PART III: PROPOSED ROAD MAP

CHAPTER 6 THE ROAD MAP FOR DEVELOPMENT OF MANNAR DISTRICT

6.1 Structure of the Road Map

As explained in Section 3.2, the Road Map consists of two parts, namely the "Village-wise Development Plan" and the "Sector-wise Development Plan."

The "Village-wise Development Plan" aims to promote resettlement of IDPs and establish a self-sustaining community. It includes measures taken for (1) restoration and improvement of livelihoods and (2) ensuring access to socio-economic infrastructure as the centerpiece of the plan, and (3) strengthening of CBOs, (4) strengthening of public organizations and (5) social inclusion of socially vulnerable persons/ promotion of social unity as the supporting factors.

The "Sector-wise Development Plan" aims for development of local industry related to the livelihoods of a majority of the population in Mannar District, namely agriculture and fisheries.

Both the "Village-wise Development Plan" and the "Sector-wise Development Plan" are formulated based on the clusters shown in Figure 6.1. The clusters were decided based on the main livelihoods of the area, namely (1) paddy cultivation, (2) OFC cultivation and other agricultural activities and (3) marine capture fisheries. Hereafter, "Cluster I", "Cluster II" and "Cluster III" refer to the paddy cultivation area, the OFC cultivation and other agriculture areas, and the marine capture fisheries area, respectively[50].

[50] Target villages for implementation of the Pilot Projects were classified into four (4) clusters, whereas Mannar District is classified into three (3) clusters for formulation of the Road Map.

Figure 6.1 Map of Clusters

6.2 Proposed Road Map: Village-wise Development Plan

The following figure, which is extracted from "Figure 3.2 Framework of the Road Map," illustrates the concept of the Village-wise Development Plan. The Village-wise Development Plan is proposed basically cluster-wise as shown.

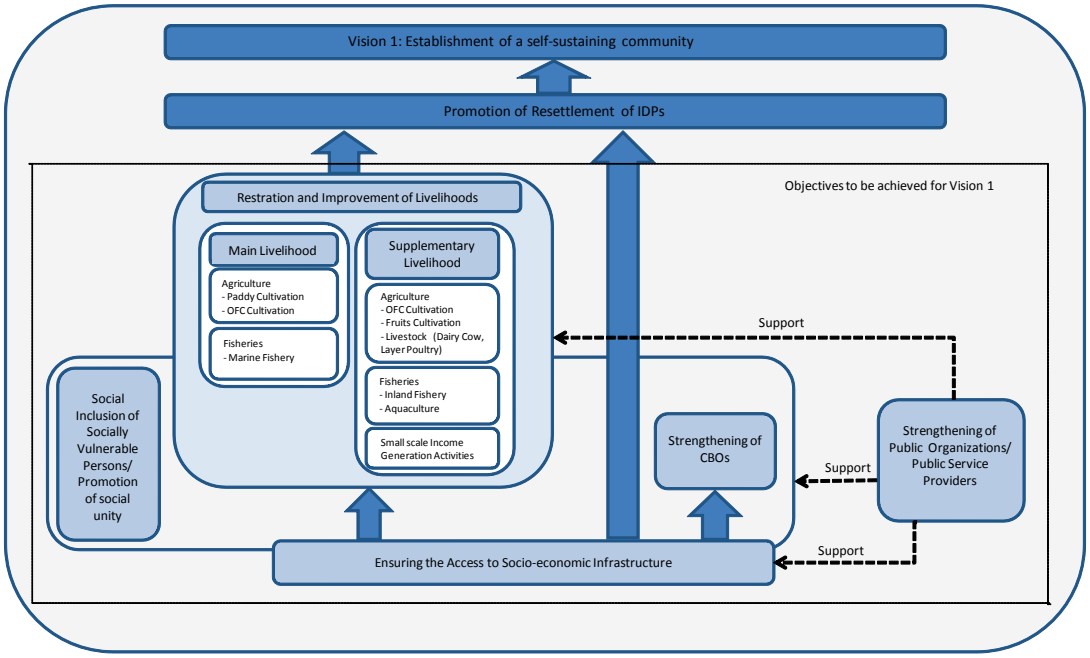


Figure 6.2 Concept of Village-wise Development Plan[51]

As discussed in Section 3.2.5, the goal of the Village-wise Development Plan is as follows: "the lives of the IDPs are reconstructed based on their needs, and socio-economic activities are implemented on the initiative of the IDPs in a self-sufficient manner." In the following sections, the potentials and disincentives to promoting village-wise development in each cluster are analyzed and the development themes and necessary measures to fulfill the goal (plans) are proposed.

[51] Labor work is not included as a livelihood in Figure 6.2.

6.2.1 Restoration and Improvement of Main Livelihoods

In actuality, villagers engage in one major livelihood in combination with several supplementary livelihoods whether they are farmers or fishers. In this section, potentials and disincentives in relation to main livelihoods in each cluster are analyzed and the necessary measures are proposed[52].

(1) Cluster I: Paddy Cultivation Area

Agriculture is the most important industry in Mannar District since 70% of the population engage in agriculture activities[53]. Paddy cultivation has been widely prevailing in the District as more than 60% of the population are cultivating paddy and the paddy yield in Mannar District was one of the best in the country before the conflict. However, the yield of paddy production decreased due to the prolonged conflict. The following table shows the overall picture of paddy in Mannar District in some years in the last 30 years:

Table 6.1 Paddy Agriculture in Mannar District

No.	Description	Unit	1983	2001	2006	2009
1	Harvested Area	ha	14,970	4,832	12,029	6,555
2	Paddy Production	ton	65,000	13,000	36,800	31,349
3	Rice Production*1	ton	40,300	8,060	22,816	19,436
4	Unit Yield (Mannar District)	kg/ha	4,342	2,690	3,059	4,782
5	Unit Yield (Sri Lanka)	kg/ha	2,982	3,953	4,137	4,336
6	Rice per capita Consumption*2	kg/ha	94	83	94	102
7	Consumption in Mannar District	ton	10,396	8,131	9,745	9,584
8	Surplus	ton	29,904	-71	13,071	9,852

Note: *1 Ratio of paddy production to rice production is 62% including seed, waste and other losses.
*2 National Data
Source: The Project Team prepared based on data from Department of Census and Statistics, Central Bank Publications and District Hand Books

Paddy production in Mannar District was highest in 1983, before the conflicts, with a much higher unit yield than the Sri Lankan average, and the surplus production was also high. On the other hand, during the conflict period the cultivation area and unit yield in Mannar

[52] There are many supplementary means of livelihood in villages and some have been implemented under the Project. However, economic returns of only limited activities are studied in this Chapter, taking the importance and potentials into account.
[53] The study of the Road Map in agricultural sectors is based on the data (production, yield, labor requirement, prices of inputs, products, etc.) mainly published on the web sites of the Department of Agriculture, Department of Census and Statistics, the Central Bank, FAO Statistical Database (FAOSTAT), and so on.

District was depressed. In 2009, although the extent of the harvested area was not fully recovered, the unit yield was substantially recovered and exceeded the national average.

The paddy area in Mannar District is irrigated by the major tanks, namely the Giant's Tank and Akatimurippu Tank. The command area of the Giant's Tank extends on the right bank of the Maluwatu Oya (Aruvi Aru) under Nanaddan and Mannar Town DS Divisions and Manthai West AGA Division, while the command area of Akatimurippu Tank extends on the left bank of the Maluwatu Oya under the Musali DS Division. The paddy area on the right bank of the Maluwatu Oya is traditionally famous for paddy and is called the "Rice Bowl area".

In Cluster I, people's main agriculture activity is paddy cultivation supplemented by OFC and livestock. On the other hand, the results of the Endline Survey of the Project show that there are many households obtaining income from labor work and others[54]. The labor opportunity is not assured for the future as most of the present labor works are for the reconstruction and development activities. Accordingly, it is necessary to encourage farmers to carry out more profitable agriculture activities, mainly of paddy agriculture.

(a) Potentials

Taking the past performance and the present situation of paddy cultivation in Mannar District into consideration, there are many advantages and potentials for development of paddy cultivation as discussed below:

- **Yield was higher than that of the national average.**

  The paddy cultivation in Mannar District, especially in the Rice bowl area under the Giant's Tank, was quite advanced compared to other areas in the country before the conflict, which started in 1983, as shown in Table 6.1 above.

  If the infrastructure, especially irrigation facilities and public services for supporting activities, is fully rehabilitated and new technology is disseminated, it is anticipated that the paddy yield will be drastically increased and annual production of paddy in Mannar District will increase as the unit yield of paddy production, which was depressed during conflict period, is now in the recovery process and the unit yield in Mannar District in 2009 already exceeded the national average as indicated in Table 6.1.

- **Water is available if irrigation systems are rehabilitated and developed.**

  Major paddy fields in Mannar District had been irrigated during Maha season by the Giant's Tank and other tanks. Due to conflicts, those facilities were not properly

[54] Refer to Section 5.3.5 for detail.

maintained and thus deteriorated. However, the rehabilitation works have been carried out by the Pro-poor Economic Advancement and Community Enhancement Project (PEACE) under JICA, the Re-awakening Project under the World Bank and so on especially after the conflict was over in May 2009. Further, there is much potential to rehabilitate and augment irrigation facilities in the District as follows:

a. Development of Maluwatu Oya would augment Giant's Tank and Akatimurippu Tank, which could increase the cultivation area in Yala season
b. Development of Parangi Aru would augment Kurai Tank and its subsidiary minor tanks, which would increase the cultivation area of paddy for both Maha and Yala season
c. Rehabilitation and development of Pali Aru Scheme
d. Improvement of other minor schemes

It shall be noted that the efficiency of water use could be increased through rehabilitation and development of the irrigation facilities and appropriate water management and proper maintenance that make it possible to increase the irrigation area especially during the Yala season for OFC cultivation, and the maximum profits of the existing irrigation facilities could be materialized.

・**Farmers have enough knowledge and techniques to absorb new technologies.**

As discussed in the preceding section, paddy production in Mannar District had experienced high yields before the conflicts started. In addition, seed paddy produced in Mannar District was broadly distributed to other Northern Districts before the conflicts. Further, after the ceasefire was agreed upon in February 2002, despite the fact that there was little public assistance in agriculture, including paddy cultivation, the unit yield did increase to a certain level. These facts prove that the farmers in Mannar District have been maintaining good knowledge and the potential to absorb new technology. Accordingly, when the various supporting systems for farmers are rehabilitated and functioning, farmers can absorb new technologies and increase the unit yield of paddy.

The FO's function for disseminating technology and skills is also important.

・**Demand for rice will increase with population increase in the District.**

According to our projection, the population of Mannar District will be 177,231 in 2020. Demand for rice is expected to increase with the population increase in the District.

(b) Disincentives

There are a number of shortcomings and disincentives to adversely affect development of paddy cultivation as follows:

- **Demining has been completed, but mines and UXOs are still found.**

  Demining based on the international demining standard in the District has been completed. However, mines are still sometimes found in parts of the District. Accordingly, paddy fields in the remote areas shall be carefully cultivated to avoid UXO accidents.

- **Production is poor due to inadequate infrastructure such as irrigation/ drainage systems.**

  Contrary to the description of the potentials in the preceding section, the rehabilitation of some of the irrigation facilities has been delayed, and the drainage facilities in some of the irrigation schemes are poor and not functioning well, causing low productivity. Improvement of irrigation is focused broadly but in the past not much attention has been paid to drainage. Drainage issues shall also be attended.

- **Productivity is low due to poor machinery services.**

  It is widely prevailing to utilize tractors for the tillage and harvesters for harvesting, but machine hiring services in the public and private sectors are not fully recovered or developed. It was reported that this caused low productivity of paddy cultivation. It is required to recover such services for tillage as soon as possible. On the other hand, the Study Team is of the opinion that the introduction of harvesters should be carefully considered because while the harvester operation would be very advantageous for the farmers cultivating wide areas, it may not necessarily be advantageous for smallholders as the fee of deploying the harvester is not cheap and it causes loss of opportunity of family labor.

  Rehabilitation of Agrarian Development Centers (ADC) is an urgent necessity in the District for various supporting services for farmers including machine hiring.

- **Farmers have limited access to loans/ credit due to inadequate bank outlets.**

  The farmers in the District, especially in the areas where almost all residents were displaced at the final stage of the conflicts, have very limited facilities of public credits. This means that small farmers have to get credit from private moneylenders and pay high interest rates. It is essential to provide facilities such as branches of banks and mobile banking services to arrange loans and credit in addition to deposits to bank accounts, and to disseminate the system to the farmers, as the Government is providing cultivation loans through the public and private banks.

  It may also be worthwhile to arrange group loans from the banks by organizing four (4) or five (5) farmers together, which makes it easier for small farmers to access the public loans. Microfinance activities introduced under the Project as one of the Pilot Projects

of Community-based Activities may contribute to this purpose.

- **Post-harvest facilities are poor in villages.**

  Post-harvest facilities such as paddy stores and rice mills were damaged due to the conflicts. The rehabilitation and development of such facilities have been carried out intensively. However, small rice mills that would function as essential facilities for farmers' daily needs are yet to be developed. Due to the lack of small rice mills in villages, farmers have to sell paddy as soon as the harvest takes place and procure rice later for their consumption, which leads to a poorer household economy. Establishment of small rice mills to be operated by an FO or individuals in villages with the provision of a credit facility would improve the livelihoods of people.

- **The capacity of the public sector to provide trainings and extension services is inadequate.**

  Since the conflict took place, posts of officers and field workers of relevant Departments have not been filled, as shown in Table 6.2.

Table 6.2 Post and Vacancy of DOA and DAD Staff (as of December 2011)

Department	Positions	No. of Position	Allocated	Vacant
Department of Agriculture (DOA) (Extension), Mannar	Agriculture Instructor	20	8	12
Department of Agrarian Development (DAD), Mannar	Agrarian Development Officer	13	3	10
	Management Assistant	12	6	6
	Technical Officer	3	1	2
	Committee Clerk	12	5	7
	Office Employee	3	1	2

Source: Hearing from the department offices, Mannar

In addition to the above, Agrarian Services Centers (ASC) serve as important facilities for public services on agriculture. In Mannar District, 12 centers were functioning before the conflict. Although many centers damaged during the conflict have been restored to a certain level, the staff and facilities of the centers have not been fully recovered.

Similarly, the District Agriculture Training Center (DATC) began functioning after the conflicts ceased and various trainings have been implemented. However, there is no accommodation in the center; it is not possible to conduct the in-house training for a few days that can drastically improve farmers' skills.

Such facilities shall be urgently rehabilitated and provided so that capacity building of farmers can be achieved.

- **Farmers Organizations (FO) are not fully functioning on O&M and other related activities.**

  The activities of the FOs are very important, especially in paddy cultivation as water management and maintenance of irrigation facilities have to be conducted with the farmers' participation, making cooperation among farmers inevitable. In addition, procurement of inputs and marketing of products would be more efficient if the farmers' cooperation were functioning well. The activities of the FO have deteriorated due to the conflicts and at present they are in a recovery process. Accordingly, it is worthwhile to provide farmers with various trainings such as O&M of irrigation facilities, bookkeeping, procurement and marketing activities. The Project provided those trainings, but they are limited and required to cover more FOs in broad areas in the District.

(c) Village-wise Development Plan for Cluster I: Paddy Cultivation Area

Taking the above-mentioned potentials and disincentives in Cluster I into account, the following development themes and the development plans for the short-term and mid-term are proposed.

Table 6.3 Village-wise Development Plan for Cluster I: Paddy Cultivation Area

Objectives to be achieved for Vision 1	Development Potentials and Disincentives	Development Theme	Development Plan for the short-term (2011-15)	Development Plan for the mid-term (2016-20)
(1) Restoration and Improvement of Livelihoods				
1. Main Livelihood: Paddy Cultivation	▸Potentials: ・Higher yield than the national average ・Water is available if irrigation systems are rehabilitated. ・Farmers have enough knowledge and techniques to absorb new technologies. ・Demand for rice will increase with population increase in the District. ▸Disincentives: ・Demining has not been completed. ・Poor production due to inadequate infrastructure such as irrigation/ drainage systems ・Low productivity due to	Clearance of land mines & UXOs/ Safe use of paddy land/ Increase in cultivable land	・Complete demining work	
		Rehabilitation and improvement of irrigation systems including on farm systems	・Rehabilitate irrigation systems	・Control floods and increase irrigable areas
		Mechanization for increase in productivity	・Strengthen machinery hiring services by public institution	・Establish machinery hiring services by private sector/ farmers' groups
		Rehabilitation and improvement of inputs supply	・Rehabilitate inputs (seeds, fertilizer, chemicals, etc.) distribution systems of MPCS ・Restore backup services of DAD Agrarian Service Centers (ASC)	・Strengthen MPCS activities ・Enhance backup services of DAD ASC
		Improvement of production skills	・Strengthen District Agriculture Training Center (DATC) ・Conduct necessary trainings to update farmers' skills	・Construct a new facility for residential trainings

Objectives to be achieved for Vision 1	Development Potentials and Disincentives	Development Theme	Development Plan for the short-term (2011-15)	Development Plan for the mid-term (2016-20)
	poor machinery services ・Farmers have limited access to loans/ credit due to inadequate bank outlets. ・Weak capacity of public sector to provide trainings and extension services. ・FOs are not fully engaged in O&M and other related activities.	Improvement of farmers' access to loan/ credit facilities	・Reorganize the system of cultivation loan/ credit ・Establish mobile bank services in remote areas	・Establish bank branches in each DS/ AGA Division
		Establishment of post-harvest facilities in villages	・Rehabilitate small-scale rice mills in community ・Rehabilitate grinding mills	・Establish new small-scale rice mills ・Establish activities utilizing by-products
		Strengthening of public service providers	・Rehabilitate facilities of DOA and DAD ・Provide equipment and tools for extension activity ・Provide trainings in technical as well as management to front line officers	
		Strengthening of FOs	・Conduct institutional training programs ・Provide technical guidance on O & M of irrigation facilities	・Strengthen FO-managed activities
2. Supplementary Livelihoods:				
・OFC Cultivation	Refer to "Village-wise Development Plan of Cluster II: OFC/ Fruit Cultivation and Other Agriculture Area" on pp.6-16 to 6-23.			
・Fruit Cultivation	Refer to "Fruit Cultivation" on pp. 6-32 to 6-35.			
・Livestock (Dairy Cattle & Layer Poultry)	Refer to "Livestock (Dairy Cow & Layer Poultry)" on pp. 6-36 to 6-39.			
・Inland Fisheries	Refer to "Inland Capture & Culture-Based Fisheries" on pp. 6-40 to 6-44.			
・Small-scale Income Generation Activities	Refer to "Small-scale Income Generation Activities" on pp. 6-48 to 6-50.			

Objectives to be achieved for Vision 1	Development Potentials and Disincentives	Development Theme	Development Plan for the short-term (2011-15)	Development Plan for the mid-term (2016-20)
(2) Ensuring the Access to Infrastructure for Improvement of Living Standards and Activation of Activities in Community (Common to all clusters)				
1. Housing	Refer to “Housing” on p.6-51.			
2. Water Supply	Refer to “Water Supply” on pp. 6-51 to 6-60.			
3. Other Basic Infrastructure	Refer to “Other Basic Infrastructure” on p.6-61.			
(3) Promotion of Social Inclusion/ Social Unity (Common to all clusters)				
1. Strengthening of CBOs	Refer to “Strengthening of CBOs” on p.6-61.			
2. Promotion of Social Inclusion	Refer to “Promotion of Social Inclusion” on pp. 6-61 to 6-62.			

(d) Household Economy Proposed by the Project

With the various activities proposed in Table 6.3, the household economy shall be improved. Taking past performance and projection of the Department of Agriculture (DOA), and the above-mentioned development activities into account, paddy unit yield shall be gradually increased until it has reached 7.0 ton/ ha while the Development Priorities of Sri Lanka targets 6.5 ton/ ha in the year 2020.

The average extent of a paddy field owned by a farmer in Mannar District is approximately 1.0 ha. The farm economy of the paddy mono-crop is studied on a 1 ha-basis and the summary is shown in the following table.

Table 6.4 Summary of Paddy Cultivation Economy for 1 ha

Unit: Rs.

No.	Description	Cost	Amount
1	Gross Income (Unit Price: Rs.26/kg)		196,000
2	Cost	98,578	
a	Material Cost	(38,228)	
b	Hired Labor (Male: 15 days, Female: 50 days)	(12,100)	
c	Hired Machinery	(48,250)	
3	Family Labor (Male: 40 days, Female: 15 days)	39,000	
4	Net Income including value of family labor		**58,422**
5	Net Income excluding value of family labor		**97,422**

Source: Prepared by The Study Team based on the information from DOA (Mannar) and Department of Census & Statistics

The net income from the irrigated paddy mono-crop per family is Rs.97,422/ year as shown in Table 6.4, and most of the farmers are cultivating only in Maha season as irrigation water is firmly available, and very limited paddy cultivation is practiced during Yala season. If this income is the only the income for a family of four (4) members for a year, the per capita income is Rs.2,030 per month, which is below the poverty line of per capita income, Rs.3,269 per month, defined in the poverty guideline of the Sri Lanka Government[55]. Details of the study are given in **Annex 9.**

Taking the above situation into consideration, farmers require other income sources[56]. The Project Team proposes multiple farming to obtain supplementary income through other agricultural activities, as the family labor would be available for other activities.

[55] In accordance with the Department of Census and Statistics, Sri Lanka, the poverty line in Sri Lanka is set at Rs.3,269 per month per person in year 2009/10.
[56] The results of the Endline Survey reported in Section 5.3.5 showed that substantial supplementary income from agriculture and non-agriculture activities exists.

The following are the proposed supplementary agricultural activities.

a. Cultivation of pulse in 1.0 acre of paddy field after paddy is harvested
b. Milk production with the rearing of 3 milk cows
c. Rearing of layer poultry with 10-20 chicks
d. Home garden activities

It is noted that dairy farming provides materials for production of compost, which may cut the farmers' expenses for fertilizer.

Income from each supplementary agricultural activity is assessed as follows.

Table 6.5 Model Farm Economy of Paddy Farmers

Description	Net Income			Remarks
	Amount (Rs)	Unit	Rs. Per Month	
Pulse (Cowpea)	35,950	/crop/year	2,996	1.0 acr, Annex 10 Table 1
Dairy Cattle	453,200	5 years	7,553	3 cows, Annex 10 Table 2
Poultry	34,905	19 months	1,837	20 nos. chicks, Annex 10 Table 3
Home Garden				500 m^2
Banana	11,723	12 month	977	100 m^2=17 plants, Annex 10 Table 4
Mango	12,592	12 month	1,049	200 m^2=3 plants, Annex 10 Table 5
Chilli	14,406	/crop/year	951	100m^2= 74 plants, Annex 10 Table 6
Eggplant	5,252	/crop/year	438	50 m^2= 50 plants, Annex 10 Table 7
Red onion	4,522	/crop/year	377	50 m^2=7,500 plants, Annex 10 Table 8
Total			16,178	
Paddy	97,422	/crop/year	8,119	
Grand Total			24,297	

The breakdown of each of the income and production costs for the above activities is presented in **Annex 10**.

The total net income of a farm family would become Rs.24,297 per month, which is 300% higher than the net income through paddy cultivation only, and Rs.6,074 per month per person if the family consists of four (4) members. The net income of the family exceeds the poverty line defined by the Government of Sri Lanka, and the net monthly income of the family exceeds the median income of the rural sector, Rs.21,996 in 2010, in Sri Lanka[57]. Accordingly, the introduction of multiple farming improves the household income

[57] Data in Household Income and Expenditure Survey – 2006/07, Department Census and Statistics was inflated based on the data of the Central Bank of Sri Lanka.

substantially, and thus the livelihoods of farmers.

