (*Promoting type)*	Current Targeted Products*	Development Subjects and Expected Effect	Expected Necessary Supports
	found and promoted to export by adding high value such as safety and healthy with organic (or natural) farming. Targeted countries are the developed countries such as Australia and Singapore. In addition, agricultural/ livestock/ fishery products produced under the natural conditions in the Timor-Leste are exported to neighboring country such as Indonesia via West Timor, by taking advantage of seasonal fluctuations in prices. *(Organic (or natural) farming products export oriented processing/ marketing industry*)	Natural farmed products: Alive cattle, Soybean/ Mung bean. Goat (which is necessary to study export possibility).	studying export possibility. It is crucial to procure target products stably and sustainably in quantity and quality. So that support in production stage is the most importance. Close and long term cooperation with administration, processors, traders and producers is needed.	products and commodities to competitive value adding process. Support for establishing cooperation system with producers, traders and processors, studying export possibility, marketing in that country, improvement of export documentation process, etc.

Note:This table does not show the classification of agricultural/ livestock/ fishery products. There are some products overlapped with promoting types and customer target.

* It is based on the current survey conducted so far. Target products should be found on market trend and development status of processing industries in the actual progresses of action plan,

(4) Import Substitute and Demand Expansion Oriented Processing and Marketing Industries for Consuming Public

In Timor-Leste, many agricultural/ livestock/ fishery products and processing commodities such as rice, refined sugar, maize, wheat flour, chicken meat, dried beans and processed noodles, etc. are imported and marketed nation-widely. Considering these situations, processing and marketing to deal with any imported substitute products should be targeted in the agribusiness promotion. Target products so that they can be manufactured by making use of domestically produced products should be found and developed for consuming public. Furthermore, considering development constraint such as lack of nation-wide products distribution system, it is desirable to promote small scale processing and marketing industries in local area so that locally produced products can be consumed within that local area.

5-3-2 Composition of Master Plan

(1) Objective of Master Plan

The objective of Master Plan is described as follows.

In order to promote processing/ marketing of agricultural products driving by private sectors such as small farmers' organizations, entrepreneurs and agro-dealers (middlemen, market traders), the Master Plan aims to provide administration system for promotion of agribusiness, to strengthen administrative services so as to support the agribusiness activities and to provide infrastructures including in establishment of institutional system/ standardization and construction of infrastructural facilities such as roads.

(2) Target year

Target year of the Master Plan is set at 10-years implementation period after the completion of this study.

(3) Target area and people

The target area of the Master Plan covers entire area of Timor-Leste. Target people are estimated at 1,066,582 in the 13 districts. Out of them, 842,599 people who engaged in agricultural/ livestock/ fishery sectors, is considered to be the direct beneficial people (the population is based on the "Population Results, Population and Housing Census 2010.").

(4) Composition of the Master Plan

The measures are integrated into the stages of production, processing, marketing and selling of products (see Table 5-2-1). Master Plan is consisted of Program and Project. The integrated measures are regarded as the "Project". And, the "Program" is named by collecting some projects in the each stage from production to selling. Then, framework of the Master Plan is formed.

Box-1 Proposal from the Pilot Project Implementation

It is required to establish cooperation system with agribusiness actors such as administration organization and private sector along the value chain of the target product. DNPIAC should handle to establish the value chain of the product. Under such conditions, it was proposed to incorporate the program "Value Chain Improvement". The program requires the functions of "Support for establishment of product based value chain" and " Capacity development plan of value chain stakeholders".

As the result of pilot project implementation, it is proposed to incorporate the concept of "Value Chain Improvement" into the Master Plan (see Box-1). Based on the proposal, the item of grouping of measures and framework of the Master Plan was reviewed. As the result, framework of the "Nurturing plan of agribusiness stakeholders" was changed into the "Value Chain Improvement". Master plan was consisted of the 7 programs and 20 projects, as shown in Table 5-3-2.

Table 5-3-2 Framework of Master Plan

Program		Project	
1.	Improvement of agricultural productivity	1.1	Establishment of seed/ input materials supply system
		1.2	Rehabilitation of agricultural production infrastructures
		1.3	Strengthening of dissemination system of cropping technology
		1.4	Promotion of contract farming
2.	Support for promotion of processing industries	2.1	Support for set-up of private processing industry
		2.2	Support for set-up of processing industry by farmers/ women group
		2.3	Support for specializing products
		2.4	Support for provision of processing infrastructures
3.	Support for promotion of distribution industries	3.1	Support for improvement of product transportation
		3.2	Provision of agricultural distribution infrastructures
		3.3	Provision of an agribusiness information and communication system
4.	Support for sales promotion	4.1	Support for marketing route development
		4.2	Introduction of agriculture produce grading system
		4.3	Improvement of sanitary management
		4.4	Introduction of food safety inspecting system

Program	Project	
5. Improvement of the government's products purchasing system	5.1	Improvement of an operating system in central and local levels
6. Support for export promotion	6.1	Support for finding export commodity and its sales promotion
	6.2	Promotion of exporting
7. Value Chain Improvement	7.1	Support for establishment of product based value chain
	7.2	Capacity development plan of value chain stakeholders

Note: Program of the "Value Chain Improvement" was formed based on the lessons learned from the pilot project. The program was changed from the framework of "Nurturing plan of agribusiness stakeholders" guided from the grouping of measures and framework of Master Plan in Table 5-2-3.

(5) Development Goal of the Master Plan and Objectives of the Programs

Development goal of the Master plan is set based on the objective.

Development goal: Processing/ marketing / selling of agriculture/ livestock/ fishery products are promoted."

In order to achieve the development goal of the Master Plan, objectives of each program are set as follows (see Table 5-3-3).

Table 5-3-3 Objectives of the Programs

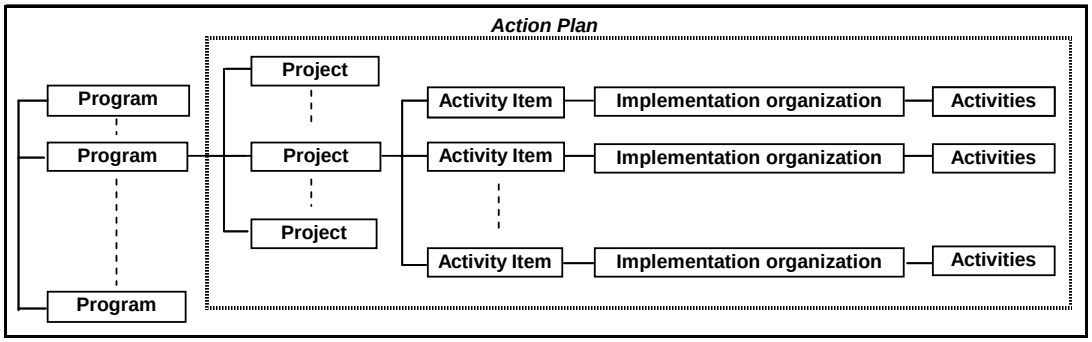
Program	Objectives
1. Improvement of Agricultural Productivity	To support increase of productivity of rice and other food crops in quality and quantity through establishment of sustainable seed/ input materials supply systems, establishment of operations and management systems for farm machines, rehabilitation of present irrigation systems, dissemination of farm technology and contract farming between farmers groups and traders/ processing industries.
2. Support for Promotion of Processing Industries	To support farmers groups/ women groups so that they can set up and operate small scale processing industries which make use of local agricultural/ livestock/ fisheries products aiming at expansion of local product demand.
3. Support for Promotion of Distribution Industries	To promote provision of infrastructure such as roads, storage facilities and ports and improvement of products transportation, and provide prepare market/ agricultural information supply service for agribusiness stakeholders including processing industry, traders, wholesalers, farmers groups, women groups and retailers and sellers, so as to make products distribution more effective and economic.
4. Support for Sales Promotion	To provide sales opportunities such as exhibitions and agribusiness talking opportunities for producers/ traders/ sellers, improve sanitary environments of marketplace and abattoir, introduce agricultural products grading system and food safety inspection system so as to be conducive to promote food sales
5. Improvement of the government's Products Purchasing System	To improve the present products purchasing system to generate practical impacts.
6. Support for Export Promotion	To find exportable Timor-Leste's naturally farmed products by seizing the opportunities through analysis of information produced by market

Program	Objectives
	research in the target export countries, and promote its export through provision of export business conditions such as improvement of quarantine service, simplified export documentation and export promotion campaigns.
7. Value Chain Improvement	To create agribusiness through supporting the development activities from viewpoint of value chain improvement of the product. This program takes the cross-cutting approach of series programs from the No.1. to the No.6. To realize the value chain improvement, capacity development of human resources including administration organization staff and private sectors such as farmers groups/women groups, processors, traders and sellers, are also conducted.

CHAPTER 6 FORMULATION OF ACTION PLAN

6-1 COMPOMENT OF ACTION PLAN

Master Plan consists of the seven (7) programs. Each program has an Action Plan provided to achieve the objectives of the program. The Action Plan has some projects. The 'Project' consists of several activity items. The 'Activity Item' explains necessary activities and measures to be taken in order to achieve the objective of the 'Project'. Implementation of the 'Activity Item' is undertaken based on the present situation and implemented by 'Implementation organization' such as government organizations, institutes, private processors, traders and farmers. The 'Implementation organization' takes 'Activities'. Composition of the 'Program', 'Project' and 'Activity Items' is illustrated as below.



6-2 SUGGESTIONS FROM THE PILOT PROJECTS

Activities of the 'Project' of the Action plan were practiced in the pilot projects and lessons learned were obtained. Those lessons are incorporated into the 'Activity item' and 'Activities' in the Action Plan as suggestion from the pilot projects. Suggestions to each project are summarized as shown in Table 6-2-1.

Table 6-2-1 Suggestions from the Pilot Projects to the Action Plan

Project	Suggestion form the Pilot Project
Establishment of Seed/Input Materials Supply System	Natural land condition and cropping methods should be surveyed to find seed multiplication areas and farmers, in the case that seed of the target crop can not be procured from the present seed supply system. As for soybean seed, Maubisse is the most suitable area.
Rehabilitation of Agricultural Production Infrastructures	Development stages from survey and planning to construction works should be standardized to make rehabilitation works smooth. For proceeding pump rehabilitation, prior to the planning stage, it should be taken action to make consensus of the type of pump and its operation/ maintenance method.
Strengthening of Dissemination System of Cropping Technology	Local resources adapted farming technology including the ways how to make fertilizer and pesticide by using local resources and how to spray them should be disseminated as one of the cropping technologies. DNPIAC, in cooperation with DNADC and DNAH, as the mediator between related farmers and district extension workers, work out to disseminate organic farming technology. In the sites, it is effective to make use of NGO who learned know-how in this project.

Project	Suggestion form the Pilot Project
Promotion of Contract Farming	For contracting, an agreement should be made in the presence of DNPIAC staff and processors/ traders, and other private groups/ NGO agreed by related persons. It is required to collaborate with the project "Strengthening of Dissemination System of Cropping Technology", in order to ensure production activity,
Support for Set-up of Private Processing Industry	MAF, in cooperation with MTCI and MED, should work on to the related organization to establish credit system and/ or subsidy system so that private sector can procure processing and marketing machine and equipment. For making financial support accessible, MAF should arrange with international aid agencies and related private sectors as required. DNPIAC prepare the list of possible products/ commodities to be improved and developed. The list includes the name and capacity of existing processors/ processing groups. The list is useful to plan future processing project.
Support for Set-up of Processing Industries by Farmers/Women's Groups	MED monitors regularly the current situations of the registered cooperatives and takes necessary supports based on the monitoring results. MED supply new technical information about new activity and provides learning opportunity among similar cooperatives and groups. DNPIAC should transfer tempe manufacturing technology to women groups where soybean production is active and contract farming is introduced. It is effective to make use of NGO who learned the technology as trainer. Chicken raising is incorporated into the Action Plan as a realistic agribusiness activity in rural areas. Chicken raising business is put stress on the growing local chicken rather than the chicken egg purpose raising. It can be led by strengthening traditional raising way. DNPIAC lead to open the cooking class in all district. MAF, in cooperation with the related ministries, should work to establish subsidy system to support set-up of cooking business.
Support for Specialized Products	Cooking class graduates are encouraged to participate in finding specialized products.
Support for Provision of Processing Infrastructures	Power source of the processing machinery and equipment should be planned based on the local conditions and operation/ management capacity of targeted processor/ women's groups/ farmers groups. Providing that they could not purchase power supply equipment, government should establish financial supporting system such as subsidy system and a long term loan system for them.
Support for Improvement of Product Transportation	Information about procurement of the packaging material and the packaging measures should be collected and compiled for propagation to the related agribusiness groups. MAF should collect information on transporters in sub-district level and compile them. The information shall be provided to users/ farmer groups/ processors through district and sub-district offices.

Project	Suggestion form the Pilot Project
Provision of Agribusiness Information and Communication System	Small scale chicken raising women groups collect local market information through middleman and/or related persons for their sales activity. Market information is communicated by simple method like SMS. Corn flour is can only be obtained in Maliana at an economically viable price. Dili bakery operations secure financially viable supply contracts with corn flour makers in Maliana. As long as the government product purchasing system is in place introduction of an agribusiness information and communication program is not warranted. Significance to provide market information system covering whole country is low for small caterer and restaurant since they directly purchase food materials from local marketplace.
Support for Marketing Route Development	Government should undertake exhibition or agribusiness fairs regularly, in order to promote sales of domestic agricultural crops, local made products and new products by using local products developed by private sector. This contribute to the 'Local products-Local consumption' campaign Under the current activities avoiding the risk of disease and lack of feed, chicken raising activity is limited to the small scale activity in household level aiming to generate non-farm income source. Radio, newspapers, banners and flyers are all good media channels for new product promotion. Posters were found to be of limited usefulness. DNPIAC should continue the cooking classes in both in existing and new locales. A new cooking class providing some new recipes and teaching basic business skills should be applied.
Introduction of Agriculture Produce Grading System	For activating rice market, grading system should be provided. Content of broken rice and impurities should be the major standard items in the grading system. Local soybean product producers and traders can use tested information such as high protein content and requirement further cleaning for promotion of their business.
Capacity Development Plan of Agribusiness Stakeholders (to be put on the "Value Chain Improvement" program.)	DNPIAC undertake to have group training regularly for related persons with agribusiness in cooperation with MED and MAF. The training aims to develop their agribusiness capacity. MAF should provide training program for extension farmers to promote local resources adapted farming. On the other hand, NGOs and related private organizations/ groups who learned technology and knowledge can be incorporated as technical supporting group into the implementation organization of the Action Plan, to support extension workers, DNPV should provide for district staff training opportunity to learn disease prevention measure. For promotion of chicken raising in household level, it can be effective to make use of local NGO who has technology and experience.

Based on the suggestions, Action Plan was prepared as the following sections.

6-3 ACTION PLAN FOR IMPROVEMENT OF AGRICULTURAL PRODUCTIVITY

6-3-1 Establishment of Seed/ Input Materials Supply System

(1) Basic Concept

Seed/ input materials are currently distributed to farmers, aiming at increasing productivity of rice. It is the national policy that seed and input materials such as fertilizer, weed killers and fuel (15lit/ha) are

distributed free of charge to farmers who crop paddy based on the planting method recommended by government. DNAH is responsible for the distribution. According to the DNAH, each district estimates necessary amount of them and request it to DNAH. After collecting the request from districts, DNAH adjust it among districts. After the adjustment, DNAH distribute it to each district. The distribution processes up to farmers is not monitored. It is necessary to improve some parts of the distribution system. It may include estimate method of distribution amount and design of distribution time.

Government procures seeds from import form Indonesia and donors' aid program of FAO and Seed of Life (AusID). Supply of seeds does not meet the requested demand from districts. Under such situation, MAF practices to increase seeds through nurturing seed multiplication farmers in the districts of Baucau, Bobonaro, Covalina, Manatuto, Manufahi, Oecusse and Viqueque. However, its outcome does not reach to the target level yet. Considering future prospect after donors' supply program, proper seed multiplication system should be established. In line with this, it may be necessary to discuss feasibility of organizing seed multiplication institute.

Fertilizer/ pesticide are imported from Indonesia. Their price is so high that farmers can not buy sufficient amount. Then, it may not be considered that farmers overuse them more than the amount distributed by government. In order to make crop productivity more stable, however, it is necessary for farmers to prepare distribution system of them so that they can get easily when required such as prevention of expansion of crop disease. Under such conditions, cropping system using available local resources should be established to make production stable.

Present free distribution of seed/ input materials is considered to be the urgently and temporary government policy to urge to increase paddy production. It is necessary to establish sustainable distribution system of input materials considering future prospect after support from donor agencies.

As for agricultural machine, government distributed 2,942 units of tractor free of charge to farmers groups from the year from 2006 to 2009. Distribution process was not monitored and actual operation was not surveyed. It is considered that it is necessary to establish operation and maintenance (O/M) system of such tractors to make sustainable use of them. Related with the O/M system of farm machines, MAF conducted the overseas training for senior extension workers to learn operation and maintenance method of the tractor under the support of JICA expert. To follow such trainings, the outcomes should be put on strengthening plan of O/M system of farm machine. It is necessary to establish O/M system of them including in organizing O/M workshop in each district.

This project aims to support increase of agricultural productivity through establishment of sustainable seed/ input materials supply system. By implementation of this plan, it can be realized to provide seed/ input materials for cropping. This contributes to increase in crop productivity. With the increase of production, surplus crop production arisen can be shipped into market.

(2) Action and Related Organization's Responsibility

Action		Related Organization	Organization's Responsibility
1	Review of the present supply system	DNAH	Present seed distribution stages from acquisition, storage in Dili, transportation, storage in districts, transportation to farmers are reviewed. It is also clarified where is intervened by DNAH and traders. Bottleneck points to distribute it to

Action		Related Organization	Organization's Responsibility
			farmers when required are sought in the stages.
2	Compilation of crops and producers information	DNAH	DNAH staff in district level prepares a database in suco or sub-district level on crop planning area and harvesting area of crops. There is no source to accumulate accurate data. Data should be estimated more accurately based on the past harvested data and planted area. It will be able to make use of agricultural census which FAO is planning in near future. By picking some data from the census, the database will be able to prepare more exactly.
3	Establishment of seed multiplication/ input materials supply system	DNPIAC DNAH DNPP	In order to increase seed, some interested farmers who can multiply seed in their farm plots are selected from the area where irrigation system provided, besides present seed multiplication farmers. By observing the progress of such seed multiplication works, it might be necessary to seek any possibility to establish organization or institute dealing with seed multiplication. As for agribusiness target crops, natural land condition and cropping methods should be surveyed to find seed multiplication areas and farmers, in the case that seed of the target crop can not be procured from the present seed supply system. As for soybean seed, Maubisse is the most suitable area.
4	Establishment of fertilizer supply system	DNPP DNAH	In order to supply fertilizers/ pesticides properly, it is examined to allocate sales shop in each district, establish transportation network from Dili and estimate necessary importing amount.
5	Establishment of O/M system of farm machine	DNAH	As for farm machine, present situations including operation and maintenance of them are investigated. Present status of the tractors distributed by government is also investigated. Based on the investigations, problems for farm mechanization are found. Based on the problems, strengthening plan of operation and maintenance system is prepared.
6	Monitoring/ evaluation of the improved system and review it	DNAH DNADC	Monitoring system of seed/ input materials supply is established. It is monitored to distribute them as planned. Distribution and effects are verified.

(3) Implementation Organization

Implementation body : DNAH
Arrangement organization : DNPIAC
Cooperation organization (MAF) : DNADC, DNPP
(Related ministries) : -
Donor agencies: AusAID

6-3-2 Rehabilitation of Agricultural Production Infrastructures

(1) Basic Concept

Based on the present food supply and demand condition, rice as staple crop does not meet the country's demand. Farmers provide produced crops for self-consumption. As the results, marketing amount a few. Under such conditions, rice is imported. Export amount of rice exporters peaks the highest level. International price of rice largely fluctuates. Then, government put food security on the national

development plan as top priority policy. In line with this national policy, MAF is grappling with increase of production aiming to reach self sufficiency of rice.

Irrigation facility is the important infrastructure for increasing productivity as shown in the Maliana irrigation rehabilitation project where crop productivity is increased and contract farming is introduced in some areas. At present, out of 71,300 ha of irrigable area in the country, the area of 56,300 ha has been rehabilitated, so that remaining area is 15,000 ha for irrigation rehabilitation. To reach self-sufficiency of rice, rehabilitation of irrigation facility is the major subject to increase productivity.

Based on the feasibility study in 2008, rehabilitation of the following design area is proposed by DNIGUA.

Table 6-3-1 Proposed Rehabilitation Area based on the Feasibility Study

District	No. of area	Design Area (ha)
Viqueque	3	1,235
Baucau	3	1,125
Manufahi	1	600
Ainaro	1	190
Ermera	1	800
Covalina	1	1,300
Oecusse	1	1,000
Total	11	6,250

Source: DNIGUA (2008)

It is necessary to promote rehabilitation works in the proposed area. Priority should be put on those areas.

Action plan of this project aims to support increase of agricultural productivity through rehabilitation of irrigable areas. By implementation of this action plan, it can be realized to increase in irrigation area. This brings to increase in cropping area and crop productivity. With the increase of production, surplus crop production arisen for self-sufficient farmers. It may be shipped into market

(2) Action and Related Organization's Responsibility

Action		Related Organization	Organization's Responsibility
1. Planning of irrigation rehabilitation system			
1.1	Feasibility study for large scale rehabilitation project	DNPP DNIGUA	Feasibility study for formulation of irrigation system rehabilitation project is conducted for irrigable area of 15,000 ha where irrigation facility is not rehabilitated. Priority is set for the rehabilitation projects.
1.2	Study for small scale rehabilitation project	DNIGUA DNADC	For small scale rehabilitation, implementation system in district level is established so that district can manage rehabilitation project, in cooperation with DNADC. District DNIGUA prepare study and design for rehabilitation of small structures which were constructed in Indonesian era. Rehabilitation design is promoted under farmers participatory processes. Development stages from survey and planning to construction works should be standardized to make rehabilitation works smooth. For proceeding pump rehabilitation, prior to the planning stage, it should be taken action to make consensus of the type of pump and its operation/ maintenance method.

Action		Related Organization	Organization's Responsibility
2. Implementation of the rehabilitation plan			
2.1	Large scale rehabilitation works	DNPP DNIGUA	Funding source including international aid agencies is found for the projects. Projects are implemented based on the priority.
2.2	Small scale rehabilitation works	DNIGUA DNADC	Rehabilitation works are conducted under the farmers participation. In parallel with the rehabilitation works, a workshop is held to discuss operation and maintenance method of constructed facilities. Role and responsibility are clarified to ensure sustainable use of the facilities

(3) Implementation Organization

Implementation body : DNIGUA
Arrangement organization : DNPIAC
Cooperation organization (MAF) : DNPP, DNADC
(Related ministries) : -
Donor agencies: JICA, GIZ

6-3-3 Strengthening of Dissemination System of Cropping Technology

(1) Basic Concept

DNADA allocated 12 senior extension staff and 376 extension staff in district and suco levels, respectively, in years of 2008 to 2009, in order to disseminate proper farming technology to farmers. However, actual extension works are not started because lack of concrete action plan and preparation of dissemination guideline and no facilities for development of extension works, and lack of overall extension technology. As for learning on farming technology, some of senior extension staff has learnt ICM method and extension technology in the OJT under GIZ project. Some of them have gotten overseas training in the One Village One Product (SIPI) under JICA. For extension staff in suco level, there is no systematic training plan and provision of learning opportunity. It is the urgent subject to provide systematic dissemination system of farm technology in cooperation with senior extension staff and extension staff. For dissemination of farm technology, it is emphasized that agricultural style in Timor Leste is characterized as natural farming, so that dissemination of local resources adapted farming technology is strengthened in the extension works.

It should be incorporated into this project to make use of three agricultural high schools under DNFA and Timor University as learning opportunity for extension staff.

Action plan of this project aims to support increase of agricultural productivity through dissemination of farm technology. By implementation of this plan, extension staff can be realized to learn know-how of teaching method of cropping to farmers. Local resources adapted farming technology including the ways how to make fertilizer and pesticide using local resources and how to spray them should be disseminated as one of the cropping technologies.

This contributes to increase in crop productivity. With the increase of production, surplus crop production arisen can be shipped into market.

(2) Action and Related Organization's Responsibility

Action		Related Organization	Organization's Responsibility
1	Plan formulation of dissemination system of cropping technology	DNADC DNPIAC DNIGUA	Dissemination plan is prepared based on the relationship of target number of suco and farm households with the number of extension staff allocated in each district and sub-district. For plan formulation, present situations of agricultural high schools and university are analyzed to seek learning opportunity of cropping technology and dissemination method for extension staff. It is also examined to construct demonstration farm in order to learn cropping technology. Based on these, practical dissemination system is prepared for allocated extension staff. DNPIAC, in cooperation with DNADC and DNAH, as the mediator between related farmers and district extension workers, should work out to disseminate local resources adapted farming technology. In the sites, it is effective to make use of NGO who learned know-how in the pilot project.
2	Training of trainers (extension staff)	DNADC	Training plan for senior extension staff is prepared in corporation with donor agencies, educational institute and Timor university/ three agricultural schools. The plan is prepared by crops and agricultural fields. Overseas training is included.
3	Dissemination of cropping technology by trainers	DNADC	Training plan for extension staff in suco level is prepared by senior extension staff.
4	Preparation of manual/ guideline for dissemination	DNADC	Manual and guideline for extension work are prepared for dissemination work.
5	Procurement of equipment/ materials for dissemination	DNADC	Necessary equipment/ materials for extension work are procured. Extension works with extension staff are started in suco level.

(3) Implementation Organization

Implementation body : DNADC
Arrangement organization : DNPIAC
Cooperation organization (MAF) : DNAH, DNFA, DNIGUA
(Related ministries) : -
Donor agencies: JICA, GIZ

6-3-4 Promotion of Contract Farming

(1) Basic Concept

Considering future marketing prospect of agricultural/ livestock/ fishery products, growing capacity of soy beam and mung bean is large in both overseas and domestic markets. Some of them can be exported to West Timor and be used for domestic processing industry.

Domestic soybean production of about 800 ton (2008) is mostly produced in Bobonaro districts. The amount is not large enough to meet the domestic demand. Imported amount is estimated at maximum 500

ton. Domestic demander of soybean is the processing industry making tofu and tempe. In general, processing industry has used imported one to make them, since production in quantity and quality has not be sufficient for the industry. Consumers come to prefer local beans to imported one since local one is considered of superior quality. Then, tofu and tempe producers, especially in Dili, are planning to increase in making use of local beans as possible. However, occasionally local beams are either small or of mixed sizes, although quality of them is being improved. It is necessary for tofu and tempe producers to make supply of local beans more stable in quality and quantity.

Mung bean is high protein, easy to digest and especially nutritious when combined with cereals. There is ample growing opportunity to increase sales in both overseas and domestic markets. As well as soy bean, the production amount is not enough to meet the domestic demand. Major production is in the three districts of Bobonaro, Covalina and Manatuto. Country's total production is estimated at 1,222 ton. Although disaggregated data is not available for mung bean alone, and most statistics group into all beans together, it is said that WFP imports about 2,400 ton/year of all type of beans for use in their program. Then, country's total imported amount is estimated 2,600 ton/year. On the other hand, mung bean is exported to West Timor. Indonesia imports mung bean to meet expanding domestic demand. Therefore, imported beans from Timor-Leste are almost all consumed in West Timor, since Timor-Leste beans are preferred as their flavors is considered better.

Considering the above situations, it is important to cope with increasing domestic and overseas demands of soy bean and mung bean. To do so it is necessary to increase productivity in quantity and quality. However, there are some constraints to increase productivity in local production areas. Those are unprepared infrastructures and low cropping technology of farmers. In addition, farmers have not sufficient economic incentive to production activity since they practice self-sufficient farming so that their commercial agricultural sense is low.

Under the above conditions, action plan of this project aims to promote contract farming for soy bean and mung bean productions between farmers group and traders/ processing industry in possible productive districts such as Bobonaro, Covalina, Manatuto, and any other interested farmers groups in other districts. This plan includes organizing farmers. By this plan, it is expected to make local beans production stable in quantity and quality. It is led to ensure stable supply of them to processing industry and export traders. Then, they can provide manufacturing plan and export plan in advance. It makes business operation more stable. It also contributes to generation of income source and stable farming practice for farmers groups.

Considering the current production situation, pulse crops such as soybean and mung bean can be used as target crops for this project. Effectiveness of this project was verified through the implementation process of the contract farming concluded between the farmers groups and processors in the pilot project "Improvement of value chain of soybean products". The pilot project is the advanced case study for future project implementation.

(2) Action and Related Organization's Responsibility

Action		Related Organization	Organization's Responsibility
1	Finding of target product/ target farmers group/ traders/ processing	DNPIAC DNPP DNADC	Possible products are found from viewpoints of future processing and marketing in this country (at present soy bean for promotion of domestic processing industry and mung bean for exporting to West Timor are considered as

Action		Related Organization	Organization's Responsibility
	industry		profitable products).
			Interested farmers are found from productive three districts and other willing farmers. Through discussion with them, conduct of contract farming is made decision. It is supported to organize farmers into contract farming production groups.
			Based on the local information, traders/ processing industry who contract with farmers groups are sought. Possibility of contract farming between them is sounded.
2	Opening of stakeholder workshop	DNPIAC DNADC	Workshop is opened under participation of stakeholders, farmers groups, traders/ processing industry. It is discussed to find problems and constraints, and share future direction.
3	Training for creating contract sense and commercial education for farmers group	DNPIAC DNFA MoE	It is clarified the method of contract farming, such as crops, variety, minimum buying price, payment, timing of collection and minimum quantity and quality level, input materials and their procurement and cropping method, etc. Learning opportunity in which significance of conduct of contract and commercial calculation can be learnt is prepared for farmers whose contract sense and commercial calculation capacity is low. Simple agreement for contract farming is prepared to confirm the conduct of contract. (Case study of the pilot project is useful.) For contracting, an agreement should be made in the presence of DNPIAC staff and processors/ traders, and other private groups/ NGO agreed by related persons. It is required to collaborate with the project "Strengthening of Dissemination System of Cropping Technology", in order to ensure production activity,
4. Support for organizing farmers groups			
4.1	Organizing workshop of farmers/ farmers group	DNPIAC	Farmers are encouraged to organize themselves into cooperative by explaining that learning opportunity such as creating saving sense, providing cropping skill and knowledge are given to them if they join into cooperative.
4.2	Support for institutional registering process of farmers organization	DNPIAC MED, MoE	Documentation procedure is explained to join and register into cooperative after agreed among all members. It is supported to make documentation, and submit to Ministry of Justice.
5. Implementation of contract farming			
5.1	Acquisition of seed and seed multiplication	DNPIAC DNAH	Contract farming is carried out. It is discussed to procure input seed and multiply seed among farmers so that it can be procured sustainably.
5.2	Improvement of cropping technology	DNPIAC DNADC	Cropping technology is improved based on the cropping method and inputs materials planned in advance. Extension staff support technically as required.
5.3	Farm field management	DNADC DNIGUA	Operation and management (on-farm management and water management) of farm plot is carried out so that production in quantity/ quality can be satisfied with contract. Extension staff is required to support technically

Action		Related Organization	Organization's Responsibility
			in operation and management method and cropping.
6. Monitoring and evaluation			
6.1	Establishment of monitoring/ evaluation organization	DNPIAC DNADC	Monitoring and evaluation organization is established in central and contract farming site levels. Monitoring form is prepared for district monitoring staff to make the monitoring work easy.
6.2	Monitoring/ evaluation of the activities	DNPIAC	Working progress of contract farming, such as situation of cropping and prospect in quality and quantity is monitored. Monitoring process is reported to contracted traders/ processing industry. After collection and shipping, workshop is organized to discuss the outcomes, problems and solutions. The discussion is put on the next contract and improvement for next cropping.

(3) Implementation Organization

Implementation body : DNPIAC
Arrangement organization : DNPIAC
Cooperation organization (MAF) : DNPP, DNADC, DNIGUA, DNAH, DNFA
(Related ministries) : MED, MoE

6-4 ACTION PLAN FOR SUPPORT FOR PROMOTION OF PROCESSING INDUSTRY

This Action Plan is to support processing industries/ framers groups/ women groups who try to set up and operate industries. Considering the present local conditions, the possible commodity processing industry is limited to a type of labor-intensive small scale home industries with processors/ farmers groups/ farmer organizations/ cooperatives, by making full sue of local resources in and around areas. As the results, it may show a business model in the rural area. It is expected to grow incentive to setting up industry and its operation in rural areas, through implementation of this draft action plan.

6-4-1 Support for Setting-up of Private Processing Industry

(1) Basic Concept

This project is to support private processing industries in setting-up, operation and management of their processing business through supporting value adding process and new commodity development of the products. Planning the action plan is largely dependent on the target products. Private processing industry seeks any possibility of set-up industry based on the marketability of the target products with customer targets (rich people, consuming public and overseas customers). In the pilot projects, soybean processors and bakeries.

(2) Action and Related Organization's Responsibility

Action		Related Organization	Organization's Responsibility
1	Finding of target product and processing industries	DNPIAC DNPA DNADC MTCI	Products/ commodities which are targeted for processing industry are found based on the agricultural production information. Interested processing industries are also found based on the information from production sites. Development direction of the processing industry is

Action		Related Organization	Organization's Responsibility
			discussed expecting the customers target for sales promotion. DNPIAC prepare the list of possible products/ commodities to be improved and developed. The list includes the name and capacity of existing processors/ processing groups. The list is useful to plan future processing project. MAF, in cooperation with MTCI and MED, should work on to the related organization to establish credit system and/ or subsidy system so that private sector can procure processing and marketing machine and equipment. For making financial support accessible, MAF should arrange with international aid agencies and related private sectors as required.
2	Support for setting-up of processing industry	DIPIAC, MTCI, MED, MoJ	When industry is established in Timor-leste, it is required to register it to Ministry of Justice. It is supported to make institutional registration for setting up of processing industry. Documentation processes are supported to submit it to MTCI, MED and Ministry of Justice.
3	Support for procurement of fund	DNPIAC, Related donors, Micro-finance Institute	It is supported to procure necessary facilities for setting up of industry, and find financial source. Fund is the most constraints for setting-up industry in local areas. Access to credit system is limited. It is supported to connect and negotiate with institutes such as credit system by Micro-finance institute in Timor-Leste, development program by donor agencies. Available fund source is found through discussion with processors. It may be required to establish processing industry subsidy program in MAF. It is included to examine loan system and lending system of processing machine and equipment. MAF, in cooperation with MTCI and MED, should work on to the related organization to establish credit system and/ or subsidy system so that private sector can procure processing and marketing machine and equipment. For making financial support accessible, MAF should arrange with international aid agencies and related private sectors as required.
4	Support for provision of processing facilities	DNPIAC	It is supported to procure processing equipment/ machine and install them. Providing process is supported.
5	Support for commodity development/ selling technology	DNPIAC, DNPSE, Processing Specialist	Commodity development technology and quality improvement method are supplied. It is included to supply packing technology for sales.
6	Support for renewal and O/M of processing facilities	DNPIAC, Processing machine/ equipment specialist	Operation and maintenance technology of processing equipment and machine including exchange of spare parts is learnt in the on-the-job training (OJT). Procurement channel of spare parts is also developed.

(3) Implementation Organization

Implementation body : DNPIAC
Arrangement organization : DNPIAC, MTCI

Cooperation organization (MAF) : DNFA, DNPSE, DNPA, DNADC
(Related ministries) : MTCI, MED, MoH, MoF, MoJ
Donors agency: JICA, GIZ, EU, Portugal, WB, UNDP
Private sector : Micro-Finance Institute

6-4-2 Support for Setting-up of Processing Industry by Farmers/ Women Groups

(1) Basic Concept

This project is to support farmers groups/ women groups who try to set up and operate industries making use of local agricultural/ livestock/ fishery production resources. Contents of the action plan are largely dependent on the target crops. Administration should grapple with the movement and timing of generating processing industry in local area and encourage them to challenge setting-up of industry, indicating future development direction of processing/ marketing industries. Administration provides necessary support in setting-up and operation processes based on this project for them.

(2) Action and Related Organization's Responsibility

Action		Related Organization	Organization's Responsibility
1	Finding of target products	DNPIAC DNAH DNPA, DNPV DNADC	Products/ commodities which are targeted for processing industry are found based on the agricultural production information and locality. Development direction of the processing industry is discussed expecting the customers target for sales promotion.
2	Finding of farmers groups/ women groups	DNPIAC DNADC DNPV DNPA	Interested processing industries/ farmers groups/ women groups are found based on the information from production sites. Preparatory discussion for setting up industry is held with them. Contents of supporting activities expected in the process of setting up industry are explained in advance
3	Cooperation with related donors agencies	DNPIAC Donor agency (GIZ, JICA, etc)	If there are on-going similar activities by related donors such as GIZ, Portugal agency, JICA, planning of products and activities are arranged between them. Learning from them is compiled for next actions
4	Opening of stakeholder workshop	DNPIAC	A workshop in which stakeholder including processing industry/ farmers groups/ women groups are participated is held to discuss and share present situations, problems, development constraints and problem solutions.
5	Support for setting-up of processing industries	DNPIAC, MTCI, MED, MoJ	When industry is established in Timor-leste, it is required to register it to Ministry of Justice. It is supported to make institutional registration for setting up of processing industry. Documentation processes are supported to submit it to MTCI, MED and Ministry of Justice.
6	Support for procurement of fund	DNPIAC Donor agency Micro-finance institute NGOs DNADC	It is supported to procure necessary facilities for setting up of industry, and find financial source. Fund is the most constraints for setting-up industry in local areas. Access to credit system is limited. It is supported to connect and negotiate with institutes such as credit system by Micro-finance institute in Timor-Leste, development program by donor agencies, cooperation with NGOs and village development fund. Available fund source is found

Action		Related Organization	Organization's Responsibility
			through discussion with group members. Considering limitation of access to credit system in local areas, it may be required to establish processing industry subsidy program in MAF. It is included to examine loan system and lending system of processing machine and equipment.
7	Support for provision of processing facilities	DNPIAC Donor agency NGOs	It is supported to procure processing equipment/ machine and install them. Providing process is supported.
8	Support for commodity development/ selling technology	DNPIAC DNPSE Processing specialist	Commodity development technology and quality improvement method are supplied. It is included to supply packing technology for sales.
9	Support for renewal and O/M of processing facilities	DNPIAC Machine/ equipment specialist	Operation and maintenance technology of processing equipment and machine including exchange of spare parts is learnt in the OJT. Procurement channel of spare parts is also developed.
10	Support for organizing into cooperation	DNPIAC MED MoI	It is explained to farmers groups/ women groups that organizing cooperatives have advantages to get learning opportunity of know-how for processing technology and operation of industry. It is encouraged them to join cooperatives. It is supported to make documentation to join and register to cooperatives.
11	Training for strengthening of operation/ management capacity of processing industry	DNPIAC MED	Learning opportunity of know-how for running industry business such as making business organization, accounting and operating method. Suggestions from the pilot projects are as follows. MED monitors regularly the current situations of the registered cooperatives and takes necessary supports based on the monitoring results. MED supply new technical information about new activity and provides learning opportunity among similar cooperatives and groups. DNPIAC should transfer tempe manufacturing technology to women groups where soybean production is active and contract farming is introduced. It is effective to make use of NGO who learned the technology as trainer. Chicken raising is incorporated into the Action Plan as a realistic agribusiness activity in rural areas. Chicken raising business is put stress on the growing local chicken rather than the chicken egg purpose raising. It can be led by strengthening traditional raising way. DNPIAC lead to open the cooking class in all district. MAF, in cooperation with the related ministries, should work to establish subsidy system to support set-up of cooking business.
12. Monitoring and evaluation			

Action		Related Organization	Organization's Responsibility
12.1	Establishment of monitoring/ evaluation organization	DNPIAC	Monitoring and evaluation organization is established in central and district level to monitor and evaluate the above working progresses. Monitoring format is prepared for district monitoring staff to make the monitoring work more easily.
12.2	Monitoring/ evaluation of the activities.	DNPIAC	Operating processes of the industry is monitored and problems/ constraints are clarified. Based on this, necessary next supporting activities are planned. Workshops in which all of stakeholder participates are held to discuss and evaluate the working processes so far, find and share constraints and solutions. Discussion results are put on the next operation stage of the industry.

(3) Implementation Organization

Implementation body : DNPIAC
Arrangement organization : DNPIAC, MTCI
Cooperation organization (MAF) : DNPSE, DNPA, DNPV, DNADC
(Related ministries) : MTCI, MED, MoH, MoJ
Donor agency: JICA, GIZ, EU, Portugal Aid agency, NGOs, UNDP
Private institute: Micro-Finance Institute

6-4-3 Support for Specializing Products

(1) Basic Concept

This action plan is to support farmers/ women groups in setting-up and operation of their home industries handling special products, in cooperation with on –going SIPI campaign. By implementing this action plan, new local special commodities can be found by farmer themselves and processed/ marketed for specialization. This plan includes technical support in the new commodity development processes. This project contributes to realization of self-reliance of producers, farmers/ women groups.

(2) Action and Related Organization's Responsibility

Action		Related Organization	Organization's Responsibility
1	Cooperation with SIPI	DNPIAC	Lessons learnt from on-going/ planned/ implemented SIPI and information collected from related districts and sub-districts and suco of SIPI are compiled to put on the supporting activities for specializing products.
2	Finding products and production group	DNPIAC DNADC, DNF DNPV	Based on the information of local specialty and producers, any development possibility of specialization is analyzed considering lessons learnt from SIPI. Cooking class graduates are encouraged to participate in finding specialized products.
3	Opening of stakeholder workshop	DNPIAC	A workshop is opened to discuss specializing products with producers. In the workshop, development problems which would be arisen in the development stages from production, processing and marketing are discussed. After discussion, it is agreed to take actions for specialization.

Action		Related Organization	Organization's Responsibility
4	Support for procurement of input materials	DUPIAC,	It is supported to provide equipment and machines required in the development stages. As for fund source, credit of micro-finance institute and utilization of communication development fund are considered as well as in the small scale processing industries, processes. It is also supported to have the loan of MAF, as well as in the SIPI.
5	Support for commodity development	DNPIAC, DNPSE, DNFA, MoH, Commodity Dev. Specialists	It is prepared to have learning opportunity of technical know-how of commodity development. Necessary specialist is invited to conduct OJT for learning commodity development process.
6	Support for market channel development/ selling technology	DNPIAC, MTCI, MED	It is necessary to cope with market channel development and sales promotion based on the experiences and lessons learnt from SIPI. It is necessary to support packing technology and cooperate with the "4. Support for Sales Promotion Program" to promote sales of its specialty.
7. Monitoring/ evaluation			
7.1	Establishment of monitoring/ evaluation organization	DNPIAC	Monitoring and evaluation organization is established in central and district level to monitor and evaluate the above working progresses. Monitoring format is prepared for district monitoring staff to make the monitoring work more easily.
7.2	Monitoring/ evaluation of the activities.	DNPIAC	Operating processes of the industry is monitored and problems/ constraints are clarified. Based on this, necessary next supporting activities are planned. Workshops in which all of stakeholder participates are held to discuss and evaluate the working processes so far, find and share constraints and solutions. Discussion results are put on the next operation stage of the industry.

(3) Implementation Organization

Implementation body : DNPIAC
Arrangement organization : DNPIAC
Cooperation organization (MAF) : DNPSE, DNFA, DNF, DNPV, DNADC
(Related ministries) : MTCI, MED, MoH
Donor agencies: JICA
Private institute: Micro-Finance Institute

6-4-4 Support for Provision of Processing Infrastructures

(1) Basic Concept

1) Electricity supply

Nationally, the percentage of population with access to electricity was 36.1% in 2007. Only 19.7% of rural population had access to electricity, as compared with 82.1% of urban areas. Many rural areas have no access to electricity at all. Country's electricity supply service is consisted of 58 isolated grids with diesel-powered electricity supply centers. Most of the district capitals supplies electricity by diesel

generators providing electricity supply for 6 to 12 hours in a dar, except for Baucau and Dili where there are generally accessible to 24 hours electricity service. It is required to provide nationwide prevailing power distribution network for power supply of various industries. MoI is responsible organization for provision of electricity supply service. MoI is promoting the nation-wide electricity supply plan (diesel power generation at 2 sites in Manatuto and Same, transformer substation at 10 sites and distribution network of 630 km). (Data source: Present economic condition and data in Timor-Leste, Aug, 2009, the Japanese embassy in Timor-Leste).

Long-term implementation is required to provide above mentioned nation-wide electricity supply plan. Except for Dili and Baucau, power supply is limited in many areas in quantities and service time. Therefore, generator is necessary for driving an electrical processing machine. Even in Dili and Baucau, it is required for emergency due to frequent occurrence of power outages. Such current situations are considered to be the development constraints for promotion of processing industry. In order to encourage and support setting-up and operation of processing industry in the non-electricity supply service areas, it is required to provide electricity supply service under the support of administration. This is the temporary measure until electricity supply service completes. Administration should establish a mechanism that power source such as generator and solar power facility are lent to processing industry on demand.

2) Water supply

As for water supply in Timor-Leste, only about 13% of household have house connections and 16% are served by community taps. There is a water supply system which has built during the Indonesian period in the major urban area. However, they are generally in poor condition at present. Therefore, some of them have been rehabilitated by financial cooperation with the Japanese government and other donor. In rural area, it is estimated that less than a quarter of rural households have access to safe water. Government and donors currently assist rural area to establish low-cost water supply system in which related communities provides some part of financial or labor contribution. In any rate, it may be required to take a long term to rehabilitate country's water supply system. For setting up and operating of small scale processing industry, provision of water supply system should be incorporated with procurement of processing facilities, as well as in the power supply. Available water source should be found on each site condition.

Lack of water supply system may be one of constraints of setting-up and operation of processing industry, as well as the electricity. Then, administration should support the processing industry in providing water supply service on demand. Then, administration should establish a mechanism of water supply system including facility construction and collection of water fee for processing industry.

This project is to provide processing infrastructures such as electricity and water supply for processing industry on demand. This project is a temporary measure in response to the request from processors, farmers groups/ women groups and other related processing groups until provision of infrastructures in national level is completed.

(2) Action and Related Organization's Responsibility

Action		Related Organization	Organization's Responsibility
1. Provision of electricity supply service for processing industry			
1.1	Survey of power source for processing	DNPIAC Processing industry	Power supply condition is surveyed in the industry site. Provision of power source is

Action		Related Organization	Organization's Responsibility
	machine	MoI Local administration	examined for processing industry. Suggestion from the pilot project: power source of the processing machinery and equipment should be planned based on the local conditions and operation/ management capacity of targeted processor/ women's groups/ farmers groups. Providing that they could not purchase power supply equipment, government should establish financial supporting system such as subsidy system and a long term loan system for them.
1.2	Design of power source for processing machine	DNPIAC Processing industry	Power source such as generator and solar power facility is designed based on the processing machine.
1.3	Electricity supply service	DNPIAC, DNPP	Electricity supply service (lending system of generator and solar power facility) is provided for processing industry.
2. Provision of water supply for processing industry			
2.1	Survey on water supply conditions	DNPIAC Local administration	Water supply conditions at the industry site are surveyed. Possibility of water supply including water source is studied.
2.3	Introduction of water supply service system for processing industry	DNPIAC, DNPP	Water supply system including in construction of source such as well and weir is introduced. It is agreed with processing industry to establish collection system of water use fee from the processing industry.

(3) Implementation Organization

Implementation body : MoI
Arrangement organization : DNPIAC
Cooperation organization (MAF) : DNPP
(Related ministries) : MoI, Local administration
Donor agencies: JICA, EU

6-5 ACTION PLAN FOR SUPPORT FOR PROMOTION OF DISTRIBUTION INDUSTRIES

6-5-1 Support for Improvement of Product Transportation

(1) Basic Concept

Fresh fish and vegetables are prone to be damaged in the transportation, due to lack of cold chain and poor road condition. Although there is a cold chain for imported agricultural products, the cold chain for domestically produced agriculture/fisheries products is very limited. The only existing elements of a local cold chain are the limited use of ice by fish traders/retailers and a chill room and an insulated truck used by a private firm (Timor Fresh) supported under a USAID project. As a result farmers/fishers suffer losses related to spoiled and damaged produce, while consumers receive variable quality products. Even when good quality products can be found in the marketplace, consumers face significant search costs in terms of time lost.

This project is to support processing and marketing industries in transportation of the target products produced by farmer groups/ women groups and processors among production, processing and consumption sites. This project mainly is focused on the fresh products. Main objective is to establish cold chain system or cool transportation system. The project includes improvement of packaging to make the products transportation more effective.

This project seeks to overcome these constraints through implementation of a cold chain system in selected rural areas and Dili. The project first locates approximately four rural shipping points (2 for fisheries, 2 for agriculture). At the shipping points, traders are training in transportation shipping technology with a focus on packing, storage and cold chain operation and maintenance and marketing. After the training, the traders are provided with equipment depending or their specific needs. It is envisaged that items such as sorting tables, freezers, chillers and refrigerated (or insulated) trucks are supplied. The traders are expected to make a contribution to the cost of the equipment. The traders will be free to sell to customers of their choice. In addition to the rural bases, the project will also assist in setting up (or upgrading an existing) chill rooms in Dili and Baucau. The chill room operators preferably will be competent businessmen running similar enterprises. They are provided equipment such as sorting tables, freezers, chillers and refrigerated (or insulated) trucks. Like the rural traders, the chill room owners are expected to make a contribution to the cost of the equipment. They are given training in cold chain operations, care and maintenance of the equipment and marketing.

(2) Action and Related Organization's Responsibility

Action		Related Organization	Organization's Responsibility
1. Establishment of rural agriculture/fisheries packing and transportation systems			
1.1	Planning of rural agriculture/ fisheries packing and transportation systems	DNPP, DNPA MTCI, MED	MAF will retain an outside expert to design the rural agriculture/fisheries packing and transportation systems. The design will start with a cold chain sector and a trader needs assessment. The study will also determine what is already being done and what is available at traders' facilities. The design documents should include training and equipment TORs as well as a suggested maintenance plans and target indicators.
1.2	Selection of 4 rural shipping points (2 fisheries, 2 agriculture) and related traders	DNPP, DNPA MTCI, MED DNPIAC	MAF together with the designer will develop a matrix for selection of rural shipping points and traders. They will then apply the matrix to select 4 rural shipping points and related traders. Information about procurement of the packaging material and the packaging measures should be collected and compiled for propagation to the related agribusiness groups. MAF should collect information on transporters in sub-district level and compile them. The information shall be provided to users/ farmer groups/ processors through district and sub-district offices.
1.3	Training of traders in packing and transportation systems and maintenance	DNPIAC DNPA MTCI Distributors	Based on the design plan TORs, MAF implements training courses for at least 4 traders. To the maximum extent possible, training will be conducted on the job.

Action		Related Organization	Organization's Responsibility
1.4	Provision of equipment (ice making machines, ice boxes, refrigerated trucks)	DNPA MTCI Distributors	Based on the design plan TORs, MAF procures cold chain equipment. The equipment procurement packages will include a maintenance plan provided by the vendor. The traders will later payback MAF for the equipment in a mutually agreed manner.
2. Dili and Baucau based Operations			
2.1	Selection of chill room operators	DNPA MTCI	MAF together with the designer will develop a matrix for selection of chill room operators. They will then apply the matrix to select the chill room operators.
2.2	Planning of chill room	DNPA MTCI	MAF will retain an outside expert to design the chill room. The design will start with an analysis of what is already being done and what is available at existing facilities. The design documents should include training and equipment TORs as well as a suggested maintenance plans and target indicators.
2.3	Training of chill room operators in operations and maintenance	DNPA (MAF) Traders	Based on the design plan TORs, MAF implements training courses for chill room operators.
2.4	Provision of equipment (chill room)	DNPA Distributors	Based on the design plan TORs, MAF procures chill room equipment. The equipment procurement packages will include a maintenance plan provided by the vendor. The chill room operators will later payback MAF for the equipment in a mutually agreed manner.

(3) Implementation Organization

Implementation body : DNPA
Arrangement organization : DNPIAC
Cooperation organization (MAF) : DNPP, DNAH, DNPV
(Related ministries) : MTCI, MED

6-5-2 Provision of Agricultural Distribution Infrastructure

(1) Basic Concept

This project aims to improve infrastructure so as to make distribution business of agriculture/ livestock/ fishery products more efficiency and economically. The project consists of "Rehabilitation of roads", "Rehabilitation of ports" and "Construction of storage facilities".

1) Rehabilitation of roads

National roads which connect Dili to 12 district capitals, total length of 1,405 km, are the key distribution system in country. In general in this country, the roads are prone to be damaged by erosion and sliding of slopes since most roads are running in mountainous area and along slope-sided. Therefore, road surfaces are subject to deteriorated. According to the survey report, length of unsealed surface and poor or very poor paved surface in the national roads is estimated 108 km and 500 km respectively. District roads are under the same condition as well as the national roads, unpaved roads occupied 38% of total length 812 km. It is said that poor road network may cause rising selling price of commodities in the market since transportation becomes costly under poor road condition. Present poor road network is one of constrains to

prevent from growing agribusiness. It is necessary for development of distribution system to rehabilitate poor roads.

MoI is responsible for rehabilitation of roads. Actual rehabilitation works are developed under the supports of related donor agencies such as ADB, UNDP and JICA due to requirement of long-term scheme with large investment. As for rehabilitation plan of roads, ADB prepared the overall rehabilitation plan on roads and bridges in this country. To promote the rehabilitation plan, ADB proposed to put priority routes or sections. Based on the proposal of ADB, MoI may promote road rehabilitation plan.

According to the ADB's plan, priority sections are proposed as follows.

Table 6-5-1 Priority Sections Proposed by ADB

Type	Section			Total Length (km)
	Beginning		Terminal	
National road	Ainaro	-	Suai	67
	Liquisia	-	Mata Ain	75
	Tibar	-	Ermera	45
	Ermera	-	Maliana	64
	Pante Macassar	-	Sakato	15
District road	Bazartete	-	Aipelo	14

Source: Preparing the Road Network Development Project – TA7100

Considering the current road conditions, roads connecting with north and south coasts is very poor. Transportation access is limited especially during rainy season. The south coast area has rich agricultural potential. On the other hand, the north coast has consumption potential and import/ export ports in Dili. From viewpoints of agricultural product distribution, it is urgent to rehabilitate the connecting roads with north and south coasts available throughout a year. Then, the Ainaro-Suai section of 67 km might be proposed as a short term priority road.

This action plan is to promote provision of roads under the MoI. The MoI grapples with a series of works from planning, survey and design to implementation taking future agricultural distribution in the country into consideration.

2) Rehabilitation of ports

In the middle term development plan of port sector, it is mentioned that expansion of port facilities is necessary to cope with increasing freight industry in the future. In line with this, rehabilitation plan of international port in Dili is considered. According to this, it is mentioned that rehabilitation work would be facing with environmental problems. Then, as an alternative plan, new construction plan of port is studying. Even in this plan, it would be required to take long term consideration for economical and environmental feasibility. Besides the international large port, there are six commercial ports in the country. Except for Dili port, they have only small wharf or jetties. A regular ferry service between Dili and Oecussi is provided to distribution of daily goods. Except this, the other ports have only small landing where no daily shipping business is worked. Although physical rehabilitation of port is required, considering future distribution system in this country, priority of rehabilitation of roads should be higher than the ports. Action plan of this project, therefore, is to propose that a viewpoint of distribution system of agriculture/ livestock/ fishery products such as export of alive cattle and local beans should be incorporated in overall rehabilitation plan of the ports. It is expected to prepare proper rehabilitation plan

putting such views on setting priority and planning freight amount.

3) Construction of storage facility

Mung bean is exported to West Timor from border districts such as Covalina and Maliana, when the price is lowest for Timor-Leste. There are large seasonal fluctuations in price in the border trade. West Timor mung bean prices rise highest from November to February. In Timor-Leste mung beans are harvested from April to June in the highland (Bobonaro) and from August to October in the lowland (Covalima). West Timor mung bean prices are low for those harvesting period. In order to take high price trade opportunity, it would be required to provide any proper storage facilities to keep in store of Timor-Leste mung bean. But, there are no such storage facilities in border area. To take advantages of higher price in export trade, it is required to construct storage facility which is usable for traders in the place adjacent to border trade office. If such common use storage facility would be constructed, Timor-Leste mung bean might be traded at profitable timing.

(2) Action and Related Organization's Responsibility

Action		Related Organization	Organization's Responsibility
1. Rehabilitation of roads			
1.1	Formulation of the rehabilitation project of roads for promotion of market	MoI MAF (DNPIAC) MED	Rehabilitation routes and/or sections of roads are prioritized from viewpoints of improvement of agricultural product distribution. The priority roads are selected based on the ADB's proposal and future distribution system and discussed among the related ministries. (Considering future distribution system, the section of Ainaro –Suai (67km) is tentatively proposed as the priority one.) Based on the discussion, road rehabilitation project is planned in cooperation with related donor agencies.
1.2	Project implementation	MoI	Under the support of donor agencies, planning/ survey and design works are conducted. Taking the necessary procedures, road rehabilitation work is implemented.
2. Rehabilitation of ports			
2.1	Suggestion for formulation of the rehabilitation project of ports for export promotion	MoI MTCI MED MAF (DNPIAC)	Viewpoints from future distribution of agricultural/ livestock/ fishery products are put on working progress of rehabilitation planning by MoI. Ideas such as setting rehabilitation priority of ports and planning of freight volume are suggested in the rehabilitation plan.
3. Construction of storage facilities			
3.1	Formulation of the construction project of storage facilities for export promotion	MTCI MED MAF (DNPIAC) Traders	Discussion with local beans traders are held to exchange views about necessity of storage facilities to take advantage of trade to West Timor. If necessity is confirmed, feasibility including selection of construction site, capacity, budget and environment consideration is studied. Construction plan included in operation and maintenance system and utilization way is prepared.
3.2	Implementation of the construction plan	MTCI	Based on the construction plan, a series of study, design and cost estimate is conducted and design report is prepared. After budget arrangement, construction work

Action		Related Organization	Organization's Responsibility
			is conducted taking necessary processes.
3.3	Formulation of operation and management plan	MTCI Traders	Operation and management body is decided. A workshop is held to discuss with traders to explain and agreed about utilization and operation/ maintenance methods.

(3) Implementation Organization

Implementation body : MoI, MTCI
Arrangement organization : MAF (DNPIAC)
Cooperation organization (MAF) : DNPP, DNAH, DNPV
(Related ministries) : MED, Local administration
Donor agencies: ADB, JICA

6-5-3 Provision of Agribusiness Information and Communications System

(1) Basic Concept

Agribusinesses (i.e., processing industries, traders, wholesalers, farmers groups, women groups, retailers, sellers) have very limited access to market information such as selling and buying prices and volumes. Consequently they are not able to make fully informed marketing decisions, and so do not want to take purchasing risks. The result is that: (i) farmers have difficulty selling products, (ii) marketplaces have very limited sales volumes, and (iii) agribusinesses often run short of product or have to pay high prices for agriculture products.

DNPIAC does not have an electronic agribusiness database. Consequently, its access to up-to-date information is very limited. Typically, when information is needed the government relies on directly contacting stakeholders. While serviceable, this system is quite limited and does not provide a comprehensive sector overview. Decision making and planning could be greatly improved through access to more timely and more inclusive information.

Action plan of this project seeks to improve agribusiness' access to market information and DNPIAC's performance by provision of an electronic agribusiness database and communications system. The system will be operated by at least 2 trained database operators. To build such a database and communications system, support is needed for: (i) system planning and design, (ii) equipment, (ii) software, (iii) staff training, (iv) database operations, (v) communication system operations, and (vi) a database updating system. Once the database is operational, the Agribusiness Directorate will operate a communications system to private agribusinesses and publish and distribute quarterly agribusiness profile reports. The database will also be used on an as needed basis by Agribusiness staff to assist in planning and decision making. Database operators will be available to produce quarterly agribusiness sector profiles as well as customized reports as needed by the government. The database operator will also manage the communications system. It is envisaged that the communications system can use the existing hand phone network by sending sms messages.