In addition to the above-mentioned supplementary agricultural activities, Inland Capture & Culture-Base Fishery and Small-scale Income Generation activities are potential sources of supplementary income. The details of these activities are discussed in the following section "2. Supplementary Livelihood" (refer to "(2) Cluster II: OFC and Other Agriculture Area" for home garden activities, which is common to main and supplementary livelihoods).

(e) Required Family Labor for Proposed Agriculture Activities

Agriculture activities require a lot of labor, either from family or hired labor in general. However, recent paddy cultivation activities are labor-saving because of the broadcast method of sowing in lieu of manual transplanting, application of weedicide in lieu of manual weeding, utilization of harvesters in lieu of manual harvesting, and so on.

If one male and one female are considered to be the family labor for one family, about 250 days each could be considered for working days in a year. Table 6.6 shows working days of family labor on the model agriculture household economy discussed in the preceding section.

Table 6.6 Working Days of Family Labor for the Agriculture Activities

No.	Activities	Duration	Labor Requirement	MD/ Year*	Remarks
1	Paddy Cultivation	5.0 months	Male	35	Table 6.4
			Female	22	
2	Pulse Cultivation	2.5 months	Male	10	Annex 10 Table 1
			Female	12	
3	Cow Raising	60 months	Male	28	Annex 10 Table 2
			Female	23	
4	Poultry	19 months	Male	4	Annex 10 Table 3
			Female	41	
	Total	12 months	Male	77	
			Female	98	

Source: Study of the Project Team
Note: * MD means labor of one person of male or female for one full day.

The required working days for the above four (4) agriculture activities are 77 days for male and 98 days for female, which is considered to be easily achievable. Labor for home gardening is nominal, thus it is not counted.

(2) Cluster II: OFC Cultivation and Other Agriculture Areas

In the areas in Mannar District where paddy cultivation is not prevailing, people depend upon non-paddy agriculture such as OFC / Fruit cultivation and livestock in addition to construction labor works as their income sources. OFC cultivation in Mannar District, however, is not popular: the extent is still small, taking the total arable land into account, the per capita production in the District is far below the per capita production at the national level except for ground nuts as shown in Table 6.7. As Table 6.7 shows, per capita production of OFC in Mannar District is much less than the requirement assuming consumption of OFC in Mannar District is the same as the national average. Therefore the supply of OFC is not adequate to cater to the demand of the District.

Table 6.7 Production and Demand of OFC in Mannar District and Sri Lanka in 2009

No.	Crop	Mannar District				Sri Lanka		
		Area (ha)	Production (ton)	Ratio*4 (%)	Production (kg/capita)	Production (ton)	Import (ton)	Per Capita Consumption (kg/capita)
1	Dry Chili*1	122	146.4	0.3	1.6	46,414	36,000	4.0
2	Onion*2	21	312.5	0.2	3.3	127,941	159,000	14.0
3	Pulses*3	139	139.0	0.5	1.5	29,814	44.360	3.6
4	Ground Nut	53	188.3	1.4	2.0	13,077	-	0.6
5	Maize	45	134.2	0.1	1.4	129,769	-	6.3
	Total	380	920.4	0.3	9.8	347,015	239,360	28.6

Note: *1. Difference between weight of fresh chili and dry chili is assumed to be 8 times
*2 Both big onion and red onion; no production of big onion is reported in Mannar in 2009
*3 Pulses are Green Gram, Peas, Black Gram, so on
*4 Ratio of Production in Mannar to National Production in Sri Lanka
Source: Arranged by the Study Team based on the data in Economic and Social Statistics of Sri Lanka, Central, Bank, Statistical Hand Book Mannar District, 2010 & 2011 and FAOSTAT.

On the other hand, vegetable production per capita in the District is higher than the national per capita production for all vegetable items as shown in Table 6.8. As Table 6.8 also shows, per capita production of vegetables in Mannar District exceed the requirement assuming consumption of vegetables in Mannar District is the same as the national average. Therefore the supply of vegetables is adequate to cater to the demand of the District. However, as an agricultural district, the extent of the cultivation areas of OFC and vegetables are still small, taking the amount of arable land into consideration. The production of OFC and vegetables in the District shall be enhanced.

Table 6.8 Production and Demand of Vegetables in Mannar District and Sri Lanka in 2009

No	Crop	Mannar District				Sri Lanka	
		Cultivation Area (ha)	Production (ton)	Ratio*1 (%)	Production (kg/capita/ year)	Production (ton)	Consumption (kg/capita/ year)
1	Brinjal	46.5	936	0.9	10.0	106,381	5.2
2	Okra	45.5	910	1.6	9.7	56,549	2.8
3	Tomato	32.5	488	0.7	5.2	73,917	3.6
4	Capsicum	21.5	127	0.9	1.4	14,406	0.7
5	Hawarima	33.0	297	-		-	
6	Bitter Gourd	35.8	715	1.8	7.6	39,692	1.9
7	Snake Gourd	23.8	475	1.4	5.1	33,421	1.6
8	Manioc	41.5	830	-		-	
9	Sweet Potato	13.0	208	-		-	
10	Ash Plantain	32.3	555	0.7	5.9	77,633	3.7
11	Pumpkin	12.8	548	5.7	5.8	9,582	0.5
12	Leafy Vegetable	43.8	438	-		-	
	Total	382.0	6,527				

Note: *1 Ratio of Production in Mannar to National Production in Sri Lanka

Source: Statistical Hand Book 2010 Mannar District, Pocket Book of Agriculture Statistics, 2010, Department of Agriculture.

According to the Endline Survey of the Project, the range of household income is very wide, which may pertain to knowledge, aspirations, efforts, land conditions and so on of the farmers and lands. There are many people who were landless before obtaining the land allocation in the area after the ceasefire agreement in 2002 and have a limited knowledge of cultivation. It shall be noted that there are farmers who are cultivating paddy where suitable soil and water are available. Livestock including dairy production and poultry also has a high potential as the Government also strongly focuses on livestock in view of import substitution.

(a) Potentials:

The potentials of OFC agriculture activities in Cluster II are as follows.

- **Suitable land for OFC cultivation at the home garden and backyard is available.**

  Most of the families living in Cluster II are cultivating OFC only during Maha season if irrigation facilities are not available, or twice or three times if they are available. Soils of substantial parts of the farm land available in Cluster II are appropriate for OFC and fruits and most of the OFC and fruit trees could be grown.

- **OFC and fruit cultivation fit in well with the Government policy.**

As Table 6.9 below shows, imports of OFCs, especially chili, onion and milk products, are substantial. Accordingly, production of those items has high potential in Mannar District in view of import substitution.

Table 6.9 Imports of Major Food Items in Sri Lanka in 2009

No.	Description	Unit	Sugar*1	Onion	Dry Chili	Milk Products*2	Dry Fish
1	Production	1000 ton	50	128	46	16	38
2	Imports	1000 ton	441	159	36	63	49
3	Available Supply	1000 ton	491	287	82	79	87
4	Import Ratio	%	90	55	44	80	56
5	Import Value*3	Rs. m	22,707	5,526	4,698	17,272	7,869
6	Potential in Mannar			◎	◎	◎	◎

Note: *1 Conversion rate of sugar cane to sugar in production is 5.4% based on the data in 2005.
*2 Conversion rate of fresh milk to milk products is assumed at 10%.
*3 Conversion rate of US$ to Sri Lanka Rs is assumed at US$1.0=Rs.110

Source: Prepared by the Study Team based on the data of FAO, Central Bank of Sri Lanka and Department of Census and Statistics

- **Potential market is available, even markets in Mannar District.**

Markets of OFC products are available in Mannar District and other areas. There are several farmers who have produced a substantial quantity of chili in the last Maha and obtained a large gross income. They sold the products at Mannar, Malawi, even to Dambulla, a leading wholesale market for OFC and fruits in Sri Lanka. Accordingly markets for the OFC products are readily available. If the farmers can become well organized for marketing activities, establishing a leading production area for specific items and negotiating with buyers, they will have the bargaining power to command a better price.

(b) Disincentives:

The disincentives of OFC agriculture in Mannar District to overcome are discussed below.

- **Seed and other input materials are not well distributed.**

Quality seeds and input materials are not fully available in Mannar District and surrounding areas. Thus farmers face difficulty in obtaining quality seeds of OFC. Farmer organizations (FOs) and their federations shall have a leading function to attend to this issue in addition to inputs from public services.

- **Production is poor due to lack of farmers' knowhow.**

Farmers' knowhow for OFC cultivation is generally poor except for a few, which causes low productivity of OFC cultivation. Such conditions shall be improved through

trainings and practice. Dissemination of new technology is required. The Government Departments and FOs shall play important roles in this issue.

- **FOs' activities are weak.**

  FOs' activities are weak in various aspects such as group procurement of inputs and marketing of product, and dissemination of the cultivation knowhow. This issue may require various trainings on management, bookkeeping, cultivation skills, etc.

- **No productive measures are taken to avoid damage from animals.**

  Farmers are used to complaints that OFC cultivation is not favorable due to frequent damage by cattle and wild animals, as OFC areas are usually located adjacent to the forest. Protective measures such as barbed wire fence and /or live fencing shall be adopted to minimize animal damage. Taking the cost involved into account, it may be appropriate to introduce live fencing, which may also be utilized as feed for livestock.

(c) Village-wise Development Plan for Cluster II: OFC and Other Agriculture Areas

Taking into account the above-mentioned potentials and disincentives in Cluster II, the following development themes and the development plans for the short-term and mid-term are proposed.

Table 6.10 Village-wise Development Plan for Cluster II: OFC Cultivation and Other Agriculture Areas

Objectives to be achieved for Vision 1	Development Potentials and Disincentives	Development Theme	Development Plan for the short-term (2011-15)	Development Plan for the mid-term (2016-20)
(1) Restoration and Improvement of Livelihoods				
1. Main Livelihood: OFC/ Fruit Cultivation (Cultivation at home garden) * Applicable for "Supplementary Livelihoods" in Cluster I & III	▸Potentials: ・Suitable land for OFC cultivation including home garden and backyard is available. ・Potential market is available even in Mannar District. ▸Disincentives: ・Seeds and other input materials are not well distributed. ・Poor production due to lack of farmers' knowhow ・No protective measures are taken to avoid damage from animal grazing.	Dissemination of advantage of OFC cultivation	・Conduct awareness seminars and basic trainings in OFC cultivation	
		Stable supply of seeds and seedlings	・Establish nursery farms ・Rehabilitate DAD ASCs to supply quality seeds	・Encourage nursery farms to produce seedlings and saplings ・Encourage private seed suppliers
		Organization of farmers' groups and FOs for production and marketing based on the market demand	・Study market demand ・Organize "group production and marketing" activities ・Produce products by farmers' groups and FOs based on the market demand	・Strengthen "group production and marketing" activities
		Improvement of farmers' skills on OFC cultivation	・Conduct training for farmers by DOA and DAD ・Conduct an awareness program in protection from damage from animal grazing ・Introduce multiple farming with livestock raising	・Strengthen training in OFC cultivation for farmers by DOA and DAD ・Strengthen multiple farming with livestock raising
		Strengthening of public services providers	・Rehabilitate facilities of DOA and DAD ・Provide equipment and tools for extension activity	

			・Provide trainings to front line officers
2. Supplementary Livelihoods:			
・Livestock (Dairy Cattle & Layer Poultry)	Refer to “Livestock (Dairy Cow & Layer Poultry)” on pp. 6-36 to 6-39.		
・Small-scale Income Generation Activities	Refer to “Small-scale Income Generation Activities” on pp. 6-48 to 6-50.		
(2) Ensuring the Access to Infrastructure for Improvement of Living Standards and Activation of Activities in Community (Common to all clusters)			
1. Housing	Refer to “Housing” on p.6-51.		
2. Water Supply	Refer to “Water Supply” on pp. 6-51 to 6-60.		
3. Other Basic Infrastructure	Refer to “Other Basic Infrastructure” on p.6-61.		
(3) Promotion of Social Inclusion/ Social Unity (Common to all clusters)			
1. Strengthening of CBOs	Refer to “Strengthening of CBOs” on p.6-61.		
2. Promotion of Social Inclusion	Refer to “Promotion of Social Inclusion” on pp. 6-61 to 6-62.		

(d) Household Economy Proposed by the Project

In Cluster II, the many variations of cropping patterns are considered for improvement of the household economy. The Team considers that in the Village-wise Development Plan of Cluster II a model household shall carry out OFC cultivation in one (1) acre of land for chilli and onion for import substitution and eggplant, which is one of the popular vegetables, with supplementary agriculture activities consisting of (i) milk production and (ii) rearing of layer poultry.

It is assumed that the following agriculture activities in rain-fed conditions shall be carried out by a model farmer using a readily available market for the products and the assumption of land availability by the model farmer being 0.4 ha:

a. 0.2 ha of chilli cultivation
b. 0.1 ha of red onion cultivation
c. 0.1 ha of eggplant cultivation
d. milk production with rearing three (3) cows
e. rearing of layer poultry with 20 chicks

The model farmer's income from OFC cultivation and supplementary agriculture activities in Cluster II is assessed as follows:

Table 6.11 Model Farm Economy of Non-Paddy Farmers

Description	Net Income			Remarks
	Amount (Rs)	Unit	Rs. Per Month	
Chilli (0.2 ha)	51,320	/crop/year	4,277	Annex 10 Table 9
Red Onion (0.1 ha)	104,048	/crop/year	8,671	Annex 10 Table 10
Eggplant (0.1 ha)	42,720	/crop/year	3,560	Annex 10 Table 11
Sub-total	260,088		16,508	
Dairy Cattle	453,200	5 years	7,553	Annex 10 Table 2
Poultry (20 nos.)	34,905	19 months	1,837	Annex 10 Table 3
Total	-		25,898	

Note: The above cultivation is under the rain-fed conditions. If irrigation is provided the income will be greater.

The breakdown of each of the income and production costs for the above activities is presented in **Annex 10**.

The net income from the OFC cultivation per family is Rs.16,508 per month, and it is assumed that farmers are cultivating only in Maha season as irrigation water in other seasons is not firmly available, and very limited cultivation is practiced during Yala season. If this income is the only the income for a family of four (4) members for a year, the per capita

income is Rs.4,127 per month, which is higher than the poverty line, per capita income of Rs.3269 per month, defined in the poverty guideline of the Sri Lanka Government, but lower than the monthly median family income of the rural sector, Rs.21,996, as discussed in the preceding section.

The total net income of a farm family including supplementary livestock activities would become Rs.25,898 per month per family, which is 57% higher than the income from OFC cultivation only. Accordingly, OFC cultivation with the introduction of dairy cattle and poultry would improve household incomes, and thus livelihoods of farmers, substantially.

(e) Required Family Labor for Proposed Agriculture Activities

Agriculture activities require a lot of labor, either within the family or from hired labor in general. If one male and one female are considered to be family labor for one family, about 250 days each could be considered for working days in a year. Table 6.12 shows the working days for family labor on the model agriculture household economy for Cluster II as discussed above.

Table 6.12 Family Labor Requirement of OFC Model Farmer

No.	Activities	Duration	Labor Requirement	MD/ Year*	Remarks
1	Chili Cultivation	5.0 months	Male	6	Annex 10 Table 9
			Female	47.5	
2	Red Onion Cultivation	5.0 months	Male	6.6	Annex 10 Table 10
			Female	14.1	
3	Eggplant Cultivation	5.0 months	Male	3.5	Annex 10 Table 11
			Female	14	
4	Dairy Cattle	60 months	Male	28	Annex 10 Table 2
			Female	23	
5	Poultry	19 months	Male	4	Annex 10 Table 3
			Female	41	
	Total	12 months	Male	**48.1**	
			Female	**139.6**	

Note: * MD means labor of one person, male or female, for one full day.
Source: Study by Project Team

The required working days for the above five (5) agriculture activities are 48.1 days for male and 139.6 days for female, which is considered to be reasonable. In addition to the family labor, hired laborers for 5.0 days and 74.9 days for male and female respectively are required for OFC cultivation, as explained in detail in **Annex 10.**

(3) Cluster III: Marine Capture Fisheries Area

The status of the fishing communities is shown below (Table 6.13). There are no data on fishing families and population in 1982 except that there were 5,684 active fishermen as reported by the Fisheries Sector Development in the Northern Province of Sri Lanka (1982). As per record at DFAR Mannar, there are, as of December 2011, 8,686 fishing families (households) with 8,193 active fishermen among a fishing population of 33,257.

Table 6.13 Fishing Community of Mannar District

	1982	2002	2003	2009	2011
- Fishing families	-	6,330	7,280	6,734	8,686
- Fishing population	-	-	27,780	25,959	33,257
- Active fishermen	5,684	7,975	9,540	8,392	8,193
- FCS	-	-	-	35	35 (65)*
- FCS Membership	-	-	-	6,817	9,343

Remarks: Asterisk (*) refers to the newly re-organized Rural Fisheries Organization.
Source: 1) DFAR Mannar Statistics Section; 2) 1) Fisheries Statistics (MFARD)

(a) Fisheries Development Potentials in Marine Sector

The development potential of Mannar fisheries centers on its rich fisheries resources that have not been adequately harnessed. In 1983, Mannar accounted for 19,040 tons of marine fish landings, or around 10% of the total marine fish production (184,740 tons) in Sri Lanka. However, severe disruptions to fishing activities since then has led to a drastic decline in the annual fish catch, from over 19,040 tons in 1983 to around 7,000 tons in the mid-1990's, and the contribution to the country's total fish catch from Mannar District also declined to less than 5%.

Mannar District has about 163 km of the country's total coastline of 1,730km; it has a continental shelf area that is much wider than the rest of the country's coast. This wider shelf is known to provide a relative abundance of the demersal fish resources, although large pelagic fish (such as tunas) are less abundant in Mannar. The shallow seas off Mannar along with stretches of mangroves and lagoons, etc., also support commercially important fisheries resources such as groupers, snappers, prawns, crabs, lobsters, sea cucumber (beach de mer), etc. Estimates of fish biomass and fish potential during Research Vessel (R/V) Dr. 'Fridtjof Nansen' Surveys from 1978 to 1980 show the northwest coast of Mannar has an annual fish potential estimate of 22,300 tons. This potential has been not adequately harvested due to various inadequacies and disincentives (mentioned below). In addition, the offshore fisheries resources have also not been exploited. Therefore, fishing activities in the coastal areas and lagoons can be an important means for income and livelihood of the community.

(b) Disincentives to Fisheries Development

- **Scattered fish landings due to absence of easy access**

  None of the 40 fish landing points in Mannar District is provided with fishery jetty or anchorage infrastructure except for the jetty existing at Talaimannar Pier. However, this jetty is not currently accessible to fishermen due to security reasons. In general there are no safe anchorages or landing jetties to attract Inboard Engine (IBE) fishing crafts (such as day-boats and multi-day boats).

- **Stagnated fishing operations in inshore coastal waters**

  Fishing efforts are stagnated to inshore coastal waters. The existing fishing crafts are beach landing crafts with OBE conducting fishing operations mainly in the inshore water.

- **Absence or lack of modernization of fishing crafts and gear**

  Current fishing operation technologies (OFRPs and motorized & non-motorized canoes) limit and prevent promotion of fishing efforts in offshore waters. Large size and well-equipped boats capable of exploiting the offshore resources are required. Therefore regular poaching by trawlers from south India is prevalent off the coast of Mannar.

- **Non-availability of infrastructural facilities (fish landing, preparation & marketing)**

  IBE fishing crafts (some multi-day & 82 day-boats) are mainly operating in Pesalai: in the absence of a jetty, double handling of fish catch (unloading into the feeder crafts, and again at the beach) results in a severe impact on the fish quality. Also, the absence of on-land loading and unloading service facilities (ice, fuel, water) also affects the fish quality. Similar situations are also observed at other major fish landing sites.

- **Absence of proper and suitable fish collection sheds in fishing villages**

  There is an absence of proper and suitable fish collection sheds in fishing villages located in remote parts: existing simple wadis (fish collection and storing) clustered on the beaches are of poor structures lacking in basic amenities for ice and fish storage for fishermen and fish traders. This leads to unsanitary practices that cause physical and quality losses of landed fish catches.

- **Lack of awareness of fish quality & hygiene**

  Lack of knowledge of fish handling and post-harvest practices on the part of the fishermen and fish traders is leading to poor quality of fish landings and high fish spoilage. According to MFARD, post-harvest value losses are estimated to be around

30%.

- **Weak institutional support to fishers**
  There is insufficient technical manpower and logistics support to provide extension services by Mannar DFAR. There were 22 approved cadre positions in 2011; only 11 exist with four technical staff including the acting director. Although there are eight FI divisions, there is only one Fisheries Inspector (FI) inspector to cover the whole District; further the office lacks in mobility and other resources.

In view of the prevailing situation of the marine capture fisheries and its significant support to coastal communities, it is of the utmost importance to revive and develop the sector in tandem with the national development as envisaged by the Government.

(c) Village-wise Development Plan for Cluster III: Marine Capture Fisheries Area

Taking into account the above-mentioned potentials and disincentives in Cluster III, the following development themes and the development plans for the short-term and mid-term are proposed.

Table 6.14 Village-wise Development Plan for Cluster III: Marine Capture Fisheries Area

Objectives to be achieved for Vision 1	Development Potentials and Disincentives	Development Theme	Development Plan for the short-term (2011-15)	Development Plan for the mid-term (2016-20)
(1) Restoration and Improvement of Livelihoods				
1. Main Livelihood: ・ Marine Capture Fisheries	▸Potentials: ・ Rich & diverse fisheries resources ▸Disincentives: ・ Devoid of infrastructure such as jetties and anchorages, is causing fishing efforts to be limited in inshore coastal water ・ Current fishing operation technologies limit and prevent offshore fishing efforts ・ Poor quality of landed fish due to absence of jetties, on-land loading and unloading service facilities (ice, fuel, water); lack of knowledge in fish handling practices, etc.	Development and improvement of marine capture fisheries	・ Replace & provide fishing equipment to start operation (worse-affected areas). ・ Formulate plans for landing facilities.	・ Develop efforts to off-shore areas with improved technology & resource management in mind. ・ Implement construction of jetties, etc.
		Development and improvement of facilities related to fish marketing & distribution system	・ Develop appropriate basic & functional facilities for an organized fish marketing & distribution system (FMDS).	・ Upgrade and sustain the FMDS in line with increased offshore catches & market requirement.
		Quality improvement and value-added products, preferably targeting new products	・ Implement training on handling & sanitary practices. ・ Disseminate dry fish processing technique imparted by the Project.	・ Develop village-level industries by introducing processing technology. ・ Encourage & develop "Mannar Brand" fisheries product.
		Strengthening of FCSs	・ Provide offices & facilities for management of FCSs and CBOs. ・ Provide managerial & entrepreneurial trainings to strengthen economic & financial capacity. ・ Encourage savings and loans, and activate and/or set up Idiwara Bank (Fisheries Development Bank).	

Objectives to be achieved for Vision 1	Development Potentials and Disincentives	Development Theme	Development Plan for the short-term (2011-15)	Development Plan for the mid-term (2016-20)
	・Weak capacity of DFAR Mannar to provide & sustain the training & extension services	Strengthening of DFAR Mannar	・Provide office & logistic facilities (computers, bikes, etc.) to function. ・Increase man-power (fisheries inspectors) to impart extension & training. ・Provide trainings for FIs in line with technological development.	
2. Supplementary Livelihoods				
・Marine Aquaculture	Refer to “Aquaculture” on pp. 6-45 to 6-47.			
・OFC Cultivation	Refer to “Community Development Plan of Cluster II: OFC Cultivation and Other Agriculture Area” on pp. 6-16 to 6-23.			
・Livestock (Dairy Cattle & Layer Poultry)	Refer to “Livestock (Dairy Cow & Layer Poultry)” on pp. 6-36 to 6-39.			
・Small-scale Income Generation Activities	Refer to “Small-scale Income Generation Activities” on pp. 6-48 to 6-50.			
(2) Ensuring the Access to Infrastructure for Improvement of Living Standards and Activation of Activities in Community (Common to all clusters)				
1. Housing	Refer to “Housing” on p.6-51.			
2. Water Supply	Refer to “Water Supply” on pp. 6-51 to 6-60.			
3. Other Basic Infrastructure	Refer to “Other Basic Infrastructure” on p.6-61.			
(3) Promotion of Social Inclusion/ Social Unity (Common to all clusters)				
1. Strengthening of CBOs	Refer to “Strengthening of CBOs” on p.6-61.			
2. Promotion of Social Inclusion	Refer to “Promotion of Social Inclusion / Social Unity” on pp. 6-61 to 6-62.			