Government purchasing system is on-going. If the target products are put on the list of the government purchasing system, significance of this project is small. Small caterer and restaurant and small industry groups can directly collect market information from their local marketplace.

(2) Action and Related Organization's Responsibility

Action		Related Organization	Organization's Responsibility
1. Establishment of agribusiness information system			
1.1	Planning of agribusiness database, data collection and communications systems	DNPIAC	MAP will retain an outside expert to design an agribusiness database, data collection and communications systems. The design will start with an agribusiness sector and MAF needs assessment. The study will also determine what is already available at other agencies like MAF's other directorates, Bureau of Statistics and MTCI. Comparing Agribusiness' data needs with information available from all sources, data gaps are identified. An agribusiness database and data collection system are designed to satisfy information gaps and needs. It is envisaged that the database would include items such as: (i) name, address and corporate profiles for agribusiness processors, cooperatives, traders, retailers and women's' groups, (ii) agribusiness production amounts sorted geographically and by products, (iii) commodity market prices sorted by geography, product and industry level (i.e., farmers, traders, processors, wholesalers, retails, consumers), and (iv) marketplace descriptions, operational information and throughputs. The information on commodity market prices will be communicated to agribusinesses. It is envisaged that communications to agribusinesses can be accomplished by sms through the existing hand phone network. The design documents should include training and equipment TORs. Target indicators for use in quarterly reports should be included as a section of the design study.
1.2	Training of database operators	DNPIAC	Based on the design plan TORs, MAF implements training courses for at least 2 database staff. To the maximum extent possible, training will be conducted on the job with MAF's own system. Database operators will also be trained in the operation of the communications network.
1.3	Provision of database and communications equipment	DNPIAC	Based on the design plan TORs, MAF procures database and communications equipment. The equipment procurement packages will include a maintenance plan provided by the vendor.
1.4	Software development and/or purchase	DNPIAC	MAP will follow the database design plan and retain an outside expert to purchase (or if necessary develop) the software needed for an agribusiness database. Software development will include provision of data collection forms and training for MAF staff in data input and systems operation.
1.5	Collection of database information	DNPIAC MAF MTCI	Database information will be collected on standard forms by MAF staff and district agriculture offices. Lists of agribusinesses and cooperatives can be provided by MTCI and Ministry of Economy and

Action		Related Organization	Organization's Responsibility
			Economic Development.
1.6	Input of information to database	DNPIAC	Database operators will be trained how to input data to the database by the software developer. Training will be very practical and consist of the actual input of data into the database. All data input will be undertaken by MAF's database operators following the system recommended by the software developer.
2. Database Operations			
2.1	Operation of data updating system	DNPIAC	The software developer will train the MAF database operators in the data updating system. The training will include use of relevant forms, data collection, data entry and system updating. The MAF database operators will assume responsibility for continued system updating on a regular basis.
2.2	Preparation of agribusiness sector quarterly reports	DNPIAC	MAF will study the indicators recommended in the design study, and recommend those to be used in agribusiness quarterly profiles. Report format can be similar to the Bureau of Statistics quarterly trade report. The database operators will produce concise quarterly profiles covering the agribusiness indicators.
2.3	Operation of communications system	DNPIAC	The software developer will train the MAF database operators in the communications system. The MAF database operators will assume responsibility for continued operation.
2.4	Provision of customized data to decision makers	DNPIAC	As required customized agribusiness data will be provided to government decision makers.

(2) Implementation Organization

Implementation body : DNPIAC
Arrangement organization : DNPIAC
Cooperation organization (MAF) : DNPP, DNPSE, DNAH, DNPA, DNPV
(Related ministries) : MTCI, Local administration

6-6 ACTION PLAN FOR SUPPORT FOR SALES PROMOTION

6-6-1 Support for Marketing Route Development

(1) Basic Concept

Almost all produce found in Timor-Leste's supermarkets and large restaurants is imported. If sales opportunities were provided by the government and other institutes, consumer demand for local produce would grow and at least some portion of the imports could be displaced. Due a lack of markets, most Timorese farmers only grow crops for self consumption. Where markets exist, farmers respond by increased production. Moreover, when consumer demand increases, farmers produce more for sale.

To increase sales of local agriculture produce, MAF implements conducts a local produce promotion program. The MAF develops a comprehensive sales promotion strategy for graded high quality local produce, in cooperation with related organizations such as MTCI and MoE. The strategy will be multi

faceted and include elements such: (i) agribusiness fairs, (ii) use of market booths (antennae markets), and (iii) a market promotion campaign for local agriculture products. It will also include that certified stakeholders will supply high quality produce to the Ministry of Education (MED) for use on their school feeding programs. The market promotion campaign will be multi media and include use of radio, television, newspapers, banners and competitions. MAF will be given the equipment and materials needed for sales promotion.

(2) Action and Related Organization's Responsibility

Action		Related Organization	Organization's Responsibility
1	Introduction of agribusiness fairs	MAF, (DNPIAC) MTCI MED	MAF will develop a protocol to be used for the conduct of agribusiness fairs. The protocol will include information on how to organize and implement agribusiness fairs. The protocol will also contain a list of agribusinesses that will be invited to display their works, and a proposed schedule. MAF will prepare several booths, which can be easily transported and erected, as well as promotional materials advising the public about the fairs. Based on the protocol MAF will run one fair per year in East, Central and West Timor-Leste.
2	Program for strategic placement of market booths (antennae markets)	MAF	MAF will also teach the use of antennae markets to stakeholders. After informing stakeholders, MAF will invite private sector participants to place antennae markets at key events (e.g., agribusiness fairs, football matches, etc.) and businesses.
3	Market promotion campaign for local agriculture products	MAF, MoH	MAF will promote high quality, graded agricultural produce through a variety of mediums including radio, TV, print media, contest and competitions. Although employing a range of outlets, the promotion campaign will have a consistent, easily understood theme. From the pilot projects, Radio, newspapers, banners and flyers were all good media channels for new product promotion. Posters were found to be of limited usefulness.
4	Provision of equipment and materials for sales promotion	MAF	MAF will first develop TORs for equipment (e.g., video cameras, etc.) and materials and then procure items as needed. When possible, procurement packages will include a maintenance plan provided by the vendor.
5	Supply of local agriculture products to school feeding programs	MAF MED MoH MoE	MED already has an ongoing school feeding program. After the grading system is operational and promotion programs underway, MAF will enter into an agreement with MED to supply high quality, graded produce to the school feeding program.

(3) Implementation Organization

Implementation body : MAF (DNPIAC)
Arrangement organization : DNPIAC
Cooperation organization (MAF) : DNPP
(Related ministries) : MTCI, MED, MoH, MoE

6-6-2 Introduction of Agriculture Product Grading System

(1) Basic Concept:

Almost all produce found in Timor-Leste's supermarkets and large restaurants is imported. Imported products are mostly high quality produce that has been carefully sorted, graded and packed. To date, for agriculture products there are no guidelines or regulations being applied by the government for quality grades, or even standardized weights and measures. If grading standards for produce quality were introduced by the government, consumer demand for local produce would grow and at least some portion of the imports could be displaced. Due a lack of markets, most Timorese farmers only grow crops for self consumption. Where markets exist, farmers respond by increased production. Moreover, when consumer demand increases, farmers produce more for sale.

To increase sales of local agriculture produce, MAF implements an agriculture products grading and certification system; and conducts a local produce promotion program. MAF develops a comprehensive sales promotion strategy for graded high quality local produce.

To insure high quality produce comes to market, MAF will oversee implementation of produce grading by the private sector. MAF will establish food grading standards and publication of related materials. Grading guides will be published and disseminated to traders, buyers and sellers. MAF will train grading inspectors, who can extend the grading system to traders, wholesalers and retailers. Once stakeholders have learned and are using the grading systems, MAF will inspect participants and issue grading certificates. MAF will have a fully equipped laboratory to be used for grading inspection and verification. Introduction of the grading will boost sales, provide consumers more high quality fresh produce.

(2) Action and Related Organization's Responsibility

Action		Related Organization	Organization's Responsibility
1	Establishment of produce grading standards and publication and dissemination of related materials	DNPSE, DNPIAC, DNPP Private sector MTCI	MAF will study produce grading standards being used in other countries. Based on this research and in consultation with the private sector, MAF will determine the appropriate national grading standards. The grading standards will then be published perhaps on cards as is now done for coffee and disseminated to stakeholders. For activating rice market, DNPIAC, in cooperation with related Directorates such as DNPP, provides the rice grading system. Content of broken rice and impurities should be the major standard items in the grading system. Local soybean product producers and traders can use tested information such as high protein content and requirement further cleaning for promotion of their business.
2	Training of inspectors	MAF MTCI	To learn the produce grading system needs, MAF implements training courses for at least 5 grading inspectors. In addition to how to implement the grading system, the training will include appropriate extension methods needed to introduce the grading system to stakeholders.
3	Provision of equipment and materials for grading	MAF	MAF will first develop TORs of equipment (e.g., laboratory gear, etc.) and materials and then procure items as needed. When possible, procurement packages will include a maintenance plan provided by the vendor.

Action		Related Organization	Organization's Responsibility
4	Issuance of grading certificates	MAF	MAF Inspectors will check private sector operators and if their operations are following the grading guidelines issue certificates to the firms/individuals.
5	Support for grading system extension to traders, wholesalers and retailers	MAF Traders, Wholesalers, Retailers	MAF Inspectors will not only check installations but also aid the sector to implement the grading guidelines. Their main duty will be to encourage compliance through knowledge dissemination. The MAF Inspectors will serve in an extension capacity to promote the grading system.

(3) Implementation Organization

Implementation body : DNPSE
Arrangement organization : DNPIAC
Cooperation organization (MAF) : DNPP, DNAH
(Related ministries) : MTCI
Private Sectors

6-6-3 Improvement of Sanitary Management

(1) Basic Concept

This project aims to prepare environment conditions so that sales can be promoted by adding value through ensuring food safety of agriculture/ livestock/ fishery products. The project consists of the "Provision of sanitary management system in the marketplace" and "Provision of abattoir".

1) Provision of sanitary management system in the marketplace

There are three large public marketplaces of Taibesi, Harilala and Comoro and five small marketplaces in Dili. Each district has a public marketplace in the district capital. In the marketplaces, there are various market styles such as free market of direct sales, outdoors retail shop, retail shops with simplified building structure, and retail shops under large scale building with roof. There are no infrastructures such as water supply, electricity and drainage facilities in the marketplaces. Therefore, sanitary environment is prone to deteriorate. Under such conditions, MTCI is planning to rehabilitate public marketplaces. The Taibesi market is planned to rehabilitate by 2010 as the first priority in Dili. MTCI is also planning to rehabilitate local public market in district. According to the plan, priority is put on the Baucau and Same markets. According to the MTCI's information, provision of infrastructures such as toilet and water supply facility are considered to incorporate in the plan. Sales room for fresh products such as meat and fresh fish are supposed to prepare in Taibesi market. But, there is no plan to construct such room in other market. It is considered that all of those rehabilitation plans face with budget limitation. The rehabilitation plans are focused on the physical improvement of marketplace. After rehabilitation works, operation and maintenance works of the marketplace are entrusted into the local administration. Sanitary management is the most important subjects in the operation and management of marketplaces. While the sanitary condition becomes worse, food safety become to be threatened. Especially, sales of fresh foods might be damaged. In order to ensure sales with food safety, it is necessary to improve sanitary environment including provision of fresh food sales room and low temperature storage facility.

Fish are a highly perishable commodity. They require specialized transportation, handling and retail chains. Fish are landed throughout Timor but there are concentrations of fishers in Atauro, Laga and Heera.

Usually fishers sell to buyers nearest to their point of landing. There is no refrigeration at most landing sites so they can only hold the fish for about a day. The result is that most commonly fishers sell to specialized collectors. Dili traders visit landing sites between Liquica and Manatuto, and Baucau traders from Manatuto to Baucau. Collectors travel to landing sites, gather fish in plastic buckets and then carry the fish to retailers in Dili or towns. The collectors bring the catch to well known sales points where they either set up stalls themselves or sell to fish retailers. Fish retail areas can be found at specified points along the Dili coastal roads. Fish are sold to the public and/or to other traders or peddlers carrying fish on poles. Ice is in only occasional use. The retailers' stalls also have no direct access to either power or freshwater. As a result, the quality of fresh fish sold is extremely variable. The consequence of not having any central fresh fish auction or retail market is that fishers receive low prices and consumers cannot easily find good quality

Fish marketing plans are already underway and construction partially complete to build a fish auction and retail fresh fish market at Taibesi. DNPA began work in 2007 to build such a structure, but not complete yet. No operation and maintenance plan include in this plan. In parallel with the construction, it is required to provide operation plan of a fresh fish auction and retail market in Dili.

This plan aims to improve environment conditions of marketplace so as to appeal food safety to buyers. It is to improve sanitary environment, provide sales room for fresh food, and introduce low temperature storage facility in the marketplace for sales promotion.

2) Provision of abattoir

It is important to make meat market through provision of abattoir to not only supply it to local consumers and but also promote export to West Timor and other neighboring islands. There is a large scale abattoir in the Tibar in Liquica district and small scale abattoir in the 5 cities of Same, Ainaro, Baucau, Oequsse and Maliana. According to the DNPV, Tibar abattoir closed up to now is rehabilitated for reopening, and to open, guard fence is now constructing around it for environmental consideration on neighboring elementary school. As for processing meat of animal such as cattle, pig and goat is usually processed in the garden of farmhouse without any sanitary management. Such processing process is prone to be polluted by salmonellas and other serious poisons. Safety of meat is not inspected in such garden works. On the other hand, according to the DNPV, it is regulated in the abattoirs that inspectors are allocated to inspect body and meat before and after processing based on the guideline. But, actual inspection does not meet satisfied level. There always is a risk of pollution under poor sanitary condition. It is necessary to improve the inspection system. Safety of meat is the international concern since BSE problem in 1996. It is expected to activate meat market in domestic and export levels after reopening the Tibar abattoir. It is highly required to control meat safety through strengthening inspection system, in order to supply safe meat to consumers and promote its export to neighboring countries.

Action plan aims to supply hygienic and safe meat to consumers through providing physical and technical conditions so that livestock can be processed under hygienic condition and processed meat can be inspected. Establishment of ensuring meat safety system may also contribute to expansion of international meat market by promoting export to neighboring countries.

(2) Action and Related Organization's Responsibility

Action		Related Organization	Organization's Responsibility
1. Provision of sanitary management system in the public marketplace			
1.1	Planning of sanitary management system	MTCI MED Local administration	Sanitary management system in the marketplace is planned. By local administration and persons related with marketplace. Physical conditions of marketplace are improved by administration. Stakeholders who are entrusted to manage marketplace are collected by district and/or city. They discuss improvement method of environmental condition in the market place. After discussion they prepared improvement to district/ city and/or MTCI. Stakeholder includes retailers, inspectors and administrators. Problems and found and solutions are discussed. Actors and responsibility to improve environment conditions. are clarified
1.2	Installation of sanitary facilities in the public marketplace	MTCI	Administration discusses necessity of install of sanitary facilities (toilet, washing place, drainage facility, waste disposal) and operation and management method of them. Based on the discussion, such facilities are installed
1.3	Discussion on installation of sales room with cold storage facilities for sales of fresh foods	MTCI Local administration	They discuss with retailers and wholesalers about sales of fresh food. Based on their needs, it is planned to install sales space of fresh food and low temperature storage facility. Taibesi is planning to install such space for fresh food. For the other marketplaces, necessity of such space and facility are discussed by them, although electricity service is required. It is proposed to MTCI that discussion results are incorporated in the rehabilitation plan.
1.4	Campaign for necessity of sanitary management	MTCI, MoH Local administration	Campaign for improvement of sanitary environment in the marketplace is carried out. For the campaign, necessary equipment and materials are made.
1.5	Fish Auction/Retail Market Operations	DNPA MTCI Private sector Local administrator	DNPA makes out of the O/M plan needed for smooth operation of both the auction and retail market systems. Recruitment of auction managers/ retail sellers and operation method of auction hall and the retail market stalls are included in this plan.
2. Provision of abattoir			
2.1	Sanitary improvement in the abattoir	DNPV	Present sanitary condition of abattoirs is reviewed. Sanitary facilities are provided through studying waste disposal method after dressing animals and dressing processes.
2.2	Review of the present meat safety inspection system and formulation of improvement plan	DNPV MoH	Present meat inspection system is reviewed. Based on this, improvement plan of inspection system such as allocation of inspectors, update of guideline, implementation system of inspection is formulated
2.3	Strengthening of inspection capacity of	DNPV	Inspecting capacity of inspectors is strengthened by training. To train them, training plan is prepared. If necessary, overseas training is incorporated in the training plan.

Action		Related Organization	Organization's Responsibility
	inspectors		
2.4	Procurement of equipment/ devices for meat safety inspection	DNPV	Necessary equipment and devices to inspect dressing processes are allocated in the abattoir

(3) Implementation Organization

Implementation body : DNPA, DNPV
Arrangement organization : DNPIAC
Cooperation organization (MAF) : DNPP
(Related ministries) : MTCI, MED, MoH, Local administration

6-6-4 Introduction of Food Safety Inspecting System

(1) Basic Concept

It is important for promotion of processing/ marketing industry to control food safety along food supply route. Observing the present situations, however, it was not controlled in shipping spots of farmhouse garden and processing factory. In the marketplaces, food safety campaign such as dealing method in fresh foods and washing hand is promoted. As for practical inspection of food safety, it is regulated in marketplace in Dili that inspectors from MoH and MTCI would basically inspect products every three months and/or at the time when any food problem arise. On the other hand, in the local marketplaces, they inspect regularly selling commodities by observing and checking consumable period mentioned in the label. Any guidelines or manuals for inspection are not provided. There are no devices and equipments for conducting inspection. It is necessary to introduce food safety inspection system along food supply routes including processing factory.

Action plan of this project is to make it possible to sale foods added high-quality value by ensuring food safety through strengthening inspection system along market routes. Related with ensuring food safety, it is emphasized to introduce certification system for organic farming products which are produced under the natural farming conditions of Timor-Leste. If such system is introduced, it may contribute to getting reliability from international market and help export promotion of the products.

(2) Action and Related Organization's Responsibility

Action		Related Organization	Organization's Responsibility
1	Review of present situation/ food safety standard/ inspection guideline and improvement planning	MoH Local administration	Present food safety standard based on the Indonesian standard are reviewed. Worldwide standard is collected and compared with the present one. Review is done considering future promotion of export of domestic products. Establishment plan of food inspection system based on the standard prepared is made with the assistance of WHO.
2	Training of food safety inspectors	MoH	Based on the plan, capacity development plan of inspecting technology of inspectors is prepared. Training plan is prepared. It includes basic knowledge of food hygiene, inspect technology, campaigning way of food safety. Inspection manual and/or guideline are

Action		Related Organization	Organization's Responsibility
			prepared for inspectors.
3	Procurement of equipment/ devices for food safety inspection	MoH	Necessary equipment and devices for inspection are procured.
4	Establishment of food safety inspection organization	MoH	Allocation plan of inspectors is prepared for 12 marketplaces. Implementation organization is established.
5	Campaign for food safety	MoH	Campaign plan for food safety is made. Campaign materials such as poster, booklet, pictures and videos are provided. Campaign is regularly made in corporation with related persons with marketplace.

(3) Implementation Organization

Implementation body : MoH
Arrangement organization : DNPIAC
Cooperation organization (MAF) : DNPIAC
(Related ministries) : MTCI, MED, MoE, Local administration
Donor agency: WHO

6-7 ACTION PLAN FOR IMPROVEMENT OF THE GOVERNMENT'S PRODUCTS PURCHASING SYSTEM

6-7-1 Establishment of an Operating System in Central and Local Levels

(1) Basic Concept

MTCI under the authority of the Minister's Office is seeking to promote a paradigm shift, and change the farmers' perspective from production for self sufficiency to production for the marketplace. To do this, MTCI sets purchase prices for 10 locally produced food products at approximately double the free market rate. It then purchases an unlimited quantity of these products at its Dili warehouse. In the future, MTCI plans to establish purchasing points in all 65 sub-districts.

While the intent of the MTCI system is admirable, its product procurement mechanisms are new and still not well developed. It also lacks focus by covering so many products. Operational modalities are in their infancy, and distribution of purchased products is undertaken mostly on an ad hoc basis. There are frequent problems with the slow disbursement of funds to farmers and traders, and insufficient spreads for traders both at the intermediate and Dili sales levels. Slow payment in particular is a disincentive to farmers and traders. In addition, there are further indirect impacts, which have not been well researched by MTCI. These indirect impacts include the facts that: (i) price differentials between products and sales levels can change farmer production patterns to not match the market, and (ii) the MTCI milling of rice has a negative impact on private rice millers. MTCI operations can be considerably improved by instituting programs for: (i) human resource development, (ii) improved quality control inspection system for purchases, (iii) inauguration of a comprehensive operating systems database, and (iv) streamlining cumbersome procedures.

Action plan of this project seeks to create better farmers' incentives through improvement of the existing MTCI product purchasing system. Interventions include: (i) improvement of the operating systems for

product procurement, and (ii) introduction of a better purchase quality control methods. To improve the operating system, an enhanced database will be introduced and a human resource development program for MTCI staff at the national and district levels provided. To introduce better purchase quality control, standards will be developed, quality inspectors trained and assistance provided during the initial stages of improved quality control program.

(2) Action and Related Organization's Responsibility

Action		Related Organization	Organization's Responsibility
1	Finding problems of the present system and formulation of improvement plan	MTCI MAF MED MoF	MTCI conducts a comprehensive review of current operations. The analysis is undertaken both within MTCI and with farmers, traders and retailers. A report is drafted with special emphasis placed on solution of exiting bottlenecks such as slow fund disbursements, lack of purchasing points and negative impacts on traders/millers. The review includes a detailed improvement plan to overcome current deficiencies. The improvement plan contains training and equipment TORs. It should also recommend which products should be subsidized with defined indicators.
2	Preparation of a database for a purchased products operating system	MTCI	Based on improvement plan findings, MTCI outsources development of an upgraded operating database. The database is specifically geared to provide real time information on product purchase quantities and to accelerate payments to traders and farmers.
3	Procurement of equipment/devices for the operating system	MTCI	Based on improvement plan TORs, MTCI procures equipment to implement an upgraded operating system.
4	Training for administrators	MTCI	Based on improvement plan TORs, MTCI implements training courses for MTCI, Ministry of Economy and Economic Development and MAF staff
5	Setting target indicators for making decisions during the operating period	MTCI	MTCI uses the target indicators as provided in the improvement plan. Sample indicators could include MTCI's impact on: (i) improved product quality, (ii) payment time for accounts receivables, (iii) increased farmer product purchases, and (iv) private miller throughputs.
6. Introduction of quality inspecting systems			
6.1	Preparation of quality standards for purchasing products	MTCI MAF	MTCI prepares quality standards for purchasing products. Prior to implementation, MAF must agree to the quality standards. For example in the case of paddy, the moisture content will be defined.
6.2	Training of quality inspectors	MTCI MAF	MTCI implements training courses for staff based on improvement plan TORs. The training courses should focus on applied topics. Consideration should be given to sending trainees from MTCI, Ministry of Economy and Economic Development and MAF to the related Indonesian Institute or organization.

6.3	Improvement of quality inspecting system	MTCI	MTCI implements improved quality inspecting system. The quality inspecting system is subject to audits by MAF and external experts to insure proper introduction of improved quality control methods.

(3) Implementation Organization

Implementation body : MTCI
Arrangement organization : DNPP, DNPIAC
Cooperation organization (MAF) : DNPIAC
(Related ministries) : MED, MoF

6-8 ACTION PLAN FOR SUPPORT FOR EXPORT PROMOTION

6-8-1 Support for Finding Export Commodity and Sales Promotion

(1) Basic Concept

Most agriculture crops in Timor-Leste are produced with adapting local available resources without the use of genetically modified seeds and chemical fertilizers, herbicides or pesticides. These local resources adapted farming systems can be classified by default as organic farming. The world organic market has been growing by 20% a year since the early 1990s. In addition to high growth, market prices for organic products are also significantly higher than products produced by conventional farming methods. For example, observations in Singapore retail markets found that organic soymilk sells for over 4 times more than the comparable non organic product (organic $3.65/l versus non organic $0.85/l).

However, despite the ubiquity of local reources adapted farming products, Timor-Leste has been largely unable to capitalize on its comparative advantage and enter the high priced, high growth organic marketplace. Except for coffee, agricultural exports from the country are minimal.

This action plan seeks to promote the exportation of local resources adapted farmed products through a series of targeted actions. These actions include: (i) finding of agriculture products with export potential, (ii) creation of an export marketing strategy for selected products in target markets, and (iii) introduction of an organic (i.e., local resources adapted farming without chemical inputs) certification program. Introduction of these measures should enable the nation's produce to enter the international market.

(2) Action and Related Organization's Responsibility

Action		Related Organization	Organization's Responsibility
1	Finding appropriate commodities and assessing their export potential	DNPIAC	MAF will produce a report that details the domestic aspects of local resources adapted farming products that have export potential. Report sections should include: (i) selection of crops, which have high export potential, (ii) current and potential production volume, (iii) current value chains with purchase prices, (iv) cropping calendars, (v) location of production areas, (vi) current marketing/trading systems, and (vii) domestic transportation means and costs.
2	Collection/analysis of information related to overseas market research	DNPIAC MTCI MED	Based on the selection of such farmed products with export potential, MAF assess the general overseas markets for those products. The study will determine the existing product types, price levels and seasonal patterns for key markets such as

Action		Related Organization	Organization's Responsibility
			Indonesia, Singapore and Australia plus other markets of future interest such as Japan, US and EU. The product type information can be used to determine local value added techniques required.
3	Finding export market channels in target countries.	DNPIAC MTCI	Based on the results of both the domestic and overseas export market reports, detailed work is undertaken to define the specific export channels to be used in the target countries. An export market strategy will be produced that details by commodities: (i) export document procedures, (ii) preferred transportation routes, (iii) import procedures in the target countries, (iv) likely wholesale buyers in target markets, (v) a financial profile of costs incurred by the sellers as well as selling prices, (vi) export credit arrangements, and (vii) means of payment to exporters.
4	Support for research and development of value adding technology	DNPIAC DNADC	The overseas market report will recommend value added techniques. MAF will conduct the research and development on the recommended value adding techniques. Value adding techniques could be as varied as field trails with farmers (e.g., specialized honey production) or work with processors (e.g., tetra-packs for organic soymilk).
5	Introduction of natural farming product certification system	DNPIAC MoH	In many countries, organic standards are formulated and overseen by the government. The United States, the EU and Japan have comprehensive organic legislation. In these regions, the term "organic" may be used only by certified producers. Being able to put the word "organic" on a food product is a valuable marketing advantage. As a first step, MAF staff should be trained overseas in the organic certification process. After training, MAF can establish the procedures and procure the equipment necessary for implementation of an organic certification system.

(3) Implementation Organization

Implementation body : DNPIAC
Arrangement organization : DNPIAC
Cooperation organization (MAF) : DNPP, DNAH, DNPV, DNADC
(Related ministries) : MTCI, MED, MoH

6-8-2 Promotion of Exporting

(1) Basic Concept

The only agricultural product of export is coffee. For the export of it, the Ministry of Finance's Customs Department requires a copy of the Exporters Trading License and, for export of live plants and animals, MAF's National Directorate of Quarantine and Bio-security (DNQB) produces an Export Permit before providing a Customs Declaration.

DNQB has quarantine offices where are allocated in the three districts (the number of quarantine inspectors) of Suai (2), Bobonaro (Maliana) (2) and Oequsse (4). Besides, there is the office in Dili. The Quarantine inspectors in Dili are allocated in 4 in airport, 4 in Dili port and 3 in post office. The quarantine inspectors inspect the quarantine items. There is no laboratory. Currently, Timor-Leste

Quarantine services are unable to comply with international standard.

Live cattle are exported by traders who come from Indonesia to purchase cattle for export. The paperwork required for cross border trade of live animals is significant. To date, it appears that only the Cooperative Café Timor (CCT) has been able to surmount these bureaucratic hurdles and obtain legal export documentation.

Action plan of this project aims to improve quarantine service and export documentation system, in order to develop a promotion strategy in each product in each specific market. By implementing the plan, product exporting will be activated through simplified documentation process and upgraded quarantine system of export product.

(2) Action and Related Organization's Responsibility

Action		Related Organization	Organization's Responsibility
1	Recommendations on overseas export promotion campaigns	MAF (DNPIAC)	To maximize sales in overseas markets, promotion campaigns should be conducted. MAF will development a promotion strategy individually geared to each product in each specific market. Implementation of the market promotion can be undertaken by overseas firms.
2	Improvement of quarantine system	DNQB	Timor-Leste quarantine services are upgraded through staff training and equipment procurement to comply with international phytosanitary obligations under WTO-SPS and IPPC, to produce 'Health Certificates' for livestock or 'Phytosanitary Certificates' for plant materials.
3	Improvement of export documentation system	MoF	Analysis is made of the export document requirements both at the port of Dili and at the major border crossings from Timor-Leste into West Timor (including Oecussi). Based on finding the recommendations are made how to both streamline procedures and reduce costs. Special attention will be paid to the paperwork required for live animal exported from Oecussi.

(3) Implementation Organization

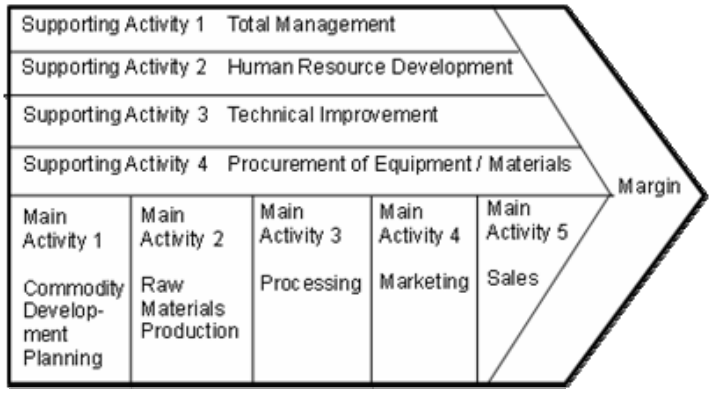
Implementation body : DNQB
Arrangement organization : MoF
Cooperation organization (MAF) : DNPIAC, DNPP
(Related ministries) : MTCI, MED

6-9 ACTION PLAN FOR VALUE CHAIN IMPROVEMENT

6-9-1 Support for Establishment of Product Based Value Chain

(1) Basic Concept

This project is to support in establishing value chain system from production to processing, marketing and selling until consumption. This project takes an integrated development approach in cross-cutting of the projects in the draft action plan in line with the activities from production to selling. DNPIAC is responsible for this project implementation. DNPIAC should take approach to establish a linkage of the actors to create the value chain.



Value chain system is designed for various actors participating in the economic activities from production to selling such as production farmers, processors, traders, middle and retailers, so that they can gain profit from their each activity. Activities to establish value chain are consisted of supporting activity and main activity. Supporting activity is to support the actors so that they can participate in economic activity in the value chain system, which is the coordination and arrangement activities with related agribusiness stakeholders of public and private sectors. DNPIAC should guide this supporting activity. Main activity is the economic activities which participating each actor takes initiative in their activities to gain profit. Any issues occurred in each economic actives should be solved through the supporting activities. Approach to establishing value chain is dependent on the target product.

(2) Action and Related Organization's Responsibility

Action		Related Organization	Organization's Responsibility
1. Supporting activity			
1.1	Total management	DNPIAC	Target product for establishing value chain system is found based on the development potential. Actors related to the value chain system are listed. Listing of the production farmers is based on the information from DNPIAC, DNAH and DNADC. Listing of the processors includes information on their intension for improving processing process and developing new product. Intervention to be taken by administration is designed along with the line of value chain. Contents and timing of intervention are overall planned. (In the pilot projects, district agricultural office and sub-district and suco administration office were participated in the activities of seed procurement and contract farming.) It is necessary DNPIAC takes intervention in the processing and sales promotion processes. Progressing of the designed value chain activities is monitored. Workshop is organized as required time based on the monitoring. Issues arisen in the value chain process are discussed and solutions are shared among actors.
1.2	Human resource development	DNPIAC	Capacity of the human resources is developed so that they guide necessary activities in each value chain development stage. Production stage: support in developing human resource for stable crop production (in the pilot project, capacity development of extension workers and NGOs was conducted through the training on organic farming.) Processing stage: supporting human resource development for improving processing technology (technology and skill for developing new products and operating and managing processing machine and equipment)

Action		Related Organization	Organization's Responsibility
			Marketing (selling) stage: supporting human resource development for providing overall strategic plan on effective transportation and sales expansion of the target product (packaging and transportation, sales promotion, etc) Human resource so that they can monitor and evaluate working progress of value chain and feedback to the primary designed value chain activities.
1.3	Technical improvement	DNPIAC	Support in conducting technical improvement as required in the creating value chain. Technical improvement is largely dependent on the target products. Production stage: seed multiplication and making use of local variety seed, manufacturing local resources adapted fertilizer and pesticide Processing stage: manufacturing technology of target product Marketing (selling) stage: packaging/ transportation and sales promotion
1.4	Procurement of equipment and materials	DNPIAC	Support in procurement process of machine/ equipment/ materials required in each economic activity stage of value chain system. Those are the input for crop production as raw materials (seed, machine/ equipment / materials for local resources adapted farming and post-harvesting), and processing machine/ equipment (procurement of sterilization machine was supported in the pilot project), and marketing or selling materials including packaging, labeling , materials for exhibition)
2. Main (economic) activity			
2.1	Commodity development planning	DNPIAC	Considering various conditions in Timor-Leste such as agricultural productions, marketability and manufacturing technology of processors, development and improvement possibility of product are analyzed.
2.2	Raw materials production	DNPIAC	Most important activity in this country to establish value chain is to maintain stable production and procurement of raw materials in quantity and quality. ("Contract farming" was practiced to maintain stable procurement of raw material in the pilot project. As the result, it was emphasized that improvement activity of cropping technology should be conducted to ensure stable production and procurement of raw materials crop.) plural production sites should be provided for processors to avoid their operation and management risk .
2.3	Processing	DNPIAC	Besides analyzing marketability of the target products, current situation of processing and distribution infrastructures such as roads, provision of cool storage facilities, water supply and power supply should be studied in order to plan processing activities. It is also studied to ensure packaging and transportation aiming at expansion of selling.
2.4 2.5	Marketing Sales	DNPIAC DNPIAC	Marketing and selling activities are planned to expand sales of the processed product. Planning of agribusiness fare, opening of antenna shop and exhibition are expected. (Strategic sales promotion plan based on the consumers' buying consciousness from viewpoints of Attention, Desire, Action and Satisfaction

Action		Related Organization	Organization's Responsibility
			was prepared. Based on this, labeling and selection of sales sites were planed.)

(3) Implementation Organization

Implementation body : DNPIAC
Arrangement organization : DNPIAC
Cooperation organization (MAF) : Related Directorates participating in the value chain system.
(Related ministries): MTCI, MED

6-9-2 Capacity Development Plan of Value Chain Stakeholders

(1) Basic Concept

Farmers' groups, agricultural cooperatives and traders (wholesalers, women groups, retailers, and sellers) are very important agribusiness industry participants. Unfortunately, these groups are facing constraints related to their business management, trading and marketing skills. Farmers' groups have been given training but mostly in very specific technical topic areas (e.g., making virgin coconut oil, marmalade production, etc.). Cooperatives have been provided both equipment and training by Cooperatives Directorate of MED. MAF mostly provide support on technical agriculture topics. MTCI is very active working with traders, farmers and farmers groups under its commodities purchase programs. However, it does not provide training to its clients. As a result, farmers' groups and cooperatives are lacking skills in administration, business management, accounting and marketing. Traders are in an even worse position. There a very few programs focused on traders so they have received far more limited assistance for capacity development. Consequently, they often lack even basic business skills. The low level of human resource development in the agribusiness sector has lead to problems of low productivity, inconsistent product quality and limited market sales volumes.

As for administrators, except a few administrators in central, they lack basic task operation skills in promotion for processing/ marketing industries, namely, establishment of value chain system. There are no learning opportunities provided so far for establishing value chain system. Capacity development opportunity for administrators in central and district levels is limited only in the on-the-job training of relevant donors' projects. In order to promote processing/ marketing industries proposed in the Draft Action Plan, it is required that administrators are trained so that they can organize and operate their task on support for set-up and operation of processing industries with value chain concept in corporation with farmers groups and traders/ processing industry. In the district administrator level, it is required to improve facilitation capacity in working process of finding interested framers groups/ private processing industries, organizing them for processing/ marketing industries, and operating their works on their initiatives. These actors are organized to aim at building value chain of target product. As for central administrators, it is important to learn and improve planning, operation and managing capacities of overall agribusiness promotion works and establishing value chain.

This project is to provide learning opportunities on agribusiness for value chain stakeholders including administration and private sectors. There are two training directions, one for improving agribusiness operation capacity under value chain improvement in administration level, the other for strengthening of business management in private sectors such as farmers' group/ women groups, cooperative, processing industries, traders. As for administrators, government staff from DNPIAC and related MAF directorates is

trained in the improving agribusiness and value chain operation capacity to strengthen their capacity for planning value chain system. As for strengthening of business management, three courses are offered: one with a focus on business management, second on trader skills, third on planning and operation of agribusiness. Participants in the business management training may focus on business operation, personnel management, record keeping and accounting. Participants in the trading skills management focus on bookkeeping, market information gathering, marketing and retailing. Overall training plan should be led by DNPIAC as representative of MAF. For training on private sectors, MAF may lead to cooperate with MTCI and MED.

(2) Action and Related Organization's Responsibility

Action		Actor	Actor's Responsibility
1. Capacity building for administrators			
1.1	Analyzing capacity of agribusiness data/ information for finding target product	DNPIAC	Capacity development is conducted for administration staff for establishing value chain system. They are trained so that they can find appropriate products aiming at establishing value chain. To do so, it is required to train them so that they can collect and analyze progress and outcomes from past agribusiness and value chain improvement projects by related donors and NGOs. This action is also the learning opportunity on value chain. It may guide to find value chain target product.
1.2	Cooperation capacity for overall planning and operation	DNPIAC	Cooperation capacity aiming to find farmers as raw materials producers, organizing them and make linkage between them and processors is improved. In this action, on-the-job training style in the pilot project sites may be useful. Improvement of cooperation capacity with related administration organizations is also included in this action. From the pilot projects, it is included to cooperate with extension workers and arrange disease prevention measures with DNPV. Pilot project sites may be useful for administrators to learn the cooperation method.
1.3	Planning, operating and managing capacity for promotion of processing industry	DNPIAC	Administrators are trained so that they can plan to establish value chain, focusing on processing activity, finding interested processing industries/ farmers groups/ women groups, supporting setting up and running their processing activity, and monitoring/ evaluation of the working processes. Training includes improvement of communication capacity with related donors such as GIZ and JICA, NGOs, and related organizations such as MoE and MTCI to arrange each agribusiness activity.
1.4	Finding and training of commodity development specialist	DNPIAC DNFA	Commodity development specialists of targeted product are found and trained. Appropriate trainers are sought through the education institution and NGOs in the country. Overseas trainings for trainers and invitation of overseas specialist are planned if necessary. This action is useful to build human resources network related to commodity processing. It is also effective for administrators to improve planning and executing training programs.
1.5	Operation and management training for establishing value chain	DNPIAC DNFA	For overall operation and management for value chain system, central and district administrators are trained so that they can organize workshop with value chain

Action		Actor	Actor's Responsibility
			stakeholders including processing industry/ farmers groups/ women groups. Facilitation capacity of them is improved. Training opportunity is provided in the sites practicing to establish value chain.
2. Capacity development for private sectors			
2.1	Selection of topics	MAF MTCI	MAF, in cooperation with MTCI and MED, conducts a comprehensive review of the agribusiness sector including farmers' groups, cooperatives and traders (wholesalers, women groups, retailers, sellers) to find agribusiness capacity gaps and training needs. The skills of government agencies for agribusiness support and extension are also analyzed. Based on the review, special emphasis is placed on definition of development constraints. Training topics are clarified to strengthen their business and trading skills.
2.2	Recruit trainers	MTCI	Based on the selected topics, MAF, with MTCI and MED, locates and recruits trainers. (Training topics may be put on two fields: production and marketing.) For topics where trainers are available locally, recruitment can be done in-country. For topics that are not available in Timor-Leste, overseas trainers will be recruited or overseas training programs located. Overseas training is expected to be in Indonesia, Malaysia and Thailand.
2.3	Recruit training participants	MAF MTCI MED	MTCI, MED and MAF jointly develop a screening process to select participants from farmers' groups, cooperatives, agribusinesses and traders and the government. Based on the screening, training participants are recruited. The trainers develop the details of the training plans and implementation programs including course materials, schedules and requirements for training venues.
2.4	Training for strengthening of business management	MAF MTCI	Based on training plan designs, MAF, in cooperation with MTCI, implements the training courses in business management for selected participants. Topics covered include: (i) administration, (ii) business planning, (iii) personnel management, and (iv) accounting management.
2.5	Training for strengthening of trading businesses	MTCI MAF MED	Based on training plan designs, MTCI lead to implement the training courses for selected participants. Topics covered include: (i) bookkeeping, (ii) business planning, (iii) market information gathering, (iv) marketing, and (v) retailing. Training is prepared based on the understanding level of each topic.
2.6	Training for strengthening of agribusiness operation and management	DNPIAC MTCI	DNPIAC guide to implement training program for private sectors focused on farmer groups/ women groups engaging in production activity. Training topic is put on (i) concept of agribusiness, (ii) setting-up of agribusiness in line with value chain concept, and (iii) preparing business plan (activity, input, expected outcomes, cost-benefit analysis, cash flow, etc). Contents of training program are prepared based on the understanding level of trainees.

(3) Implementation Organization

Implementation body : MAF
Arrangement organization : MAF(DNPIAC)
Cooperation organization (MAF) : DNPIAC, DNPP, DNFA
(Related ministries): MTCI, MED

6-10 SOCIAL AND ENVIRONMENTAL CONSIDERATIONS

6-10-1 Natural Environment

In general, project activities of the Action Plan are agriculture in nature, and are not expected to cause significant adverse environmental impacts. In any case, the environmental effects are site specific, and can be mitigated through application of appropriate managerial and technical remedies. As a first step, project for improvement of agricultural productivity has avoided major environmental concerns by not including:

- Drainage of wetlands and land reclamation in wildlife habitats or virgin forests
- Conversion of steep uncultivated hills to other land use
- Commercial logging operations
- Manufacture, transportation and use of pesticides, hazardous and/or toxic materials
- Large dam construction

Project activities of the Action Plan cover a wide range of suggested interventions ranging from those with virtually no environmental impacts, such as training programs, to those with potentially large impacts, such as rehabilitation of roads, ports, marketplaces and abattoirs. Consequently, each project activity is unique and will need to be reviewed separately. All must follow the nation's existing environmental permitting process. For major projects, there will be the need for environmental impact assessments and environmental management plans. Related projects with natural environmental impact are in the project for provision of infrastructure in the production, processing/ marketing and sales. It is recommended that special care be taken to avoid potential negative impacts from the project implementation as follows.

Table 6-10-1 Impact Items and Expected Special Care

Impact Item	Special care
Soil Contamination	Inappropriate use of herbicides, pesticides, fertilizers and fuels
Water Quality	Agricultural input contamination, processing plant discharge, site run off
Water Circulation	Re-distribution effects by small dams and irrigation systems
Biodiversity	Vegetation/ habitat loss, impact on local crops from new plant introductions
Deforestation	Agriculture land clearing
Waste	Increased solid and liquid refuse (from processing plants, marketplaces, abattoirs)
Air Quality	Local pollution, dust, smoke in construction and operation stages of facilities
Noise	processing plant noise

Most undesirable environmental impacts can be avoided through environmental screening of design, construction and operating practices. A sample environmental screening framework showing potential environment impacts of project activities and mitigation measures is shown in Table 6-10-2.

Table 6-10-2 Potential Environmental Impacts of Action Plan Activities and Mitigation

Project activities	Potential Environmental Impact	Possible Mitigation
Construction & rehabilitation of infrastructures	Soils - contamination from waste materials, e.g. cement and paints, engine oil, etc.	Construction plan with decrease of waste disposal. Control and daily cleaning at construction sites, provision of adequate waste disposal systems and services
	Water quality and flow - water contamination due to materials and chemicals	Proper disposal of chemicals and other hazardous materials
	Water quality and flow - blockage of drains	Regular cleaning of drains
	Air quality - dust, noise, odor, and indoor pollution	Dust control by water, appropriate design and setting, restrict construction to certain time
	Biodiversity and forests - disturbance of national parks and other protected areas	Consider alternative sites
	Biodiversity and forests - vegetation loss	Minimize vegetation loss during construction
	Social - construction accidents	Provision of safety management system. Provision of basic safety training and equipment
Rehabilitation of roads	Soils - vegetation loss, cutting of trees or poaching of wildlife where roads are rehabilitated in forest or conservation areas	Re-vegetation and forestation on the side of the road, limited area as forest or conservation reserve
	Soils - erosion and increased runoff	Construct or rehabilitation road embankment
	Air quality - dust and particulate matter generation during rehabilitation construction	Wet areas with water continuously
	Social - contamination from waste materials, e.g. engine oil, sand, etc	Provision of adequate waste disposal services during rehabilitation
Rehabilitation of irrigation facilities	Soils - soil degradation during construction	Revegetation and physical stabilization
	Water quality and availability - water contamination	Adequate protection from livestock, minimal distance from settlements and farms
	Water quality and availability - seepage of contaminated water back into irrigation system or well	Measures taken to minimize seepage, e.g. by lining and extending casting above ground level, covering the well, installing hand pump or permanently attached bucket to draw water, Adequate drainage around irrigation/wells. Storage tanks should be covered
Agriculture/ Agricultural Processing	Soils - erosion or loss due to construction or rehabilitation of facilities	Proper siting, erosion control measures, facility maintenance plan and schedule

Project activities	Potential Environmental Impact	Possible Mitigation
	Soils - pollution due to wastes or inputs	Insure waste disposal or re-use and proper raw materials handling
	Water quality and flow - contamination of water source	Proper siting, minimal distance from nearest water source
	Water quality and availability - water contamination	Adequate protection from livestock, minimal distance from settlements and farms, insure water at source is not used for bathing, laundering, animal watering, etc
	Fertilizer and pesticide use	Fertilizers and pesticides be manufactured, packaged, labeled, handled, stored, disposed of, and applied according to international standards
	Biodiversity and forests - vegetative loss due to construction of new facility	Encourage maintenance of vegetation, or revegetation and afforestation
Operation in marketplace	Soils - contamination from waste materials	Control and daily cleaning, adequate waste disposal services
	Water quality and flow - water contamination due to materials and chemicals of sales products	Proper disposal of chemicals and other hazardous materials
	Water quality and flow- blockage of drains	Regular cleaning of drains

6-10-2 Social Consideration

Implementation of the Action Plan provides agribusiness stakeholders: (i) increase in agricultural productivity, (ii) transfer of agribusiness knowledge, skills and technology, (iii) better market information, (iv) upgraded marketing outlets and opportunities, (v) improved infrastructure (e.g., roads, ports, storage) and improved sales environment, (vi) more dependable income source through contract farming, and (vii) enhanced government support services. Taken as a whole, Action Plan activities have a net positive impact by offering additional skills training, human resource development and assistance to agribusiness participants including processing industries, traders, wholesalers, farmers/farmers groups, women groups, retailers, sellers and even government staff.

There are also indirect benefits for consumers through access to more and better agriculture products. Action Plan activities brought benefit to the general public include cooperation with school feeding programs, better food safety, and effective quarantine systems.

Furthermore, the potential for negative impacts might be minimized by designing the Action Plan to avoid programs with major adverse social impacts and excludes such as:

- Any activity results in resettlement of individuals (voluntary or involuntary).
- Activities that would impact cultural property.
- Construction or rehabilitation of places of worship.

CHAPTER 7 IMPLEMENTATION PLAN OF ACTION PLAN

7-1 RECOMMENDATION FROM THE PILOT PROJECTS

Lesson learned for the pilot project implementation, followings were suggested for planning the implementation organization.

(1) It is required to organize the implementation organization so as to enable to cooperate with related ministries and related MAF directorates.

In order to realize the Action Plan, it is required to organize an implementation organization which can provide cooperative relationship with related ministries and directorates.

(2) It is effective to incorporate relevant NGOs and private organizations/ groups into the implementation organization of the Action Plan, under the management and financial supports from the international aid agencies, until MAF provide budgeting and institutional conditions for realization of Action Plan.

It is suggested to make full use of NGOs and relevant private organizations/ groups who have experience and knowledge until the administration system will be provided. Such NGOs and private organizations/ groups are incorporated into implementation organizations of the Action Plan as technical supporters. Their supporting activities will be managed and supported financially by international aid agencies.

(3) It is realizable to take product based approach for materializing Action Plan

Product based approach based on the development potential should be taken to realize the Action Plan.

7-2 PROPOSAL OF IMPLEMENTATION ORGANIZATION

7-2-1 Related Administration Organizations with Action Plan

Realization of the Action Plan is involved with many administration organizations. Those are the National Directorates under MAF for production, MTCI for processing/ marketing and sales, Cooperative Directorate under MED for cooperatives, MoI for provision of processing/ marketing infrastructures, MoH for food safety of processing / marketing products. Related Administration Organizations with Action Plan were compiled, considering their basic responsibility and contents of the project, as shown in Table 7-2-1.

Table 7-2-1 Related Administration Organizations with Action Plan

Program/Project		MAF											MTCI	MED	MoH	MoF	MoE	MoI	MoJ	L.A
		DNAF	DNPP	DNFA	DNPSE	DNPIAC	DNAH	DNF	DNPA	DNPV	DNIGUA	DNQB	DNADC								
1. Improvement of agricultural productivity																					
1.1	Establishment of seed/ input materials supply system		△			○	◎						△								
1.2	Rehabilitation of agricultural production infrastructures		△			○					◎		△								
1.3	Strengthening of dissemination system of cropping technology			△		○	△				△		◎								
1.4	Promotion of contract farming		△	△		◎	△				△		△		△			△			
2. Support for promotion of processing industries																					
2.1	Support for set-up of private processing industry				△	◎			△				△	○	△	△	△			△	
2.2	Support for set-up of processing industry by farmers/ women group				△	◎	△		△	△	△		△	△	△	△				△	
2.3	Support for specializing products			△	△	◎		△		△			△	△	△	△					
2.4	Support for provision of processing infrastructures		△			◎													○		△
3. Support for promotion of distribution industries																					
3.1	Support for improvement of product transportation		△			○	△		◎	△				○	△						
3.2	Provision of agricultural distribution infrastructures		△			○								◎	△				◎		△
3.3	Provision of an agribusiness information and communication system		△		△	◎	△		△	△				△						△	
4. Support for sales promotion																					
4.1	Support for marketing route development		△			◎								△	△	△					
4.2	Introduction of agriculture produce grading system		△		◎	○	△							△							
4.3	Improvement of sanitary management					△			◎	◎				○	△						△

Program/Project		MAF												MTCI	MED	MoH	MoF	MoE	MoI	MoJ	L.A
		DNAF	DNPP	DNFA	DNPSE	DNPIAC	DNAH	DNF	DNPA	DNPV	DNIGUA	DNQB	DNADC								
4.4	Introduction of food safety inspecting system					○								△		◎		△			△
5.	**Improvement of the government's products purchasing system**																				
5.1	Improvement of an operating system in central and local levels		○			△								◎	△		△				
6.	**Support for export promotion**																				
6.1	Support for finding export commodity and its sales promotion		△			◎	△			△			△	△	△	△					
6.2	Promotion of exporting					△						◎		△	△		○				
7.	**Value Chain Improvement**																				
7.1	Support for establishment of product based value chain		△	△	△	◎	△	△	△	△			△	△	△	△		△			
7.2	Capacity development plan of value chain stakeholders		△	△	△	◎	△	△	△	△			△	△	△	△		△			

Note: ◎: Implementation body ○: Coordination arrangement organization △: Coordination organization

MAF: Ministry of Agriculture and Fisheries,

MoI: Ministry of Infrastructure,

MoH: Ministry of Health,

MED: Ministry of Economy & Development,

MTCI: Ministry of Tourism, Commerce and Industry,

MoE: Ministry of education,

MoF: Ministry of Finances,

MoJ: Ministry of Justice

L.A: Local administration

7-2-2 Proposal of Implementation Organization

(1) Provision of Implementation Organization of the DNPIAC

DNPIAC is the implementation body for implementing the programs and action plans. DNPIAC should establish an implementation organization immediately after the completion of this study. The implementation of the Programs and Action Plans are the usual tasks of the DNPIAC. The organization should be organized by the existing DNPIAC staff.

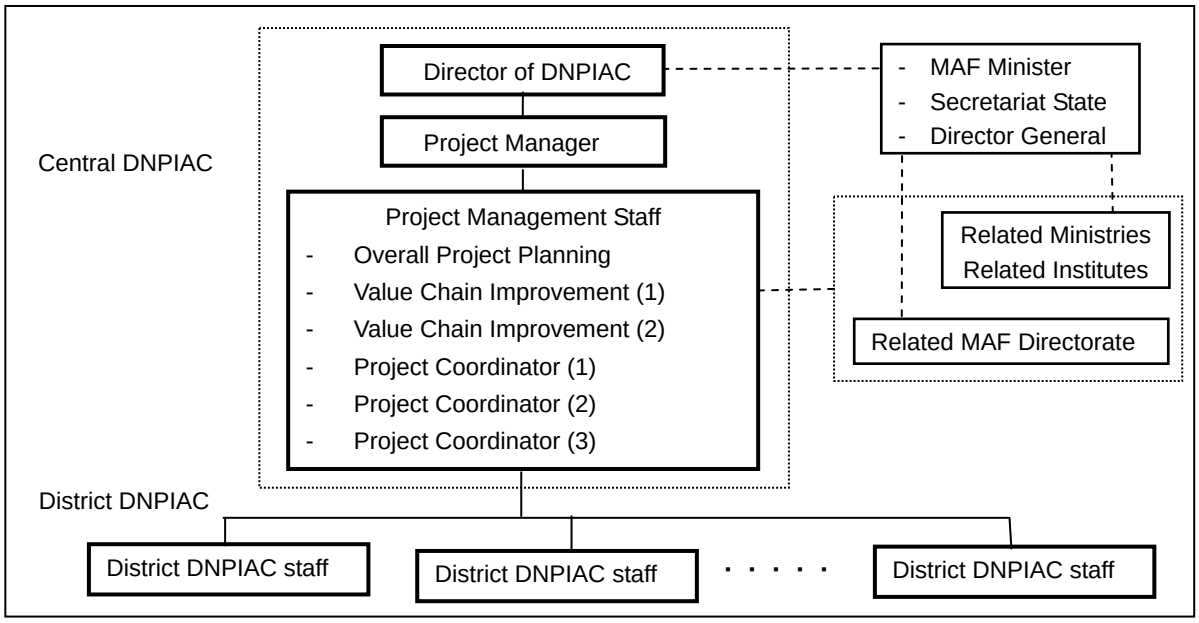


Figure 7-2-1 DNPIAC Implementation Organization

Relevant ministries and MAF directorates are expected to cooperate with this DNPIAC implementation organization in the implementation of Programs and Action Plans. Under this DNPIAC implementation organization, however, cooperation with related administration organizations may be provided through the MAF organization structure. Same approach as the present system will be taken by the subjects. It is not easy to provide the cooperation between the DNPIAC and related administration organizations. Judging from such conditions, DNPIAC will face with many difficulties in providing cooperation when the Programs and Action plans will be executed. As the results, designed implementation may not be executed smoothly. Although such difficult situations will arise, DNPIAC should try to realize the Programs and Action Plans under this establishing implementation organization.

(2) Proposal for Organizing Agribusiness Promotion Unit (APU)

In order to materialize the Action Plan, it is required to build cooperative relationship of a core product with related ministries, related MAF directorates and private agribusiness actors. It is not easy to build the effective cooperation system with all stakeholders. To realize the cooperation, both economic activities of related private actors and responsibility of related administration should be analyzed along value chain from production to consumption of the product. DNPIAC is the only possible directorate to take cross-cutting approach among MAF directorates. DNPIAC should act as implementation body to arrange and realize cooperation with related MAF directorates and related ministries. However, DNPIAC will not be able to act as coordination organization so as to arrange all cooperation activities with related administration and private actors, considering the responsibility mandated from MAF. Considering such situations, it is proposed to provide a new implementation organization for agribusiness promotion like

Agribusiness Promotion Unit (APU) in which DNPIAC implementation organization is incorporated, to put forward the Programs and Action Plans.

In the implementing stage under the DNPIAC implementation organization, MAF should discuss necessity of an implementation organization to materialize smoothly the Programs and Action plans. MAF should provide to organize the following organization structure, APU. Organization of APU is developed under the following concept.

1) Proposal of establishment Agribusiness Promotion Unit (APU)

MAF should provide the implementation organization to realize the Programs and each Action Plan. Organizing is outlines as follows.

1) "Agribusiness Promotion Unit" (APU) is established in the MAF. MAF assigns DNPIAC as secretariat of the APU. Representatives of the all directorates are participated in the APU to make the cooperation system easy.
2) DNPIAC is the Secretariat of the APU. Director of the DNPIAC is assigned as Secretariat-general.
3) MAF mandates the APU to promote agribusiness. MAF takes necessary budget for the APU. APU mandates DNPIAC organization to execute the Programs and Action plans. APU supervise the working progress of them.
4) MAF organize a Steering Committee chaired by the Secretary of State for Agriculture and Arboriculture.
5) Steering Committee supervises the APU.
6) Steering Committee coordinates the cooperation with related ministries and MAF directorates, outside institute, and keep corporation with international aid agencies.

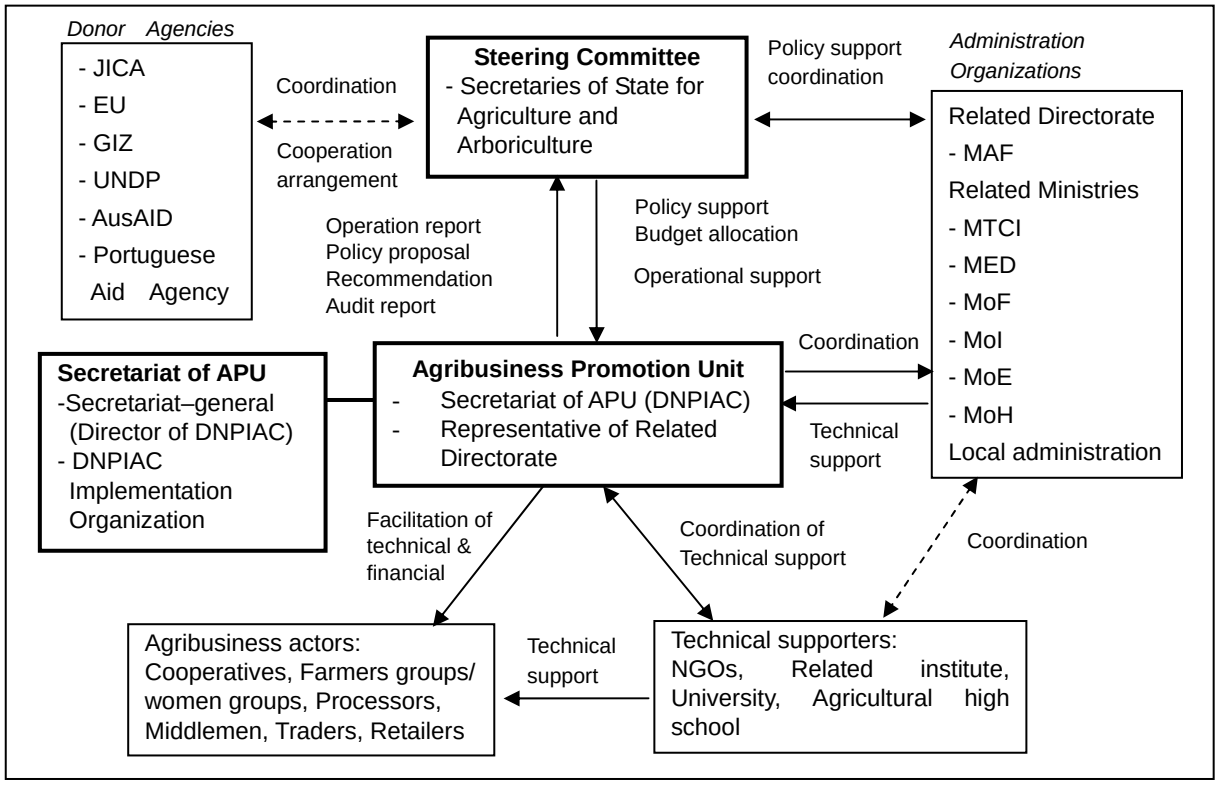


Figure 7-2-2 Proposed APU Organization Structure

7) It was suggested from the pilot projects to make use of NGOs and private organizations/ groups. Based on this, 'Technical supporters' are incorporated into the implementation organization. The technical supporters support the administration organization, and work with private actors in the sites.