(d) Fishing Household Income and Economy

It is a general assumption that fishers' households have income levels comparatively higher than that of agricultural families. However, it is not quite true for the households in Manthai West AGA Division particularly after the resettlement. There are no statistical data or information relevant to income on the fishing households in Mannar District for validation or comparison. The Baseline Survey of the Project on socio-economy conducted (November 2010) on its focal villages provides the only indicative baseline figures on income and expenditures that could be used to measure the impacts of the Pilot Project activities. The Endline Survey conducted in December 2011 to evaluate impacts of the Pilot Projects additionally provides indicative monthly income and expenditure of households.

Using these indicative figures, a model of a typical fisher household income/economy is proposed basically targeting the fishing communities in Manthai West AGA Division in Cluster III. The fishing communities in Manthai West AGA Division in particular represent a classic case of the worst affected among the IDP returnee fishers. The proposed scheme of the model is akin to Bottom of the Pyramid (BOP). The bottom represents the returnee IDPs whose livelihood support depended on fishing activities as a main source of income before the displacement, and even after the resettlement.

Stages of Development

The Project attempts to grasp the progress of income and expenditure of fishing households through different stages. The development stages or progress is categorized, as shown in the table and figure below.

In this model, fishing activity (capture fisheries) is the main source of income of the fishing communities; some fishers' households (mainly women) do conduct dry fish processing to augment their income. Socio-economic surveys (Baseline and Endline) of the Project show that some fishers' households do engage in home gardening; the homegrown vegetables and/or fruits may be for self-consumption and/or for sales to augment their income. In the case of self-consumption of homegrown fruits and vegetables, the benefit is that it reduces the household's expenditure.

Table 6.15 A Model of Fishing Household Economy (Income/Expenditure/Saving)

	Stages of Development	Fishing Household Economy (Income/Expenditure/Savings)			Remarks
		Median Monthly Income [1)]	Median Monthly Expenditure [2)]	Contribution to HH Savings	
Short-term	**(1) Initiation** Households just after Resettled (By Feb. 2010)	None or no tangible income	Food & non-food needs provided by international donors, NGOs, etc.	None	No tangible productive assets (boats, equipment, etc.) to commence fishing.
	Baseline Survey (Nov. 2010)	Rs. 12,000	Rs. 17,000	None	Fishers hire or lease boats & gears to re-start fishing.
	(2) Developing Endline Survey (Dec. 2011)	Rs. 19,100	Rs. 20,000	None	Boat, OBEs, nets, etc. provided by donors, NGOs, etc. and MANREP
Mid-term	**(3) Maturation** [3)]	Rs. 28,650	Rs. 26,000	Rs. 2,650	Assumption planned projects in the roadmap are implemented.
	(4) Sustainable [4)]	Rs. 35,800	Rs. 33,800	Rs. 2,000	Assumption planned projects in the Road Map are implemented.

Remarks: 1) Income is mainly from fishing activities (figures are rounded).
2) Expenditure includes food and non-food items (figures are rounded).
3) Assumption income increases 50% & expenditure increases around 30% from the Endline Survey.
4) Assumption income increases 25% & expenditure increases around 30% from the maturation phase.

(a) Initiation Stage

In the early stage of the initiation phase (February 2010), i.e., during the resettling or just after resettlement, the returnees were without productive fishing assets to start fishing operations. Therefore, household income would be expected to be none or insignificant; their expenditures for daily livelihood necessities, etc. were supported by international donors, NGOs, etc.

The Baseline Survey conducted in November 2010 (after eight months of resettlement) shows median monthly household income and expenditure of Rs.12,000 and Rs.17,000, respectively. The income was basically acquired through fishing operations using hired/leased boats and equipment, while relevant government agencies, donors, NGOs, the Project, etc., were preparing assistance to provide boats and equipment. The expenditure (food and non-food items) was greater than the income; the deficit was probably covered by informal loans, pawning of articles (gold, jewelry), etc.

(b) Developing Stage

The developing phase, covering about a year, represents a period of assistance trickling down from different sources to IDPs in order to rehabilitate and support livelihood. The Project provided fishing crafts, OBEs and nets during this phase. The Endline Survey of households (Dec. 2011) indicates an increased median monthly household income of Rs.19,100 and expenditure of Rs.20,000, with no contribution to savings.

Please note an additional income in the range of Rs.3,000 – Rs.5,000 could be included for households engaged in dry fish processing using the old method (before the training in dry fish production by the Project).

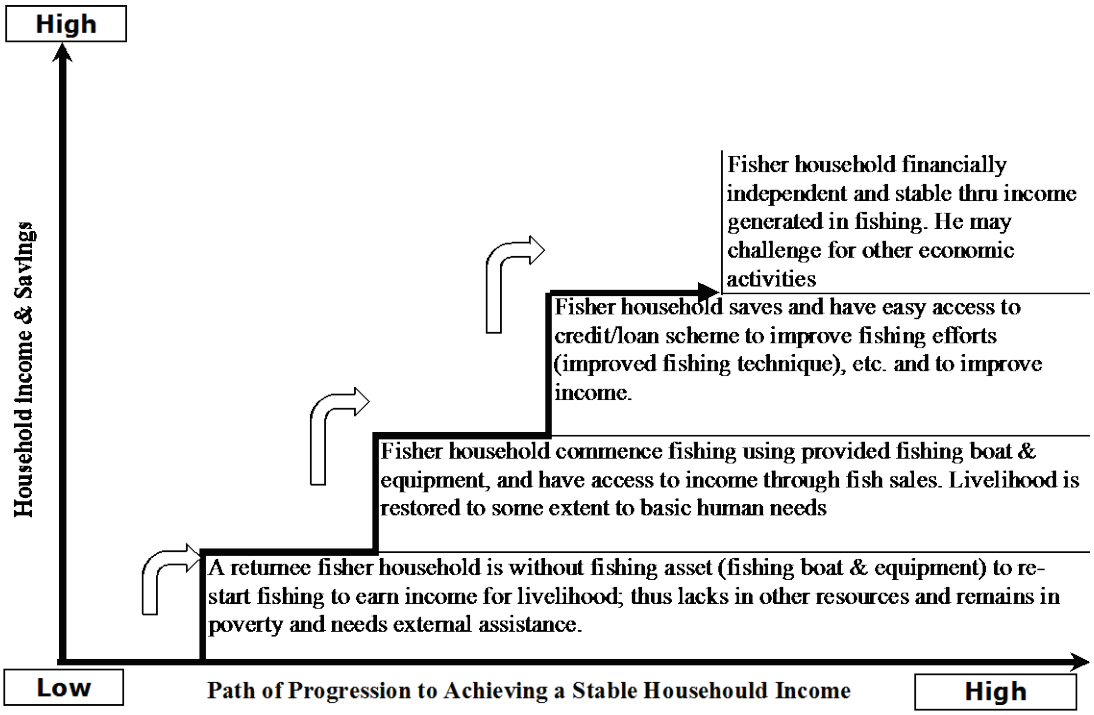


Figure 6.3 Guide to Path of Progression

(c) Maturation Stage

In the maturation stage, the fishing communities are expected to have increased their fishing operations with the implementation of the planned projects (short-term) in the Road Map; that is by addition of boats, engines, nets, etc. (through replacements of damaged fishing crafts & equipment). Simultaneously it is expected that the planned projects such as provisions of training in fishing techniques and off-shore fishing crafts and equipment; and provision of appropriate fish landing & marketing facilities, are being implemented. Appropriately the FCSs are re-organized and strengthened to take responsibility for their activities. It is expected that the fishing households have credit

worthiness and have easy access to credit/loans to improve fishing efforts and livelihoods.

At this stage, the monthly income is estimated at around Rs.28,650 and the monthly expenditure at around Rs.26,000; contribution to savings is expected to be Rs.2,650.

An additional income in the range of Rs.5,000 – Rs.7,000 from dry fish processing could be included for households using the new processing method (after the training by the Project).

(d) Sustainable Stage

At this stage, it is expected that the fishing communities have become ambitious, mature and capable of exploiting their talents and resources to be more independent. This depends on the assumption that the proposed programs and assistance are provided on time by relevant agencies. With the sustainable income and savings, a fishing household may challenge for other economic activities.

At this stage, the monthly income is estimated at around Rs.35,800 and the monthly expenditure at around Rs.33,800; contribution to savings is expected to be Rs.2,000.

6.2.2 Restoration and Improvement of Supplementary Livelihoods

The potentials and disincentives to development, development themes and plans for supplementary livelihoods in the Village-wise Development Plans are discussed below.

(1) OFC Cultivation

Refer to "Village-wise Development Plan of Cluster II: OFC Cultivation and Other Agriculture Areas" for OFC cultivation from page 6-16 to 6-23.

(2) Fruit Cultivation

Fruit cultivation and production is one of the promising supplementary agricultural activities to upgrade livelihoods of IDP returnees. The cultivation extent and production of fruits in Mannar District in comparison with the national production is summarized as shown in Table 6.16. The consumption of fruits in Sri Lanka is very low compared to other countries[58] and to be increased in future. The fruit supply in the District exceeds the

[58] According to the FAOSTAD data, annual per capita consumption of fruits in Sri Lanka in 2007 was 37kg. Other countries' annual consumptions per capita are 53kg in India, 65kg in Japan, 88kg in Thailand,

requirement assuming the requirement is equivalent to the national average. However, the cultivation extent is not much taking arable land in the District into account. There is a great potential to increase the production in the future.

Table 6.16 Cultivation Extent and Production of Fruits in Mannar District and Sri Lanka in 2009

No	Fruit	Mannar				Sri Lanka	
		Cultivation Area (ha)	Production (ton)	Ratio*1 (%)	Availability (kg/Capita)	Production (ton)	Consumption (kg/Capita)
1	Mango	283	1,675	2.4	17.8	67,941	3.3
2	Jackfruits	48	960	-	10.2	-	-
3	Banana	252	3,565	0.9	37.9	383,748	18.7
4	Lime	24.5	124	2.7	1.3	4,490	0.2
5	Orange	11	40	1.0	0.4	4,145	0.2
6	Papaya	62	870	3.6	9.2	24,258	1.2
7	Pomegranate	30.5	81	-	0.9	-	-
8	Guava	29.5	90	-	1.0	-	-
9	Wood Apple	460	4,590	-	48.8	-	-
	Total	1,200.5	11,995		127.6	484,582	23.7

Note: *1 Ratio of Production in Mannar to National Production in Sri Lanka
2 No figures in columns indicate no data available.
Source: Statistical Hand Book 2010 Mannar District, Sector Brief, Fruits and Vegetables, Feb. 2011 (Ceylon Chamber of Commerce)

(a) Potentials

- Suitable land for fruit cultivation is available on the premises as home gardens and backyards.
- The Government policy suggests promotion of export of agricultural products.
- Potential markets are available in the District, other parts of the country and abroad.

(b) Disincentives

- Seedlings and saplings of improved varieties of fruit trees are not adequately available.
- Farmers' skills on maintaining fruit trees and production is not high.
- Marketing links for fruit production are still weak.
- FOs' activities for promoting production and marketing are weak.
- Measures to avoid wild animals are required.

(c) Village-wise Development Plan for Supplementary Livelihood: Fruit Cultivation

Taking into account the above-mentioned potentials and disincentives, the following development themes and the development plans for the short-term and mid-term are proposed.

130kg in the United Kingdom, 131kg in the Philippines, etc.

Table 6.17 Village-wise Development Plan for Supplementary Livelihood: Fruit Cultivation

Objectives to be achieved for Vision 1	Development Potentials and Disincentives	Development Theme	Development Plan for the short-term (2011-15)	Development Plan for the mid-term (2016-20)
(1) Restoration and Improvement of Livelihoods				
Supplementary Livelihoods: Fruit Cultivation (Cultivation at home garden and backyard)	▸Potentials: ・Suitable land for fruit cultivation including home garden and backyard is available. ・Fruit cultivation fits the national policy. ・Potential market is available even in Mannar District. ▸Disincentives: ・Seedlings and other input materials are not well distributed. ・Poor production due to lack of farmers' knowhow. ・Weak activities by FO on fruit cultivation and marketing. ・No protective measures are taken to avoid damage from wild animals.	Dissemination of advantage of fruit cultivation	・Conduct awareness seminars and basic trainings in fruit cultivation	・Conduct study tour to the advanced area
		Stable supply of seeds and seedlings	・Establish nursery farms ・Rehabilitate DAD ASCs to supply quality seedlings	・Encourage nursery farms to produce seedlings and saplings ・Encourage private seedling suppliers
		Organization of farmers' groups and FOs for production and marketing based on the market demand	・Study market demand ・Organize "group production and marketing" activities ・Produce products by farmers' groups and FOs based on the market demand	・Strengthen "group production and marketing" activities
		Improvement of farmers' skills on fruit cultivation	・Conduct training for farmers by DOA and DAD ・Conduct an awareness program in protection from damage from wild animals ・Introduce multiple farming with livestock raising	・Strengthen training in fruit cultivation for farmers by DOA and DAD ・Strengthen multiple farming with livestock raising
		Strengthening of FO	・Strengthening of FO on fruit cultivation	・FO takes initiative of marketing

Objectives to be achieved for Vision 1	Development Potentials and Disincentives	Development Theme	Development Plan for the short-term (2011-15)	Development Plan for the mid-term (2016-20)
			• Study by FO for marketing of products	
		Strengthening of public services providers	• Rehabilitate facilities of DOA and DAD • Provide equipment and tools for extension activity • Provide trainings to front line officers	

(3) Livestock (Dairy Cow and Layer Poultry)

Dairy Cow

Dairy development is well known to farmers in Mannar District as a profitable agricultural activity. However, it has not materialized much in the District; the present productivity is very low, and farmers have very limited access to improved varieties of cows. Data on dairy production in Mannar District in comparison with the national data in 2009 is provided in the following table.

Table 6.18 Production of Milk in Mannar District and Sri Lanka in 2009

No.	Description	Unit	Mannar District	Sri Lanka
1	Number of Cattle	Nos.	24,530	1,195,610
2	Number of Milking Cows	Nos.	6,095	249,315
3	Avg. Daily Milk Production	liter/day	6,610	479,007
4	Productivity	liter/day/cow	1.1	1.9
5	Annual Production	1000 liter /year	2,413	174,838
6	Availability per Capita	liter/year	25.6	8.5
7	Ratio*1	%	1.3	100

Note: *1 Ratio of Production in Mannar to National Production in Sri Lanka
Source: Prepared by the Project Team based on the data provided in Economic and Social Statistics of Sri Lanka 2010

The production of milk and per capita availability, 25.6 liter/ year in Mannar District, is higher than the national level, 8.5 liter/ capita/ year. Therefore, demand in the District is fulfilled by the production in the District. However, as shown in Table 6.9 of the preceding section, the Government emphasizes the promotion of more milk production since the imports of milk products are very high, encompassing nearly 80% of milk-related consumption.

Layer Poultry

The layer poultry is one of the potential agricultural activities in Mannar District. The production of chicken eggs in Mannar District in comparison with the national production is shown in Table 6.19. The supply of eggs in Mannar District is adequate if the national level per capita consumption is the same as the level of consumption in the District. However, taking the international level of consumption into consideration, the production level shall be further increased.

Table 6.19 Layer Poultry Production in Mannar District and Sri Lanka in 2009

No.	Description	Unit	Mannar District	Sri Lanka
1	Number of Chickens	Nos.	76,580	13,615,290
2	Amount of Egg Production	1000 Nos./month	614	95,187
6	Availability per Capita*1	Nos./year	78.4	55.8
7	Ratio*2	%	0.6	100

Note: *1 The country base consumptions per year in 2004 are 105 nos. in Thailand, 174 nos. in UK, 247 nos. in Russia, 320 nos. in China, 330 nos. in Japan, according to the data issued by International Egg Commission.
*2 Ratio of Production in Mannar District to National Production in Sri Lanka
Source: Prepared by the Project Team based on the data in Economic and Social Statistics of Sri Lanka 2010

(a) Potentials

The potentials identified in Mannar District on livestock (dairy cow and layer poultry) are as follows:

- Abundant grazing land is available in the District.
- There are many farmers who have experience with dairy production from before the conflict.
- The Government policy encourages the increase of milk/dairy products to substitute for imports.
- There is demand in the existing markets for milk, meat and eggs, and the market demand would be increased in parallel with the economic development of Sri Lanka.

(b) Disincentives

There are some disincentives to disturb the livestock development in the District, which shall be overcome. They are:

- Improved varieties of milking cows are not easily obtained in the District.
- The number of collection centers and chilling centers are not adequate to increase production of milk rapidly.
- The number of veterinary surgeons and stock breeding experts with facilities and materials are not adequate for future development.
- Farmers have limited knowhow and skills to practice livestock raising.
- Farmers have limited access to loans and credits due to inadequate outlets of banks and institutions.
- The capacity of the public sector to provide trainings and extension services is weak.

(c) Village-wise Development Plan for Supplementary Livelihood: Livestock (Dairy Cow and Layer Poultry)

Taking into account the above-mentioned potentials and disincentives, the following development themes and the development plans for the short-term and mid-term are proposed.

Table 6.20 Village-wise Development Plan for Supplementary Livelihood: Livestock (Dairy Cow & Layer Poultry)

Objectives to be achieved for Vision 1	Development Potentials and Disincentives	Development Theme	Development Plan for the short-term (2011-15)	Development Plan for the mid-term (2016-20)
(1) Restoration and Improvement of Livelihoods				
Supplementary Livelihoods: Livestock (Dairy Cow & Poultry)	▸Potentials: ・Availability of abundant grazing land ・Presence of experienced farmers ・The Government policy encourages the increase of milk/ dairy products to substitute for imports. ・There is demand and existing markets for milk, meat and eggs. ▸Disincentives: ・Inadequate services on introducing improved varieties. ・The number of collection centers will run short if production of milk increases in the future.	Rehabilitation and development of breeding facilities	・Establish a poultry breeding farm ・Strengthen artificial insemination (AI) activities	・Strengthen the poultry breeding farm and establish additional rearing huts ・Impart trainings in AI practice to farmers
		Improvement of production skills	・Conduct necessary trainings to introduce and improve farmers' skills in livestock	・Construct a training center and conduct trainings in AI and other skills to farmers ・Introduce multiple farming
		Increase in the number of veterinary surgeons (VS) and strengthening of their services	・Enhance the function of VS in DAPH offices through provision of necessary equipment and consumables	・Introduce private VS services
		Improvement of farmers' access to loan/ credit facilities	・Reorganize the system of livestock loans/ credits ・Establish mobile bank services in remote areas	・Establish bank branches in each DS / AGA Division
		Rehabilitation and improvement of milk-related infrastructure	・Rehabilitate milk collection and chilling stations	・Increase milk collection and chilling stations

Objectives to be achieved for Vision 1	Development Potentials and Disincentives	Development Theme	Development Plan for the short-term (2011-15)	Development Plan for the mid-term (2016-20)
	• Inadequate number of veterinary surgeons and services including provision of chemicals and vaccines • Farmers have limited knowhow on the latest livestock practices. • Farmers have limited access to loans/ credit due to inadequate bank outlets. • Weak capacity of public sector to provide trainings and extension services.	Strengthening of public and private service providers	• Provide equipment and tools for extension activities • Provide trainings in technical as well as management to front line officers • Encourage private sector in processing of livestock products	• Construct training facilities of DAPH • Encourage processing industries to expand their activities

(4) Inland Capture & Culture-Based Fisheries

Mannar District has major and medium sized tanks, and seasonal tanks that are estimated at around 5,320 ha. According to NAQDA, these water bodies support around 586 inland fisher households in the District. The available inland fish production data is presented in the table below. The lowest production was around 40 tons in 2007 and it currently stands at around 220 tons. Fish catches mainly consist of tilapia and carp. The production in comparison to the national total is considerably less than one percent. Aquaculture is not yet an activity in Mannar District; hence there is no data on aquaculture production.

The Government promotes capture fisheries in perennial and seasonal water bodies through stocking of fingerlings, distribution of outrigger canoes (orus) and gill nets in Sri Lanka. During the period of 1990-1994, the support to inland fisheries was withdrawn, and this resulted in a heavy reduction in inland fish production. Though the Government resumed its assistance to inland fisheries in 1995, Mannar, along with others districts in the Northeast Province, did not benefit as much as other districts in Sri Lanka due to the continuing conflicts.

Table 6.21 Inland Fish Production of Mannar District

Unit: ton

	1998	2000	2001	2005 & 2006	2007	2008	2009	2010
Freshwater fish production (Share of Sri Lanka %)	140 (0.45)	228 (0.62)	180 (0.6)	ND	40 (0.1)	320 (0.7)	180 (0.4)	220 (0.4)

Source: Fisheries Statistics (MFARD)

(a) Development Potentials in Inland Fisheries

The inland water bodies in the District have a high potential for development to support the returnee households in the form of fishing and income earning. NAQDA estimates the production potential of the inland reservoir resources in the Northern Province at 2,500 tons per year. These reservoirs are dominated by the tilapia species, which constitute the bulk of the inland fish catch. The total extent of fresh water bodies (perennial and seasonal tanks in Mannar District) for inland captures fisheries is shown in the table below. Mannar has 12 major and medium tanks with a water area of around 4,070 ha, which includes the Giant's Tank (2,244 ha); fishing activities were reported in six of the tanks. There are seasonal tanks (minor irrigation or village tanks) known to retain water 6-7 months of the year that also provide an opportunity to culture fast-growing fish species such as the Indian and Chinese carps.

Table 6.22 Extent of Freshwater Water Bodies for Inland Fisheries

Inland Water Bodies	No	ha
- Major & medium tanks	12	4,070
- Seasonal tanks (village tanks)	6	50

Source: Fisheries Statistics (MFARD)

(b) Disincentives to Inland Fisheries Development

- **Insufficient fishing crafts and nets**

  Returnee IDPs are disadvantaged as they are without simple basic fishing assets such as boats and nets for resuming fishing activities; therefore they have limited opportunities to earn income and re-start their livelihoods.

- **Low productivity of inland water bodies**

  Inland fish production mainly consists of capture-based fishing activities in perennial tanks by fishing communities living around such water bodies. These water bodies represent tilapia-dominated fisheries with a low share of introduced carp species and indigenous species. The growth potential is limited to a great extent; therefore production from this source cannot be expected to increase in an unlimited manner unless action is taken to promote the culture-based fisheries in water bodies.

- **Long absence of fingerling stockings and insufficient fingerling supply**

  The long absence of fingerling stocking (due to the conflicts) has affected inland fish production, and the Government's efforts to restore the fish fingerling supply is hampered by the limited availability of fingerlings nationwide. NAQDA is not in a position to supply fingerlings from its hatchery and breeding stations. NAQDA is also facing severe constraints in staff and other facilities, particularly for breeding and rearing of fingerlings.

- **Lack of rehabilitation needs of inland water bodies**

  Areas of inland water bodies of capture-based fisheries have been neglected in terms of management and identifying water areas that are suitable for culture-based fisheries, etc. Therefore most of the water bodies in Mannar do not have properly sited landing places with adequate facilities for fish collection, handling and marketing.

- **Weak inland FCSs**

  Inland fisheries cooperatives are still weak institutionally; they have to be organized and their ability and capacity strengthened to conduct and manage community-based aquaculture activities.

- **Weak institutional support**

  There is currently weak institutional support from NAQDA. There is no NAQDA presence in Mannar, except for one regional aquaculture officer based in Vavuniya. He has no support in mobility and assistance from other extension officers.

(c) Village-wise Development Plan for Supplementary Livelihood: Inland Capture & Culture-Based Fisheries

Taking into account the above-mentioned potentials and disincentives, the following development themes and the development plans for the short-term and mid-term are proposed.

Table 6.23 Village-wise Development Plan for Supplementary Livelihood: Inland Capture & Culture-Based Fisheries

Objectives to be achieved for Vision 1	Development Potentials and Disincentives	Development Theme	Development Plan for the short-term (2011-15)	Development Plan for the mid-term (2016-20)
(1) Restoration and Improvement of Livelihoods				
Supplementary Livelihoods: Inland Capture & Culture-Based Fisheries	▸Potentials: ・Significant areas of perennial water bodies (reservoirs of large, medium and minor) with fish production potential. ・Small seasonal water bodies (could be utilized for community-based fish culture activities); available 6-7 months a year. ▸Disincentives: ・Returnee fishing households without simple fishing assets (boats & nets) could not re-start fishing to earn income. ・Suspension of fingerling stocking during the conflict years; regular stocking provides stable fish production.	Development and improvement of inland capture & culture-based fish production	・Provide simple fishing boats & nets to returnee fishing households.	・Provide fishing boats & nets as needed by fishing households (credit & grant)
			・Stocking (urgent need) of fingerlings to potential perennial water bodies.	・Encourage purchase of fingerlings to continue regular fingerling stocking.
		Infrastructure development and improvements for inland fishery	・Identify potential reservoirs & seasonal water bodies for fingerling stocking; rehabilitate & repair them.	・Conduct regular stocking of these water bodies of fingerlings.
			・Establish hatcheries and fish ponds to rear fingerlings to promote and strengthen tank fish production.	
			・Formulate & implement a model plan for fry-fingerling rearing ponds & facilities for community operation & management (preferably Giant's Tank).	・Establish network of mini-nurseries in other areas for community management.
			・Identify & establish properly located landing sites around reservoirs, and construct marketing sheds.	・Establish post-harvest facilities to store ice, fish, boxes, etc. at strategic fish landing sites
		Quality improvement (value addition) and marketing development	・Provide training on handling & sanitary practices, etc. to improve fish quality & to reduce post-harvest loss.	
			・Provide training on dry fish	・Expand the processing

Objectives to be achieved for Vision 1	Development Potentials and Disincentives	Development Theme	Development Plan for the short-term (2011-15)	Development Plan for the mid-term (2016-20)
	・Fingerling supply (by NAQDA) for stocking is insufficient & unstable. ・Institutional weakness (absence of NAQDA in Mannar) to plan, coordinate & implement activities as well as to provide training & extension.		processing skill & technique similar to the Project in Sirukkulam (Giant's Tank).	technique to fishing households or community with a self-help approach. Promote a "brand product" that would represent Mannar.
			・Provide bicycles, motorcycles & fish boxes to local needy fish vendors and fishers for marketing. At later stage, provide on a mix of credit and grant thru FCSs.	
		Strengthening FCSs or CBOs	・Provide buildings or halls for efficient functioning of societies.	
			・Provide assistance to improve capacity to organize and plan their own activities & increase bargaining power, marketing activities.	
			・Encourage members' contributions (with increased landings of fish) and encourage savings & credit services.	・Encourage members to establish revolving fund (with initial grant through fingerlings, fishing boats & nets).
		Strengthening of NAQDA	・NAQDA must establish a district-level office with adequate staff (aquaculturist and extension officers) to provide technical advice on site location, supervision, monitoring and training.	
			・Conduct assessment of reservoir and tank fishery resources and management strategies to evaluate present status and identify water bodies suitable for development of inland fisheries (short-term to long-term).	

Remarks: Culture-based inland fisheries using seasonal water bodies, and rearing and nursing of fry-fingerlings for stocking, etc. are mandated as aquaculture by NAQDA. These activities have direct impacts on the inland capture fishery; therefore, it is appropriate to include in one format.

(5) Marine Aquaculture

Aquaculture here refers to coastal marine and inland culture activities. There is no data on aquaculture production in Mannar District. Aquaculture is not currently an important activity and it is practiced only to a limited extent, although its importance is recognized by the Government to realize its full potential to support livelihood restoration and future development. There are a few trials of marine aquaculture activities, namely in sea cucumber, oysters, and fattening of crabs, but there is no known commercial aquaculture activity in marine coastal areas.

(a) Development Potentials in Aquaculture

The coastal marine habitats constituting mangroves, salt marshes, lagoons and estuaries are also a potential for aquaculture of shrimp, crabs, oysters, fishes, etc. This potential has not been exploited at all in spite of the presence of high-value fish and invertebrate species. Aquaculture could be promoted to be an important activity in Mannar, as suitable sites are available and there is potential for both inland and coastal waters.

Table 6.24 Extent of Coastal Habitats Potential for Marine Aquaculture

Coastal Marine Habitats	ha
- Mangroves	410
- Salt marshes	2,810
- Lagoons	1,390
- Estuaries	400

Source: Fisheries Statistics (MFARD)

(b) Disincentives to Aquaculture

- Aquaculture, in both inland freshwater and coastal marine areas, is a new concept; its promotion and development has to be considered carefully on the types of species, nursery and grow-out, services and investment required.
- There is a lack of private investment for commercially oriented development though a few commercial-level models practiced elsewhere in Sri Lanka can be applied.
- Inland fisheries cooperatives are still weak institutionally; they have to be organized and their ability and capacity strengthened to conduct and manage community-based aquaculture activities.
- There is weak institutional support from NAQDA. There is no NAQDA presence in Mannar, except for one regional aquaculture officer based in Vauniya. He has no support in mobility and assistance from other extension officers.

(c) Village-wise Development Plan for Supplementary Livelihood: Marine Aquaculture

Taking into account the above-mentioned potentials and disincentives, the following development themes and the development plans for the short-term and mid-term are proposed.

Table 6.25 Village-wise Development Plan for Supplementary Livelihood: Marine Aquaculture

Objectives to be achieved for Vision 1	Development Potentials and Disincentives	Development Theme	Development Plan for the short-term (2011-15)	Development Plan for the mid-term (2016-20)
(1) Restoration and Improvement of Livelihoods				
Supplementary Livelihoods: Marine Aquaculture	▸Potentials: ・Significant coastal marine habitats (lagoons, estuaries, mangroves) have potential for coastal aquaculture. ・Endemic species of high-value and culturable species (shrimp, crab, milkfish, mussels, sea cucumber, etc.) ▸Disincentives: ・Inadequate survey to identify potential areas on carrying capacity, environmental concerns, etc. ・No zonal plans for planned and sustainable development. ・Limited commercial interest from private sector investment.	Development of aquatic resources of coastal areas for fish production	・Identify potential areas & resident cultivable species for community-based culture activity. ・Formulate viable pilot-scale plans.	・Encourage investors to set up aquaculture in collaboration with local communities on an out-grower system with a suitable buy-back system.
		Infrastructure development and improvements for aquaculture	・Establish pilot-scale infrastructure and facilities appropriate to the area. ・Conduct cost-benefit & technical feasibility of selected resident species (sea cucumber, milkfish, crab-fattening, oysters).	・Encourage private investors to lead capital investments for commercially-oriented aquaculture using the results of the pilot-scale study. ・Encourage investors to collaborate with local communities on an out-grower system with a suitable buy-back system.
		Quality improvement and marketing development	・Plan and establish appropriate facilities & services to maintain product quality/standards acceptable to the domestic and international markets. ・Provide training on handling & sanitary practices, etc., to maintain fish quality & to reduce post-harvest loss with increased aquaculture activities.	
		Strengthening FCSs or CBOs	・Provide buildings or halls for efficient functioning of societies.	

Objectives to be achieved for Vision 1	Development Potentials and Disincentives	Development Theme	Development Plan for the short-term (2011-15)	Development Plan for the mid-term (2016-20)
			• Provide assistance to improve fishers' capacity to organize and plan their own activities, and also increase bargaining power, marketing activities. • Encourage members' contributions (with increased landings of fish) & encourage savings & credit services.	• Mobilize the trained local communities to commence aquaculture activities on an out-grower system with investors with a suitable buy-back system. • Establish revolving fund (with initial grant through fingerlings).
		Strengthening of NAQDA	• NAQDA must establish a district-level office with adequate staff (aquaculturist and extension officers) to provide technical advice on site location, supervision, monitoring and training.	
			• NAQDA prepares an aquaculture zonal plan to identify suitable sites for different types of aquaculture.	• NAQDA develops business plans and handouts on potential and viable cultivable species.

(6) Small-scale Income Generation Activities

IDPs, especially women of women-headed households who do not have enough productive assets such as land and fishing equipment urgently need any activities of small-scale income generation as supplementary income sources.

(a) Potentials

- There are raw materials which can be developed as cottage industries such as fish, Palmyra, cashew nuts and fruits. Specially, dry fish in Mannar District has a good reputation for its quality and there is a great demand for it.
- There is a great demand for building materials due to the ongoing reconstruction projects at least for another few years. Therefore, production of building materials such as cement blocks contributes to the improvement of the income level of IDPs.

(b) Disincentives

- People have (1) limited information about marketing, (2) limited training opportunities and (3) limited access to small-scale loans/ credit. Those factors hinder IDPs in beginning new income generation activities.
- There are a limited number of mechanics in the District who can repair basic machines for income generation activities such as cement block making. Therefore, once a machine breaks down, it takes a long time to repair it or in the worst case it is abandoned and people lose the opportunity to earn by utilizing it.
- A branch of the Industrial Development Board (IDB), which imparts marketing information and trainings to the public, has not been established in Mannar District, so that support from the public sector for establishment of small-scale income generation activities is weak.

(c) Village-wise Development Plan for Supplementary Livelihood: Small-scale Income Generation Activities

Taking into account the above-mentioned potentials and disincentives, the following development themes and the development plans for the short-term and mid-term are proposed.

Table 6.26 Village-wise Development Plan for Supplementary Livelihood: Small-scale Income Generation Activities

Objectives to be achieved for Vision 1	Development Potentials and Disincentives	Development Theme	Development Plan for the short-term (2011-15)	Development Plan for the mid-term (2016-20)
(1) Restoration and Improvement of Livelihoods				
Supplementary Livelihoods: Small-scale Income Generation Activities	▸Potentials: ・There are raw materials that can be developed as cottage industries such as fish, Palmyra, cashew nuts and fruits. ・There is a great demand for building materials due to the ongoing reconstruction projects. ▸Disincentives: ・People have: - limited information about marketing, - limited training opportunities, - limited access to small-scale loans/ credit.	Development of marketing strategies	Identify marketable products	Expand the marketing channels
		Introduction and improvement of production skills	Impart trainings based on the demand	Update the skills through follow-up trainings
		Improvement of access to loans/ credit	Reorganize the system of small-scale loans/ credit. Establish mobile bank services or extension services in remote areas.	Establish bank branches in each DS/ AGA Division
		Strengthening of public service providers, trainers, mechanics, etc.	・Establish a branch of the Industrial Development Board (IDB) in Mannar District to promote small-scale industrial activities ・Train mechanics to meet the local demand	・Strengthen the capacity of IDB ・Increase the number of trained mechanics
		Strengthening of CBOs/ production groups	・Formulate production groups for effective production and marketing	

Objectives to be achieved for Vision 1	Development Potentials and Disincentives	Development Theme	Development Plan for the short-term (2011-15)	Development Plan for the mid-term (2016-20)
	• There are a limited number of mechanics in the District who can repair basic machines. • Weak capacity of public sector to impart marketing information and trainings.			

6.2.3 Ensuring the Access to Infrastructure for Improvement of Living Standards and Activation of Activities in the Community

(1) Housing

Housing is one of the most important issues for the IDP returnees. Although there is some assistance rendered to returnees, as the following figure shows, there still exists a great gap between the number of houses that need to be constructed or repaired and the number of houses constructed or being constructed. Acceleration of the work in this field is one of the urgent issues, while the livelihoods of IDP returnees in terms of income have recovered to the level of the development stage. In particular, acceleration of the existing housing project, namely the housing project funded by the Government of India, will contribute to fulfill the needs of IDPs for rehabilitation of houses.

Table 6.27 Construction of Houses under the Category of "Fully Damaged" in Mannar District (as of December 2011)

DS Division	No. of Fully Damaged	Number of Houses Constructed & being Constructed			Balance Requirement
		NEHRP	NGO	Gov. of India	
Mannar Town	1,388	342	113	-	933
Nanaddan	833	155	-	-	678
Musali	3,320	403	150	56	2,711
Madhu	1,149	252	244	47	606
Manthai West	3,331	463	380	72	2,416
Total	10,021	1,615	887	175	7,344

Source: Information from District Planning Secretariat

(2) Water Supply[59]

Efforts have continued in Mannar District for rehabilitation and reconstruction with assistance from donor organizations. In the water sector, ADB 5th Project of ADB and ENReP (Emergency of Northern Recovery Project) of the World Bank have undertaken renovation of water supply systems/facilities.

These projects have designed their schemes by setting the target year at 2030. The Road Map proposed by the Project, in order to maintain consistency with those other projects, also sets the target year at 2030; the sizes of schemes will be considered for this year.

[59] The Plan for Water Supply presented in this section is formulated based not on the clusters in Figure 6.1, but on water sources because of the technical characteristics.

At the same time, the Road Map sets the intermediate target at the year 2020 in accordance with the 'Development Priorities of Sri Lanka (2010)' [60] proposed by the Department of National Planning, Ministry of Finance and Planning as follows.

- Access to safe drinking water: 100%
- Population with pipe-borne water facilities: 60%

(a) Existing Facilities and Ongoing Schemes for Water Supply in GN Divisions

A total of four (4) water supply systems are in operation under the NWS&DB. Among those, three are under the ADB-5th project for rehabilitation/expansion as shown in Table 6.28. The three water supply systems are provided with water from four tube wells located in the Murunkan area. Three more wells have already been drilled in Murunkan for the rehabilitation/expansion of the systems. Enhancement of transmission lines, not only of the main line from Murunkan to Mannar but also those of branch lines to Thiruketheeswaram and to Vankalai, are also ongoing under the ADB-5th project. In addition, the Mannar Water Supply Ssystem (WSS) is also water-provided from 15 open dug-wells located at Thoddakadu on Mannar Island.

Table 6.28 Existing Water Supply System near Mannar Town

	(Metered)	Beneficiaries			Note
System \ Year	2010-Sep	2012	2020	2030	(Ongoing Project)
Mannar	(3,185)	32,128	38,025	45,855	ADB 5th
Erukkalampiddy	(80)	-	-	-	-
Thiruketheeswaram	(67)	1,320	1,393	1,478	ADB 5th
Vankalai	(586)	5,168	5,454	5,787	ADB 5th

Note: Data for 2010, 2012 and 2030 from NWS&DB of Mannar; Data for 2020 was calculated by the Project Team (2011);
Source: Prepared by Project Team (2011)

The Erukkalampiddy Water Supply System provides water to only 80 connections (approx. 500 beneficiaries) of the five GN Divisions of Central, North, East, South and West Erukkalampiddy from the water source of seven open-dug-wells located at Thoddaveli on Mannar Island.

On the other hand, ENReP of the World Bank has implemented rehabilitation /expansion schemes for the damaged water supply systems in the three GN Divisions of Thevanpiddy, Vidataltivu and Adampan in Manthai West DS/AGA Division as shown in Table 6.29 below. Among those, for the Adampan water supply scheme, water is taken from the main transmission line at Uyilankulam junction of A14 road, the main transmission line from Murunkan to Mannar.

The water supply schemes that are water-provided from ground water sources are illustrated

[60] A presentation paper obtained at the GA office Vavniya

in **Annex 11**.

Table 6.29 Rehabilitation/ Expansion Scheme under ENReP

System	Beneficiaries				Source of Water	Note (Ongoing Project)
	2011	2012	2020	2030		
Thevanpiddy	-	2,070	2,431	2,900	Ganeshapuram	ENReP
Vidataltivu	-	6,067	7,124	8,500	Sannarkulam	ENReP
Adampan	-	4,183	4,912	5,860	Murunkan	ENReP

Note: The three systems are all damaged and out of use as of 2011; Data for 2012 and 2030 are provided by NWS&DB of Mannar; Data for 2020 was calculated by the JICA Project Team (2011);
Source: Prepared by the JICA Project Team (2011)

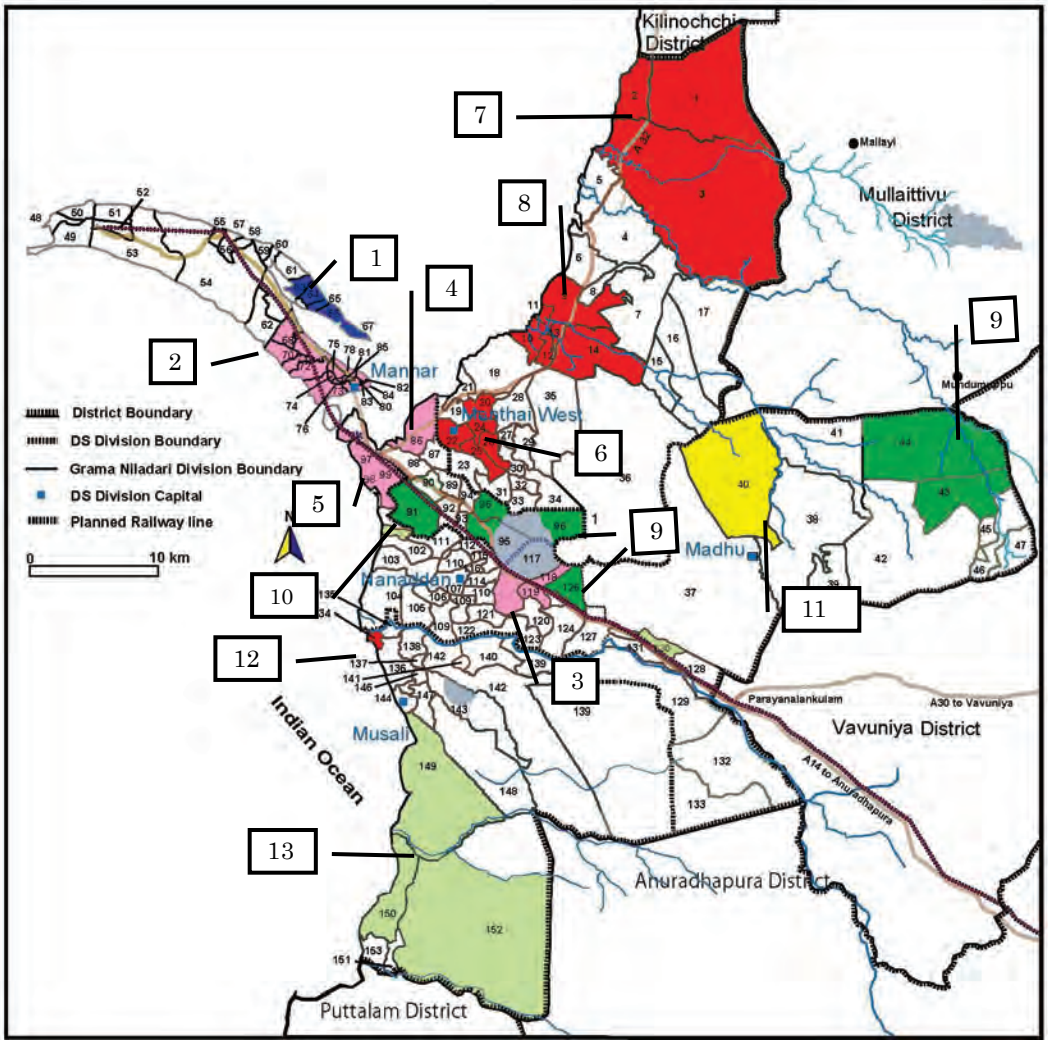
Existing water supply systems/facilities including those of ongoing construction works for rehabilitation/expansion are summarized in **Annex 12** and shown in Figure 6.4 in terms of GN Division. It is noted that not all of the villages of the GN divisions shown are necessarily water-supplied by the corresponding systems/facilities.

(b) Coverage by the Existing Facilities and/or Ongoing Schemes for Water Supply

The populations of the GN Divisions where the existing facilities and /or ongoing water supply schemes are available are shown in **Annex 13**. According to **Annex 13**, on the completion of these ongoing projects:

- The coverage of these GN divisions will reach approximately 73%
- The coverage in Mannar District will be approximately 36%

The coverage in Mannar District on the completion of these ongoing projects will be at the same level as the coverage of all of Sri Lanka as of 2010.



Notes: (1) Not all villages in GN divisions are necessarily covered by the projects/schemes indicated; (2) Open-dug-well schemes are not included.

Name of Scheme/Project	Project	Name of Scheme/Project	Project
1. Erukkalampiddy	Existing	8. Vidataltivu	ENReP
2. Mannar	ADB 5th	9. MANREP	JICA- MANREP
3. Murunkan	ADB 5th	10. MANRECAP	JICA-MANRECAP
4. Thiruketheeswaram	ADB 5th	11. Palampiddy	NWS&DB
5. Vankalai	ADB 5th	12. Arippu	RAP
6. Adampan	ENReP	13. Deep well with hand pump	RAP
7. Thevanpiddy	ENReP	-	-

Source: JICA Project Team

Figure 6.4 Existing/ Ongoing Projects/ Schemes Identified in Mannar District

(c) Identification of Water Supply Schemes for the Road Map

Water supply schemes are identified from the following points of view, for the GN Divisions where existing/ongoing schemes do not supply sufficient water to all of the population of divisions.

Piped Water Supply Scheme

- Water sources suitable for drinking are made available only in the western limestone hilly terrain and the area near the Giant's Tank; in other words a water source suitable for drinking will not be available generally in the Rice Bowl area and coastal areas where most of the population inhabits. The water supply schemes are therefore first proposed as 'piped water supply scheme' with water sources from the groundwater in those water source areas.
- When excessive groundwater exploitation should be considered, surface water (river water) is then proposed, being equipped with water treatment facilities.
- Regional water supply schemes utilizing the groundwater have already been implemented by ADB-5th project or ENReP. Those existing/ongoing schemes are proposed to be extended to the neighboring GN divisions; i.e. Thevanpiddy WSS, Vidatalativu WSS and Adampan WSS of ENReP; Mannar WSS Murunkan WSS and Thiruketheeswaram WSS of the ADB-5th Project.
- For reasons of expediency, proposed extensions from the ongoing ENReP are limited within Manthai West DS/AGA division; while proposed extension from the ongoing ADB-5th project is limited in Mannar Town DS/AGA division and Nanaddan DS/AGA division; with a few exceptions.
- The proposed schemes that are not extensions of either the ADB-5th project or ENReP are assigned new scheme names.

The Other Water Supply Schemes

- Tube wells with a hand pump for each is proposed to the coastal area of Musali DS/AGA division where there are sparse villages only; with a further proposal as "the way forward" that those areas will be connected to a regional piped water supply scheme when times have matured.
- A protected open dug well equipped with a cover and hand pump for each is proposed for the areas of Madhu DS/AGA division where sufficient water to be used perennially is not available from either groundwater or surface water nearby; with a further proposal as "the way forward" that these areas should be water-supplied through a regional piped water supply system with water from the nearest perennial river of Aruvi Aru.

The summary of the proposal is shown in Table 6.30. Calculations of water requirements for the proposed schemes are shown in Table 6.31. The locations of the proposed schemes/ proposals for the Road Map are shown in Figure 6.5.