2) Staff allocation from DNPIAC to APU.

"Agribusiness Promotion Unit"(APU) is established in the MAF. The responsibility is to put forward the Program and Action Plan as planned. For organizing APU, present organization capacity of DNPIAC who is expected to be main implementation body is analyzed, as follows.

DNPIAC	Present Capacity and Subjects for Establishing APU
DNPIAC (Central)	There is an agribusiness promotion section that puts promotion priority on the food crops and horticulture crops and consisted of 6 staffs. This section obtained basic knowledge and experiences for agribusiness promotion through participating in this study, but, has not enough capacity to operate and manage overall implementation of the Action plans. Considering the present MAF organization, it was hard to recruit full-time staff for proposed agribusiness promotion scheme. Some of the staff from the DNPIAC implementation organization should be incorporated into the APU, as concurrent staff with DNPIAC.
DNPIAC (Local)	2-3 staffs are allocated to each district. There is few staff who has knowledge and experiences about agribusiness promotion and generating value chain. Considering the present organization capacity of MAF and budget limitation, it is hard to recruit new staffs who have basic implementation capacity related to the agribusiness and Action Plan. Present staff should be incorporated into the district APU as required under the instruction from the central DNPIAC, as usual tasks.

Considering the above situations, APU is established in the DNPIAC. Tasks govern to the APU is regarded as a usual tasks of the DNPIAC. APU staff also holds the concurrent post in the DNPIAC.

3) Responsibility of the Proposed APU Implementation organization

a) Agribusiness Promotion Unit (APU)

- Provides learning opportunity as for agribusiness promotion and awareness of value chain for private actors and central/ district DNPIAC staff, and other related organizations/ persons,
- Provides training plan for capacity development of public and private human resources related with agribusiness promotion and establishment of value chain,
- Collects agribusiness information on products or crops, producers, processors and traders, etc. and establishes human resources' network for establishing value chain,
- Find target products of agribusiness promotion, and designs its value chain improvement,
- Based on the design, makes linkages with actors of related administration, producers of raw materials of the products, and private processors/ traders/ retailers, etc, (Case of the pilot projects: linkages with seed producers, producing farmers groups, district/ sub districts/ suco administrators, and processor for soybean products, linkages with corn flour miller and bakery for corn product),
- Provides the action plan to be conducted by technical supporters, and supervise them,
- Support the actors tackling with value chain and arrange cooperation with related organizations. (Case of the pilot projects: organic farming in the production stage, reduction of initial cost to be burden by processors (introduction of credit system for procurement of processing machine, technical support for new product development), sales expansion planning of developed commodity),

- Arranges intervention activities by related administration organizations and private actors, discusses about finding available resources and making use of them for establishing value chain with stakeholders, shares the ideas and measures for value chain improvement, and facilitates the improvement activities.(Case of the pilot project: finding soybean seed producing farmers, mediation of soybean contract farming, identification of available resources for improving cropping technology, introduction of quality test, etc.),
- Provides data/ information/suggestion on agribusiness activities for policy makers so that they can reflect them on the policy. (For example, from the pilot projects, it was suggested to MAF strengthening way of crop production system including seed multiplication, effective use of idle land, quality improvement of rice, cropping promotion of import substitute crops (support of input materials). Suggestion to related ministries is provision of marketing infrastructures such as roads and storage facilities, introduction of food security inspection system, provision of public marketplace with cool temperature storage facilities, proper import management of agricultural products.),
- Takes over the outcomes of agribusiness projects from the pilot projects and other similar projects conducted by international aid agencies such as GIZ, and expands them,
- Communicates and arranges with related organizations to put forward the proposed programs and draft action plan.

b) Basic function of the Steering Committee

- Makes strategy and policies for agribusiness promotion,
- Coordinates corporation with related ministries, other administration organizations and institutes ,
- Makes supporting policy of MAF on agribusiness target crops, for example, subsidy of input materials for organic farming, support for dissemination of cropping technology, subsidy system and long term lending system for procurement of processing machine, and suggestion and discussion with related ministries and institute for establishing credit system,
- Evaluates the outcomes from activities by APU in line with MAF policy (Case of the pilot projects: agribusiness activities of import substitute crops, contribution to the foods security, local production and local consumption),
- Provides data/ information lessons learned from the APU's agribusiness activities for related ministries so that they can reflect on their policies, for example, suggestion to prioritize the road improvement, provision of storages facilities, improve government products purchasing system, introduce food safety inspection system, provides domestic products for school meals program, etc,
- Makes approaches to related ministries for strengthening management system of importing agricultural crops and products which takes task on managing importing ones and its accurate quantity, making supporting policy for agribusiness actors who are dealing in import substitute crops/ products and encouragement of import substitute agribusiness

c) Basic functions of the technical supporters

- Based on the instruction from APU, supports private actors technically in cooperation with related organizations,
- Facilitates actors through organizing their agribusiness development activities,
- Provides and arranges interventions from related administrations and private actors,
- Finds development constraints in the activities, and discusses them with APU to seek solutions and measures, and take them in the site.

d) Basic functions of the agribusiness actors

- Organizes themselves for agribusiness activities, under the support of the technical supporters,
- Operates and manages machine, equipments or other materials supplied from APU,
- Participates in the intervention, discusses the facing problems and solutions/ measures, and executes the measures

7-3 IMPLEMENTATION PLAN OF THE PROGRANS AND ACTION PLANS

7-3-1 Overall Implementation Schedule Planning

Challenging agribusiness promotion has been started from the pilot projects. Effectiveness of the Action Plan was verified in the pilot projects and lessons learned from the pilot projects were reflected on the improvement of Action Plan. After completion of this study, it is expected that improved Action Plan is materialized based on the outcomes from the pilot projects. However, an administrative environment to ensure implementation of the Programs and Action Plans in long term implementation period is considered to be insecure under the unrest social, political conditions in the country. On the other hand, target of the implementation period of the master plan is planned at 10-years.

Considering such conditions, an implementation schedule is planned related with the implementation organizations mentioned above. Overall implementation schedule is drawn on the targeted 10-years, as follows.

(1) Implementation under the DNPIAC implementation organization

Programs and Action Plans are implemented based on the outcomes from the pilot projects under the DNPIAC implementation organization. The pilot projects should be continued. MAF should budget to do so. In addition, MAF should train agribusiness stakeholders so that they can cope with the Programs and Action Plans considering the necessity of training as the lessons learned from the pilot projects. MAF faces with budget limitation and lack of human resources. Considering such constraints, it is considered that an implementation pace may be slow, to be difficult to attain the target of the Master Plan for 10-years.

It is proposed that MAF makes arrangement for organizing APU in the implementation process under this DNPIAC implementation organization.

(2) Implementation under the APU

Programs and Action Plans are implemented under the APU, aiming to attain the Master Plan target with 10-years. Implementation schedule is prepared as follows.

It is necessary to provide budget and training of agribusiness stakeholders to ensure attaining the target, from the necessity of training based on the lessons learned from the pilot project. Under such conditions, training activity is incorporated into the implementation under the APU.

Table 7-3-1 Proposed Implementation Schedule

Overall Implementation Schedule of Action Plan	Preparation	Implementation Period 10-years)		
		First (4-years)	Second (3-years)	Third (3-years)
1. Implementation under the DNPIAC	→			
1) Monitoring/ Follow-up of the Pilot Projects under DNPIAC	→			
2) Arrangement of Administrative Conditions for Implementation	→	→		
2. Implementation under the APU		→	→	→
1) Implementation under the APU provided full support from international aid agencies		→		
2) Implementation under the APU shifting from full-support to self-supporting organization			→	
3) Implementation under the self-supported APU				→

1) Implementation under the APU provided full support from international aid agencies:

It is suggested from the pilot projects that present implementation capacity of proposed organization consisted of DNPIAC staff including budgeting to the APU is not enough to operate and manage overall implementation of the Action Plan. It is proposed to materialize the Action Plan under the financial and technical full supports from international aid agencies which have knowledge and experiences. APU's organization capacity including human resources development will be improved in this period. Programs/ Action Plans will be implemented by APU and through related staff training.

2) Implementation under the APU shifting from full-support to self-supporting organization:

Supports from international aid agencies will be minimized. APU organization will try to operate and manage implementation of the Action Plan based on the knowledge and experiences learned from the first stage. Action Plans will be operated and managed under the APU organization shifting from full-support from the international aid agencies to self-supporting APU.

3) Implementation under the self-supported APU:

Based on the evaluation and lessons learned from the second stage, self-supported APU will operate and manage the Programs/ Action Plans. Implementation processes will be progressed as regular tasks of DNPIAC.

7-3-2 Product Based Approach to Implementation and Priority Products

(1) Development Potential of Products and Necessary Supports

It is proposed from the suggestion of the pilot projects that Action Plans should be materialized in the product based approach, as well as in the pilot project. Target product is primarily selected from the domestically produced and marketed products based on the agribusiness development potential. Necessary supports are incorporated as concrete activity plan into the Action Plan, to cope with the development potential. Development potentials and necessary supports of possible products in the country are shown in Table 7-3-2.

(2) Selection of priority products

Priority is put on the products for realization of Action Plan. Criteria to put the priority are provided as follows. Selection priority of agricultural/ livestock/ fishery products is arranged on 1) food/ horticultural/ industrial crops, 2) livestock products, 3) fishery products, in order. Priority will be made on the following criteria.

- Priority product is the food/horticultural crops and industrial crops producing widely in the country.
- Target product is considered to be import substitute. Animal feed crops for livestock development are included.
- Target product is the substitute products for much imported livestock and fishery products.
- It is expected to get a large and quick benefit from small investment in the short term. Product has high marketability.
- It is expected to become exported product in the short term.
- Many actors exist and agribusiness of the selected crop is expected to have many beneficial people.
- As for the coffee, supporting activities already conducted aiming at exporting. Priority is put to be low.

Based on those criteria, three levels are made as the priority, 1: high, 2: moderate and 3: low, as shown in the Table 7-3-2.

For short term development, higher priority is put on the major food crops: rice (including husk, rice bran and straw), corn, root crops such as cassava, sweet potato and potato, etc, pulse crops such as soybean, mungbean and peanut.

(3) Necessity of DNPIAC organization reform

DNPIAC should take over the outcomes of Action Plan implementation brought from APU, and continue and expand them to the related areas/ actors. To perform their duties, present organization structure and office regulations stipulated under the present organic law should be improved. DNPIAC has one section "Agribusiness of Food & Horticulture" dealing in agribusiness promotion. Organization structure of the department should be improved to promote agribusiness, taking over the outputs of APU and other related implemented projects.

For short term target, two departments: 1) food crop and horticulture crop, 2) industrial crops and forestry crops, are proposed to form.

And in line with the outcomes and based on the implementation progresses executed by APU, other two departments dealing in, 3) livestock, 4) Fishery, should be added as the long term target.

Finally, total 4 departments are proposed.

According to the organization structure reform, responsibility to make cooperation with related MAF Directorates should be mandated by MAF. Budgeting for their performance is also provided by MAF.

Table 7-3-2 Development Potential of Domestic Products and Necessary Support for Development

Pri-ority	Products	Customers Target	Development Potential	Production area	Necessary Support	
					Supporting subjects	Administration organization / Executing body/ Arrangement/ Cooperation
(1) Food crops and horticulture crops oriented domestic demand expansion and exporting						
1	Rice (Milled rice)	Consuming public	Timorese people generally favor local varieties. White rice and red rice can be branded by production sites. There is possibility of sales expansion. However, there is competition with imported and other government purchased one in the market. It is required to obtain the competition power in quality and price.	Low elevation land of Bobonaro, Lautem, Baucau, Viqueque, Manatuto, Manifahi, Aileu, Oecussi	Rice cultivation training, Training on rice quality improvement for rice farmers Support for packaging skill Introduction of rice grading system	DNADC/ DNPIAC/ DNAH DNADC/ DNPIAC/ DNAH DNPSE/ DNPIAC/ DNPP
			It is possible to improve rice quality by means of water management from flowering to harvesting. Well operated water management in the field can prevent occurrence of not produced fruit rice and not ripen rice, and broken rice. Rice quality can be improved by water management skill.		Provision of irrigation system (including pumping system), Promotion of water management system in the field.	DNIGUA/ DNPIAC
			If rice producing farmers operate a series work from mill and packing, they can use remainder such as chaff and rice bran, as agricultural input materials and animal feed. (MTCI purchase paddy in the government purchasing system. Chaff and rice bran are not produced in the rice production sites.)		Support in developing rice bran feeding, fermenting compost making Promotion of livestock house raising with making use of such feed and compost,	DNAH/ DNPIAC/ DNADC DNPV/ DNPIAC
			If paddy cultivation would be developed in the sloped lands, it might contribute to reaching rice self-sufficiency through increase of rice production. In general, transportation cost from production sites to consuming sites becomes relatively high in this country since road condition is poor. If production activity could be conducted in not only low land area but also steep land, total production volume might be increased within the region. It is required to provide small scale irrigation system based on the local condition as well as the low land.	Slope land of Bobonaro, Baucau and Viqueque	Providing small scale irrigation system and land consolidation in the sloped land Provision of storage house of paddy Promotion of SRI method	DNIGUA DNAH/ DNPIAC/ DNADC DNADC/ DNPIAC/ DNAH
1	Maize	Consuming	Corn is generally stored by farmers as self- consumption.	Lautem, Ermera,	Review of government	MTCI/ MAF/ DNPIAC

Pri-ority	Products	Customers Target	Development Potential	Production area	Necessary Support	
					Supporting subjects	Administration organization Executing body/ Arrangement/ Cooperation
		public	Marketing volume is low relatively, compared with the production. (It is said that marketing volume is less than 25% of the production according to the DNPIAC). If corn consumption would be diversified into, for example, chicken feed and food, production volume would be increased and marketing would be activated. Corn is one of the government purchasing products, so that, production activity in commercial base is not active. Government purchasing system should be reviewed to make commercial production active.	Baucau, Bobonaro	purchasing system Technical support to increase production with commercial sense	 DNADC/ DNPIAC/ DNAH
1	Soybean (tofu, tempe)	Consuming public	Domestic soybean produced under the local resources adapted farming is characterized as high content of sugar. It is possible to make high quality products from domestic soybean without applying chemical fertilizer in post-harvest time. Demand of soybean product such as tofu and tempe is high. Sanitary sense is important in the manufacturing process of them. Sanitary condition should be maintained for especially tempe manufacturing. It is necessary to prevent unwanted bacteria from intruding. If tempe bacillus could be multiplied under the managed sanitary condition, it could be possible to manufacture high quality tempe at cheaper price.	Bobonaro, Aileu, Ainaro, Manufahi, Viqueque	Promotion of local resources adapted farming for local soybean Production increase through contract farming between farmers and processors Technical support to tempe and tofu processor Provision of manufacturing machine Knowledge and skill of food safety and hygiene management	DNADC/DNPIAC/ DNAH DNPIAC/ DNADC DNPIAC MoH/ DNPIAC
1	Soybean (soymilk)	Consuming public, Rich people, Oversees consumers	Soymilk by using local soybean is one of the products for people. It may be possible to export to neighboring countries such as Singapore and Malaysia. According to the drink processing industry (*) in Malaysia, demand of organic soybean for soymilk is high.	Dili	Support for providing long-term preservation and packing machine Support for sales promotion Possibility research for export	DNPIAC DNPIAC/ MTCI, MED DNPIAC/ MTCI, MED

Pri-ority	Products	Customers Target	Development Potential	Production area	Necessary Support	
					Supporting subjects	Administration organization Executing body/ Arrangement/ Cooperation
1	Soybean, Mungbean (as raw materials for processing)	Consuming public, Oversees consumers (in West Timor)	In this country, tofu and tempe is manufactured with imported soybean from Brazil and USA. According to the government statistics, soybean and mug bean are exported to West Timor and Indonesia. (It is said that some of them are re-imported.) It will be able to export it to West Timor by taking advantage, looking at market price in West Timor. Demand of beans in neighboring countries is high. Mungbean is the raw materials for spring rain, cake and bean sprouts. Development subject is to ensure stable production and expansion of demand of processed ones.	Bobonaro, Covalima, Aileu, Viqueque, lautem	Bean production improvement in quantity and quality, Technical provision for harmful insects damage in cropping (**) Support for bean storage at cheaper price Training of bean traders, Support domestic processing industry Support for export promotion	DNADC/ DNPIAC/ DNAH, DNPP, DNPSE DNPIAC/ DNADC/ MTCI DNPIAC/ MTCI DNPIAC/ MTCI DNPIAC/ MTCI
1	Maize, Root crops, Pulses	Consuming public	These crops are high-carbohydrate diet crops, and cropped in the wide area. These are stored as supplemental food crops. People have no idea and knowledge how to use. If any products would be made from these crops, demand of them would be expanded. (For example, maize is the major carbohydrate diet source for people living in upland areas. Cooking method of corn is a few in this country. No processed products made from corn exist. If any products would be made from corn flour such as corn bread and corn cake, and suited for people's taste, demand of those products would be possibly increased.)	All districts	Training on cooking and making cake by using local crops, opening of cooking class, support for opening of local product restaurant, Supply crops to school feeding program Support for set-up of processing business (to make products and to run business)	DNPIAC DNPIAC/ MED DNPIAC/ MoE DNPIAC/ MTCI, MED
1	Cassava	Consuming public	Cassava is the popular crop for farmers, since harmful insect damage is low and free harvesting. Young leaf is made meal. MAF tries to distribute the improved seed which is expected to get high production under the Seed of Life program. There is no processed product of cassava. If any products suitable for local condition, such as tapioca, would be developed, they could be substitute for food crops when main grain crops are shortage.	Upland area in this country, Especially southern highland area	Support for developing new processing products Effective distribution of improved variety seed	DNPIAC DNAH/ DNADC

Pri-ority	Products	Customers Target	Development Potential	Production area	Necessary Support	
					Supporting subjects	Administration organization Executing body/ Arrangement/ Cooperation
1	Peanut	Consuming public	There is a certain demand constantly as supplemental food. It is cultivated even in low fertility soil. It can be used for making cakes. Peanut is produced actively in Indonesia. There is a few exporting possibility at present.	Oecussi, Bobonaro, Baucau, Manufahi	Support for production Technical support for making new products such as cake, etc	DNAH/ DNADC DNPIAC
1	Fruits	Consuming public	Various fruits are vegetated on meteorological conditions in this country. It would be possible to improve their quality by means of well managed applying fertilizer and preventing from harmful insects damage. As for making products such as jam, pickles, dry fruits, etc. provision of bottle and its packaging are the major subject for sales promotion. Other fruits such as banana, papaya, mango, pineapple, jackfruit, avocado, cacao, etc. would be possibly processed in the production sites. But, as well as the above crops, sales expansion would be the most difficult subject.	Ainaro, Aileu,Ermera, Dili, Baucau, etc.	Support for quality improvement through applying local resources adapted fertilizer and pesticide Support for improving packaging Support for improving transportation, including making bottle Support for sales promotion	DNADC/ DNAH/ DNPIAC DNPIAC DNPIAC/ MTCI DNPIAC/ DNPP
1	Fresh vegetable	Rich people in the city	Quality of the vegetable can be uniform by means of planting in the greenhouse and shade house. It would be possible to improve processing method with market development. Fresh vegetable cropping under the green hose is made in the southern area of Aileu under the US Aid program. The fresh vegetable is shipped to supermarkets in Dili. Marketing system of them is established, and well working now. But, it will be hard to expand this system to the public market.	Aileu, Ainaro, Ermera	Support for construction of green house by using local materials Support for improving transportation method of products (transportation to maintain low temperature, cold storage facility)	DNAH/ DNPIAC/ DNADC DNPA/ DNPIAC/ MTCI, MED

Pri-ority	Products	Customers Target	Development Potential	Production area	Necessary Support	
					Supporting subjects	Administration organization Executing body/ Arrangement/ Cooperation
		Consuming public	Consuming public generally does not buy vegetable in the supermarket. They buy in the public marketplace or from peddler. Constraint for marketing vegetable is to maintain freshness. If its freshness is dropped, it is abandon. It is required to provide transportation infrastructure including low temperature transportation car and cold storage in the marketplace for vegetable market development.	Aileu, Ainaro, Ermera, Baucau, Bobnaro, Viqueque	Support for improving shipping and transportation at production sites Support for improvement at selling place Improvement of transportation infrastructure such as roads, transportation cars, cold storage house	DNADC/ DNPIAC MTCI/ DNPIAC MTCI/ DNPIAC
1	Local resources adapted fertilizer/ pesticide(***)	Farmers and livestock breeders	It is generally hard for farmers to procure chemical fertilizer and pesticide timely. Most farmers are practicing low-cost input farming. Under such situations, they tend to apply traditionally succeeded way by using local materials and local medical plants. Traditional fertilizer and pesticide are applied. It is important to strengthen such traditional way. Local resources adapted farming is characterized as typical farming method in this country. Marketing crops with such farming are coffee, vegetable and bean.	All districts	Technical support and training for making organic fertilizer and organic pesticide and its dissemination Technical support for making use of animal residual and its dissemination,	DNADC/ DNPIAC DNPIAC/ DNAH/ DNPP
1	Livestock feeds	Breeders	Livestock animal is bred in free grazing style. If enclosure breeding style will be promoted, feed preparation needs will be high. By-products after rice milling, root crops, maize and other cereals become important as animal feed. Requirement of feed preparation for pig and chicken will be high.	All districts, especially Viqueque, Lautem, Covalima and Bobonaro	Support for shifting from free grazing to in-house grazing Support for training on preparation of feed by making use of local materials、	DNAH/ DNPV
2	Traditional medical plants	Consuming public	Existence of traditional medical plants is succeeded among farmers. It should be verified whether succeeded one is right or not. Missionary NGO sells medical plants package which may be effective for liver, pneumonia, women's folic acid and shortage of iron. The plants are likely to be effective for livestock raising. Research should be done. (In the pilot projects, traditional medical plants are tried for chicken raising.)	Southern region of high rainfall and natural vegetation	Preparation of plant list and compilation of its effectiveness Support for analyzing the ingredient. Support for commercializing Support for sales promotion.	DNAH/ DNPIAC DNAH/ DNPSE DNAH/ DNPIAC/ DNPSE DNPIAC

Pri-ority	Products	Customers Target	Development Potential	Production area	Necessary Support	
					Supporting subjects	Administration organization Executing body/ Arrangement/ Cooperation
2	Herbs	Oversees consumers	Mountainous area enjoys much rainfall and spring water, and lower temperature than the low-lying land. Herbs such as mint and basil which can be used for cooking and tea are vegetated. Japanese NGO is planning to export them to Japan through fare trade, besides coffee.	Aileu, Manufahi, Ermera, Bobonaro	Technical support to ensure stable harvesting in quantity and quality aspects Support for drying and packaging Support for exporting	DNAH/ DNPIAC DNPIAC/ DNAH DNPIAC
(2) Industrial crops oriented domestic demand and exporting through strengthening production in quantity and quality						
3	Coffee (green bean, roasted coffee)	Consuming public	Roasted coffee is sold in bulk or export packaged one in this country. Indonesian roasted coffee packaged in small volume is sold. It is well marketed since its selling volume is suitable for consumers, and its taste is also suitable for them. Recent year, packaged one mixing with coffee, milk and sugar, '3 into 1'' product are marketing. Demand is not expanded rapidly, sine it is tasted product.	Ermera, Ainaro, Aileu (El 1200-1500 m)	Support to operate Coffee Cooperatives and farmers' production groups Technical support to develop further processing and packaging suited to the consumers	MED, MoF /DNPIAC/DNADC DNPIAC/MTCI, MED
		Rich people, Oversees Consumers	Representative export product. There is large oversees demand. Exporting system already is established. Many donors are supporting for further exporting. Japanese NGO supported to get organic certification from Japan and supporting sales activity in Japan. Exporting possibility is high, emphasizing advantages of Timorese coffee product such as organic, Arabica mild and taste.		Cooperation with JETRO development project Support to promote export through participation in oversees exhibition Support for simplified export documentation process	DNPIAC/ MTCI/ MED DNPIAC/ MTCI/ MED DNQB/ DNPIAC/ MoF/
2	Coconut (Cooking oil)	Consuming public	Coconut tree is widely vegetated, so that it can be collected at cheaper price as raw materials for processing. Virgin coconut oil can be used for cooking oil which substitute for imported one. Consumers' taste is different in the regions. It is favorable in east region than west region.	Lautem, Viqueque, Baucau	Promotion of manufacturing method in the rural area Chemical inspection Quality and improvement	DNPIAC DNPIAC/ MoH/ DNPP DNPIAC
	Coconut (Soap)	Oversees consumers	Coconut soup mixed with extract of medical plant and natural perfume has been commercialized with the assistance of NGOs.	Lautem, Viqueque	Chemical test of extract of medical plants Support for market development and exporting	DNPIAC/ MoH DNPIAC/ MTCI/ MED
2	Candlenut	Oversees consumers	Candlenut oil can generate raw materials of products such as cooking spice, shampoo with hair growth effects,	Covalima, Bobonaro,	Technical support for stable collection in quality and	DNPIAC

Pri-ority	Products	Customers Target	Development Potential	Production area	Necessary Support	
					Supporting subjects	Administration organization / Executing body/ Arrangement/ Cooperation
			supplement materials for dyeing of fiber and painting oil. It is hard to increase the collection and improve its quality. Small amount is exported to Hawaii.	Baucau	quantity aspects Technical support for high quality value adding	 DNPIAC
3	Dried Beatle nut	Consuming public	It is customarily tasted. There is a constant demand. Damage to human body is reported. It is difficult to prohibit its taste.	All district	Scientific inspection between Beatle nut and laryngeal cancer Education of stop chewing it.	DNPIAC/ MoH MoH/ MAF
2	Cashew nut	Consuming public	There is a constant demand as supplement food. None chemical treated cashew nut are produced. It is expected to prevent pest damages by biological control using red ants as counter-pest. It is possible to promote as specialized product in the production sites.	Oecussi, Bobonaro, Baucau, Manufahi	Support for procurement of manual operated de-husking machine Support for packaging and sales promotion	DNPIAC DNPIAC
2	Other industrial crops	Consuming public	Besides coconut, cashew nut, DNPIAC selects cacao and vanilla as the candidate crops for export. There are many subjects to be tackled to realize export. It is required to overcome international keen competition. Large investment is required for long-term. Cultivation technology should be improved. Processing and marketing cost should be reduced.	Southern area	It is required to study about export possibility from technical and economical viewpoints Long term technical support for exporting	DNPIAC/MAF/ MTCI DNPIAC/ MAF/ MTCI, MED
3	Industrial crops (handcrafts by coconut leaf, etc)	Consuming public, Oversees consumers	Cape and mat are made with coconut leaf. Bamboo vegetated naturally is also used to make handicrafts. Texture is made. Its domestic demand is low. Sales promotion for oversees consumers is trying by NGOs. Cotton is cultivated in Lautem district. There is no rapid increase of them.	Lautem	Technical support for developing new necessities (demand of decoration is limited, it will be possible to promote sales if quality and design are high enough.)	DNPIAC
3	Industrial crops (house construction material	Rural people	Woods and leaf from teak tree, bamboo and coconut tree are used for house construction. Tree planting is not done. Utilization of them should be studied in line with forest conservation policy.	All districts	Support for tree planting and forest management Support for community management	DNF

Pri-ority	Products	Customers Target	Development Potential	Production area	Necessary Support	
					Supporting subjects	Administration organization Executing body/ Arrangement/ Cooperation
(3) Specialized products oriented domestic demand expansion and future exporting						
2	Palm wine	Rich people, Oversees consumers	Palm wine is the taste product for specialized consumers. The demand is expected to be certain level. Taste and alcohol degree are different in the production sites. Production is limited. But, it will be possible to make barding at the specified sites.	All district	Support for improving quality and setting quality standard to ensure stable production Establishment of quality inspection and grading system, support for bottling and packaging Support for sales development.	DNPIAC, DNPSE, DNADC DNPIAC/ DNPP/ DNPP, MTCI, MoH DNPIAC, MTCI
2	Honey	Consuming public	Local made light taste honey is collected. Quality with sugar is not uniformed. Collection amount is small. It will be possible to be on market as specialized product.	All district, but limited area	Support for specializing & improving for quality uniform Packaging and labeling for sales promotion	DNPIAC DNPIAC
3	Apiculture	Oversees consumers	There is huge demand for Apis mellifera for pollination of vegetable and fruits because of occurrence of Colony Collapse Disorder (CCD). But, it is within limited area. Collection amount is small in specific area.	Liquica, Manatuto in less rainfall area	Support for promotion of apiculture Export possibility study Provision of inspection and exporting system	DNPIAC/ DNADC DNPIAC DNPIAC/ DNQB
2	Foliage plants	Rich people in the city	Constant demand is expected in the city. Plant of rose and local chrysanthemum is popular. Marketplace is located in Dili under the assistance with MED.	Dili	Improvement of selling place by providing shade house, water tank and supply pipe	MTCI/ DNPIAC/ DNPP
			Foliage plants planting and selling business is operated by the Cooperative. Cooperative's operation method should be improved in the parts of that planting skill is low, and plant pot is imported at high price. Plants are damaged in the transportation from production sites to market place due to poor road conditions so that transportation cost becomes relatively high, Setting process of selling price is unclear.	Dili and neighboring sub districts	Promotion of local resources adapted planting technology Support for finding marketing plants Support for improving transportation method Support for improving sales service	DNAH/ DNPIAC DNAH/ DNPIAC DNPIAC DNPIAC