Table 6.30 List of Water Supply Schemes (WSS) Identified for the Road Map

Scheme Name	DS/AGA Division	Grama Niladhari Division		Project/ Funding	Water Source/Facility
*Talaimannar WSS	Mannar Town	MNR/048	Talaimannar Village North	to be identified	Water Requirement: 1,500 m3/day Water Source: Murunkan Tube Well Field of Aruvi Aru Facility/System: Piped-water supply system with one elevated tank
		MNR/049	Talaimannar Village South		
		MNR/050	Talaimannar Pier West		
		MNR/051	Talaimannar Pier East		
		MNR/052	Talaimannar (station)		
		MNR/053	Kaddukarankudiyiruppu		
*Provision of protected dug wells	Madhu	MNR/041	Keerisuddan	to be identified	Water Source: Protected dug well of 2.5 m dia. with a bottom 1m deep in the basement rock for the immediate requirement. The way forward: Water Requirement :1,500 m3/day; Regional piped water supply system with water source at Aruvi Aru (the nearest perennial river)
		MNR/042	Iranai Illuppaikulam		
		MNR/045	Kakkayankulam West		
		MNR/046	Kakkayankulam East		
		MNR/047	Kalmadhu		
		MNR/128	Maluvarayar Kaddaiadampan		
		MNR/129	Pannavedduvan		
		MNR/131	Thekkam		
		MNR/132	Matha Gramam		
		MNR/133	Periyamurippu		
*Pesalai WSS	Mannar Town	MNR/054	Thullukudiyiruppu	to be identified	Water Requirement: 2,500 m3/day Water Source: Murunkan Tube Well Field or Aruvi Aru Facility/system: Piped-water system with one elevated tan
		MNR/055	Pesalai West		
		MNR/056	Pesalai South		
		MNR/057	Pesalai North		
		MNR/058	Siruthoppu		
		MNR/059	Periya Karisal		
		MNR/060	Olaithodduwai		
*Northern Musali Regional WSS	Musali	MNR/135	Arippu East	to be identified	Water Requirement: 5,000 m3/day Water Source: Possibility of tube wells should be examined in the east area of Veppankulam and/or Maruthamadhu ; or otherwise, water source in Murunkan may be utilized. A total of 6 wells may be required for the demand of 2030. Facility/System: A regional piped-water supply system
		MNR/136	Meththanvely		
		MNR/137	Pandaravely		
		MNR/138	Poonochchikulam		
		MNR/139	Maruthamadhu		
		MNR/140	Veppankulam		
		MNR/141	Periya Pullachchi Potkerny		
		MNR/142	Sinna Pullachchi Potkerny		
		MNR/143	Ahathymurippu		
		MNR/144	Chilavathurai		
		MNR/145	Saveriarpuram		

Scheme Name	DS/AGA Division	Grama Niladhari Division		Project/ Funding	Water Source/Facility
		MNR/146	Puthuvely		
		MNR/147	Koolankulam		
		MNR/148	Kokkupadayan		
*Nanaddan WSS	Mannar Town	MNR/092	Uyilankulam	to be identified	Water Requirement: 1,400 m3/day Water Source: Water to be taken from the transmission main at Uyilankulam JCT of A14 road, the main from the tube wells in Murunkan. A total of 2 tube wells may be required for the demand of 2030 or Aruvi Aru. Facility/System: A regional piped-water supply system
		MNR/093	Mathoddam		
		MNR/095	Uyirtharasankulam		
	Nanaddan	MNR/105	Rasamadhu		
		MNR/106	Moddaikadai		
		MNR/107	Nanaddan		
		MNR/108	Pallankoddai		
		MNR/110	Periyakaddaikadu		
		MNR/111	Ilahadipiddy		
		MNR/112	Ilanthaimoddai		
*Madhu Church WSS	Madhu	MNR/037	Madhu	to be identified	Water source: An existing tube well + new wells in Parapukadanthan forest 14 km from the church; Facility/System: Mainly for pilgrims in high seasons
*Extension of Madhu Church WSS	Madhu	MNR/038	Periya Pandivirichchan West	to be identified	-ditto-
		MNR/039	Periya Pandivirichchan East		
*Extension of Thiruketheeeswaram WSS	Mannar Town	MNR/087	Periyanavatkulam	(ADB 5th)*1	Water Requirement: 94 m3/day (Water source: From Murunkan tube well field or Aruvi Aru)
		MNR/088	Nagathalvu		
*Extension of Vidataltivu WSS	Manthai West	MNR/015	Kaya Nagar	(ENReP)*1	Water Requirement: 1,100 m3/day (Water source: same for the Vidataltivu WSS)
		MNR/016	Periyamadhu West		
		MNR/017	Periyamadhu East		
		MNR/035	Parappukadanthan West		
*Extension of Thevanpiddy WSS	Manthai West	MNR/004	Illuppaikadavai	ENReP*2	Water Requirement: 350m3/day (Water source: same for the Thevanpiddy WSS)
		MNR/005	Anthoniarpuram		
*Extension of Thevanpiddy WSS	Manthai West	MNR/006	Kalliyadi	(ENReP)*1	Water Requirement: 150m3/day (Water source: same for the Thevanpiddy WSS)
		MNR/007	Kurai		
		MNR/008	Aththimoddai		
*Extension of Nanaddan WSS	Nanaddan	MNR/102	Vanchchiankulam	to be identified	Water Requirement: 1,300 m3/day (Water source: same for Nanaddan WSS from Murunkan, or Aruvi Aru)
		MNR/103	Umanagari		
		MNR/104	Achchankulam		
*Extension of Murunkan WSS	Manthai West	MNR/036	Parappukadanthan East	(ADB 5th)*1	Water Requirement: 2,500m3/day (Water source: same for Murunkan WSS from Murunkan, or Aruvi Aru)
	Nanaddan	MNR/109	Valkaipettankandal		
		MNR/113	Puthirakandan		
		MNR/114	Razool Puthuvely		
		MNR/115	Kanchchithalvu		

Scheme Name	DS/AGA Division	Grama Niladhari Division		Project/ Funding	Water Source/Facility
		MNR/116	Aththikuly		
		MNR/120	Sirukandal		
		MNR/121	Pontheevukandal		
		MNR/122	Kalimoddai Puliyankulam		
		MNR/123	Pariharikandal		
		MNR/124	Katkidanthakulam		
		MNR/125	Irraddaikulam		
		MNR/127	Isamalaithalvu		
*Extension of Erukkalampiddy WSS	Mannar Town	MNR/061	Puthukudiyiruppu	To be identified	Water Requirement: 3,500 m3/day (Water source: to be connected to the Mannar WSS with water from Murunkan , or Aruvi Aru)
		MNR/062	Thoddavely		
*Extension of Adampan WSS	Mannar Town	MNR/089	Neelasenai	(ENReP)*1	Water Requirement: 2,500 m3/day (Water source: same for the Adampan WSS from Murunkan, or Aruvi Aru)
		MNR/090	Kallikaddaikadu		
		MNR/094	Vannamoddai		
	Manthai West	MNR/018	Pappamoddai		
		MNR/019	Veddayamurippu		
		MNR/021	Maligaithiddal		
		MNR/023	Palaikuly		
		MNR/027	Andankulam		
		MNR/028	Kannady		
		MNR/029	Alkaddively		
		MNR/030	Karunkandal Vannakulam		
		MNR/031	Kaththankulam		
		MNR/032	Vaddakandal		
		MNR/033	Palai Periymalkaddu		
		MNR/034	Palayadi Puthukulam		
*Deep well + Hand pump schemes	Musali	MNR/151	Marichchukaddy	to be identified	Water Requirement:250m3/day (1 hand pump/100capita; 85 hand pumps)
(Army Camp)	Musali	MNR/153	Mullikulam	-	-
Total		96 Divisions			
*1: Organizations within parentheses are indicative only for financing because the proposed WSSs are the extension of the ongoing projects financed by that organization. *2: Organization without parentheses is the financing agency of the NWS&DB of Mannar, expected.					

Table 6.31 Water Requirement

Water Requirement for Road Map Schemes

Table-A-a On-going Water Supply Schemes with the Water Source from Murunkan

Water Supply Scheme	Fund	Beneficiaries 【2030】	Unit consumption	Domestic use	Other use		UFW		Total	Well Yeild	Operation Hour	Nos. of Well	
		(Person)	(L/Capita/day)	(m3/day)	(%)	(m3/day)	(%)	(m3/day)	(m3/day)	(L/min/well)	(h/day)	Nos.	Sum
Mannar WSS	ADB 5th	45,855	120	5,503	30%	1,651	20%	1,431	8,584	600	24	9.9	9.9
Thiruketheeswaram WSS	ADB 5th	1,478	120	177	30%	53	20%	46	277	600	24	0.3	10.3
Vankalai WSS	ADB 5th	5,787	120	694	30%	208	20%	181	1,083	600	24	1.3	11.5
Murunkan WSS	ADB 5th	1,285	120	154	30%	46	20%	40	241	600	24	0.3	11.8
Adampan WSS	Enrep	5,860	120	703	30%	211	20%	183	1,097	600	24	1.3	13.1
(Prepared by the Project Team (2011) based on the information provided by NWS&DB of Mannar)									11,282	600	24	13.1	14.0

Table-A-b Road Map Water Supply Schemes with the Water Source from Murunkan

Water Supply Scheme	Fund	Beneficiaries 【2030】	Unit consumption	Domestic use	Other use		UFW		Total	Well Yeild	Operation Hour	Nos. of Well	
		(Person)	(L/Capita/day)	(m3/day)	(%)	(m3/day)	(%)	(m3/day)	(m3/day)	(L/min/well)	(h/day)	Nos.	Sum
*Enhancement of Adampan WSS (Adjustement)	(Enrep)	646	120	77	30%	23	20%	20	121	600	24	0.1	4.2
*Extension of Adampan WSS	(Enrep)	11,407	120	1,369	30%	411	20%	356	2,135	600	24	2.5	4.1
*Enhancement of Murunkan WSS	(ADB 5th)	1,276	120	153	30%	46	20%	40	239	600	24	0.3	7.1
*Extension of Murunkan WSS (Adjustment)	(ADB 5th)	11,984	120	1,438	30%	431	20%	374	2,243	600	24	2.6	6.8
*Extension on Thiruketheeeswaram WSS	(ADB 5th)	501	120	60	30%	18	20%	16	94	600	24	0.1	7.2
*Nanaddan WSS	to be identified	7,386	120	886	30%	266	20%	230	1,383	600	24	1.6	1.6
**Extension of Nanaddan	to be identified	5,505	120	661	30%	198	20%	172	1,030	600	24	1.2	8.4
**Extension of Nanaddan (GN div of RAP 2-3 WSS)	to be identified	1,128	120	135	30%	41	20%	35	211	600	24	0.2	8.6
*Enhancement of Erukkalampiddy WSS (Adjustment)	to be identified	15,778	120	1,893	30%	568	20%	492	2,954	600	24	3.4	12.0
*Extension of Erukkalampiddy WSS	to be identified	6,429	120	771	30%	231	20%	201	1,203	600	24	1.4	13.4
Total									11,614	600	24	13.4	14.0
(Excluding Erukkalampiddy)									7,457				

Table -B Water Supply Schemes with the Water Sources for Thevanpiddy WSS

Water Supply Scheme	Fund	Beneficiaries 【2030】	Unit consumption	Domestic use	Other use		UFW		Total	Well Yeild	Operation Hour	Nos. of Well	
		(Person)	(L/Capita/day)	(m3/day)	(%)	(m3/day)	(%)	(m3/day)	(m3/day)	(L/min/well)	(h/day)	Nos.	Sum
Thevanpiddy WSS	Enrep	2,900	120	348	30%	104	20%	90	543	600	24	0.6	0.6
*Extension of Thevanpity WSS (Illuppaikadavai)	(Enrep)	939	120	113	30%	34	20%	29	176	600	24	0.2	0.8
*Extension of Thevanpity WSS (Anthoniapuram)	(Enrep)	752	120	90	30%	27	20%	23	141	600	24	0.2	1.0
*Extension of Thevanpity WSS (Kalliyadi, Kurai, Aththimoddai)	(Enrep)	798	120	96	30%	29	20%	25	149	600	24	0.2	1.2
									1,009	600	24	1.2	2.0

Table -C Water Supply Schemes with the Water Sources for Vidataltivu WSS

Water Supply Scheme	Fund	Beneficiaries 【2030】	Unit consumption	Domestic use	Other use		UFW		Total	Well Yeild	Operation Hour	Nos. of Well	
		(Person)	(L/Capita/day)	(m3/day)	(%)	(m3/day)	(%)	(m3/day)	(m3/day)	(L/min/well)	(h/day)	Nos.	Sum
Vidataltivu WSS	Enrep	8,500	120	1,020	30%	306	20%	265	1,591	600	24	1.8	1.8
*Extension of Vidataltivu WSS	(Enrep)	5,631	120	676	30%	203	20%	176	1,054	600	24	1.2	3.1
									2,645	600	24	3.1	4.0

Table -D Water Supply Schemes with the Water Sources for Northern Musali Regional WSS

Water Supply Scheme	Fund	Beneficiaries 【2030】	Unit consumption	Domestic use	Other use		UFW		Total	Well Yeild	Operation Hour	Nos. of Well	
		(Person)	(L/Capita/day)	(m3/day)	(%)	(m3/day)	(%)	(m3/day)	(m3/day)	(L/min/well)	(h/day)	Nos.	Sum
*Northern Musali Regional WSS	to be identified	27,363	120	3,284	30%	985	20%	854	5,122	600	24	5.9	5.9

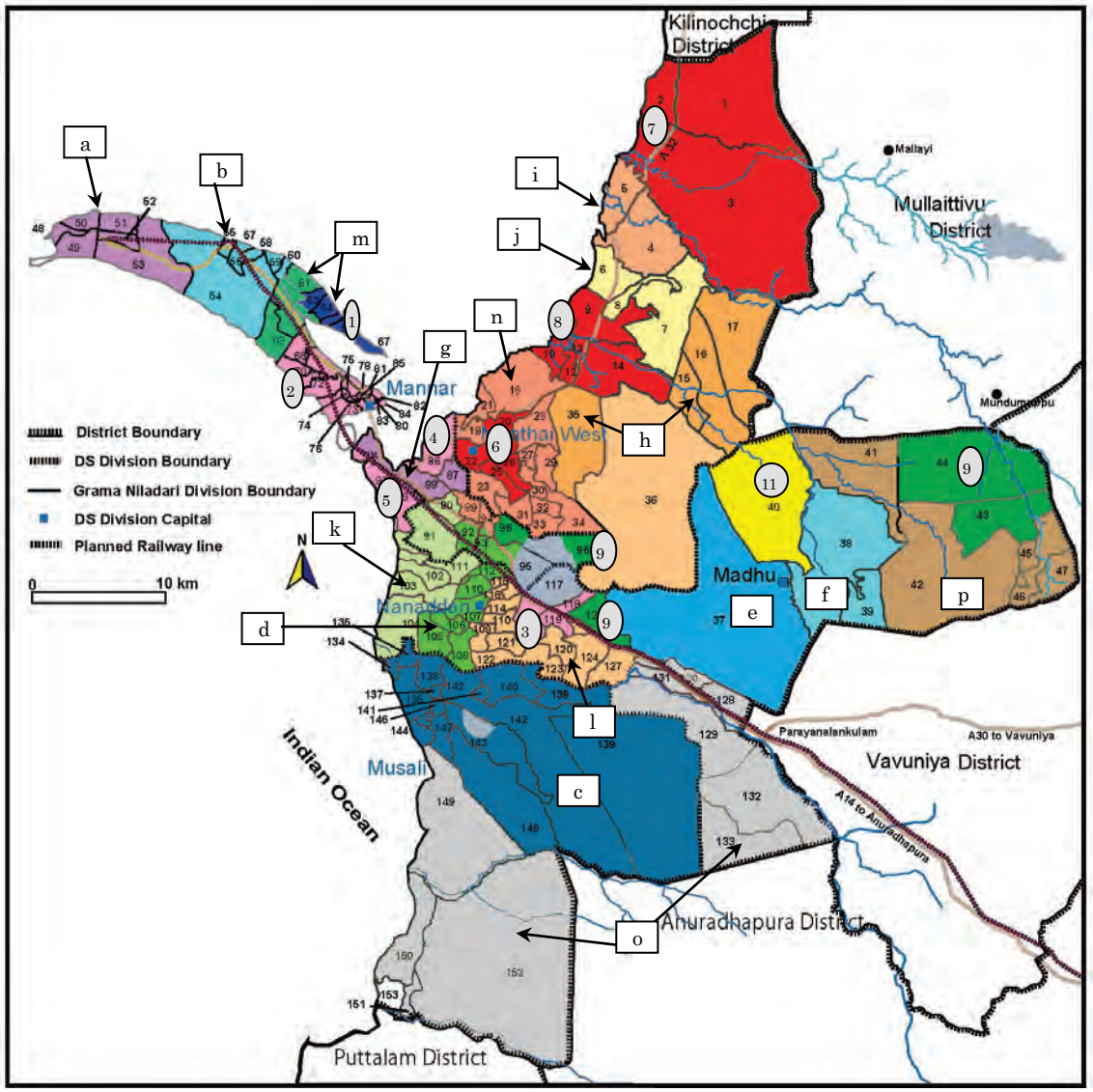
Table -E Water Supply Schemes with the Water Sources for Madhu Church WSS

Water Supply Scheme	Fund	Beneficiaries 【2030】	Unit consumption	Domestic use	Other use		UFW		Total	Well Yeild	Operation Hour	Nos. of Well	
		(Person)	(L/Capita/day)	(m3/day)	(%)	(m3/day)	(%)	(m3/day)	(m3/day)	(L/min/well)	(h/day)	Nos.	Sum
*Madhu Church WSS	to be identified	682	120	82	500%	409	20%	98	589	600	24	0.7	0.7
**Extention of Madhu Church WSS	to be identified	1,777	120	213	30%	64	20%	55	333	600	24	0.4	0.4
									922	600	24	1.1	1.0

Table -F Water Supply Schemes with Other Water Sources

Water Supply Scheme	Fund	Beneficiaries 【2020 or 2030】	Unit consumption	Domestic use	Other use		UFW		Total	Note
		(Person)	(L/Capita/day)	(m3/day)	(%)	(m3/day)	(%)	(m3/day)	(m3/day)	
Pesalai WSS		*13,033*	*120*	*1,564*	*30%*	*469*	*20%*	*407*	*2,440*	*Full requirement for the year of 2030*
Talaimaner WSS		*7,580*	*120*	*910*	*30%*	*273*	*20%*	*237*	*1,419*	
*Provision of Protected Dug Wells (Madhu)	to be identified	11,790	120	1,415	30%	424	20%	368	2,207	
*Provision of Protected Dug Wells (GN div. of RAP-1 WSSMadhu)	to be identified	645	120	77	30%	23	20%	20	121	Requiremet for "The-Way-Forward after 2030)
*Deep well + Handpump Project (GN div. of RAP 4-7 Musali)	to be identified	8,368	120	1,004	30%	301	20%	261	1,566	

Note: UFW stands for Unaccounted for Water.



Name of Scheme/Project		Name of Scheme/Project	
a.	Talaimannar WSS	i.	Extension of Thevanpiddy WSS-a (Anthoniarpuram, Illuppaikadavai)
b.	Pesalai WSS	j.	Extension of Thevanpiddy WSS-b
c.	Northern Musali Regional WSS	k.	Extension of Nanaddan WSS
d.	Nanaddan WSS	l.	Extension of Murunkan WSS
e.	Madhu Church WSS	m.	Enhancement/Extension of Erukkalampiddy WSS
f.	Extension of Madhu Church WSS	n.	Extension of Adampan WSS
g.	Extension of Thiruketheeswaram	o.	Deep well + Hand Pump
h.	Extension of Vidatalativu WSS	p.	Protected dug-wells
a+b+m: Mannar Island Regional WSS (1) - (11): Existing/Ongoing Schemes/Projects (see Figure-2) (JICA Project Team (2011)			

Figure 6.5 Identified Schemes/ Project for the Road Map

(3) Other Basic Infrastructure

In addition to housing and water supply mentioned above, access to basic infrastructure such as public buildings for community and village internal roads should also be ensured for the improvement of living standards and activation of activities in the community. When conditions allow, it is proposed that construction of those facilities be undertaken through community contract, which will enhance satisfaction of the community.

6.2.4 Promotion of Social Inclusion/ Social Unity

In order to drive the conflict-affected society towards self-reliance, it is vital, as a basis, to assist the community in appropriate manners to maximize their potential resilience.

(1) Strengthening of CBOs

CBOs play crucial roles in reconstruction and development activities in villages since they are the focal points of the communities. Their managerial skills on finance, personnel, assets and so on need to be enhanced and remain accountable and transparent through trainings and monitoring.

At the same time, the role of the Government is also important to provide appropriate assistance and create enabling environments for the CBOs/ communities. Therefore, the collaborative working relationship between CBOs and the Government sector is one of the key factors for successful village-wise development. For strengthening the relationship, opportunities need to be prepared to share the ground situation and development needs of communities, and to promote joint planning and implementation of village-wise activities[61].

(2) Promotion of Social Inclusion

Socially vulnerable people have their special needs besides the common needs to all of the community members. Particular emphasis should be given to the accessibility of any activities to the vulnerable groups. However, there is a possibility that an overemphasis on targeting the socially vulnerable people would make other members of the community feel neglected by or excluded from the outside assistance. This could be followed by a social disharmony within a community and isolation of the socially vulnerable people.

[61] A similar program has been implemented by UNDP (November-December 2011, Report #38, JOINT HUMANITARIAN AND EARLY RECOVERY UPDATE).

Therefore, it is important to take into consideration relations between the vulnerable groups and the rest of the members in a community when any organization plans its activities. To mitigate tensions and facilitate social inclusion of the vulnerable people, any organization should seek to design its activities to create opportunities for the targeted vulnerable population while also benefiting the whole community. In this respect, incorporation of the support for the socially vulnerable people into the community-based activities in combination with the activities targeting those people could be effective, especially in the post-conflict regions where the whole community has been affected by the conflict.

The Pilot Projects of the Project proved that microfinance activities and construction of community infrastructure through community contract promote social unity among the members of the village. Support from the public sector towards those activities will facilitate to drive the conflict-affected society towards peace and self-reliance.

6.3 Proposed Road Map: Sector-wise Development Plan

As discussed in Chapter 3, the concept of the Sector-wise Development Plan is illustrated in Figure 6.6.