Pri-ority	Products	Customers Target	Development Potential	Production area	Necessary Support	
					Supporting subjects	Administration organization Executing body/ Arrangement/ Cooperation
(4) Livestock and marine products substitute for import						
1	Chicken	Consuming public	Demand of chicken meat is high. Imported one is also marketed actively. Local chicken is favorable for local people, since its quality is high and taste is suitable for them. It is possible to substitute for imported. In the chicken raising, it is hard to ensure feed procurement. Shortage of feed such as corn sometimes occurs. There is a risk of outbreak of infectious disease. Especially in the southern region with high rainfall, there is a high risk. It is required to disseminate disease prevention method when chicken raising started.	All districts	Support for chicken raising in rural area Execution of disease prevention measures Technical support for feed preparation Support for providing immunity against disease	DNPV/ DNPIAC DNPV DNPIAC/ DNAH/ DNADC DNPIAC/ DNPV/ DNAH
1	Chicken (egg)	Consuming public	Demand of chicken egg is high. Imported one is marketed even in rural area. If chicken egg would be collected in the country, it would be possible to substitute for imported one. For egg collection, it is required to pay attention to prepare feed contained 'Ca' ingredient. Large scale egg collection business has a high risk due to often disease occurrence.	Dili, Liquicia, Manatuto	Support for production of feed crops Dissemination of disease prevention measure including traditional disease prevention measures	DNPIAC/ DNPV DNPV
1	Pig raising (by-product soybean products, etc)	Consuming public	As by-product of tofu, products such as Indonesian soy sauce and cakes can be made. It is also used for pig's feed. (Pork sometimes is not supplied in the market although chicken is done stably. Development potential for pig breeding in pigsty is likely to be high.)	Suburbs of the city in Dili, Baucau, Maliana	Support for setting up of pig raising business model by using soybean by-product, etc.	DNPV/DNPIAC
2	Cattle, pig (meat)	Rich people, consuming public	It is possible to substitute for imported ones. To do so, abattoirs should be rehabilitated. Sanitary sense is low and knowledge level is low for sanitary management. It is required to improve sanitary management system together with rehabilitation of abattoirs for promotion of meat marketing.	Liquica and other abattoir sites	Rehabilitation of Tibar abattoir Training on hygienic education, support for operation and management	DNPV DNPV/ MoH

Pri-ority	Products	Customers Target	Development Potential	Production area	Necessary Support	
					Supporting subjects	Administration organization Executing body/ Arrangement/ Cooperation
			Sausage and ham as the meat product are not manufactured in the country, which will be possible to set up as small scale meat processing industry in the meat processing sites. It should be done together with learning sanitary management skill and knowledge. Pork market is unstable. Meat supply sometimes is stopped. Pig raising business has high development potential. For promoting pig breeding, it is required to put together feed preparation business.	Suburbs of Dili	Promotion of meat processing skill Providing learning opportunity about processing and cooking ways Subsidy system for procurement of processing machine Support for promotion of pig breeding business	DNPIAC/ DNPV DNPIAC DNPIAC DNPV
3	Sea fishes	Consuming public	It is a source of protein. There is no buying opportunity of fresh fishes in inland area. If fish market will be opened, demand will be increased. It is required to maintain freshness to expand its demand. To do so, it is necessary to provide freezing and low temperature facility in the fish market.	Dili, Liquica, Baucau	Support for provision of opening fish market, freezing and low temperature facility and cool transportation car, Technical training for maintaining freshness such as removal of viscera, making ice and providing cooler box	MTCI/ DNPA MTCI/DNPA DNPA
3	Inland fishes	Consuming public	It is the source of protein for rural people. Fish culture has high development potential. Six nursery ponds have been destroyed at the civil conflict time. All facilities/ equipment are devastated. It is expected to promote fish market through rehabilitation of them.	Viqueque, Ermera, Manufahi, Oecusse	Support for reopening of existing three nurseries in Gleno/ Same/ Ossu to distribute fry Training technician, Technical and financial support for operation and management of nursery pond	DNPA/ DNPIAC

Pri-ority	Products	Customers Target	Development Potential	Production area	Necessary Support	
					Supporting subjects	Administration organization Executing body/ Arrangement/ Cooperation
3	Milkfish culture	Consuming public, Oversees consumers	Milkfish are an excellent food fish, which can be easily reared in captivity. Since they filter feed algae, no additional feeding is required and there are very little other input costs. Usually the main obstacle to milkfish culture is obtaining juvenile fish. The hatchery technology for production of milkfish fry is complex and requires the use of large, older age and captive reared brood stock. Fortunately, there are abundant sources of wild fry in coastal Oecussi, so brood stock is not required. If ponds are built and farmers/fishers trained in milkfish aquaculture, a new industry can be created. Milkfish can be sold locally and/or exported to nearby Indonesia.	Oecusse	Construction of culture pond, Support for training fish specialist and technical transfer of fish culture to farmers and fishermen Possibility study for exporting to Indonesia	DNPA DNPA DNPA DNPA/ DNPIAC
(5) Livestock and marine products oriented exporting						
1	Alive cattle	Oversees consumers	Demand is high in Indonesia. Overland transportation to West Timor is conducting. In case of marine transportation, selling price becomes down. There is no abattoirs and cool storage facility in this country. Only way is to export by alive cattle.	Oecussi, Lautem	Support for improving raising skill including veterinary service and artificial insemination Simplifying exporting procedures and quarantine system	DNPV DNPV DNQB, MoF
3	Sheep	Oversees consumers	It is said that number of inhabitants are increasing. Demand of sheep meet in Indonesia is high. It is considered to be possible to export. In this country, free grazing may cause negative effect on vegetation with soil erosion.	Baucau, Manatuto, Liquica, Oecussi	Possibility study for exporting to Indonesia	DNPIAC/DNPV/ MoF
1	See weeds	Consuming public, Oversees consumers	In Atauro island, Dili district, edible sea weeds are collected. After harvesting, the weeds are dried and stored temporally in the Cooperative's warehouse. Exporting to Indonesia is increasing in recent year.	Dili (Atauro island)	Technical support for promoting sea weed culture to ensure stable and sustainable collection Promotion for expansion of domestic consumption such	DNPV DNPIAC

Pri-ority	Products	Customers Target	Development Potential	Production area	Necessary Support	
					Supporting subjects	Administration organization Executing body/ Arrangement/ Cooperation
					as introduction of cooking method	

Note:
* : Ace Canning Co. Ltd in Malaysia
** : Damaged by “Nezela viridula” It is developed through symbolic relationship with of “Genus Burkholderia”.
*** : It is proposed to use animal residual, pulse crops and rice bran for local resources adapted fertilizer, wood vinegar and extract from natural plant for local resources adapted pesticide.

7-3-3 Putting Implementation Priority on the Programs

(1) Setting priority

Judging from the actual budgeting for MAF and related ministries, it will be difficult to provide full scale implementation cost along the proposed implementation schedule. Actually, proposed Program and Action Plan may be realized flexibly within the budget of implementation body including support from related donors. Proposed Programs are desirable to realize making budget arrangement so as to keep development balance of each other. But, it may be actually progressed based on the actual budgeting with putting priority of the implementation organizations. Considering such budget limitation, it is proposed to put priority on the Programs from the viewpoint of future agribusiness promotion. Based on the lessons learned from the pilot project implementation, priority is primary set by three levels (1: high, 2: moderate, 3: low). It is put on each Program, as shown in Table 7-3-3.

Table 7-3-3 Implementation Priority of the Programs

Program	Basic concept for putting priority	Priority
1. Improvement of agricultural productivity	Priority is the most highest for not only stable supply of raw materials to processing & marketing industries but also nation's food security. As for the project "Establishment of seed/ input materials supply system". It is required to launch the project considering the near future completion of on-going seed of life project. Seed multiplication system should be established in the nation level. Project implementation cost of the project "Rehabilitation of agricultural production infrastructure" is expected to be high. Considering the implementation capacity including budgeting, it is required to get financial and technical supports for related donor agency. As for the project "Strengthening of dissemination system of cropping technology", it is urgent to tackle the dissemination of local resources adapted farming technology, in addition to the ICM farming. Dissemination activity taken by APU should be consistent with nation wide dissemination plan. The project "Promotion of contract farming" is crucial project to procure raw material crops for processing and marketing industries. Cooperation with the project "Strengthening of dissemination system of cropping technology" should be arranged.	1
2. Support for promotion of processing industries	Both projects "Support for set-up of private processing industry" and "Support for set-up of processing industry by farmers/ women's group" are the key project in the Program. Although the projects should be prioritized on the assumption that raw material products are obtained stably, priority should be high. APU should take initiative to tackle with the Program. The project "Support for specializing products" will be operated based on the lessons learned from the past implemented SIPI project. DNPIAC may promote it, apart from the APU. The project "Support for provision of processing infrastructures" may be implemented together with the setting-up of processing industry, apart from the nation wide electric power supply plan and water supply plan.	1
3. Support for promotion of distribution industries	The projects "Support for improvement of product transportation" and "Provision of agricultural distribution infrastructures" are related with the provision of infrastructures. Those should be launched urgently to make distribution of agricultural products effective and economical. In actually, large investment fund is necessary. There are many difficulties until its realization. Implementation organization should task to provide infrastructures taking initiatives. Considering the present financial and technical capacities of the organization, it is required to get support from related donors for long term implementation period. APU should act	2

Program	Basic concept for putting priority	Priority
	agribusiness promotion on the assumption of the current infrastructure constraints. APU should suggest priority of the provision of the infrastructure such as section of road improvement and construction of storage warehouse to the related organizations, based on the suggestion obtained form implementation process. The project "Provision of an agribusiness information and communication system" should be launched at later stage when agribusiness actors will understand the necessity of that system, judging from the lessons learned from the pilot projects. Priority may be low.	
4. Support for sales promotion	This Program is crucial to expand sales for promoting processing and marketing industries. It may be tackled by each product. As for the project "Support for agriculture produce grading system", necessity for introducing grading system may be different among the products. Although sanitary conditions in the marketplaces and abattoirs should be improved and fish market should be opened, those projects will be attempted in the working progress to establish the operation and management system in parallel with construction of facilities under MTCI and MAF. The project "Introduction of food safety inspection system" is significant to inspect food safety along the marketing route and in the marketplaces. It should be approached by products. It should be take long term period to target all processing and marketing products, in parallel with improvement of sanitary management in the marketplaces and abattoirs. Overall implementation priority is considered to be low. APU should take action for this program by products.	3
5. Improvement of the government's products purchasing system	The Program should be implemented urgently to get reliability of this purchasing system from the market. Improvement activities will influence on the future development direction of agribusiness in this country. APU can not directly take part in the improvement process. APU should suggest the improvement viewpoints form promotion of agribusiness to the implementation body MTCI.	1
6. Support for export promotion	Finding the export products should be taken urgently, analyzing marketing trend in the surrounding countries. It is required to support continuously for long term in order to generate exporting products. It is not expected to get profitable effect in the short term.	3
7. Value Chain Improvement	Priority of this Program is high. APU should take action to materialize implementation of this Program, as implementation body. The Program takes cross cutting approach of the related programs form production to selling, on the assumption of the current development constraints.	1

(2) Urgent Program/ Action Plan

Based on the lessons learned form the pilot projects, the project "Strengthening of dissemination system of cropping technology" should be implemented urgently.

'Local resources adapted farming' technology should be trained to the related farmers. The farming method was practiced in the pilot project "Value Chain Improvement of Soybean Product" to procure the soybean stably as raw materials for processing industry. The farming method was in the trail stage and not fixed yet on the farmers. Therefore, it should be trained on the farmers. Training should be continued to ensure stable production for sustainable project effect. The pilot project is considered to be advanced project for agribusiness promotion until the time when APU will realize to implement the Programs and Action Plans. Pilot project including activities taken in the implementation process and effects caused from the activities should be demonstrated to agribusiness actors. Result of the pilot project may give large influence on the future prospect of the Program.

Considering such conditions, MAF should take necessary activity to disseminate the 'local resources adapted farming' technology in line with the project “Strengthening of dissemination system of cropping technology”, as an urgent Program and Action Plan. The activities should be continued until proposed Programs and Action Plans would be materialized.

7-3-4 Cost Estimate for Implementing Programs and Action Plans

There exist related administration organizations to materialize the Action Plan, so that the implementation cost is consisted of the following parts.

(1) Operation cost for APU

This is the necessary cost for overall operation and management of the Action Plans. It covers costs in planning, executing, operation and managing implementation of the Action Plan. Necessary cost to realize cooperation with related MAF Directorates and related Ministries are also included. Most of them are considered to be the soft component cost.

(2) Cost for related MAF Directorates

Apart from the realization of Action Plan, it should be allocated to the related MAF Directorates as the budget for their usual tasks. Cost component related with the Action Plan includes in the parts such as irrigation rehabilitation of DNIGUA, dissemination of cropping technology of DNAH and DNADC, improvement of abattoir/ execution of disease prevention measures for DNPV, opening the fish market for DNPA. Most of the cost is considered to be provided for improvement of infrastructures.

(3) Cost for related Ministries

Apart from the realization of Action Plan as well as the above the (2), it should be allocated to the related Ministries as the budget for their usual tasks. For example, there is the road improvement by MoI, provision of cool transpiration and storage facilities for MED and MTCI, introduction of food safety inspection of MoH and improvement of government products purchasing system by MTCI. All of them are the related with the provision of infrastructures.

Appropriate cost estimate according to the implementation schedule planning is shown in Table 7-3-4.

Table 7-3-4 Execution Cost of Programs and Projects

Unit; US$ 1,000

Program/ Project	First stage (4-years)			Second stage (3-years)			Third stage (3-years)			Total			Grand total
	APU	Related MAF	Related Minsitries	APU	Related MAF	Related Minsitries	APU	Related MAF	Related Minsitries	APU	Related MAF	Related Minsitries	
1. Improvement of agricultural productivity													
1.1 Establishment of Seed/ Input Materials Supply System	85	3,191	0	42	4,545	0	42	4,545	0	169	12,281	0	12,450
1.2 Rehabilitation of Agricultural Production Infrastructures	40	9,000	0	30	13,350	0	30	13,250	0	100	35,600	0	35,700
1.3 Strengthening of Dissemination System of Cropping Technology	36	450	0	27	331	0	27	317	0	90	1,098	0	1,188
1.4 Promotion of Contract Farming	271	0	0	203	0	0	203	0	0	677	0	0	677
2. Support for promotion of processing industries													
2.1 Support for Setting-up of Private Processing Industry	259	0	6	194	0	5	194	0	5	647	0	15	662
2.2 Support for Setting-up of Processing Industry by Farmers/ Women Groups	265	0	0	199	0	0	199	0	0	663	0	0	663
2.3 Support of Specializing Products	150	0	0	113	0	0	36	0	0	299	0	0	299
2.4 Support for Provision of Processing Infrastructures	272	0	0	204	0	0	204	0	0	680	0	0	680
3. Support for promotion of distribution industries													
3.1 Support for Improvement of Product Transportation	272	1,200	0	204	0	0	204	0	0	680	1,200	0	1,880
3.2 Provision of Agricultural Distribution Infrastructures	36	0	23,550	27	0	16,155	27	0	16,155	90	0	55,860	55,950
3.3 Provision of Agribusiness Information and Communications System	440	0	0	145	0	0	145	0	0	730	0	0	730
4. Support for sales promotion													
4.1 Support for Marketing Route Development	265	0	0	199	0	0	199	0	0	663	0	0	663
4.2 Introduction of Agriculture Product Grading System	48	122	0	36	547	0	36	363	0	120	1,033	0	1,153
4.3 Improvement of Sanitary Management	48	549	0	36	616	0	36	616	0	120	1,781	0	1,901
4.4 Introduction of Food Safety Inspecting System	44	0	225	33	0	136	33	0	100	110	0	462	572
5. Improvement of the government's products purchasing system													
5.1 Establishment of an Operating System in Central and Local Levels	40	0	204	30	0	621	30	0	827	100	0	1,652	1,752
6. Support for Export Promotion													
6.1 Support for Finding Export Commodity and Sales Promotion	567	0	0	185	0	0	73	0	0	826	0	0	826
6.2 Promotion of Exporting	48	0	0	36	33	0	36	33	0	120	66	0	186
7. Value Chain Improvement													
7.1 Support for establishment of product based value chain	208	0	0	156	0	0	156	0	0	520	0	0	520
7.2 Capacity development plan of value chain stakeholders	117	0	0	88	0	0	88	0	0	292	0	0	292
Total	3,511	14,512	23,985	2,187	19,422	16,917	1,998	19,124	17,086	7,696	53,058	57,989	118,742

Notes: Most of cost components of related MAF and related Ministries is the cost for provision of infrastructure. The cost is basically allocated equally for 10 yeas. However, necessary cost for survey, planning and designing is allocated in the first stage. There is no relation with the implementation plan of donors and related directorates and ministries.

Cost estimate of the above three cost components is summarized as follows.

Table 7-3-5 Summary of Cost Component Unit: US$1,000

Cost component	First (4-years)	Second (3-years)	Third (3-years)	Total (10-years)
Operation cost for APU	3,511	2,187	1,998	7,696
Cost for related MAF Directorates	14,512	19,422	19,124	53,058
Cost for related Ministries	23,985	16,917	17,086	57,989

Reference: Capital and development allocated to MAF and DNPIAC Unit: US$1,000

Budget items	2009	2010	2011
MAF (including in development fund from donors)	13,820	5,476	3,015
DNPIAC	224	Not allocated	Not allocated

Judging from the past budgeting for capital and development allocated to MAF and DNPIAC, it is considered that full allocation of operation cost for APU would be difficult. Financial support from outside organizations will be required to implement the proposed action plans by APU.

Costs for related MAF Directorates and related Ministries are almost all the cost for provision of physical infrastructures. It seems to be hard to procure from domestic budget. It is required to be assisted from related donors. Those costs for provision of infrastructures are desirable to be allocated in line with running of the Action Plan by APU. To do so, it is required to make arrangement with the related donors and directorates/ ministries. However, it is expected to be hard to arrange with them. Those components can be arranged with the budget plan of related MAF Directorates and related Ministries. Through such arrangement, budgeting should be conducted.

The estimate should be reviewed based on the implementation progress, outcomes and evaluation of the Action Plan.

7-4 IMPLEMENTATION UNDER THE DNPIAC IMPLEMENTATION ORGANIZATION

It is expected to take the certain term to organize the APU implementation organization and launch materialization of the Programs and Action Plans. Until the APU organization would be established, DNPIAC implementation organization should continue the Programs and Action Plans after completion of this study. DNPIAC implementation organization should tackle the following actions.

7-4-1 Follow-up of the Pilot Projects

The on-going pilot projects are considered to be the prior implementation of the Programs and Action plans. The results will influence on future prospect of the programs and action plans. DNPIAC implementation organization should take over the outcomes from the pilot projects and intervene in the acting process by actors, support their activities if problems arisen. Such follow-up activities should be continued until the generated outcomes would be fixed on the actors.

DNPIAC should monitor the pilot project's activity process by means of interview survey with actors and site survey, discuss the progress and problems, and provide necessary supports to be fixed on their activities. The pilot projects should be supported as follows.

No.1: Capacity Development of Agricultural Cooperatives

- Production of milled rice and shipping amount, sales in the supermarket, activities for decreasing

broken rice and its results, vegetable cropping in dry season and shipping to Baucau market, burden of fuel expenses among pump users, and cost-benefit analysis.

No.2: Value Chain Improvement of Soybean

- Progress of contract farming, soybean cropping by local resources adapted farming, procurement of soybean seed by production farmer groups, manufacturing of soymilk and its sales. Operation and maintenance of processing machine, dissemination of the tempe processing technology

No.3: Promotion of Small Scale Business of Poultry Production by Women's Group

- Overall chicken breeding progress, sales of grown chicken and laid eggs, procurement of feed such as corn, cassava broken rice, etc, applying disease prevention measures by using traditional medical plants and its effectiveness

No.4: Diversification of Corn Product

- Manufacturing of corn bread, selling and examination of cost-benefit, procurement of corn flour, milling process by miller, resumption of manufacturing and selling the corn bread in the Same and Baucau cities, expansion of manufacturing method of the corn-bread into the other local bakeries

No.5: Support on 'Local Product, Local Consumption'- Cooking Classes -

- Making use of cooking book, progress of cooking business such as catering service and opening restaurant by graduates, opening of cooking classes by NGOs

7-4-2 Implementation Direction of the Action Plans after the Pilot Projects

It is expected to promote the Programs and Action plans with any target products under the DNPIAC implementation organization after completion of the pilot projects. DNPIAC implementation organization will have difficulty in provision of human resources and funding, so that the number of target products may be limited. It is expected that long term preparation period is needed to establish the APU and launch the proposed programs and action plans. Considering the long term requirement, DNPIAC should try to realize them based on the experiences and knowledge obtained from the pilot projects.

Although DNPIAC should act as implement body from the beginning stage, the study team tentatively prepares implementation process of Action Plans, as an example, selecting a possible product. Outline of the Action Plan is prepared as follows.

As a first step, target product is selected. Priority products in the short term target were selected based on the present production, processing and marketing conditions. Those are the paddy (rice), maize, root crops and legume crops such as soybean, mungbean and peanut. Among those, mungbean can be selected as an example of high priority. The project "Value chain improvement of mungbean" is tentatively proposed as prority project. Action Plan of that project is drawn by putting the target products 'mugbean' on the proposed project 'Support for value chain improvement', like the 'soybean' of the pilot project. Outline of the Action plan is tentatively prepared as follows. DNPIAC act:

- Collect the latest district production data of mungbean through DNAH,
- Based on the collected data, request production district such as Bobonaro, Covalima, Manatuto and Viqueque to collect site information such as production farmers, production, procurement of seed (home collection, purchase from outsides), natural condition of production sites, quality, shipping (middlemen, local market, home consumption). District DNPIAC collect/compile the data and send it to central DNPIAC.
- Analyze the collected data, Mungbean profile from production to selling is prepared. List of private

stakeholders including processors, middleman and traders are provided.

- Discuss development possibility of munbean agribusiness such as milling, processing mungbean product and exporting with processors and traders. Through the discussion, select interest processor and traders who will to improve their current activities and participate in the value chain improvement process are selected. In the discussion, cost-benefit analysis and marketability of mungbean product is roughly estimated.
- Design the value-chain improvement along flow of the mungbean product, seek the value adding points and find problems and solutions in the value chain line.
- Select value-chain improvement actors from mungbean production farmers, processors and traders who will to challenge to improve their activities. In the selection process, distribution conditions as the base point of Dili is also considered.
- Administration offices who participate in designed value chain improvement in district, sub-district and suco levels are identified.
- Establish the linkage with private actors such as farmers, processors and traders and administration offices.
- Actors participated in the value- chain improvement start the designed activities including the measures for the solutions.
- Necessary supports from administration required to solve the problems arisen in the value- chain improvement activities are planned. (In the pilot projects, the supports were to procure the seed, improve the cropping technology and procure the processing machinery. As for exporting mungbean, construction of common use warehouse by traders may be required. Value-chain improvement activities by private actors are thought of private economic activities. Supporting activities cannot be designed prior to the actual activity. Those are found in the implementation process.)
- Monitor the activities taking by the actors to solve the problems and give necessary supports aiming to establish value chain improvement of mungbean.

DNPIAC implementation organization should operate flexibly the activities mentioned above, based on the social/ economic movement such as school feeding programs, actual import of the mungbean and its processed commodities, and export of it to Indonesia.

By compiling the study result of the Master Plan formulation, outline of the proposed project of the Master Plan is shown as the Table 7-3-6.

Table 7-3-6 Project Outlines of the Master Plan

Objective: Provide administration system for promotion of agribusiness, strengthen administratin services and provide infrastructures.

Development Target; Agribusiness of production/ processing/ marketing/ selling of agriculture/ livestock/ fishery products are promoted.

Framework of Master Plan		Implementation Organization			Priority		
Program	Project	Implementation body	Cooperation arrangement	Major Cooperation	High	Med.	Low
1. Improvement of Agricultural Productivity	1.1 Establishment of Seed/ Input Materials Supply System	DNAH (MAF)	DNADC (MAF)	DNPP/ DNADC	○		
	1.2 Rehabilitation of Agricultural Production Infrastructures	DNIGUA (MAF)	DNPIAC	DNPP/ DNADC	○		
	1.3 Strengthening of Dissemination System of Cropping Technology	DNADC (MAF)	DNPIAC	DNPA/ DNFA/ DNIGA (MAF)	○		
	1.4 Promotion of Contract Farming	DNPIAC (MAF)	DNPIAC	DNAH/ DNADC/ DNPP / MED	○		
2. Support for Promotion of Processing Industry	2.1 Support for Setting-up of Private Processing Industry	DNPIAC (MAF)	MTCI	DNPSE/ DNPA/ DNADC/ MED/ MoH	○		
	2.2 Support for Setting-up of Processing Industry by Farmers/ Women Groups	DNPIAC (MAF)	DNPIAC/ DNADC/ DNPV	DNAH/ DNPA/ DNPV/ DNADC/ MTCI/ MED/	○		
	2.3 Support of Specializing Products	DNPIAC (MAF)	DNPIAC	DNPSE/ DNF/ DNPV/ DNADC/ MED		○	
	2.4 Support for Provision of Processing Infrastructures	DNPIAC (MAF)	MoI	DNPP/ Local Administration (L.A.)		○	
3. Support for Promotion of Distribution Industries	3.1 Support for Improvement of Product Transportation	DNPA(MAF)	DNPIAC(MAF)/ MTCI	DNAH/ DNPV/ MED	○		
	3.2 Provision of Agricultural Distribution Infrastructures	MoI/ MTCI	DNPIAC	DNPP/ MED/ L.A.		○	
	3.3 Provision of Agribusiness Information and Communications System	DNPIAC (MAF)	DNPIAC	DNPP/ DNPSE/ DNAH/ MTCI			○
4. Support for Sales Promotion	4.1 Support for Marketing Route Development	DNPIAC (MAF)	DNPIAC	DNPP/ MTCI/ MED/ MoH	○		
	4.2 Introduction of Agriculture Product Grading System	DNPSE (MAF)	DNPIAC	DNPP/ DNAH/ MTCI		○	
	4.3 Improvement of Sanitary Management	DNPA/ DNPV (MAF)	MTCI	DNPIAC/ MED/ L.A.			○
	4.4 Introduction of Food Safety Inspecting System	MoH	DNPIAC	MTCI/ MoE/ L.A.			○
5. Improvement of the Government's Products Purchasing System	5.1 Establishment of an Operating System in Central and Local Levels	MTCI	DNPP/ DNPIAC	MED/ MpF	○		
6. Support for Export Promotion	6.1 Support for Finding Export Commodity and Sales Promotion	DNPIAC (MAF)	DNPIAC	DNPP/ DNAH/ MTCI/ MED		○	
	6.2 Promotion of Exporting	DNQB(MAF)	MoF	DNPIAC/ MTCI/ MED			○
7. Value Chain Improvement	7.1 Support for Establishment of Product based Value Chain	DNPIAC (MAF)	DNPIAC	DNAH/ DNADC/ DNPV/ DNADC/ DNPSE/ MTCI	○		
	7.2 Capacity Development Plan of Value Chain Stakeholders	DNPIAC (MAF)	DNPIAC	DNAH/ DNADC/ DNPV/ DNADC/ DNPSE/ MTCI	○		

PROJECT OUTLINE (1.1)

(1) Project Number	1.1
(2) Project Name	Establishment of seed/ input materials supply system
(3) Target Group/ Area	Farmers/ Framers production groups
(4) Implementation Organization	Implementation body: DNAH Cooperation arrangement: DNPIAC Cooperation: DNADC, DNPP, Donor: AusAID

(5) Background

Based on the present food supply and demand condition, rice as staple crop does not meet the country's demand. Farmers provide produced crops for self-consumption. As the results, rice marketing amount a few. Under such conditions, rice is imported. Export amount of rice exporters peaks the highest level. International price of rice largely fluctuates. Then, government put food security on the national development plan as top priority policy.

In line with this national policy, MAF is grappling with increase of production aiming to reach self sufficiency of rice. Related with this policy, In order to increase agricultural productivity, MAF distributes seed/ input materials for staple crops of rice and other major crops such as corn and bean free of charge. And, MAF provided agricultural machines. But, there is necessity of improvement in the present seed/ input material supply system and establishment for operation and maintenance method, including exchange of spare parts of provided agricultural machines. It is urgent to improve the present seed/ input materials supply system and provision of operation and maintenance system of farm machine.

(6) Objective

To improve present seed/ input materials supply system and establish operation and maintenance system of farm machine aiming at maintaining and increasing in agricultural productivity of agribusiness target crops.

(7) Implementation Period (10-years)

Y-1	Y-1	Y-3	Y-4	Y-5	Y-6	Y-7	Y-8	Y-9	Y-10

(8) Project Goals

1. Seed/ input materials are distributed to the present farm land of paddy (45,000ha), maize (86,000ha), other food crops (1,000ha to 10,000ha), with proper quantities and at proper timing.
2. O/M workshop of farm machine is established in each district.

(9) Expected Outputs

1. Planning of seed/ input supply system is formulated.
2. Supply system of fertilizer/ pesticides is established in 13 districts.
3. Seed multiplication farmers are established.
4. O/M method of farm machine is established.

(10) Development Indicators and Monitoring Method

1. Distribution records of farmers groups and amounts of seed/ input materials
2. Records of cropping area and production of crops
3. Number of farm machine workshops, utilization records of farmers

(11) Main Activities

Action-1: Review of the present supply system
Action-2: Compilation of crops and producers information
Action-3: Establishment of seed multiplication/ input materials supply system
Action-4: Establishment of fertilizer supply system
Action-5: Establishment of O/M system of farm machine
Action -6: Monitoring/ evaluation of the improved system and review it

(12) Necessary Expenses

Unit: US$1,000

APU	169
Related MAF	12,281
Related ministries	-
Total	12,450

(13) Fund Source MAF

(14) Risk

Change of present policy of input materials distribution system. Change of seed of life program by AusAID. Lack of cooperation with related donor agencies.