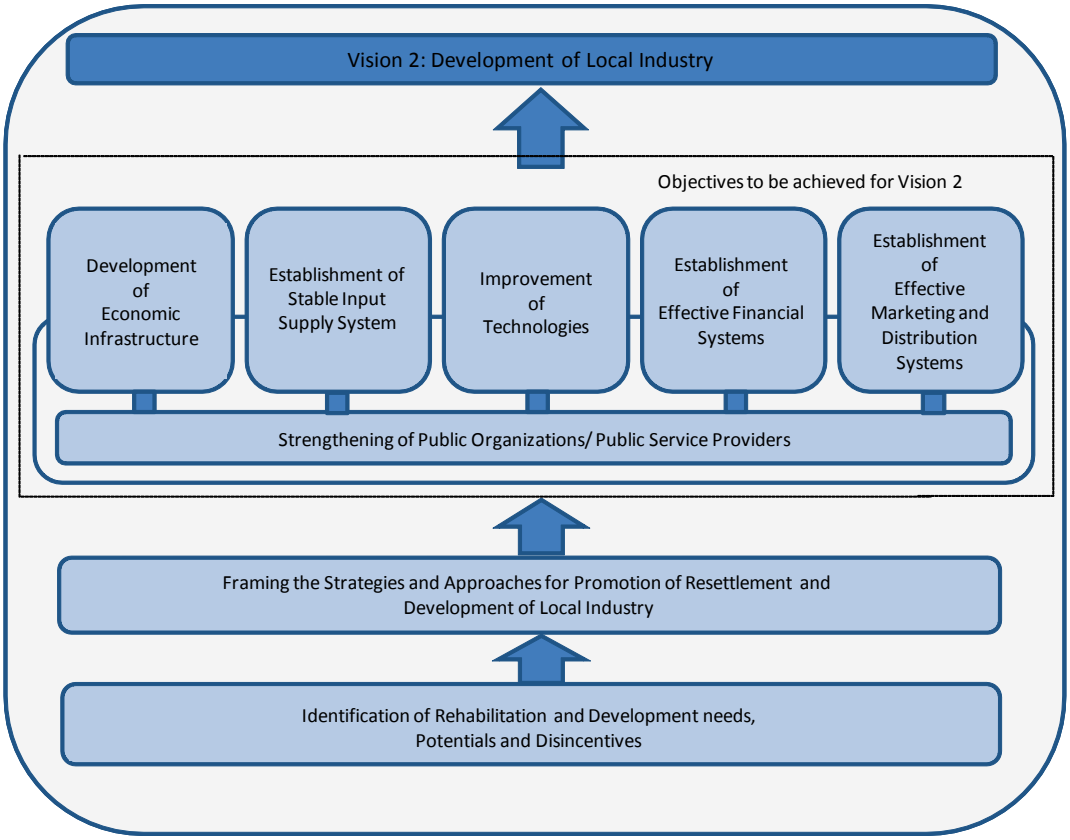


Figure 6.6 Concept of Sector-wise Development Plan

In order to formulate plans for development of industries in Mannar District, the agriculture and fishery sectors have to be taken into consideration first as they are the prevailing industries in the District, in which 70% of the population is engaged in agriculture and 25% in fishing[62].

As discussed in Section 3.2.4, the goal of the Sector-wise Development Plan is as follows: "the local industry to contribute to the improvement of livelihoods and living standards of the resettled communities is rehabilitated and developed." In any sector, the following objectives shall be met to fulfill the goal:

[62] Statistical Hand Book 2010 Mannar District, District Planning Secretariat

(1) Development of Economic Infrastructure
(2) Establishment of Stable Inputs Supply System
(3) Improvement of Technologies
(4) Establishment of Effective Financial System
(5) Establishment of Effective Marketing and Distribution System

In order to materialize the above objectives, "Strengthening Public Organizations and Public Service Providers" is required as a common factor to all the objectives.

Agriculture, especially paddy cultivation, is prominent in the District as 61% of the population engages in paddy production[63]. Meanwhile, other agricultural activities such as horticulture (OFC, fruits, vegetables) and livestock (dairy, poultry, etc) are not so popular though their potentials are high. Accordingly, development plans for the agriculture-related local industry need to incorporate horticulture and livestock in addition to paddy agriculture.

In order to plan the sector-wise development in agriculture, farmers' incomes of some of the sub-sectors are studied. These sub-sectors are paddy, OFC, vegetables, fruits, dairy and layer poultry. Although an agriculture activity of each sub-sector is not necessarily monoculture, a farm economy with a monoculture basis is analyzed in this study to simplify the analysis. The target of monthly per capita income of an agriculture activity of each sub-sector shall be set at approximately 80% of the national median monthly per capita income of the rural sector in Sri Lanka[64], which was Rs.8,636 in 2009. Accordingly, the target monthly income per family with four family members would be Rs.27,635 (Rs.8,636 x 0.8 x 4). It is anticipated that the other 20% of the income shall be created through combined agricultural activities with other sub-sectors, though a detailed analysis was not conducted for this report.

It shall be noted that the following are the prerequisites for achieving the above-mentioned Vision 2, especially in agriculture:

(1) Irrigation is further improved in terms both of facilities and operation and maintenance.
(2) Improved varieties of seeds, seedlings, livestock, etc. are introduced.
(3) Skills in cultivation, rearing, management, etc. are improved.
(4) Capacities of the staffs of the relevant Departments are strengthened to provide various services.
(5) Others.

[63] Statistical Hand Book 2010 Mannar District, District Planning Secretariat
[64] Refer to Table 5.5 in Chapter 5.

Fisheries in the District were also badly affected by the conflict. Marine capture fisheries have been confined to the coastal areas. Inland capture fisheries and aquaculture have been neglected though their potentials are very high.

Most of the potentials and disincentives of the sectors and the sub-sectors are common for the main and supplementary livelihoods discussed in Section 6.2. In the following sections, sector-wise and sub-sector-wise development plans are proposed.

6.3.1 Paddy Sector (Cluster I)

(1) Development Plan for the Paddy Sector

Mannar District is traditionally a famous paddy production area, though the production was greatly affected by the conflicts.

Contrary to its reputation, paddy agriculture is not necessarily profitable as discussed in Section 6.2.1 (1). However, it is not easy to change the cropping pattern taking soil conditions, drainage conditions, food security, alternative crops, etc. into consideration. Even though profitability is not so high, paddy agriculture shall take on a major role of the agriculture of Mannar District. As an industry, much improvement on cultivation skills, post harvest, marketing, etc. shall be needed to develop paddy agriculture.

Taking into account the potentials and disincentives of the sector discussed in Section 6.2, the following development themes and plans for the short-term and mid-term are proposed.

Table 6.32 Sector-Wise Development Plan for the Paddy Sector

Development Potentials and Disincentives	Objectives to be achieved for Vision 2 (Development of paddy-related local industry)	Development Theme	Development Plan for the short-term (2011-15)	Development Plan for the mid-term (2016-20)
▸Potentials: • Higher yield than the national average • Water is available if irrigation systems are rehabilitated. • Mannar was once a great provider of quality seed paddy. • Farmers have enough knowledge and techniques to absorb new technologies. ▸Disincentives: • Most of the paddy-related industrial facilities including farm roads are not fully functioning. • Low productivity due to poor machinery services.	(1) Rehabilitation and Development of Economic Infrastructure	Rehabilitation and improvement of irrigation systems including on-farm system	• Rehabilitate irrigation systems	• Control floods and increase irrigable areas • Augment existing irrigation systems
		Improvement of the facilities for reactivation of paddy-related local industry	• Rehabilitate rice mills, paddy stores and fertilizer stores • Install power supply system • Rehabilitate farm roads and other economic road systems	• Establish new rice mills by private and/ or public institutions for milling in the District
	(2) Establishment of Stable Input Supply System	Rehabilitation and improvement of stable supply of inputs	• Rehabilitate inputs (seeds, fertilizer, chemicals, etc.) distribution systems of MPCS • Restore backup services of DAD ASC • Strengthen machinery hiring services by public sector	• Encourage private sector for inputs supply • Establish machinery hiring services by FOs/ farmers' groups and private sector
		Rehabilitation and improvement of seed paddy production	• Reactivate seed paddy producers' association • Rehabilitate facilities of seed paddy processing	• Construct new seed paddy processing facilities

Development Potentials and Disincentives	Objectives to be achieved for Vision 2 (Development of paddy-related local industry)	Development Theme	Development Plan for the short-term (2011-15)	Development Plan for the mid-term (2016-20)
• Cultivation loans/ credit are not functioning due to inadequate bank outlets. • There are only a limited number of traders in the district. • Public services provided by DOA and DAD are not sufficient due to inadequate facilities and training opportunities for the staff.	(3) Improvement of Technologies	Development of value-added products to meet the market demand	• Improve training facilities and equipment • Improve training programs and systems • Strengthen extension activities at the field level • Encourage private sector for processing of products	• Technology development in collaboration with relevant research institutions
	(4) Establishment of Effective Financial Systems	Improvement of access to loan/ credit facilities by private sector	• Reorganize loan/ credit facilities for private sector • Establish mobile bank services in remote areas	• Strengthen loan/ credit facilities for private sector • Establish bank branches in each Division
	(5) Establishment of Effective Marketing and Distribution Systems	Improvement of marketing systems	• Collect marketing information • Identify potential markets • Create strategy on future marketing in collaboration with the private and public sectors • Encourage MPCS, FOs, farmers' groups for marketing	• Tap new market channels • Expand the activities for marketing by MPCS, FOs, farmers' groups
	(6) Strengthening of DOA and DAD	Capacity development to facilitate reconstruction and development of local paddy-related industry	• Rehabilitate facilities of DOA and DAD • Provide trainings for public service providers	• Construct new training facilities of DOA and DAD

(2) Future Production of Paddy in Mannar District

In order to make paddy monoculture profitable, it is necessary to increase the cultivation area of one operation unit by either one farmer or a group to facilitate utilization of the machinery. In the case of a group, excess laborers in the group shall engage in some other agricultural activities. If an average farmer who operates 1 ha of paddy land would like to continue independent cultivation, paddy agriculture integrated with non-paddy agriculture as discussed in Section 6.2.1 is proposed.

Since the target unit yield of the Road Map per ha is fixed at 7.0 ton/ ha, the planned production in Mannar District is projected to be 64,970 tons in 2020 as tabulated in the following Table 6.33, and the surplus production would reach 47,249 tons.

Table 6.33 Comparison of Paddy Production and Surplus in Mannar District in 1983 & 2020

No.	Description	Unit	1983	2020
1	Harvested Area*1	ha	14,970	14,970
2	Paddy Production	ton	65,000	104,790
3	Rice Production*2	ton	40,300	64,970
4	Population in Mannar District	ton	110,315	177,213
5	Unit yield of Paddy in Mannar	kg/ha	4,342	7,000
6	Unit Yield of Paddy in Sri Lanka	kg/ha	2,982	6,500
7	Rice per capita Consumption*3	kg/year	94	100
8	Consumption in Mannar	ton	10,396	17,721
7	Surplus	ton	29,904	47,249

Note: *1 Harvested area was the largest in 1983 and the paddy production in the country was almost self-sufficient. If the irrigable area in Yala is increased by construction of Maluwatu Oya Reservoir, crops of the increased area shall be utilized for OFC or other crops.
*2 Ratio of paddy production to rice production is 62% including seed, waste and other losses.
*3 National data and assumption in 2020
Source: The Project Team prepared based on the data from the Department of Census and Statistics, Central Bank Publications and District Hand Books

(3) Plan for Post Harvest

There were only a few rice mills whose processing capacity was more than 1.0 ton per hour (approximately 2,500 ton per year[65]) in Mannar District in the past, and they were also damaged due to the conflict. Therefore, most of the paddy produced was purchased by merchants and sent to Vavuniya and other areas for processing in the past and at present. Although the reconstruction and new construction of rice mills have been started recently, the numbers are still limited. At least 20 rice mills whose capacity is 1.0 ton per hour or

[65] Assuming 250 days per year and 10 hours per day operation.

more in addition to many small rice mills as discussed in Section 6.2 are required to process approximately 75% of the projected paddy production in Mannar District in 2020. At the same time, storage facilities of paddy are also required to store paddy for processing after harvests. It is suggested to establish rice mills equipped with color sorters, polishers and flour mills to enhance the value of the rice produced in the District.

The Project Team would like to recommend GA and other District officers including banks to encourage MPCS, FO/ federations, and private investors with certain incentives such as low interest credit, land allocation and so on to invest in rice mills so that paddy produced in the District would be processed in the District, which would create employment opportunities during construction and operation of mills and keep prices of rice in the District relatively cheaper.

The Government plan, "Development Priority of Sri Lanka," states that all villages in the country shall be electrified by 2012. This policy helps the rice processing industry to establish new facilities in Mannar District, though many areas in the District where people were displaced at the final stage of the conflict in 2008 and 2009 have not yet been provided with electricity by the end of 2011.

(4) Model Farm Economy as Industry

A farm economy of model farmers in Cluster I for paddy as the industry is discussed hereunder.

Table 6.34 Summary of Paddy Cultivation Economy for 4 ha Cultivation

Unit: Rs.

No.	Description	Cost	Amount
1	Gross Income (Unit Price: Rs.26/kg) (Yield: 7ton/ha)		784,000
2	Cost	394,390	
a	Material Cost	(152,990)	
b	Hired Labor (Male: 27 days, Female: 127 days)	(48,400)	
c	Machinery Cost	(193,000)	
3	Family Labor (Male: 120 days, Female: 75 days)	156,000	
4	Net Income including value of family labor		**233,610**
5	Net Income excluding value of family labor		**389,610**

Source: Prepared by The Project Team based on the information from DOA (Mannar) and Department of Census & Statistics

It is seen that the farmer can earn enough income from monoculture of paddy provided the farmer can achieve the yield of 7.0 ton/ha and owns a four-wheel tractor for the 4 ha paddy cultivation. The machinery cost includes depreciation, fuel, and other O&M costs. It is

known that the four-wheel tractor owner has substantial income from working for other farms and for construction works as reported in the Endline Survey. Therefore, it is considered that the farmer cultivating 4 ha of paddy land could earn enough for his livelihood, provided an initial investment cost is covered by a credit.

6.3.2 OFC and Other Agriculture Sector (Cluster II)

(1) Development Plan for OFC and Other Agriculture Sector

The OFC and other agriculture sector in Mannar District consists of OFC, vegetables, fruit and livestock. The Road Map is planned for the individual sub-sector. In the OFC and other agriculture sector, marketing plays a significant role to encourage cultivation and production. FOs and production groups shall be strengthened through study tours and field trips to the advanced areas such as paddy processing in Anuradhapura, banana production in the Walawe area, vegetables and dairy in System H of Mahaweli area, the market at Dambulla, etc. It is also suggested that specialty products in a specific area such as grapes in Jaffna, banana in Walawe, and dry fish in Mannar be promoted.

It will be necessary to provide technical guidance on skills required for the non-paddy agriculture by the DOA and various inputs such as seeds, saplings, fertilizer through the Agrarian Development Center (ADC) of the area, DOA, FOs and/or federations and the private sector, who are suppliers of inputs, buyers of products, facilitators of marketing and so on.

Taking into account the potentials and disincentives of the sector discussed in Section 6.2, the following development themes and short-and mid-term plans for the OFC and Other Agriculture Sector are proposed.

Table 6.35 Sector-Wise Development Plan for the OFC and Other Agriculture Sector

Development Potentials and Disincentives	Objectives to be achieved for Vision 2 (Development of Commercial OFC Cultivation)	Development Theme	Development Plan for the short-term (2011-15)	Development Plan for the mid-term (2016-20)
▸Potentials: • Suitable land for OFC cultivation is available. • Potential market is available in Mannar District and other areas. • The Government policy encourages increased production to substitute for imports. ▸Disincentives: • Farmers have a limited access to loans/ credit due to inadequate bank outlets. • Poor infrastructure for OFC cultivation throughout the year. • Seed and other input materials are not well distributed. • Farmers' poor knowledge on marketing information and	(1) Rehabilitation and Development of Economic Infrastructure	Restoration and development of infrastructure for OFC cultivation	• Restore agro-wells and irrigation facilities during Yala • Restore farm roads	• Develop water supply systems for Yala • Improve farm roads to stand in all weather conditions
	(2) Establishment of Stable Input Supply System	Rehabilitation and improvement of stable supply of inputs	• Establish nursery farms for production of seedling and saplings • Rehabilitate MPCS inputs (seeds, fertilizer, chemicals, etc.) distribution systems • Restore backup services of DAD ASC	• Encourage private nursery farms to produce seedlings and saplings • Encourage private seed suppliers to start their businesses
	(3) Improvement of Technologies	Enhancement of technologies to be utilized in OFC cultivation	• Provide trainings in OFC cultivation • Introduce multiple farming with livestock raising	• Provide trainings in advanced OFC cultivation • Introduce technologies for new varieties/ kinds of crops • Strengthen multiple farming with livestock raising
	(4) Establishment of Effective Financial Systems	Improvement of access of farmers and private sector to loan/ credit facilities	• Arrange cultivation loan / credit systems for OFC cultivation • Establish bank services in remote areas	• Arrange cultivation loan/ credit systems for OFC cultivation by private sector • Establish bank branch in each DS Division

Development Potentials and Disincentives	Objectives to be achieved for Vision 2 (Development of Commercial OFC Cultivation)	Development Theme	Development Plan for the short-term (2011-15)	Development Plan for the mid-term (2016-20)
marketing system. • Farmers' poor knowhow on OFC cultivation. • Post-harvest technology is not appropriate for value addition.	(5) Establishment of Effective Marketing and Distribution Systems	Improvement of marketing and distribution systems to reduce post-harvest loss and increase market value	• Study market demand & prices of commodities • Organize group production and marketing • Produce products based on the market demand	• Establish production areas for specific OFC products • Encourage timely production based on the market prices of the products • Improve post-harvest activities including storage, packing and transportation
	(6) Strengthening of Public and Private Service Providers	Capacity development to facilitate reconstruction and development of local OFC cultivation-related industry	• Rehabilitate facilities of DOA and DAD • Provide trainings for public service providers • Encourage private sector for processing of OFC products including fruits	• Construct new training facilities of DOA and DAD • Strengthen processing businesses by private sector

The development plan of the individual sub-sectors of the OFC and Other Agriculture Sector is described hereunder:

(2) Sub-sectors

(2) - 1: Other Field Crops (OFC)

(a) Plan for the Road Map

The Project Team proposes, as a plan for OFC agriculture in Mannar District, that production of each crop except ground nuts meet the requirements of the anticipated District population in 2020 (177,231) calculated based on the per capita consumption in 2009 in Sri Lanka. The ground nut production shall be three (3) times the 2009 production. The production and area to be cultivated for each crop is planned as shown in Table 6.36:

Table 6.36 Production Plan for OFC in the Mannar in 2020

No.	Crop	Mannar District, 2009		Mannar District, 2020		Sri Lanka, 2009
		Area (ha)	Production (ton)	Area (ha)	Production (ton) *	Per Capita Consumption (kg/capita)
1	Dry Chili	122	146.4	489	704	4.0
2	Onion	21	312.5	139	2,481	14.0
3	Pulses	139	139.0	484	581	3.6
4	Ground Nut	53	188.3	133	565	0.6
5	Maize	45	134.2	284	1,017	6.3
	Total	380				

Note: * Unit yield in 2020 shall be planned to be 20% higher than that in 2009.
Source: Planned by the Project Team based on Table 6.7

As shown in Table 6.36, the production of dry chili and onion in Mannar District in 2020 is projected to be 704 tons (5,672 tons of fresh chili) and 2,481 tons respectively, and the cultivation area in 2020 shall be 489 ha and 139 ha for chili and onions respectively, which are nearly four (4) times and seven (7) times greater than that in 2009.

Production of pulses, ground nut and maize may increase in parallel with the increase of production of onion and chili. Pulse could be cultivated just after the paddy harvest if soil conditions allow.

(b) Model Farm Economy of OFC

A farm economy of model farmers cultivating a specialized OFC as an industry is now discussed. OFC cultivation crops and cropping pattern are planned as shown in the

following figure, provided the farmer has a well for irrigation during the dry season.

No.	Crop	Area (ha)	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
1	Red Onion	0.4												
2	Cowpea	0.8												
3	Fresh Chili	0.2												

Figure 6.7 Cropping Pattern of OFC Cultivation

An OFC cultivation economy with the above cropping pattern, for which the minimum cultivation land shall be 1.0 ha in all, is shown in the following table.

Table 6.37 Summary of OFC Cultivation Economy for 1 ha Cultivation

Unit: Rs.

Description	Cultivation Cost Excluding Family Labor	Income				Remarks
		Gross Income	Net Income	Unit	Monthly Income	
Red Onion (0.4 ha)	163,860	570,000	406,140	/crop/year	33,845	3 months
Cowpea (0.8 ha)	53,200	125,100	71,900	/crop/year	5,992	3 months
Chili (0.2 ha)	33,410	84,750	51,340	/crop/year	4,278	8 months
Total	250,470	779,850	529,380		44,115	

Sources: Prepared by the Project Team based on the DOA information and field data collected

An OFC farmer could obtain a good income from only OFC cultivation, provided that the skills, intensive care, marketing arrangement, etc. of the farmer are appropriate. In particular, marketing is an important factor.

107 days of labor for two (2) workers in the family would be required for the above cultivation. There is some time then for other activities such as income generation and community activities.

(2) - 2: Vegetables

Vegetables in Mannar District are produced mainly in home gardens and backyards of farmers' residences. The cultivation area and production are not much, and consequently the marketing is not so active on vegetables at present.

(a) Plan for the Road Map

Taking the data on consumption of vegetables in different countries[66] into account, the per

[66] Annual consumption of vegetables in some countries are 337 kg in the United States of America, 249 kg in the United Kingdom, 284 kg in Japan in accordance with FAOSTAT (2003)

capita consumption of vegetables in Sri Lanka is planned at 150 kg/ year. Accordingly, the Road Map plans to supply sufficient quantities of vegetables in the District for per capita consumption of 150 kg/ capita/ year in 2020. A total production of 26,582 tons (177,213 x 150 /1000) would be required in Mannar District, assuming the average unit yield is the same as in 2009, which is 17 ton/ ha. The total cultivation area of vegetables in Mannar District shall be 1,564 ha**,** which is 4.1 times more than that in 2009.

The above calculation is theoretical and the actual situation would differ as many items would come from other districts while many other items could also be sold to other districts.

(b) Model Farm Economy of Vegetables

A farm economy of model farmers cultivating a specialized vegetable as an industry is now discussed. Vegetable cultivation crops and a cropping pattern are planned as shown in the following figure, provided the farmer has a well for irrigation during the dry season.

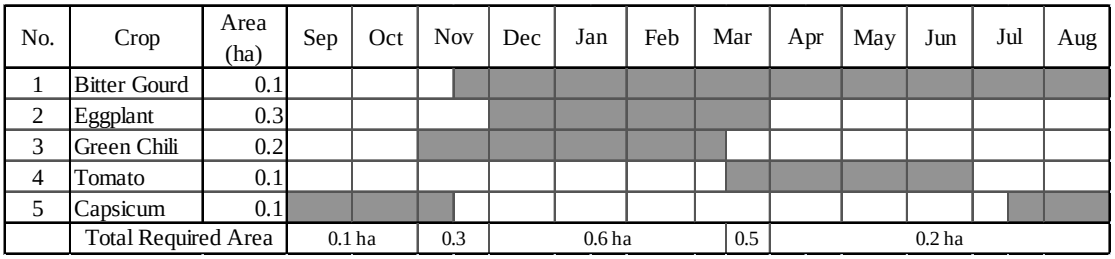


Figure 6.8 Cropping Pattern of Vegetable Cultivation

A vegetable cultivation economy with the above cropping pattern, for which the minimum cultivation land shall be 0.6 ha in all, is shown in the following table.

Table 6.38 Summary of Farm Economy Based Only on Vegetable Cultivation

Unit: Rs.

Description	Cultivation Cost Excluding Family Labor	Income				Remarks
		Gross Income	Net Income	Unit	Monthly Income	
Bitter Gourd (0.1 ha)	24,952	78,750	53,798	/crop/year	4,483	3 months
Eggplant (0.3 ha)	60,435	372,000	311,565	/crop/year	25,964	8 months
Green Chili (0.2 ha)	35,196	120,000	84,804	/crop/year	7,067	3 months
Tomato (0.1 ha)	6,032	26,250	20,218	/crop/year	1,685	
Capsicum (0.1 ha)	24,738	60,750	36,012	/crop/year	3,001	
Total	151,353	657,750	506,397		42,200	

Sources: Prepared by the Project Team based on the DOA information and field data collected

A vegetable-specialized farmer could obtain a good income from only vegetable cultivation,

provided that the skills, intensive care, marketing arrangement, etc. of the farmer are appropriate. In particular, marketing is an important factor.

88 days of labor for two (2) workers in the family are required for the above cultivation. There is some time for other activities such as income generation and community activities.

(2) - 3: Fruits

Fruit cultivation and production is one of the promising supplementary agriculture activities to upgrade livelihoods of IDP returnees.

(a) Plan for the Road Map

The production of fruits in Mannar District reached the international level if the products in the District were all consumed in the District.