PROJECT OUTLINE (1.2)

(1) Program Number	1.2
(2) Program Name	Rehabilitation of agricultural production infrastructures
(3) Target Group/ Area	Agricultural land in the 13 districts
(4) Implementation Organization	Implementation body: DNIGUA Cooperation arrangement: DNPIAC Cooperation: DNPP, DNADC Donor: JICA, GIZ

(5) Background

Government put food security on the national development plan as top priority policy. In line with this national policy, MAF is grappling with increase of production aiming to reach self sufficiency of rice. To reach self-sufficiency of rice, rehabilitation of irrigation facility is the major subject to increase productivity, as shown in the Maliana irrigation rehabilitation project where crop productivity is increased and contract farming is introduced in some areas. At present, out of 71,300 ha of irrigable area in the country, the area of 56,300 ha has been rehabilitated, so that remaining area is 15,000 ha for irrigation rehabilitation. Based on the recent feasibility study in 2008, DNIGUA proposed to rehabilitate in the design area 6,250 ha. It is necessary to promote rehabilitation works in the proposed area, putting priority on those areas. Besides such large scale irrigation projects in the central level, it is necessary to pick small scale irrigation facilities and improve them in district level.

(6) Objective

To rehabilitate irrigation facilities aiming to increase in irrigation area. This contributes to increase in cropping area and crop productivity of agribusiness target crops.

(7) Implementation Period (10-years)

Y-1	Y-1	Y-3	Y-4	Y-5	Y-6	Y-7	Y-8	Y-9	Y-10

(8) Project Goals

1. Irrigation facilities are rehabilitated in 15,000 ha of farm land.
2. Small scale irrigation facilities are rehabilitated.
3. Present rice production is reached to target level set by government.

(9) Expected Outputs

1. Irrigation system rehabilitation plan for 15,000 ha is formulated.
2. Implementation plan for the rehabilitation plan is provided.
3. Rehabilitation plan is implemented in cooperation with related donor agencies.
4. Small scale irrigation rehabilitation method is established in 13 districts.

(10) Development Indicators and Monitoring Method

1. Feasibility study report of rehabilitation project for 15,000 ha.
2. The number of implementation of the rehabilitation project.
3. Construction completion report of the rehabilitation projects.
4. Small scale rehabilitation planning reports in district level.
5. Implementation report of the small scale irrigation rehabilitation projects.
6. Increased irrigation areas

(11) Main Activities

Action-1: Planning of irrigation rehabilitation system
Action-2: Implementation of the rehabilitation plan

(12) Necessary Expenses

Unit: US$1,000

APU	100
Related MAF	35,600
Related ministries	-
Total	35,700

(13) Fund Source MAF, Technical and financial support by Donors

(14) Risk

Change of present MAF policy on food security. Lack of cooperation with related donor agencies.

PROJECT OUTLINE (1.3)

(1) Project Number	1.3
(2) Project Name	Strengthening of dissemination system of cropping technology
(3) Target Group/ Area	Agricultural land in the 13 districts, Farmers/ Framers groups
(4) Implementation Organization	Implementation body: DNIGUA Cooperation arrangement: DNPIAC Cooperation: DNPP, DNADC Donor: JICA, GIZ

(5) Background

In line with the national policy for secure food security, MAF is grappling with increase of production aiming to reach self sufficiency. As a policy of increasing crop productivity, MAF decided to extend farm technology in the farm level. To do so, MAF recruited extension staff and allocated them into DNADC. DNADC allocated 12 senior extension staff and 376 extension staff in district and suco levels, in order to disseminate proper farming technology to farmers. However, actual extension works are not started yet because lack of concrete action plan and preparation of dissemination guideline and no facilities for development of extension works, and lack of overall extension technology of them. It is the urgent to provide systematic dissemination system of farm technology in cooperation with senior extension staff and extension staff. For dissemination of farm technology, it is emphasized that agricultural style in Timor Leste is characterized as natural farming not applied chemical fertilizer, so that local resources adapted farming technology is strengthened in the extension works.

(6) Objective

To strengthen present cropping technology dissemination system to ensure stable supply of agribusiness target crops through training of extension staff, provision of extension materials.

(7) Implementation Period (10-years)

Y-1	Y-1	Y-3	Y-4	Y-5	Y-6	Y-7	Y-8	Y-9	Y-10

(8) Project Goals

1. Present productivity (rice: from 1.5 to 1.7 ton/ha) is increased to target level set by government.
2. Productivity of food crops such as maize and root crops is increased by 30-50% more than the current levels.

(9) Expected Outputs

1. Trainers for extension staff are found and trained.
2. 388 extension staff learns extension skills of farming technology.
3. Guidelines and manuals for dissemination of farming technology covered by cropping and operation/ maintenance of farm machines are prepared.
4. Equipment and materials for dissemination work are prepared.
5. Faming technology is disseminated in suco level of each district.

(10) Development Indicators and Monitoring Method

1. Training record of trainers
2. Training record of extension staff, self-evaluation report of trainees after training.
3. Guidelines/ manuals for dissemination work
4. Activity record of extension workers.

(11) Main Activities

Action-1: Plan formulation of dissemination system of cropping technology
Action-2: Training of trainers
Action-3: Dissemination of cropping technology by trainers
Action-4: Preparation of manual/ guideline for dissemination
Action-5: Procurement of equipment/ manuals for dissemination

(12) Necessary Expenses

Unit: US$1,000

APU	90
Related MAF	1,098
Related ministries	
Total	1,188

(13) Fund Source MAF, Technical support by donors

(14) Risk

Change of present MAF policy on farm management and seed/ input materials distribution system. Lack of cooperation with related donor agencies.

PROJECT OUTLINE (1.4)

(1) Project Number	1.4
(2) Project Name	Promotion of Contract Farming
(3) Target Group/ Area	Production farmers of agribusiness target crops, processors/ traders
(4) Implementation Organization	Implementation body: DNPIAC Cooperation arrangement: DNPIAC Cooperation: DNPP/ DNADC/ DNIGUA/ DNAH/ DNFA Related ministries: MED, MoE

(5) Background

Considering market prospect of present agricultural/ livestock/ fishery products, for example, growing capacity of bean crops such as soybean and mungbean is large in both overseas and domestic markets. Both do not meet demand, so that they are imported. Under such situations, it is recognized that it is important to increase local beans production in quality and quantity to cope with expanding domestic and export demands. In the production sites, however, it is difficult to accelerate production, since there are low incentive to production of self-sufficient farmers who have poor commercial farming sense, in addition to the insufficient production infrastructures and poor farming technology of them.

Under the above conditions, it is required to promote contract farming of crop productions such as local beans between farmers group and traders/ processing industry in productive districts to cope with the above problems.

(6) Objective

To increase contract farming style between farmers groups and traders/ processors to ensure stable supply of agribusiness target crops for processors/ traders.

(7) Implementation Period (10-years)

Y-1	Y-1	Y-3	Y-4	Y-5	Y-6	Y-7	Y-8	Y-9	Y-10

(8) Project Goals

1. The number of contract farming farmers groups is increased in the related districts in Bobonaro.
2. Farming style of contact farming is extended into other related districts such as Baucau, Lautem, Viqueque, Ainaro and Manufahi, reaching at total 1,000 ha.

(9) Expected Outputs

1. Methodology for promoting contract farming is established.
2. Crop production technology in quantity and quality is improved.
3. Methodology for organizing farmers groups is established.
4. Monitoring and evaluation system in operating contract farming is established in central and district levels.
5. Operational capacity for promotion of contract farming works of administrators (DNPIAC, 6 central staff and 28 district staff) is improved.

(10) Development Indicators and Monitoring Method

1. The number of contracted farmer groups
2. Shipping amount of contract farming farmers groups, trading amount of traders and processing industry.
3. The number of farmers' organization groups registered.
4. Training report for growing commercial sense in farmers.
5. Regular contract farming consciousness survey to farmers

(11) Main Activities

Action-1: Finding of target products/ farmers groups/ traders/ processing industries
Action-2: Opening of stakeholder workshop
Action-3: Training for creating contract sense and commercial education for farmer groups
Action-4: Support for organizing farmer groups
Action-5: Implementation of contract farming
Action-6: Monitoring and evaluation

(12) Necessary Expenses

Unit: US$1,000

APU	677
Related MAF	
Related ministries	
Total	677

(13) Fund Source MAF

(14) Risk

Government purchasing cost is set in higher more than the ceiling price of traders and processing industries.

PROJECT OUTLINE (2.1)

(1) Project Number	2.1
(2) Project Name	Support for set-up of private processing industry
(3) Target Group/ Area	Processing industries in the 13 districts
(4) Implementation Organization	Implementation body: DNPIAC Cooperation arrangement: DNPIAC, MTCI Cooperation: DNFA/ DNPSE/ DNPA/ DNADC Related ministries: MED/ MoH/ MoF/ MoI Donor agencies: JICA/ GIZ/ EU/ WB/ UNDP/ Portugal

(5) Background

Considering present agribusiness situation, it is required to encourage local people to establish processing industry making use of local resources including agricultural products produced in and around the production areas. However, based on the present poor infrastructures, possible commodity processing industry is limited to a type of labor-intensive small scale home industries with farmers groups/ farmer organizations/ cooperatives.

Relevant donor agencies are grappling with promotion of processing industry in local area. As the results of such activities, there is a growing tendency for local people to set up small scale home industries. But, such movement is in the limited areas. It is important to provide environment to formulate strategic approach for promoting small scale processing industry in the local areas, taking opportunity of such growing tendency. To do so, it is required to support small scale home industry in various stages of setting up, operating and managing itself. This project is to support private processing industries in their working processes.

(6) Objective

To support private processing industries so that they can set up and operate small scale processing business through supporting value adding process and new commodity development of the products.

(7) Implementation Period

Y-1	Y-1	Y-3	Y-4	Y-5	Y-6	Y-7	Y-8	Y-9	Y-10

(8) Project Goals

1. Private small scale processing industry is set up and operated in 13 districts.
2. New commodity making use of domestically produced products is developed and processed.
3. Processed commodities are shipped to markets and /or sales in marketplace in the 13 districts.

(9) Expected Outputs

1. Small scale processing industry is established, operated and managed
2. Methodology to support processing industries in setting up and operating industries is established.

(10) Development Indicators and Monitoring Method

1. The number of developed processing commodity
2. The number of setting up small scale industry
3. The number of new commodity developed by set-up processing industries.
4. Shipping amount of commodity, sales volume and amount
5. Operation and maintenance/ renovation record of processing facilities

(11) Main Activities

Action-1: Finding of target product and processing industries
Action-2: Support for setting-up of processing industry
Action-3: Support for procurement of fund
Action-4: Support for provision of processing facilities
Action-5: Support for commodity development/ selling technology
Action-6: Support for renewal and O/M of processing facilities

(12) Necessary Expenses

Unit: US$1,000

APU	647
Related MAF	
Related ministries	15
Total	662

(13) Fund Source MAF, MTCI, MED, MoF, Micro-finance institute

(14) Risk

Change of MAF's policy on promotion of home industries. Purchase price of raw materials for processing industry exceed the break-even point under the influence of government's purchasing system.

PROJECT OUTLINE (2.2)

(1) Project Number	2.2
(2) Project Name	Support for set-up of processing industry by farmers/ women groups
(3) Target Group/ Area	Farmers/ women in the 13 districts
(4) Implementation Organization	Implementation body: DNPIAC Cooperation arrangement: DNPIAC, MTCI Cooperation: DNPSE/ DNPA/ DNPV/ DNADC Related ministries: MED/ MoH/ MoJ Donor agencies: JICA/ GIZ/ EU/ UNDP/ Portugal, Micro-finance institute

(5) Background

Considering agribusiness situation in local area, it is required to encourage local people to establish processing industry making use of local resources including agricultural products produced in and around the production areas. Considering the present poor infrastructures, possible commodity processing industry is limited to any type of labor-intensive small scale home industries with farmers groups/ farmer organizations/ cooperatives.

Relevant donor agencies are grappling with promotion of processing industry in local area. As the results of such activities, there is a growing tendency for local people to set up small scale home industries. But, such movement is in the limited areas. It is important for administration to provide environment to formulate strategic approach for promoting small scale processing industry, taking opportunity of such growing tendency. To do so, it is required to support small scale home industry in setting up, operating and managing itself. This project is to support farmer groups/ women groups in setting-up and operating/ managing small scale processing industries.

(6) Objective

To support farmer groups/ women groups who try to set up and operate small scale processing industries making use of local agricultural/ livestock/ fishery products.

(7) Implementation Period (10-years)

Y-1	Y-1	Y-3	Y-4	Y-5	Y-6	Y-7	Y-8	Y-9	Y-10

(8) Project Goals

1. Small scale processing industry by farmer groups/ women groups is set up in 13 districts.
2. New commodity making use of domestically produced products is developed and processed.
3. Processed commodities are shipped to markets and /or sales in marketplace in the 13 districts.

(9) Expected Outputs

1. Small scale processing industry is established, operated and managed
2. Methodology to support farmer groups/ women groups in setting up and operating industries is established.

(10) Development Indicators and Monitoring Method

1. The number of developed processing commodity
2. The number of setting up and operating small scale industry
3. Shipping amount of commodity, sales volume and cost amount

(11) Main Activities

Action-1: Finding of target products
Action-2: Finding of farmers groups/ women groups
Action-3: Opening of stakeholder workshop
Action-4: Cooperation with related donor agencies
Action-5: Support for setting up of processing industries
Action-6: Support for procurement of fund
Action-7: Support for provision of processing facilities
Action-8: Support for commodity development/ selling technology
Action-9: Support for renewal and O/M of processing facilities
Action-10: Support for organizing into cooperative
Action-11:Training for strengthening of operation/ management capacity of processing industry
Action-12: Monitoring/ evaluation

(12) Necessary Expenses

Unit: US$1,000

APU	663
Related MAF	-
Related ministries	-
Total	663

(13) Fund Source	MAF, MTCI, MED, MoF, Micro-finance institute

(14) Risk

Change of MAF's policy on promotion of home industries. Procurement of raw materials for processing industry becomes difficult under the influence of government's purchasing system.

PROJECT OUTLINE (2.3)

(1) Project Number	2.3
(2) Project Name	Support for specializing products
(3) Target Group/ Area	Farmers groups/ women groups in the 13 districts, local traders
(4) Implementation Organization	Implementation body: DNPIAC Cooperation arrangement: DNPIAC Cooperation: DNPSE/ DNPF/ DNF/ DNPV/ DNADC Related ministries: MTCI/ MED/ MoH Donor agencies: JICA

(5) Background

Considering the present poor infrastructures such as lack of electricity supply service and water supply system, possible processing industry is limited to any type of labor-intensive small scale home industries.
Relevant donor agencies are grappling with promotion of processing industry in local area. As the results of such activities, there is a growing tendency for local people to set up small scale home industries. But, such movement is in the limited areas. It is important for administration to provide environment to formulate strategic approach for promoting small scale processing industry in the local areas, taking opportunity of such growing tendency. To do so, it is required to support small scale home industry in developing new commodity, operating and managing itself. As an approach, it is required to support local farmer/ women groups in specializing local products including in development stages from finding specialty, developing commodity and selling it. This activity contributes to generating income source and becoming self-reliance for local people.

(6) Objective

To support farmers/ women production groups so that they can find local specialty by making use of local resources and develop/ sell it.

(7) Implementation Period (10-years)

Y-1	Y-1	Y-3	Y-4	Y-5	Y-6	Y-7	Y-8	Y-9	Y-10

(8) Project Goals

1. Local specialty processing industry is set up and operated in 13 districts.
2. Production group become self-reliance.

(9) Expected Outputs

1. SIPI campaign is developed in 13 districts.
2. Special product and production group is found in sub-district level.
3. Commodity development method is established in each local specialty.
4. Marketing target is developed in each specialty.
5. Methodology to support production group in setting up and operating industries is established.
6. Development methodology of local specialty is induced into other similar production areas.

(10) Development Indicators and Monitoring Method

1. The number of local specialty
2. The number of established production group
3. Shipping amount of local specialty, sales volume.

(11) Main Activities

Action-1: Cooperation with SIPI
Action-2: Finding products and production group
Action-3: Opening of stakeholder workshop
Action-4: Support for procurement of input materials
Action-5: Support for commodity development
Action-6: Support for market channel development/ selling technology
Action-7: Monitoring/ evaluation

(12) Necessary Expenses

Unit: US$1,000

APU	299
Related MAF	-
Related ministries	-
Total	299

(13) Fund Source MAF, Donor Agency

(14) Risk

Change of MAF's policy on promotion of home industries. Raw material for specializing product is exhausted by natural disaster or overuse.

PROJECT OUTLINE (2.4)

(1) Project Number	2.4
(2) Project Name	Provision of processing infrastructures
(3) Target Group/ Area	13 districts, Processing industries
(4) Implementation Organization	Implementation body: MoI Cooperation arrangement: DNPIAC Cooperation: DNPP Related ministries: Local administration Donor agencies: JICA/ EU

(5) Background

Only 19.7% of rural population had access to electricity. Many rural areas have no access to electricity at all. Most of the district capitals are covered by diesel generators providing electricity 6 – 12 hours per day, except for Baucau and Dili. It is required to provide nationwide prevailing power distribution network for power supply of various industries. The present situation is the development constraint for promotion of processing industry. In order to encourage and support setting-up and operation of processing industry in the non-electricity supply service areas, it is required that administration should support processing industry in providing electricity supply service. As an infrastructure, power source such as generator and solar power facility are lent to processing industry on demand.

Only about 13% of household have house connections and 16% are served by community taps. However, the water supply facilities are generally poor. In rural area, it is estimated that less than a quarter of rural households have access to safe water. Lack of water supply system may be one of constraints of setting-up and operation of processing industry. Then, administration should support the processing industry in providing water supply service on demand. Administration should establish a mechanism of water supply system including facility construction and collection of water fee for processing industry.

(6) Objective

To provide power source and water supply for processing industries.

(7) Implementation Period (10-years)

Y-1	Y-1	Y-3	Y-4	Y-5	Y-6	Y-7	Y-8	Y-9	Y-10

(9) Project Goals

1. Processing industry procures power source for operation of the processing industry.
2. Processing industry procures water supply for operation of the processing industry.

(10) Expected Outputs

1. An administrative mechanism that administration support processing industry in providing power source is established.
2. An administrative mechanism in providing water supply service for processing industry is established.

(11) Development Indicators and Monitoring Method

1. The number of processing industry received power supply service from administration.
2. The number of processing industry received water supply service form administration.
3. Repayment record based on the operation of provided power source.
4. Repayment record based on the water use record.

(12) Main Activities

Action-1: Provision of electricity supply system
Action-2: Provision of water supply system

(13) Necessary Expenses

Unit: US$1,000

APU	680
Related MAF	-
Related ministries	-
Total	680

(14) Fund Source MAF, Donor agencies

(15) Risk

Change of MAF policy on provision of power source and water supply for processing industry in rural area. Repayment amount set by administration exceed the break-even point of the industry operation. Change of MoI's policy on electricity supply service.

PROJECT OUTLINE (3.1)

(1) Project Number	3.1
(2) Project Name	Support for improvement of product transportation
(3) Target Group/ Area	Target Group: Agribusiness/Fisheries Traders
(4) Implementation Organization	Implementation body: DNPA Cooperation arrangement: DNPIAC Cooperation: DNPP/ DNAH/ DNPV Related ministries: MTCI/ MED

(5) Background

Fresh fish and vegetables are prone to be spoiled in the transportation. It is required to improve the transportation for them. The only existing local cold chain elements are: (i) a limited amount of ice used for fish preservation at sea, (ii) ice used in ice boxes by fish traders, (iii) occasional ice use by street side fish vendors and (iii) chilled vegetables sold by the Dili Fresh Company with assistance from the USAID. Dili Fresh utilizes its own greenhouse growers, refrigerated truck and a Dili chill room. Its sales are to large size buyers. Most other fish, fruit and vegetables is sold fresh without even chilling. The result is that farmers/fishers suffer losses related to spoiled and damaged produce, while consumers receive variable quality products. If a cold chain is established especially rural farmers and fishers will be able to reduce their losses and bring better quality product to market.

(6) Objective

To provide facilities to support processing/ marketing industries in transportation of target products produced by farmers/ women groups/ processors. This project mainly focused on the fresh products. Main objective is to establish cold chain system or cool transportation system.

(7) Implementation Period

Y-1	Y-1	Y-3	Y-4	Y-5	Y-6	Y-7	Y-8	Y-9	Y-10

(8) Project Goals

1. Transportation technology of spoil easily products is established.
2. Better quality local agriculture produce/ fish are distributed for consumers.

(9) Expected outputs

1. Traders are trained in product packing, handling, transportation, marketing and maintenance.
2. Ice boxes and refrigerated (or insulated) trucks are provided for traders
3. Freezers, refrigerators and/or ice making facilities are provided at rural pickup points.
4. Chill rooms are provided in Dili and Baucau.
5. Both chili rooms are operated and maintained by vendors

(10) Development Indicators and Monitoring Method

1. Appearance of locally produced chilled fish/fruits/vegetables in marketplaces
2. The number of installed freezers and/or refrigerators at rural pickup points
3. Utilization record of ice boxes, refrigerated vehicles and chill rooms.
4. Utilization record of chill rooms for local fish, fruit and vegetable sales

(11) Main Activities

Action-1: Establishment of rural agriculture/fisheries packing and transportation systems

Action-2: Chill room operations

(12) Necessary Expenses

Unit: US$1,000

APU	680
Related MAF:	1,200
Related ministries:	-
Total	1,880

(13) Fund Source MAF, MTCI

(14) Risk

MTCI intervene in distribution of fresh products.

PROJECT OUTLINE (3.2)

(1) Project Number	3.2
(2) Project Name	Provision of agricultural distribution infrastructures
(3) Target Group/ Area	Roads, Ports in the 13 districts and Traders/ storage facility
(4) Implementation Organization	Implementation body: MoI/ MTCI Cooperation arrangement: MAF (DNPIAC) Cooperation: DNPP/ DNAH/ DNPV Related ministries: MED/ Local administration Donor agencies: JICA/ ADB

(5) Background

Present poor road network is one of constraint which is preventing agribusiness from growing. It is urgent task to rehabilitate the poor condition roads in order to distribute products. MoI is responsible for rehabilitation of roads. Actual rehabilitation plan and design are developed under the supports of related donor agencies due to large scale inputs. ADB prepared the medium/ long term rehabilitation plan on roads and bridges. From viewpoints of agricultural product distribution, it is proposed to rehabilitate the connecting roads with north and south coasts.

Traders of Timor Leste are prone to take disadvantage in trading of local beans to West Timor, since there are no any storage facilities. It is necessary to construct a proper common use storage facility so that traders would be able to take advantage at trade price.

As for provision of port, It is necessary to incorporate future prospect of export/ import of agricultural products into the port development plan.

(6) Objective

To promote provision of infrastructure such as roads, storage facilities and ports to make products distribution more effective and economic.

(7) Implementation Period (10-years)

Y-1	Y-1	Y-3	Y-4	Y-5	Y-6	Y-7	Y-8	Y-9	Y-10

(8) Project Goals

1. As a priority road, 280 km is rehabilitated.
2. Rehabilitation of national roads, district and access roads is induced.
3. Port rehabilitation plan are provided and priority ports are rehabilitated.
4. Export through using storage facilities is promoted.

(9) Expected Outputs

1. Rehabilitation plan of priority roads is prepared. Implementation of the roads is conducted.
2. Port rehabilitation plan incorporated in future agricultural/ livestock products distribution is prepared.
3. Feasibility study for construction of storage facilities adjacent to border trade sites is conducted.
4. Two storage facilities are constructed, and operated and maintained.

(10) Development Indicators and Monitoring Method

1. Planning of road rehabilitation project, design report, tender process, construction record, completion report of construction
2. Planning report of ports rehabilitation project
3. Feasibility study for construction of storage facility, construction plan, design report, construction report
4. O/M and utilization record of storage facility.

(11) Main Activities

Action-1: Rehabilitation of roads
Action-2: Rehabilitation of ports
Action-3: Construction of storage facilities

(12) Necessary Expenses

Unit: US$1,000

APU	90
Related MAF	55,860
Related ministries	-
Total	55,950

(13) Fund Source MoI, MTCI, MED, MAF and Donors

(14) Risk

Change of MoI road rehabilitation policy. Lack of coordination with donor agencies

PROJECT OUTLINE (3.3)

(1) Project Number	3.3
(2) Project Name	Provision of an agribusiness information and communications system
(3) Target Group/ Area	DNPIAC, MAF and other related offices such as MTCI
(4) Implementation Organization	Implementation body: DNPIAC Cooperation arrangement: DNPIAC Cooperation: DNPP/ DNPSE/ DNAH/ DNPA/ DNPV Related ministries: MTCI/ Local administration

(5) Background

Agribusinesses stakeholders have very limited access to market information. As a consequence, they are not able to make fully informed marketing decisions. In absence of information, the markets are not able to function efficiently with the result that farmers have difficulty with selling production. Processors, traders and consumers meanwhile find themselves either short of product. Introduction of a market information system combined with a communications network can help overcome this bottleneck and lead to improved market access for all parties.
DNPIAC is responsible for overall market information. However, there is no electronic depository of agribusiness information. Currently information is based on personal experience, existing reports and inquiries directly to agribusiness stakeholders. Decision making could be greatly enhanced if a better database were available.

(6) Objective

To supply market information to MAF decision makers as well as agribusiness persons engaged in the processing industry, traders, wholesalers, farmers groups, women groups and retailers and sellers.

(7) Implementation Period (10-years)

Y-1	Y-1	Y-3	Y-4	Y-5	Y-6	Y-7	Y-8	Y-9	Y-10

(8) Project Goals

1. Processing industry/traders use timely market information for their business operations.
2. DNPIAC use agribusiness information to support for promotion of processing/ marketing industries.
3. MAF's planning and decision making processes by provision of agribusiness database are improved.

(9) Expected outputs

1. Market information database covering 8 domestic markets and the Atambua market, West Timor is prepared.
2. Agribusiness stakeholder information is prepared.
3. Equipment/ materials for preparation of database are procured.
4. MAF staff are trained in database operations
5. Communication and connection system among produces/ processors/ traders/ market persons is established.
6. Quarterly agribusiness reports are provided.
7. Customized data on request to decision makers is provided.

(10) Development Indicators and Monitoring Method

1. Agribusiness database prepared
2. Quarterly Agribusiness profiles published and distributed
3. Number of database access
4. Increased purchases from farmers and throughput of marketplaces
5. Utilization of data provided to MAF staff for improved decision making

(11) Main Activities

Action-1: Establishment of agribusiness information system
Action-2: Database Operations

(12) Necessary Expenses

Unit: US$1,000

APU	730
Related MAF	-
Related ministries	-
Total	730

(13) Fund Source MAF

(14) Risk

Market information is decided under the influence of the government purchasing system. Traders withdraw from the domestic market when the government purchasing system control market price.

PROJECT OUTLINE (4.1)

(1) Project Number	4.1
(2) Project Name	Support for marketing route development
(3) Target Group/ Area	Food production farmers groups/ women groups/ processing industries/ traders/ sellers
(4) Implementation Organization	Implementation body: DNPIAC Cooperation arrangement: DNPIAC Cooperation: DNPP Related ministries: MTCI/ MED/ MoH/ MoE

(5) Background

Almost all produce found in Timor-Leste's supermarkets and large restaurants is imported. If sales opportunities were provided by the government and other institutes, consumer demand for local produce would grow and at least some portion of the imports could be displaced. Due a lack of markets, most Timorese farmers only grow crops for self consumption. Where markets exist, farmers respond by increased production.

To increase sales of local agriculture produce, it is important to prepare a local produce promotion program. In order to realize sales promotion, MAF should develop a comprehensive sales promotion strategy for graded high quality local produce, in cooperation with related organizations such as MTCI and MoE. The strategy may include activities such as (i) agribusiness fairs, (ii) use of market booths (antennae markets), and (iii) a market promotion campaign for local agriculture products. It will also include supply high quality produce to the Ministry of Education (MED) for use on their school feeding programs. The market promotion campaign is also conducted by making use of radio, television, newspapers, banners and competitions.

(6) Objective

To provide sales promotion opportunities such as exhibitions and sales programs, agribusiness speaking opportunities and supply of market information for farmers groups/ processing industries/ traders/ sellers.

(7) Implementation Period (10-years)

Y-1	Y-1	Y-3	Y-4	Y-5	Y-6	Y-7	Y-8	Y-9	Y-10

(8) Project goal

Farmers groups/ processing industry/ traders/ sellers promote sales of their products by taking advantage of the provided sales opportunities and information.

(9) Expected outputs

1. An agribusiness exhibition is opened in a year.
2. Antennae markets are opened in Dili.
3. Food materials are supplied by local farmer groups for school meals in 13 districts.
3. Campaign for buying safe and reliable local products is developed.

(10) Development Indicators and Monitoring Method

1. The amount of local produce used in school feeding programs (monitored by MOH)
2. The number of visitors to the agribusiness fair.
3. The amount of local produce through the agribusiness fair.
2. The amount of local produce sold through the antennae markets

(11) Main Activities

Action-1: Introduction of agribusiness fairs
Action-2: Program for strategic placement of market booths (antennae markets)
Action-3: Market promotion campaign for local agriculture produces
Action-4: Provision of equipment and materials for sales promotion
Action-5: Supply of local agriculture products to school feeding programs

(12) Necessary Expenses

Unit: US$1,000

APU	663
Related MAF	-
Related ministries	-
Total	663

(13) Fund Source MAF

(14) Risk

Ministry of Education stops school feeding program. Ministry of Education decides to make use of imported products for school feeding program. Imported high-quality & low price commodity is sold.