The Road Map plans to make the District a specific area of specialty fruits, such as palmyra, coconut, cashew, mango and wood apple. For this purpose, production of seedlings and saplings is necessary and replacement of varieties, especially wood apple, shall be implemented while inducing entrepreneurs to the field of processing.

(b) Model Farm Economy of Fruits

For a fruit orchard, it takes time to bear fruit in some cases such as mango, jack, cashew, etc. while papaya, banana, passion, and so on bear fruit within a year.

As a model farmer of fruit production, the popular fruits mango and papaya are taken into consideration. Since mango reaches its highest production in the 10^{th} year, while Papaya could be productive in two (2) years after planting, it was planned for ten (10) years of operation to reap the economic return from one 0.4 ha of mango and 0.2 ha of papaya, which is cultivated in two (2) plots. The return is considered as shown in the following Table 6.39.

Table 6.39 Summary of Fruit Orchard Operation Economy

Crop Year	Papaya				Mango	Total (Rs.)
	Plot A (0.1 ha)	Plot B (0.1 ha)	Plot A (0.1 ha)	Plot B (0.1 ha)	0.4 ha	
1st	-121,111				-15,250	-136,361
2nd	635,380				-7,113	628,267
3rd	407,095	-121,111			-7,871	278,113
4th	194,276	635,380			-7,889	821,767
5th		407,095	-121,111		23,988	309,972
6th		194,276	635,380		76,656	906,312
7th			407,095	-121,111	132,077	418,061
8th			194,276	635,380	169,315	998,971
9th				407,095	267,115	674,210
10th				194,276	269,914	464,190
	Total Profit for 10 Years					5,363,502
	Annual Average of Total Profit (Total Profit / 10 years)				(Rs./Year)	536,350
	Monthly Average of Total Profit (Annual Profit / 12 months)				(Rs./Month)	44,696

Source: Prepared by the Project Team based on the DOA data.

The anticipated income of the orchard is very substantial though the initial investment is very high. The orchard has very high potential with proper management and technical inputs.

(2) - 4: Dairy

(a) Plan for the Road Map

Assuming that the number of milk cows will be the same in 2020 as in 2009, but that the productivity of the cows is increased by replacing the present cows with hybrid variety cows, it could be planned to replace all milk cows by hybrid variety cows by 2020 and the average milk production per day at the time would be 5 liters/ day per cow. Production of milk in Mannar District in 2020 would be 17.0m liters per year (11,630 x 0.8[67] x 5 liters/ day x 365 days), which is 2.3% of the national production planned, and 31.5 times higher than the production in the District in 2009. It would be justified that the population in Mannar District projected in 2020 is 0.8% of the national population projected in the year, which means production in Mannar District would be three (3) times higher than the requirement in the District.

It is inevitable to establish collecting centers and chilling centers for marketing milk. There are the following collection and chilling centers at present in Mannar District:

[67] 0.8 indicates the ratio of cows that produce milk.

Table 6.40 List of Milk Collection Centers in Mannar District

No	DS Division	Name of Village	Operator	Remarks
1	Nanaddan	Chemantivu/ Murunkan	MILCO/ Highland	Milk collecting + milk chilling center
2	Nanaddan	Kaddakadu	MILCO/ Highland (center managed by NISDO)	By UNDP Project
3	Nanaddan	Kathidanthakulma	MILCO/ Highland (center managed by NISDO)	By UNDP Project
4	Nanaddan	Mavilenkeni/ Murunkan	Nestle	Milk collecting + milk chilling center
5	Manthai West	Andankulam/ Adampan	Nestle	Milk collecting + milk chilling center
6	Mannar	Town	Dairy development co-op society	
7	Mannar	Vaddupiththanmadhu	MILCO/ Highland (center managed by NISDO)	By UNDP Project
8	Nanaddan	Naruvilikulam	WRDS (provided by UNDP)	Collecting Center & Processing

Note: NISDO: Nanaddan Integrated Social Development Organization
Source: Data collected by the Project Team

Table 6.41 List of Milk Chilling Centers in Mannar District

DS/ AGA Division	Name of Village	Operator	Capacity
Nanaddan	Chemantivu/ Murunkan	MILCO/ Highland (LIBCO)	2000 liters
Nanaddan	Mavilenkeni/ Murunkan	Nestle	4100 liters (2300+1800)
Manthai West	Andankulam/ Adampan	Nestle	1200 liters
Mannar	Town	Dairy development co-op society	Not function

Source: Data collected by the MANREP Team

In order to handle 17.0m liters of milk a year, approximately 230 collection centers, which could handle 200 liters per day, are required, and nearly seven (7) chilling centers, which could handle approximately 2,000 – 4,000 liters[68], are additionally necessary, assuming 50% would be collected from the dairy to send to factories from collection centers and the balance shall be kept at chilling centers for a few days before transporting to factories and processed in the District.

Appropriate organizations such as cooperatives, FO/ federations are needed for carrying out milk production and marketing milk and for coordinating milk processing firms. Organizations should have close contact with the Department of Animal Production and Health (DAPH) and other public and private institutions for introducing hybrid cows and for obtaining various support for vaccinations and animal health care, and milk factories for

[68] Depending on the handling capacity of a chilling center, the required number of chilling centers may differ.

marketing milk and milk products.

The organizations should have staff who will be trained for artificial insemination to maintain the quality of the cows. The role of DAPH is very important in this aspect. At the same time, FO and/or federations should employ veterinary surgeons as it will not be easy to obtain the DAPH services when the dairy industry is expanded in the District.

Aside from supplying milk as raw material to the milk factory, cooperatives and federations should start certain processing activities in the middle of the 2010s so that value addition can be achieved in the District. Such activities include milk processing, production of yogurt and ice cream, etc.

(b) Model Farm Economy of Milk Production

A farm economy of model farmers in dairy farming as an industry is discussed hereunder. Dairy farming is planned for five (5) years as the initial investment for the facilities and procurement of hybrid cows is substantial. The high quality of hybrid cows makes them very expensive.

Table 6.42 Summary of Dairy Farming Economy with 10 Cows

No.	Description	1st Year	2nd - 5th Year	For 5 Years
1	Total cost	1,205,200	460,200	3,046,000
2	Total cost excluding building, equipment & family labor	1,032,500	307,500	2,262,500
3	Milk selling income (Rs.)	730,000	730,000	3,650,000
4	Calf sale (Rs.)	50,000	50,000	250,000
5	Gross income	780,000	780,000	3,900,000
6	Profit from total cost	-425,200	319,800	854,000
7	Profit excluding family labor cost	**-252,500**	**472,500**	**1,637,500**
	Per year profit (5 Years)			**327,500**
	Per month profit			**27,292**

Note: In the table above, an annual milk production and a price of milk is assumed to be 14,600 liters and Rs.50/ liter respectively.
Source: Prepared by the Project Team based on DAPH Data and hearings

A specialized dairy farming family may require additional income. Dairy farming on a small scale as a supplementary income is very attractive, but larger scale dairy farming not so much. The reason is that feeding for a small-scale dairy could utilize grass in the surroundings and by-products of the rice mill, etc. while a larger dairy farming operation requires considerable quantities of feed to be procured. It may require more systematic planning and operation including production of grass and feed by the farmer.

(2) - 5: Poultry

(a) Plan for the Road Map

The Project established a poultry breeding farm to be operated by Nanaddan LIBCO, in which production of chicks could reach approximately 3,000 per month at the maximum with technical guidance from the DAPH.

Mainly layer poultry is proposed in the Road Map and annual production of eggs in Mannar District is planned. In the case that the annual per capita consumption of eggs in Sri Lanka increases to 120/ year, the production of eggs in Mannar District for self-sufficiency is 1.8m/ month (2.9 times higher than that of present) and the number of chicks would be 120,000 (1.6 times) by achieving an egg production of 0.5 per day per chicken. Taking the capacity of the poultry breeding farm established in the District into consideration, production of eggs in the Road Map shall be three (3) times that of the level of self-sufficiency in the District, which is 5.4m/ month with 360,000 chicks. This monthly production is 2.4% of the estimated national consumption per month in 2020.

(b) Model Farm Economy of Layer Poultry

A farm economy of model farmers in Layer Poultry as an industry is discussed hereunder. A model farm with 150 hens is taken into consideration. Egg production starts from the fifth month of one-month-old chicks until the nineteenth month with different efficiency of production. It is assumed that the average production efficiency is 70% for the 15 months. It would be justified that layer poultry with 150 hens is economically attractive.

Table 6.43 Summary of Layer Poultry Operation Economy with 150 Hens

No.	Description	Amount (Rs)
1	Total cost including building and equipment	484,875
2	Total cost excluding Family Labor	407,925
3	Gross income	918,750
4	Profit excluding Family Labor	433,875
5	Profit including Family Labor	508,825
	Income per month	26,780

Note: In the table above, the total egg production for 15 months out of 19 months and the price of an egg is assumed to be 47,250 and Rs.15/ egg respectively.
Source: Prepared by the Project Team based on the DAPH data, FAO information and others

(2) - 6: Other Agriculture Activities

There are many other agriculture activities that are not attended to in this section. Those include coconut production, Palmyra production, broiler poultry, etc. Those are also to be carried out in parallel with the above-proposed activities.

(3) Summary of Proposed Activities of Agriculture Sub-sectors

The activities and farm incomes of the agriculture sub-sectors studied in this Chapter are summarized in the following table.

Table 6.44 Summary of Activities and Farm Incomes of Agricultural Sub-sectors for Sector-wise Development Plan

No.	Sub-sector in Agriculture	Description	Monthly Family Income (Rs.)	Family Income From One Rotation (Rs.)	Ratio against Monthly Median Family Income* (%)
1	Paddy	• 4 ha cultivation • yield 7.0 ton/ha • owning 4W Tractor	32,468	389,610	94
2	OFC	• 1.0 ha cultivation (red onion: 0.4 ha, Cowpea: 0.8 ha & Chili: 0.2 ha)	44,115	529,380	128
3	Vegetables	• 0.6 ha cultivation (Bitter gourd: 0.1 ha, Eggplant: 0.3 ha, Green Chili: 0.2 ha, Tomato: 0.1 ha, Capsicum: 0.1 ha)	42,200	506,397	122
4	Fruits	• 0.6 ha cultivation, (Papaya: 0.2 ha & Mango: 0.4 ha) • substantial initial investment • 10 years' duration	44,696	5,363,502	129
5	Livestock Dairy	• 0.4 ha for feeder • procurement of other feeds • substantial initial investment • 10 cows • 5 years' duration	27,292	1,637,500	79
6	Livestock Layer Poultry	• Procurement of feeds • substantial initial investment • 150 hens • 19 months' duration	26,780	508,825	78

Note: * National Monthly Median Family Income in Rural Sector in Sri Lanka in 2009 is Rs. 34,544.
Source: Prepared based on the study by the Project Team

6.3.3 Fisheries Sector (Cluster III for Marine Capture Fisheries, Cluster I for Inland Capture Fisheries, Cluster I & III for Aquaculture)

(1) General

Mannar District is experiencing severe shortcomings in the marine and inland fisheries sectors as a result of the long conflict. In the marine sector the shortcomings are on the fish landings, post-harvest handling and marketing system in comparison to the southern and western districts where the fish landing sites have been relatively developed with basic and functional facilities in the past two decades. Additionally, as the District with extensive perennial water bodies (tanks), the inland fisheries were neglected in terms of fingerling stockings and management of reservoirs and tanks, and also in promoting culture-based fisheries activities with CBOs. Under this prevailing situation, the District is not adequately prepared to contribute to or assist in restoring and improving the livelihoods of conflict-affected people, especially in Manthai West AGA Division and in the hinterlands, as well as to the overall development of the fisheries in the District.

(2) Supply-Demand (SD) Balance of Fish

The Supply-Demand (SD) balance of fish in Mannar estimated for 2010 is shown below. The total supply was 11,235 tons; the main contributor is the coastal marine fish landing with 11,015 tons, and inland fish production is very small at around 2% (220 tons). For species composition, refer to Table 1 of **Annex 14**. It is estimated that around 83% (9,361 tons) were marketed out of the District, and the remaining 17% (1,875 tons) was consumed within the District. Using the Mannar District population of 124,700 in 2010, the per capita supply availability was about 15 kg/ person in 2010, which is above the national target of 13.4 kg/ person in 2010.

Table 6.45 Supply-Demand Balance of Fish in Mannar District (2010)

Unit: ton

Category	SUPPLY					DEMAND		
	Fish Production			Inflow	Total	Local Consumption	Outflow	Total
	Coastal	Inland	Culture					
Fin Fish	7,767	-	-	-	7,767	1,467	6,301	7,767
Crustaceans	2,535	-	-	-	2,535	254	2,282	2,535
Sharks/skates	713	-	-	-	713	63	651	713
Freshwater fish	-	220	-	-	220	92	128	220
Total	**11,015**	**220**	**-**	**-**	**11,235**	**1,875**	**9,361**	**11,235**

Remarks: 1) Inflow refers to fish products brought into Mannar District. No data available although there seems to be inflow of fish products during the off-season, including canned fish, dried fish, etc.
2) Outflow refers to fish products marketed for consumption areas outside Mannar (cities, towns, etc.)
3) Local consumption estimation: about 19% for fish (in fresh & dried form); about 10% for crustaceans (in fresh form), and less than 10% for sharks/skates in fresh & dry form; about 40% for inland fish (freshwater fishes).

Source: 1) Fish production compiled from Mannar DFAR data.
2) Local consumption estimated based on interviews with major traders, transporters and processors.

(3) Basic Characteristics of the Fisheries Sector

A summary of the District's fish production, operating fishing fleet, fishing community, available on-land fisheries infrastructure facilities, etc., is summarized below. For details, refer to the tables in **Annex 14**.

(a) Marine Capture Fisheries

Marine fish production

The District's marine capture fisheries have been confined to its coastal areas (in 6 F.I. Divisions) with a coastline of about 163 km and wide continental shelf areas. During the pre-conflict years, Mannar contributed around 10% of the country's marine production (Refer to Table 6.46 below), which dropped to less than 5% during the conflict years, and even to 0.5% in 2000. With the rehabilitation and recovery activities in place, the landing is at around 3%, and likely to increase gradually.

Fish landings by F.I. Divisions and their usages are shown in Table 2 and 3 of **Annex 14**.

Table 6.46 Trend of Coastal Marine Fish Landings of Mannar District

	1983	1990	2000	2005	2006	2007	2008	2009	2010	2011
Marine landing (ton)	19,040	7,410	1,200	4,819	9,288	7,470	6,468	7,305	11,017	11,156
(Share to Sri Lanka)	(10.3%)	(5.1%)	(0.5%)	(3.7%)	(4.3%)	(3.0%)	(2.4%)	(2.5%)	(3.3%)	(2.7%)*

Remarks: Asterisk (*) refers to share based on the production target of 416,211 tons for 2011.
Source: 1) Fisheries Statistics, (MFARD); 2) DFAR Mannar Statistics Section.

Fishing Fleet

With the gradual increase in the fishing fleet (refer to Table 6.47 below), a notable increase in coastal marine fish production is observed from 4,819 tons in 2005 to 11,156 tons in 2011, indicating the potential for increments in fish catches (refer to Table 6.46 above). The fishing activities are now conducted only in the coastal waters (inshore). As of December 2011, fishing operations are conducted using 2,652 crafts, of which around 75% are motorized; this includes 82 day-boats, 1,747 OFRB and 185 MTRB (Vallams). The rest are non-motorized crafts.

Table 6.47 Trend of Operating Fishing Fleet of Mannar District

Operating fishing crafts	1981	1982	1997	2009	2011
- Multi-day boat	-	-	-	-	-
- Day boat (1DAY)	347	24	26	60	82
- OFRP boats	1,013	86	595	1,220	1,747*
- MTRB	217	81	53	130	185*
- NTRB	512	607	449	500	610
- NBSB	-	115	28	95	28
Total	2,089	913	1,151	1,985	2,652

Remarks: Asterisk (*) includes fishing crafts provided in the Project
Source: 1) Fisheries Statistics, (MFARD); 2) DFAR Mannar Statistics Section.

On-land fisheries infrastructure facilities

Mannar District has around 41 village-level fish landing sites scattered along its coastline that are devoid of any basic facilities. The major fishing operations in the District include Vankalai, Pesalai, Erukkalampiddy, Talaimannar New Pier, South Bar, Chilavathurai, Arippu, Pallimunai and Vidataltivu. The available fisheries infrastructure facilities are summarized in the table below. There are no fishery harbors or anchorages. There is one boat manufacturing yard and six ice making factories with a total capacity of around 110 tons per day (tpd). For details on the facilities by F.I. Division, refer to Tables 4 through 6 of **Annex 14**.

Table 6.48 Existing Fisheries Infrastructure Facilities of Mannar District

Items	Description
- Fishery harbors	None
- Fishery anchorages	None
- Fish landing points/sites	41 sites
- Boat manufacturing/repairing yard	1 boat yard
- Ice-making facilities (capacity)	6 (110 tons)
- Cold stores/ice stores	None

Source: 1) Fisheries Statistics (MFARD); 2) DFAR Mannar Statistics Section, 3) MANREP Project Team.

(b) Inland Capture Fisheries and Aquaculture

Mannar District has extensive inland water bodies, both perennial and seasonal; these water bodies support around 586 inland fisher households in the District according to NAQDA. The extent of inland water bodies and the available inland fish production data are presented below. The lowest production was around 40 tons in 2007 and it currently stands at around 220 tons. Fish catches mainly consist of tilapia and carp. For details, refer to **Annex 14**. The Government promotes capture fisheries in perennial and seasonal water bodies through stocking of fingerlings, distribution of outrigger canoes (orus) and gill nets.

Table 6.49 Extent of Freshwater Water Bodies for Inland Fisheries

	No	ha
Inland water bodies		
- Major & medium tanks	12	4,070
- Seasonal tanks (village tanks)	6	50

Table 6.50 Inland Fish Production of Mannar District

	1998	2000	2001	2005	2006	2007	2008	2009	2010
- Freshwater fish production (ton)	140	228	180	n.a.	n.a.	40	320	180	220
(Share to Sri Lanka %)	(0.47)	(0.62)	(0.6)			(0.1)	(0.72)	(0.39)	(0.43)

Source: Statistical unit of MFAR

Aquaculture is not yet an activity in Mannar District; hence there is no data on aquaculture production. Aside from a few trials of marine aquaculture activities, namely in sea cucumber, oysters, and fattening of crabs, there is no known commercial aquaculture activity in the inland waters and marine coastal areas. The coastal marine habitats constituting mangroves, salt marshes, lagoons and estuaries are also a potential for aquaculture of shrimp, crab, oysters, fishes, etc. This potential has not been exploited at all in spite of the presence of high-value fish and invertebrate species.

Table 6.51 Extent of Coastal Habitats Potential for Marine Aquaculture

Coastal marine habitats	ha
- Mangroves	410
- Salt marshes	2,810
- Lagoons	1,390
- Estuaries	400

(4) Sector – Zonal Plan

Under the prevailing status of the fisheries as delineated above and in Section 6.2.1 and 6.2.2 (Marine Capture Fishery Area & Inland Capture & Culture-based Fishery), a sector-zone plan in the fisheries Road Map is proposed to resolve the problems/issues & disincentives in the sector in order to realize its full potential to support livelihood restoration and future development of the fisheries sector in general.

(a) Development Goal of the Sector Plan

The development goal of the sector plan is to achieve quantitative and qualitative enhancement of fish production through use of the limited fisheries resources in a sustainable way in order to contribute to a rise in income and improved living conditions of fishers as well as to develop the economy of the District as a whole.

(b) Development Strategies of the Sector Plan

The following main strategies are considered for achieving the development goal.

- Promote an effective and sustainable use of the fisheries resources potential and inland water bodies potential for dynamic fishing activities in the coastal and hinterland communities.
- Establish fishing and fish marketing bases & infrastructure, and a system of marketing network through modernized fishing.
- Promote effective use of fish catches through modernized fish marketing, processing and quality control activities.
- Institutional strengthening of the community-based organizations (CBOs, FCSs, etc.) and DFAR and NAQDA to provide effective and efficient support and services.
- Promote aquaculture activities both in the coastal and inland waters to raise fish

production to support the nation's food security.

(c) Development Approaches of the Sector Plan

For the successful performance of the development strategies, two approaches are considered, namely sectoral and zonal approaches as shown below.

Sectors
Sector-1: Fishery resources & production
Sector-2: Fish marketing & distribution
Sector-3: Fish processing & quality control
Sector-5: Institutional strengthening (CBOs, DFAR & NAQDA)
Sector-6: Inland water fisheries
Sector-7: Aquaculture (Marine & Inland)

(d) Zoning of Mannar District as Fish Production Zone

Mannar District can be characterized into production zones based on its geography and the following factors.

- Strategic locations of fish landings and fish supply
- Marketing and distribution activities
- Accessibility to services

The three coastal production zones cover the following Fisheries Inspection (FI) Divisions, and a brief description of the zones characterizing the fishing community, fishing crafts and on-land infrastructure, etc. is shown below (Table 6.52). For details on each production zone refer to Tables 4 through 6 of **Annex 14**. The hinterland, especially the surrounding inland water bodies, covers an inland fish production zone. The four zones and their locations are indicated below.

Table 6.52 Summary Description of Fish Production Zones of Mannar District

Zones	Coastal Marine Areas (Cluster-III)			Hinterland (Cluster-I)
	Production Zone-1	Production Zone-2	Production Zone-3	Production Zone-4
FI Divisions (No. of villages)	Pesalai, Erukkalampiddy &Mannar (18 fishing villages)	NanaddanNanaddan & Chilavathurai (13 fishing villages)	Vidataltivu (8 fishing villages)	586 Inland fisher households*
Brief Description	Scattered fishing villages along Mannar Island to Talaimannar with Pesalai playing a major role in marketing & distribution.	Scattered villages located in sandy beach south of the Mannar island	Scattered villages located north of Mannar Island; this zone has extensive lagoon & mangroves, marshes.	Inland fishing & farming households depending on supplementary fishing (eg. Giant's Tank, Periyamadu, etc.)

Zones	Coastal Marine Areas (Cluster-III)			Hinterland (Cluster-I)
	Production Zone-1	Production Zone-2	Production Zone-3	Production Zone-4
Fishing Families	5,657	2,051	978	586 Inland fisher households*
Fishing Population	21,895	7,650	3,712	
Active Fishermen	5,685	2,397	711	
Production (ton)	7,115	2,800	1,240	220**

Remarks: 1) Figures are for 2011. 2) ** Figures for 2010.
Source: 1) DFAR Mannar Statistics Section, 2) MANREP Project Team, 3)* NAQDA Strategy Document.

Table 6.53 Roles and Functions of the Four Zones in the Sector Plan

Zones*	Roles
Production Zone-1	- Major consumption areas with Mannar town in the zone. - Main fish supplier; 64% fish landed & base for day-boats & for multi-day boats. - Provides marketing services (ice, transport, trading, etc.) especially in Pesalai. - Attractive fish marketing & collection base of fish landed in Zone-1 & Zone-3. - Pesalai in particular functions as a major trading and processing base for fish. landed in Zone-2 and Zone-3, and Zone-4 (inland fish catches of Giant's Tank are seasonally brought to Pesalai for dry fish processing). - Serves as temporary fishing base for migrant fishermen (during south-west monsoon) from Negombo, Chilaw, etc., even from Zone-2. - High potential for development; a fishing harbor plan in the pipeline. - Pesalai is expected to be a nucleus linking the four zones in future.
Production Zone-2	- Located close to Mannar town, a major consumption area. - Scattered landing sites with substantial fish collected &transferred to Pesalai, for marketing to Colombo, etc. - High potential for development; a fishing harbor plan in the pipeline.
Production Zone-3	- Scattered fish landing sites; 11% fish landed, and located about 30-50 km from Mannar town. - Serves as satellite zone supplying fish catches to Zone-1 for marketing to Colombo. - Vidataltivu (fishing landing site) in particular will play a central role in future (already with better facilities than other villages). - With extensive mangroves and lagoons, the zone has high potential for aquaculture development.
Production Zone-4	- Perennial water bodies supporting inland households depending on fishing. - Giant's Tank & Periyamadu supports fishing; still in earlier stage of development. - Mini-hatchery plan envisaged by NAQDA for Northern Province will enhance fingerlings supply and culture-based aquaculture.