PROJECT OUTLINE (4.2)

(1) Project Number	4.2
(2) Project Name	Introduction of agriculture produce grading system
(3) Target Group/ Area	Food producer/ processing industries/ traders/ retailers/ consumers
(4) Implementation Organization	Implementation body: DNPSE Cooperation arrangement: DNPIAC Cooperation: DNPP/ DNAH Related ministries: MTCI/ MoH

(5) Background

Almost all produce found in Timor-Leste's supermarkets and large restaurants is imported. Imported products are mostly higher quality than their domestic counterparts. To date, with the exception of coffee, there are no guidelines or regulations being applied by the government in regard to quality grades, or standardized weights and measures for agriculture products. If grading standards for produce quality were introduced consumer demand for local produce would grow and at least some portion of the imports displaced. Compounding efforts to boost sales of local produce is the fact that most Timorese farmers only grow crops for self consumption. The major constraint faced by the farmers is lack of markets. If a market can be demonstrated, the farmers will respond by increased production. In absence of markets, farmers revert to self consumption.

If consumer demand can be boosted, there will be pressure on farmers to produce more for the marketplace. To achieve the goal of increased consumer demand, (i) agriculture products need to be graded and certified, and (ii) market promotion for local products undertaken.

(6) Objective

To provide sales promotion opportunities such as issuing of quality certification for commodities for farmers groups/ processing industries/ traders/ sellers.

(7) Implementation Period (10-years)

Y-1	Y-1	Y-3	Y-4	Y-5	Y-6	Y-7	Y-8	Y-9	Y-10

(8) Program Targets

Farmers groups/ processing industry/ traders/ sellers promote sales of their products by taking advantage of the provided quality graded products.

(9) Expected outputs

1. Food quality grading standards are prepared.
2. Quality grade certificates for local products are issued.
3. MAF official's are trained and operate a fully equipped grading equipment
4. Properly graded produce is marketed.

(10) Development Indicators and Monitoring Method

1. Inspected local produce is used in school feeding programs (monitored by MOH)
2. Grading standards published, disseminated and being used by the private sector (monitored by MAF)
3. Increased sales amount of high quality agriculture products certified by grading system (monitored by MAF)

(11) Main Activities

Action-1: Establishment of produce grading standards and publication and dissemination of related material
Action-2: Training of inspectors
Action-3: Provision of equipment and materials for grading
Action-3: Issuance of grading certificates
Action-4: Support for grading system extension to traders, wholesalers and retailers

(12) Necessary Expenses

Unit: US$1,000

APU	120
Related MAF	1,033
Related ministries	-
Total	1,153

(14) Fund Source MAF

(15) Risk

MTCI continue to purchase agricultural products at high price without grading.

PROJECT OUTLINE (4.3)

(1) Project Number	4.3
(2) Project Name	Improvement of sanitary management
(3) Target Group/ Area	3 marketplaces in Dili, Public marketplaces in 13 districts Abattoir in Tibar and small scale abattoirs in 5 local cities
(4) Implementation Organization	Implementation body: DNPA/DNPV Cooperation arrangement: DNPIAC Cooperation: DNPP Related ministries: MTCI/ MED/ MoH/ Local Administration Donor agency: WHO

(5) Background

MTCI is planning to provide marketplaces of Dili and local cities. After construction, operation and maintenance is planned to entrust into administration in city and district levels and persons related with marketplaces. As for O/M of the marketplace, deterioration of sanitary environment influences sales of commodity, especially those perishable fresh foods. It is required to grapple with food safety in the marketplaces through improvement of sanitary environment, provision of sales space for fresh foods with low temperature storage facility.

It is important to provide market condition of safety meat through provision of abattoirs from viewpoints of supply of safety meat to consumers and export promotion of them to neighboring countries. The Dili abattoir where was closed so far, is being rehabilitated to resume the operation. Sanitary environment is the major common problem for operation. In the abattoir, meat safety is supposed to inspect at before and after dissection. If inspection system is provided, it is expected to expand local meat market and increase export to neighboring country such as Indonesia.

(6) Objective

To provide sales environments that can be conducive for promotion of food sales through improvement of sanitary management in the marketplaces and meat safety assurances in the abattoirs.

(7) Implementation Period (10-years)

Y-1	Y-1	Y-3	Y-4	Y-5	Y-6	Y-7	Y-8	Y-9	Y-10

(8) Project Goals

1. Sanitary conditions are improved in three marketplaces in Dili and local marketplaces in 12 districts so that sales with food safety can be promoted.
2. Meat safety is inspected in the Tibar and local abattoirs in 5 cities.

(9) Expected Outputs

1. Sanitary environment is improved by related marketplace persons in the three marketplaces in Dili and local public marketplaces in 12 districts.
2. Sanitary environment is improved in the Tibar and local abattoirs in 5 cities.
3. Fish auction is operated and managed.
4. Meat safety inspection system is established in the abattoirs.
5. Meat safety inspectors are trained.

(10) Development Indicators and Monitoring Method

1. Sanitary environment working record in the marketplaces
2. The number of animal head dissected in each abattoir, and shipped amount of safe meat inspected.

(11) Main Activities

Action-1: Provision of sanitary management system in the public marketplace

Action-2: Provision of abattoir

(12) Necessary Expenses

Unit: US$1,000

APU	120
Related MAF	1,781
Related ministries	-
Total	1,901

(14) Fund Source MAF, MTCI

(15) Risk

Rehabilitation of marketplace and Tibar abattoirs are not progressed.

PROJECT OUTLINE (4.4)

(1) Project Number	4.4
(2) Project Name	Introduction of food safety inspection system
(3) Target Group/ Area	3 marketplaces in Dili Public marketplaces in 13 districts
(4) Implementation Organization	Implementation body: MoH Cooperation arrangement: DNPIAC Cooperation: DNPIAC Related ministries: MTCI/ MED/ MoH/ Local Administration Donor agency: WHO

(5) Background

It is important for promotion of processing/ marketing industry to control food safety along food supply route. Observing the present situations, however, it was not controlled in shipping spots of farmhouse garden and processing factory. In the marketplaces, food safety campaign such as dealing method in fresh foods and washing hand is promoted. As for practical inspection of food safety, it is regulated in marketplace in Dili that inspectors from MoH and MTCI would basically inspect products every three months and/or at the time when any food problem arise. On the other hand, in the local marketplaces, they inspect regularly selling commodities by observing and checking consumable period mentioned in the label. Although a campaign such as handling of fresh foods and suggestion of washing hand is developed in some marketplaces, scientific inspection method is not established. There are no devices and/ or equipment and no manual/ guideline, and no laboratory. When scientific inspection is required, sampling is sent to relevant Indonesian institute.

(6) Objective

To improve sales environments those are conducive for food sales promotion through introduction of food safety inspection.

(7) Implementation Period (10-years)

Y-1	Y-1	Y-3	Y-4	Y-5	Y-6	Y-7	Y-8	Y-9	Y-10

(8) Project Goal

1. Food safety is inspected in the marketplaces in 13 districts.

(9) Expected Outputs

1. Food safety standard is prepared.
2. Guideline/ manual for food inspection are prepared.
3. Food inspection organization is established in each public marketplace.
4. Equipment/ devices for food inspection are procured.
5. Food safety inspection technology of inspectors is upgraded.
6. Food safety campaign is developed in the marketplaces.

(10) Development Indicators and Monitoring Method

1. Training record for inspectors, and self evaluation report of them
2. The number of complaint information from buyers
3. Food safety inspection records in the marketplaces.

(11) Main Activities

Action-1: Review of present situation/ food safety standard/ inspection guideline and improvement plan formulation
Action-2: Training of food safety inspectors
Action-3: Procurement of equipment/ devices for food safety inspection
Action-4: Establishment of food safety inspection organization
Action-5: Campaign for food safety

(13) Necessary Expenses

Unit: US$1,000

APU	110
Related MAF	-
Related ministries	462
Total	572

(14) Fund Source MoH

(15) Risk

Lack of cooperation with the WHO. Trained inspector left his job.

PROJECT OUTLINE (5.1)

(1) Project Number	5.1
(2) Project Name	Improvement of the government's product purchasing system
(3) Target Group/ Area	Farmers/ MTCI staff in central and district level
(4) Implementation Organization	Implementation body: MTCI Cooperation arrangement: DNPP/ DNPIAC Cooperation: DNPIAC Related ministries: MED/ MoF

(5) Background

The overall objective of the government is to promote agricultural policies that lead to food self sufficiency, price stability and food security. To attain its objectives, the government attempts to: (i) give consumers low prices for staples to enhance social stability, and (ii) simultaneously provide farmers attractive prices as an incentive to boost production and incomes. The MTCI Minister's Office is responsible for this program.

Although the intent of the MTCI program is admirable, implementation is hampered. The result is that incentives are not fully effective reaching farmers. Difficulties encountered include: (i) lack of skilled human resources, (ii) inadequate quality control inspection system for purchases, (iii) lack of a comprehensive operating systems database, (iv) cumbersome procedures such as slow funds disbursements to farmers and traders, (v) insufficient spreads for traders both at the intermediate and Dili sales levels, (vi) price differentials between products and sales levels that change farmer production patterns so that they do not match the market, and (vii) MTCI milling of rice will have a negative impact on private rice millers.

(6) Objective

To improve the present products purchasing system to generate practical impacts.

(7) Implementation Period (10-years)

Y-1	Y-1	Y-3	Y-4	Y-5	Y-6	Y-7	Y-8	Y-9	Y-10

(8) Project goals

1. Farmers who utilize the purchasing system increase in number.
2. Production amount of the products targeted in the system increase.
3. Quality of purchased products improves.
4. Paddy production reaches the specified level set by government.

(9) Expected outputs

1. Operating system is established at the central and regional levels.
2. Database of producers/ storage/ marketing is prepared for purchasing products.
3. Administrators in central and district levels operating the purchasing system are trained.
4. Necessary equipment and materials are provided.
5. Target for operation period of the purchasing system are set.
6. Quality of the purchasing products is inspected.
7. Business environment with more efficient and faster release of funds to farmers and traders is improved.

(10) Development Indicators and Monitoring Method

1. Record on increased agricultural production in the targeted agricultural products (monitored by MAF)
2. Record of purchasing amount (monitored by MTCI)
3. Increased famers' income by sampling survey (monitored by MAF and Bureau of Statistics surveys)

(11) Main Activities

Action-1: Finding problems of the present system and formulation of improvement plan
Action-2: Preparation of a database of products for operating system
Action-3: Procurement of equipment/ devices for operating system
Action-4: Training for administrators
Action-5: Setting target indicators for making decision of operating period
Action-6: Introduction of quality inspection system

(12) Necessary Expenses

Unit: US$1,000

APU	100
Related MAF	-
Related ministries	1,652
Total	1,752

(14) Fund Source MTCI/ MoF

(15) Risk

Change of present government policy.

PROJECT OUTLINE (6.1)

(1) Project Number	6.1
(2) Project Name	Support for finding export commodity and sales promotion
(3) Target Group/ Area	13 districts, Agricultural producers & exporters
(4) Implementation Organization	Implementation body: DNPIAC Cooperation arrangement: DNPIAC Cooperation: DNPP/ DNAH/ DNPV/ DNADC Related ministries: MTCI/ MED/ MoH

(5) Background

Timor-Leste's major agricultural export is coffee. Coffee's contribution to exports is very significant representing over 90% by value of all non oil exports. Export of other agricultural produces is very limited. Cattle from Oecussi are also exported, primarily through informal arrangements to West Timor.

Most agriculture crops in Timor-Leste are naturally farmed. These crops are produced without the use of genetically modified seeds and chemical fertilizers, herbicides or pesticides. Timor-Leste's natural farming systems characterized as local resources adapted farming are by default organic farming. Organic food market is growing rapidly in both developed and developing nations. It is said that the world organic market has been growing by 20% a year since the early 1990s.

Because of the prevalence in Timor-Leste of naturally farmed products, the country is ideally placed to capitalize on its traditionally produced agriculture products by exporting under an organic label. This should enable the nation's produce to enter the overseas high priced, high growth organic marketplace.

Considering the above situation, it is required to provide administration system in cooperation with private sector to find exportable naturally produced products and promote its export.

(6) Objective

To find exportable Timor-Leste's naturally farmed products and promote its export by seizing the opportunities through analysis of information produced by market research in the target export countries.

(7) Implementation Period (10-years)

Y-1	Y-1	Y-3	Y-4	Y-5	Y-6	Y-7	Y-8	Y-9	Y-10

(8) Project goals

1. Exportable natural farming products are found and an exporting system for them is established.
2. Export marketing strategy for selected products in target markets is developed.

(9) Expected outputs

1. Research and analysis organization is established and conducted to find exportable products.
2. Value added technology is developed for coffee and other possible export products such as candlenuts.
3. Certification system for organic farming products is introduced.
4. Export possibility of goat is surveyed

(10) Development Indicators and Monitoring Method

1. Export record of certified naturally farmed agriculture products (by Overseas Trade Statistics reports)
2. International acceptance of Timor-Leste issued quarantine documents (surveyed by DNQB, MAF)
3. Export record of coffee, other food/ industrial crops (statistic report)
4. The number of head of goat (survey report by MAF)
5. The number of head of cattle exported

(11) Main Activities

Action-1: Finding appropriate commodities and assessing their potential for export
Action-2: Collection/ Analysis of information related to overseas market research
Action-3: Finding export market channels in target countries
Action-4: Support for research and development of value adding technology
Action-5: Introduction of natural farming product certification system

(12) Necessary Expenses

Unit: US$1,000

APU	826
Related MAF	-
Related ministries	-
Total	826

(13) Fund Source	MAF

(14) Risk

Exportable products are included in the target products of government's purchasing system. Export of products is controlled by government.

PROJECT OUTLINE (6.2)

(1) Project Number	6.2
(2) Project Name	Promotion of exporting
(3) Target Group/ Area	13 districts, Agricultural producers & exporters
(4) Implementation Organization	Implementation body: DNQB Cooperation arrangement: MoF Cooperation: DNPIAC/ DNPP Related ministries: MTCI/ MED

(5) Background

For the export of coffee, the Ministry of Finance's Customs Department requires a copy of the Exporters Trading License. As for the export of live plants and animals, MAF's National Directorate of Quarantine and Bio-security (DNQB) produces an Export Permit before providing a Customs Declaration.

DNQB is responsible for quarantine system of exporting crops and animals. DNQB has quarantine office in the three districts (the number of quarantine inspectors) of Suai (2), Bobonaro (Maliana) (2) and Oecusse (4). Besides such local offices, there is the office in Dili. However, inspection of products is conducted only by the observation of them because of no laboratory and device/ equipment. Quarantine services are unable to comply with international standard of the WHO. Live cattle are exported by traders to purchase it. The paperwork required for border trade of live animals is significant works. To date, it appears that only the Cooperativa Café Timor (CCT) has been able to hurdle the bureaucratic documentation and obtain legal export documentation.

In order to promote export in each product in each specific market, it is required to improve quarantine service and export documentation system.

(6) Objective

To provide export business conditions so that Timor-Leste's naturally farmed products can be exported, through improvement of quarantine service, simplified export documentation and support of export promotion campaigns.

(7) Implementation Period (10-years)

Y-1	Y-1	Y-3	Y-4	Y-5	Y-6	Y-7	Y-8	Y-9	Y-10

(8) Expected outputs

1. Exporting system of Timor-Leste's products is established in each exportable product.

(9) Expected outputs

1. Annual export of coffee is maintained and/or increased more than 9,000 ton.
2. Export documentation is simplified, especially for cattle sales from Oecussi and its export is increased.
3. Quarantine services are upgraded based on the international standard.
4. Export promotion campaigns in each product are materialized.

(10) Development Indicators and Monitoring Method

1. Export record of certified naturally farmed products (by Overseas Trade Statistics reports)
2. International acceptance of Timor-Leste issued quarantine documents (surveyed by DNQB, MAF)
3. The number of quarantine service for export products (surveyed by DNQB)
4. The number complaining on export documentation process (by Customs Department of MoF)

(11) Main Activities

Action-1: Recommendation on overseas export promotion campaigns
Action-2: Improvement of quarantine system
Action-3: Improvement of export documentation system

(12) Necessary Expenses

Unit: US$1,000

APU	120
Related MAF	66
Related ministries	-
Total	186

(13) Fund Source MAF/ MTCI/ MED/ MoH/ MoF

(14) Risk

Export of products is controlled by government. Quarantine inspectors are left from the job.

PROJECT OUTLINE (7.1)

(1) Project Number	7.1
(2) Project Name	Support for Establishment of product based Value Chain
(3) Target Group/ Area	Administrators, agribusiness private sectors included in farmers group/ women group/ cooperative/ processing industries/ traders
(4) Implementation Organization	Implementation body: DNPIAC Cooperation arrangement: DNPIAC Cooperation: DNPP/ DNAH/ DNPV/ DNADC, etc. (Related MAF Directorates) Related ministries: MTCI/ MED

(5) Background

For agribusiness promotion, it is required to take an integrated development approach in cross-cutting of the projects in the action plan in line with the activities from production to selling. To do so, it is necessary to support in establishing value chain system. DNPIAC is responsible for this support. DNPIAC should take approach to establish a linkage of the actors to create the value chain. Value chain system is designed for various actors participating in the economic activities from production to selling, so that they can gain profit from their each activity. Activities to establish value chain are consisted of supporting activity and main activity. Supporting activity is to support the actors so that they can participate in the value chain system, which are the coordination and arrangement activities with related agribusiness stakeholders of public and private sectors. DNPIAC should guide this supporting activity. Main activity is the economic activities which participating actors take initiative in their activities to gain profit. Approach to establishing value chain is designed based on the target product.

(6) Objective

To support in establishing value chain system from production to processing, marketing and selling until consumption through establishing linkage among agribusiness stakeholders in the flow of target product.

(7) Implementation Period (10-years)

Y-1	Y-1	Y-3	Y-4	Y-5	Y-6	Y-7	Y-8	Y-9	Y-10

(8) Expected outputs

Linkage among actors such as producers, processors and traders is established by target product. Additional value is put on the flow of the product.

(9) Expected outputs

1. Target product for value chain improvement is found, and 2. Value chain improvement process is designed.
3. Problems arisen in the value chain improvement process are found and necessary measure for solution is provided.
4. Raw materials for establishing value chain are procured stably.
5. Necessary machine/ equipment to establish the value chain are procured
6. New commodity/ products added any value are developed and marketed.

(10) Development Indicators and Monitoring Method

1. The number of commodities/ products added value through value chain improvement
2. Market amount of those commodities/ products
3. The number of actors participated in the value chain improvement process based on the products

(11) Main Activities

Action-1: Supporting activity (Total management, Human resource development, Technical improvement, Procurement of equipment and materials)

Action-2: Main activity (value adding) (Commodity development planning, Raw materials production, Processing, Marketing and sales)

(12) Necessary Expenses

Unit: US$1,000

APU	520
Related MAF	-
Related ministries	-
Total	520

(13) Fund Source MAF, Donor agency

(14) Risk

Change of government's policy related with promotion of processing/ marketing industries. Market activities are intervened by MTCI. Lack of coordination among donor agencies.

PROJECT OUTLINE (7.2)

(1) Project Number	7.2
(2) Project Name	Capacity development plan of agribusiness stakeholders
(3) Target Group/ Area	Administrators, agribusiness private sectors included in farmers group/ women group/ cooperative/ processing industries/ traders
(4) Implementation Organization	Implementation body: DNQB Cooperation arrangement: MoF Cooperation: DNPIAC/ DNPP Related ministries: MTCI/ MED

(5) Background

Farmers' groups, agricultural cooperatives and traders are very important agribusiness actors. Unfortunately, these actors are facing with constraints related to their business management, trading and marketing skills. They are lacking skills in administration, business management, accounting and marketing. As for traders, there are no systematic training programs. Consequently, they often lack even basic business skills. Lack of human resource development has lead to inactive market sales. As for administrators, except a few administrators in central, they lack basic task operation skills in promotion for agribusiness. Capacity development opportunity for them is limited only to On-the-Job training in the relevant donors' projects. To realize agribusiness promotion, it is required to provide learning opportunity for central administrators so that they can organize and operate support for set-up and operation of processing industries in cooperation with farmers groups and traders/ processing industry. For district staff, it is required to improve facilitation capacity in working process of finding framers groups/ processing industries and organizing them for agribusiness operation on their own initiatives.

(6) Objective

To strengthen the business operational capacity of agribusiness stakeholders including administrators and private sectors such as farmers groups/ processing industries/ traders so that they can operate and manage their each agribusiness on their own initiatives.

(7) Implementation Period (10-years)

Y-1	Y-1	Y-3	Y-4	Y-5	Y-6	Y-7	Y-8	Y-9	Y-10

(8) Expected outputs

1. Agribusiness private sectors can operate and manage their agribusiness properly.
2. Administrators can operate and manage their tasks for promotion of processing/ marketing industries.

(9) Expected outputs

1. 21 DNPIAC staff in central level learns operation and management skills for agribusiness promotion.
2. 28 DNPIAC staff in district level learns facilitation and communication skills for agribusiness promotion.
4. Private sectors learn business operation, personnel management, record keeping, accounting, trading business.
5. Trainers for business management for private sectors are found and trained.

(10) Development Indicators and Monitoring Method

1. Training program for central and district administrators and self-evaluation report after completion of training
2. Training program for private sectors and self-evaluation report after completion of the training
3. Overall human resources development program for agribusiness stakeholder
4. The number of participants in the value chain improvement activities.

(11) Main Activities

Action-1: Capacity building of administrators for promotion of processing/ marketing industries

Action-2: Training for strengthening of business management for private sectors

(12) Necessary Expenses

Unit: US$1,000

APU	292
Related MAF	-
Related ministries	-
Total	292

(13) Fund Source	MAF/ MTCI/ MED/ MoH/ MoF

(14) Risk

Change of MAF's policy related with promotion of processing/ marketing industries. Lack of coordination among donor agencies.

7-5 EXPECTED EFFECT OF THE ACTION PLAN IMPLEMENTATION

It is expected to bring the following effects from the Action Plan implementation under the APU.

(1) Contributes to the food security.

Program's approach is the integrated activities from production to processing, marketing and selling. Those integrated activities bring up commercial agricultural sense to farmers. It surely activates production activities.

Generated effect form the pilot project: activating production activities by growing commercial agriculture sense of rice production through taking integrated activities from production and processing to selling, and by introducing contract farming of soybean with targeting market channel, etc.

(2) Provides labor employment in local area.

Though abundant labor force, its productivity is generally low in Timor-Leste. There are no industries so that they can absorb the labor forces except agriculture sector. Agribusiness activities are effective to create employment opportunities in rural areas. Especially, it provides labor employment opportunity for young generation which has a rise in population in this country.

Generated effect from the pilot project: job creation in cultivating and selling of dry season vegetable by farmers groups, manufacturing and selling tempe by women's groups, milling corn, processing and marketing soybean, etc.

(3) Ensures income source and improve purchasing power for rural population.

Participation in value chain improvement may generate new income source to the participated actors. Increase of income is brought to increase their purchasing power. Agribusiness activities also facilitate rural women in participating economic activities and welfare life.

Generated effect from the pilot project: generating new income source for farmers/ women groups through cropping and selling dry season vegetables, breeding chicken and manufacturing/selling tempe, and participating in cooking business after cooking classes, improving purchasing power for them as the result of ensuring new income source.

(4) Brings effective land use.

There are uncultivated idle lands in the slope land in this country. Agribusiness activity makes land use in such idle lands effective, through growing commercial agricultural sense to farmers.

Generated effect from the pilot project: land use for soybean contract farming and vegetable cropping in the idle lands.

(5) Contributes to increase non-oil sector's GDP.

Through promotion of such agribusiness activities, it contributes to the increase of agricultural sector's GDP.

Contribution to the GDP is estimated in the following items by each project.

- Capacity development of agricultural cooperatives : Increase of profit by sales expansion of high quality of rice through improving post harvesting processing technology and shipping/ selling in cooperative style
- Value chain improvement of soybean : Increase of soybean production and expansion of manufacturing and selling soymilk
- Promotion of small scale business of poultry production by women's group : Expansion of breeding chicken and producing egg, and marketing them
- Diversification of corn product : Increase of manufacturing and selling corn bread utilized corn flour as substitute for wheat flour
- Support on 'Local Product, Local Consumption'- Cooking Classes - : Increase of amount of domestic products as substitute for imported products cooked by households participated in the cooking classes

Generating effect brought from the pilot project implementation as mentioned above is estimated approximately at 4.8 million US dollar, which shows that the contribution to the agriculture sector growth is equivalent to around 4% of the GDP (124.7 million US dollar in 2007).

CHAPTER 8 CONCLUSION AND RECOMMENDATION

8-1 CONCLUSION

The study team conducted the study titled "the Study on Project for Promotion of Agribusiness in Timor-Leste" based on the scope of work (S/W) concluded between the Ministry of Agriculture & Fisheries (MAF) and the Japan International Cooperation Agency (JICA) on 2nd December 2008. In the study, based on the objectives of the study, a Master Plan for the promotion of agribusiness in Timor-Leste which aims to provide administration system for promotion of agribusiness, to strengthen administrative services so as to support the agribusiness activities and to provide infrastructures including in establishment of institutional system/ standardization and construction of infrastructural facilities such as roads, in order to promote processing/ marketing of agricultural products driving by private sectors such as small farmers' organizations, entrepreneurs and agro-dealers (middlemen, market traders), was formulated.

Study results are presented in this report. The Master Plan shows a framework and development direction of agribusiness promotion in this country to achieve the objectives with seven (7) Programs and Action Plans of the 20 Projects. The implementation means that the National Directorate for Industrial Crops & Agribusiness (DNPIAC) has the initiative to execute the Master Plan, under the supervision of MAF.

In the study, five pilot projects targeted different crops were implemented to verify formulated programs and action plans. Through the pilot projects implementation, it was verified that these Programs and Action Plans are fully effective in implementation process from planning to execution, and cooperation with private sectors such as farmers groups, processors and traders. It was confirmed that the pilot projects were considered to be business model in the country. It is clarified that formulated Programs and Action Plans are effective to achieve the objectives.

As the results, it was concluded that the Programs and Action Plans presented in this study should be immediately conducted in the country.

8-2 RECOMMENDATION

(1) Provision of administrative conditions and implementation organization for materializing formulated Programs and Action Plans

1) Provision of administrative conditions

Programs and Action Plans were formulated under the joint works of the DNPIAC and other related organizations and private actors such as farmers groups/ women groups, processors and traders participated in the study. The effectiveness was verified through the pilot project implementation. It was also confirmed that implementation of the Action Plan bring the effects such as contribution to the food security in this country, employment of labor force for local people, creation of income source for local women. MAF should understand the effectiveness of proposed Programs and Action Plans which takes an integrated development approach with related stages from production, processing, marketing to selling. It is suggested that MAF should provide administrative conditions to put forward the formulated Programs and Action Plans.

2) Making arrangement for establishing an implementation organization

It is proposed to establish an Agribusiness Promotion Unit (APU) in the MAF. DNPIAC should be assigned as an implementation body for the APU. Basic responsibility of the APU is considered to be the usual task of the DNPIAC. The organization structure of the APU consists of a project manager and some

staff. Director of DNPIAC should be assigned as project manager and APU staffs who have experienced agribusiness works in this study are nominated from the present DNPIAC's departments. In parallel with setting-up of the APU, a steering committee should be organized in the MAF. Basic responsibility of the steering committee is to allocate budget to the APU, make arrangement with related Ministries and MAF Directorates. Under such consideration, it is proposed that MAF makes arrangements for establishing the implementation organization consisted of APU and a steering committee.

(2) Necessity of following up the pilot projects

Pilot projects implemented in this study are considered to be a guiding project to implement in full scale formulated Programs and Action Plans. It is required that the pilot project sites serve as demonstration sites of all activities performed so far such as activity process including supports from the administration and generating effects. Private actors participated in the pilot project are still acting, aiming to achieve the development target. But, their activities are still in the trial stage. Their activities should be continued until their activities become established as usual work for generating effects. To do so, on-going pilot project activities should be monitored and intervened by DNPIAC and related organizations as required time. It is suggested MAF mandates DNPIAC to take necessary action to monitor and intervene their activities and budgets for them.

(3) Making approaches to establishing cooperation with related ministries and institutionalizing technical and financial supports to private sectors.

1) Making approaches to establishing cooperation with related ministries

It is required for agribusiness promotion to establish close cooperation system with administration organizations in line with the value chain establishment of targeted product. Related ministries are MTCI and MED in providing public marketplace and market infrastructure, MED related to the organizing cooperatives, MoI in rehabilitating road infrastructure, MoH for establishing food safety inspection. In addition, it is obvious that on-going government products purchasing system operating under the MTCI has an influence on not only production fields but also processing/ marketing fields.

In order to ensure an effectiveness of Programs and Action Plans, it is suggested that MAF makes approaches to arranging cooperation with such related ministries to realize the cooperation system. It is also suggested that MAF takes initiatives to discuss and make arrangement for making related policies with agribusiness promotion among related ministries.

2) Institutionalizing technical and financial supports to private sectors

Agribusiness activities are regarded as an economic activity by private actors such as farmers, processors and traders. Therefore, they always have operation risks in the economic activities. The risk is to invest certain expenses in their agribusiness activities. For example, the risks assumed from the pilot projects are to procure processing machine/ equipment and operate/ manage them, and purchase packing materials. Financial operation capacity of the private actors is very weak. Credit system has not established yet in the country. Private actors can not bear heavy burden to procure necessary machine/ equipment and other materials for their business operation.

Basic responsibility of the administration is to support their activities from the administrative sides such as institutionalizing and making regulations to make their business operation smooth. It is crucial for private actors who are challenging agribusiness to reduce their financial burden when agribusiness setting-up and

operating. Considering such conditions, it is suggested that MAF in corporation with related ministries makes approaches to establishing organization system so as to support private sectors systematically in agribusiness development activities from production to selling and any financial supporting system such as subsidy system and long-term lending system for procurement of machine/ equipments and purchasing system of packaging materials.

(4) Keeping close cooperation with international aid agencies to realize programs/ action plan

Socio-economic and political situations are still unstable, although social confusion after the independent are being settled. Government institutional base is weak. MAF and related ministries are facing with low administrative capacity and budget limitation. Under such governmental conditions, it may be difficult that proposed APU by itself can provide enough financial and operational capacity to realize formulated Programs and Action Plans. Considering such constraints, it can be considered that proposed Programs and Action Plans may be materialized under financial and technical supports from international aid agencies that have full knowledge and experiences.

It is suggested MAF to keep close cooperation with international aid agencies for realizing proposed Programs and Action plans.