Remarks: 1) Fish landed percent refers to fish landings in 2011
2) ** Hinterland refers to areas (outside Cluster-III) with inland water bodies in Cluster I.

(e) Relationship of Sectors and Zones of Mannar District

The relationship of the sectors and the designated zones are summarized in the following table. Please note "directly related" emphasizes the necessity and its relevance to the "indirectly related." The urgency and priority shall be discussed under the proposed projects.

Table 6.54 Relationship of Sector and Zonal Plan for Mannar District

SECTORS	Cluster-III (Coastal Areas)			Cluster-I
	ZONE-1	ZONE-2	ZONE-3	ZONE-4
A. Sector-1: Fishery resources & production				
(1) Replacement of damaged fishing crafts & equipment.	⊙	O	O	O
(2) Fish landing jetty and ancillary facilities.	O	O	⊙	-
(3) Provision of stores for fuel, engine, space for net repair.	O	O	O	-
(4) Improved (modernized) fishing crafts & equipment (off-shore).	O	⊙	-	-
(5) Training of fishing techniques oriented to offshore fishing.	O	O	⊙	-
B. Sector-2: Fish Marketing & Distribution				
(1) Provision of marine fish landing/handling & marketing facilities.	O	O	⊙	-
(2) Establish cool room and cold room facilities.	O	⊙	⊙	-
(3) Establish properly sited landing places (sites) around reservoirs.	-	-	-	O
(4) Inland marketing sheds and stores for fish, ice, boxes, etc.	-	-	-	O
C. Sector-3: Fish processing & quality control				
(1) Provide dry fish processing techniques (similar to MANREP).	O	O	O	O
(2) Provision of training on handling & sanitary practices.	O	O	O	O
(3) Development of new products.	O	O	O	O
D. Sector-4: Fishing community development				
(1) Reorganizing & strengthening the FCSs & CBOs.	O	O	O	O
(2) Rehabilitate damaged building & facilities.	O	O	O	O
(3) Promote economic activities for self-reliance.	O	O	O	O
E. Sector-5: Institutional strengthening (DFAR & NAQDA)				
(1) Develop the administrative facilities & equipment.	O	-	-	-
(2) Fill-up the vacancies of FIs.	O	-	-	-
(3) Provide technical training for FIs.	O	-	-	-
F. Sector-6: Inland water fisheries				
(1) Restore fingerling stocking by NAQDA and CBOs.	-	-	-	O
(2) Establish fry-fingerling raising ponds & facilities for CBOs' operation.	-	-	-	O
(3) Promote culture-based activities in selected water bodies.	-	-	-	O
G. Sector-7: Aquaculture (Marine & Inland)				
(1) Develop commercial-oriented aquaculture thru private sector.	⊙	⊙	O	-
(2) Promote community-based aquaculture activities.	⊙	⊙	O	-

Legend: O= Directly related; ⊙= Indirectly related.
Note: Zone-1: Pesalai, Erukkalampiddy & Mannar, Zone-2: Nanaddan & Chilavathurai, Zone-3: Vidataltivu, Zone-4: 586 Inland fisher households

Taking into account the potentials and disincentives of the sector discussed in Section 6.2 and above-mentioned Sector-Zonal Plan, the development themes and short-and mid-term plans for the Fisheries Sector are proposed in the following table.

Table 6.55 Sector-Wise Development Plan for the Fisheries Sector

Development Potentials and Disincentives	Objectives to be achieved for Vision 2 (Development of Fishery-related local industry)	Development Theme	Development Plan for the short-term (2011-15)	Development Plan for the mid-term (2016-20)
▸Potentials: • Rich & diverse marine resources ▸Disincentives: • Low-powered fishing crafts • Devoid of basic & functional facilities • Lack of financial sources • Insufficient technical manpower and logistics support to provide extension services by Mannar DFAR	(1) Rehabilitation and Development of Economic Infrastructure	Sustainable use of the marine resources for food security of communities and District's economy.	• Establish landing & marketing facilities at strategic sites for easy access to resources	• Establish similar facilities to other potential sites. • Upgrade facilities to promote off-shore fisheries.
	(2) Establishment of Effective Financial Systems	Easy access to financial sources to promote & develop viable fisheries activities.	Provide easy access to loans/funds for viable activities; promote economic activities among FCSs/CBOs to augment income & savings (to be financially independent).	
	(3) Establishment of Effective Marketing and Distribution Systems	Increase in value-addition and reduction of post-harvest loss	Organize & develop the existing receiving & distributing point (Pesalai) to play a central role, and accordingly provide appropriate facilities (cold room, freezer, fish stores, etc.) to strengthen market linkages with remote fishing villages.	
	(4) Improvement of Technologies	Promotion of appropriate technologies for local industry development (fishing, aquaculture, marketing, processing, etc.)	• Gradual improvement of fishing crafts to extend off-shore fishing. • Introduce appropriate technology to develop local marketing & processing (for value-added products) with private sector participation. • Formulate zonal aquaculture plans to encourage set-up of commercial aquaculture of high-value exportable species by investors.	
	(5) Strengthening of DFAR	Capacity-development to facilitate reconstruction and development of local fishery-related industry	• Provide office & logistic facilities (computers, bikes, etc.) to function. • Increase man-power (fisheries inspectors) to impart extension & training. • Provide trainings for FIs in line with technological development.	

6.3.4 Common Supporting Activities Necessary to Promote Sector Development

To promote sector-wise development in Mannar District, the following supporting activities common to all the sectors are required:

(1) Expediting improvement of economic infrastructure to connect to other districts.

Mannar is a relatively isolated district in Sri Lanka as it takes a long time to transport the products to other districts including Colombo, where the major consumption takes place in the country. Therefore it will be helpful for promoting sector-wise development in Mannar District to expedite construction of roads such as A32 and the road between Puttalam to Mannar, the road between Mankulam and Vellankulam, the railway to Mannar, and so on, which will minimize the time and cost for transporting goods.

(2) Encouraging MPCS, various federations and private entrepreneurs

It is appropriate to establish commercial entities to promote sector-wise development in a sustainable manner. In this view point, MPCS and various federations of sector-wise CBOs may take on key roles as they have been doing traditionally. Further, it is also inevitable to encourage private entrepreneurs to enter into the sector-wise industries and to develop them. It is essential for the public institutions to provide the following trainings to potential entrepreneurs in the District:

(a) Familiarization of laws and guidelines of public institutions to establish commercial entities in a certain sector
(b) Accounting, administration, marketing and basic technology of a certain sector
(c) Procedures of receiving and handling loans and credits for the commercial entities
(d) Others.

6.4 Priority Projects

6.4.1 Selection of Priority Projects

Proposed Projects for the Road Map are selected on the basis of the following criteria.

(1) Village-wise Development Plan

The Projects for the Village-wise Development Plan aim to enhance living conditions and livelihoods of IDPs and to strengthen community-based activities to improve their lives and livelihoods (**Vision 1** mentioned in Section 3.2.4.)

Selection Criterion	Indicator
Necessity	• The necessity of the Project is recognized by the community and the local authorities.
	• The Project contributes to improving the living conditions and income levels of returnees and their resettlement is promoted because of the Project.
Urgency	• The Project is urgently needed to improve the living conditions and income levels of returnees.
Relevance	• The Project is consistent with the National plans/ District plans.
	• The Project is technically feasible to implement.
	• Necessary resources to implement the Project are available (however, budget does not need securing in this selection stage).
Impact	• Number of beneficiaries.
	• The Project has a positive impact on improvement of the livelihoods of resettled communities.
	• The Project has no negative impact on the environmental and social conditions in or around the community.

(2) Sector-wise Development Plan

The Projects for the Sector-wise Development Plan aim to develop predominant local industries, namely agriculture and fisheries (**Vision 2** mentioned in Section 3.2.4.)

Selection Criterion	Indicator
Necessity	• The Project contributes to the reconstruction and development of the regional economic activities.
Urgency	• The Project is urgently needed to reconstruct and develop the regional economic activities.
Relevance	• The Project is consistent with the National plans/ District plans.
	• The Project is technically feasible to implement.
	• Necessary resources to implement the Project are available (however, budget does not need securing in this selection stage).
Impact	• Number of beneficiaries.
	• The Project has a positive impact on the regional economic activities.

Selection Criterion	Indicator
	• The Project has no negative impact on the environmental and social conditions in the region.

6.4.2 Proposed Priority Projects

Proposed Priority Projects are selected for (1) the Village-wise Development Plan, (2) the Sector-wise Development Plan, and (3) Common Projects to the Village-wise and Sector-wise Development Plans. Proposed Priority Projects are briefly explained in the following section. A summary of the proposed Priority Projects is tabulated in Table 6.57 below.

(1) Projects for the Village-wise Development Plan

The Projects proposed for the Village-wise Development Plan with brief descriptions are as follows. The project profiles are attached as **Annex 15**.

a. Institutional Development Project for FOs on Irrigation System (Cluster I):

Maintenance of irrigation facilities and water management are indispensable to utilize irrigation water to obtain high paddy yields. FOs are the main actors of those activities below the distribution canals of the irrigation systems that are defined by the Irrigation Act. In accordance with the rules and regulations of the Act, FOs and their institutional systems shall be developed along with rehabilitation works through the trainings and study tours.

b. Pali Aru Diversion and Karayankannaddi Development Project (Cluster II):

An anicut was halfway constructed on the Pali Aru River near the Pali Aru village under the ex-JICA Project, MANRECAP, to feed additionally to the Adampankulam tank on the right bank and provide water to the Karayankannadhi tank to be rehabilitated for about 100 ha of paddy land. The Project provides food security to the people who do not have paddy land in the area.

The Project gives positive impacts to the approximately 30 farm families (120 people) at Vellankulam, and 250 families (1,000 people) who had no paddy land in the area.

c. Minor Tank Rehabilitation Project (Cluster I & II):

There are many minor tanks[69] in Mannar District under the Department of Agrarian Development (DAD). The minor tanks under DAD are self-dependent on water from their

[69] The number of functioning minor tanks under the Department of Agrarian Development (DAD) at present is 99. Other than these tanks, it is reported that 77 breached minor tanks and 172 abandoned minor tanks exist in Mannar District according to the Social Hand Book, 2010, Mannar District.

own catchment. People have been requesting to rehabilitate and augment such tanks during the needs assessment. With the new JICA Maps in 1/10,000 scale, a hydrological study could be carried out to each tank and many of them could be augmented based on the precise data. It may help not only paddy cultivation but also to promote irrigation for OFC and other agriculture to improve livelihoods of the re-settlers.

The population benefitted by the Project would be 520 families (2,080 people) assuming one-third of existing tanks would be rehabilitated and one tank serves 20 families.

d. Northern Musali Regional Water Supply Scheme (Cluster II) :

Most of the people living in this area obtain water from open hand-dug wells constructed near tanks for irrigation, except in Arippu town where a piped water scheme has been installed. The water in open dug wells becomes insufficient and saline in the dry seasons and even water of the piped water system in Arippu town turns saline in the dry seasons. Supplying drinking water throughout the year is thus necessary.

The population of the proposed Northern Musali Water Supply Scheme (WSS) is 19,854 at present and is expected to reach to about 23,000 by the year 2020. Implementation of piped water supply schemes using a reliable water source will have a significantly positive impact on the people living in this area, including the people in Arippu who will be connected to the proposed WSS.

The details of the study on the scheme including a forecast for the year 2030 are given in **Appendix 11**.

e. Mannar Island Regional Water Supply Scheme (Cluster III):

The Mannar Island Regional Water Supply Scheme (WSS) will cover the following four sub-schemes, as shown in Table 6.56.

Table 6.56 Sub-schemes of Mannar Island Regional WSS

No.	Name of Sub-scheme	Population (nos.)	
		2009	2020 Forecast
1	Enhancement of existing Erukkalampiddy WSS	11,317	13,253
2	Extension of Erukkalampiddy WSS	4,667	5,432
3	Talaimannar WSS	5,503	6,405
4	Pesalai WSS	9,461	11,011

The scheme shall cover 18 GN Divisions on the Island. Water sources of the existing Erukkalampiddy WSS are seven (7) dug wells constructed in Thoddaveli on Mannar Island. There are only 80 connections to this system and approximately 400 people are

considered to be presently served, while a population of about 11,800 inhabit this area as of 2010. People at the Talaimannar and Pesalai depend upon open dug wells for water, which are saline especially during the dry season. Therefore, it may be required to supply fresh water from tube wells in the Murunkan area.

The details of the study on the scheme including a forecast for the year 2030 are given in **Appendix 11**.

f. Strengthening of CBOs on Non-Paddy Agriculture and Livestock Project (Cluster II):

It is inevitable to promote non-paddy agriculture to improve the livelihoods of the returnees in Mannar District since paddy agriculture alone does not provide sufficient income under the present condition that a farmer owns approximately 1 ha of paddy field on average. CBOs should play important roles in non-paddy agriculture and livestock development. In this point of view, strengthening of CBOs on non-paddy agriculture and livestock needs to be implemented.

g. Mixed Farming Development Project for Small-scale Farmers (Cluster I & II):

Multiple income sources are required for farmers, especially small-scale farmers in rural areas, to keep subsistence. It is necessary for farmers to utilize farmland to the maximum through a combination of several periodic and perennial crops and livestock in addition to paddy cultivation and proper technologies with a strategic implementation plan. Livestock rearing will help reduce input costs by producing compost for fertilizer.

h. Rural Community Water Supply and Sanitation Infrastructure Development (All Clusters):

There has been a substantial number of Village Water Supply Projects implemented after 2010. However, many villages remain without tap water. Accordingly in such villages new systems or extensions of WSS under the ADB fund and ENReP need to be implemented.

i. Women-led Activities Development Project (All Clusters):

Women-headed families are not uncommon in conflict-affected areas, and they are facing various difficulties. However, forming women's groups will create an opportunity to exchange their issues, find practical solutions by themselves, and even think of business ideas. To introduce women-led activities such as Women's Groups for Micro Finance, Group Insurance Systems and Micro Enterprises will help women to take action and cultivate their initiative for development of future livelihoods in a positive way. Relevant organizations could support their spontaneous actions created through group activities.

The Project shall initiate and promote such activities in broad areas.

j. Vocational Training for Women and Youths with Micro Credit Services (All Clusters):

Many talented human resources and skilled labor will be required to develop rural industries based on agriculture, livestock and fisheries. In addition, many youths and women who received higher education are living in rural areas without incomes or job opportunity. These human resources should be utilized effectively as desirable local resources instead of resources from outside. Accordingly, vocational trainings in accordance with the demand from the local industry should be considered and implemented.

k. Village Road Improvement Project (All Clusters):

Many trunk roads under the Road Development Authority (RDA) and Department of Road Development are now being rehabilitated in Mannar District. On the other hand, there are many village roads connected to trunk roads that are yet to be rehabilitated. Such a Project could be implemented as a community development project and/or food for work and so on.

l. Replacement of Damaged Fishing Crafts & Equipment (Cluster III & I):

The Project provided fishing crafts and equipment to replace damaged productive assets of selected beneficiaries in focal villages as a Pilot Project. A similar program or project to replace appropriate fishing crafts and equipment among coastal fishing communities as well as inland fisher households is proposed. This is a priority to restore and improve livelihoods in order to establish a base for future sustainability.

m. Fish Landing/ Handling & Marketing Facilities (Cluster III):

Devoid or minimal landing/marketing facilities are disincentives to attracting private sector investment, impacting post-harvest loss, etc. Establishing appropriate fish landing/ marketing infrastructure and facilities is necessary to attract modernization of the fishing operation that is confined to only the coastal waters.

n. Dry Fish Processing Improvement (Cluster III & I):

The Project conducted dry fish training in selected villages (coastal and inland) as a community-based activity. In the absence of appropriate marketing facilities and services in remote villages, the freshness of a fish catch falls, whereby it fetches a low price and results in income loss to fishers. A program to improve dry fish processing and value addition and developing new fish products will provide increased income as well as reduce post-harvest loss.

o. Supply & Stocking or Release of Fish Fingerlings to Inland Water Bodies (Cluster I):

Long neglect in releasing of fish fingerlings in the freshwater water bodies due to the civil conflict has resulted in low productivity and a decline in fish catches among inland households depending on fishing for income and livelihoods. Restoring these potential and perennial water resources is a priority by making available an uninterrupted supply of fish fingerlings for stocking.

(2) Projects for the Sector-wise Development Plan

The development of sectors as industry is necessary to upgrade economic activities in the District. It also provides opportunities for improving livelihoods of returnees. Since the major industries of Mannar District are agriculture and fisheries, projects to improve productivity and profitability in various sub-sectors of those two sectors are proposed as follows. The project profiles are attached as **Annex 16**.

a. Northern Province Master Plan Study (All Sectors):

The Master Plan study of the Northern Province in terms of agriculture including paddy, OFC, livestock and so on, processing, marketing and distribution, tourism, and environmental conservation shall be comprehensively studied and the priorities to implement shall be determined. The positioning of Mannar District shall also be formulated to focus advantages and promoted to extend them.

b. Land Use Study (Agriculture Sector):

There is vast land in Mannar District not in use along the main roads, especially along the A32 highway and Musali. In connection with the Map in 1/10,000 prepared by JICA recently, a land use map shall be prepared for the future agriculture plan, together with a soil survey and preparation of a proposal for appropriate agriculture.

c. Market Study on Agriculture Project (Agriculture Sector):

In order to promote various agriculture products, it is important to grasp the production and consumption of agricultural products such as paddy, OFC, vegetables and fruits in the country and their import and export quantities. Further marketing channels and prices of such products shall be carefully studied to prepare plans for the production of such items. Based on such information, a production and marketing plan will be prepared for promoting specific products.

d. Maluwatu Oya Development Project (Agriculture Sector):

The Maluwatu Oya is the source of water to the Giant's Tank on the right bank and Akatimurippu Tank on the left bank of the river. In order to increase in-flow to Giant's Tank and Akatimurippu Tank, thus increasing the cropping intensity of Yala season during

which only 10-20% of paddy fields are cultivated, Maluwatu Oya Reservoir may play an important role. Therefore, the construction of Maluwatu Oya Reservoir shall be planned and constructed to assure the increase of flow to Giant's Tank and Akatimurippu Tank.

e. Parangi Aru Development Project (Agriculture Sector):

There is no reservoir along the river named Parangi Aru, which may cause frequent flooding downstream near the A32 road in Mannar District. Construction of a reservoir on the river will reduce flooding and water resources could be utilized for strengthening agriculture activities. Therefore the dam construction on the Parangi Aru is to be considered a priority.

f. Kurai Tank Development Project (Agriculture Sector):

The function of Kurai Tank could be enhanced by diverting water from Parangi Aru to Kurai Tank, which will further strengthen the function of the tanks near Illupaikadavai. The Project shall be taken into consideration together with **e. Parangi Aru Development Project** above.

g. Post Harvest and Marketing Promotion Project (Paddy Sector):

Paddy is the main agriculture product in Mannar District as more than 60% of the population engage in paddy farming. Since the production of rice in Sri Lanka is almost self-sufficient, it is essential to differentiate between rice produced in Mannar District and rice produced in other areas. In this context, other than the selection of the variety of paddy cultivated, it is very important to introduce better mills and milling technology to produce quality rice marketed at higher prices.

h. Marketing Study on Non-Paddy Agriculture Products (Non-Paddy Agriculture Sector):

In agriculture, the supply side inputs have been looked after for a long time. In order to improve the incomes of farmers as well as promote agriculture activities as an industry, not only support for the production side but also assistance in post-harvest activities for value addition and minimization of waste must be carried out. Marketing must also be carefully taken into consideration. This project shall cover different sectors of agriculture such as paddy, fruits, livestock, etc. for promotion.

i. Paddy Seed Production and Marketing Project (Paddy Sector)

The paddy production in Mannar District was advanced in Sri Lanka and much seed paddy is sold to other districts. Although rehabilitation of a paddy seed processing facility was conducted after 2010, it may be appropriate to provide a few additional facilities to produce quality seeds to improve paddy production and quality of rice.

j. Livestock Development Project (Livestock Sector)

Livestock is one of the promising agricultural activities as the Government has a clear plan to promote it. In particular, dairy development is a priority as an import substitution. To develop the sector, collaboration of the public and private sectors is important. Replacement with improved variety cows, artificial insemination, skills to maintain cows, etc. is looked after mainly by the public sector while the services for farmers, and collection, transportation and processing shall be looked after by the private sector or cooperatives/federations. A credit system for farmers to invest in the sector with technical support is ultimately important. The private sector and cooperatives /federations shall be strengthened to look after the introduction of new varieties, artificial insemination, vaccinations, etc. with proper guidance under the Project.

k. Private Enterprise Promotion through District Chamber of Commerce (All Sectors):

Promotion of the introduction of private enterprise and entrepreneurs to various post harvest and processing activities in all agriculture products is a positive factor for activating agriculture as industry. It may help farmers to treat out growers and suppliers for products for processing. The Government sector shall provide assistance in land allocation and institutional credits.

l. Vocational / Entrepreneurship Training with Credit Services (All Sectors):

When the credit services are provided, it is appropriate to provide technical knowhow and management skills. Therefore, vocational / entrepreneurship trainings shall be coupled with the credit services for various agriculture activities.

m. Perennial Crop Development Project (Non-Paddy Agriculture Sector):

It is very promising that the CIC farm (a private farm) will be a pioneer to perennial crop development in Mannar District and many fruit trees are available in the backyards of farmers' premises. Through the Project cultivation of intercrops, credit arrangement for the initial investment, establishment of private nurseries, technical input such as pruning of trees, marketing, and so on shall be promoted until the trees grow to produce fruit constantly.

n. OFC and Vegetable Development Project (Non-Paddy Agriculture Sector):

OFC and vegetables are one of the important sub-sectors for agriculture development in Mannar District. OFC cultivation in Mannar District is done in very small areas and production is not much compared to the national production. Therefore there is a high potential to promote OFC in the District. Production of vegetables also has high potential. Taking these into account, the Project shall be implemented to provide technical knowhow of cultivation, arrangement of inputs, post-harvest technology, marketing, and

so on.

o. Development of Off-shore Fishery (Marine Fishery Sector):

Mannar's marine capture fishing activities are mainly limited to coastal waters due to low mechanization of fishing crafts and equipment; this results in high fishing pressure on the limited coastal fisheries resources. Sector development of the offshore fisheries resources is of utmost importance through introduction of multi-day and day boats and provision of appropriate training in new fishing techniques, etc.

p. Fish Landing/ Handling & Marketing Facilities (Marine Fishery Sector):

Without basic fish landing/marketing infrastructure and relevant facilities, fisheries development in general has been hindered as private investors are not forthcoming with finance and expertise. Relevant ministries and agencies must provide and develop the basic infrastructure/facilities at strategic fish landing centers, such fishing jetty/harbor, cold/cool rooms, etc. to entice aggressive private sector involvement. Therefore, this Project will provide basic and functional infrastructure and facilities.

q. Development of Coastal Marine Aquaculture (Aquaculture Sector):

Rich coastal resources potential (mangroves, lagoons, etc.) with endemic species of high value and cultivable species (crab, mussels, sea cucumber, shrimp, etc.) have not been adequately harnessed and directed to a commercial-based aquaculture. Trials and models tested and proven elsewhere in the country by relevant agencies should be introduced and nurtured to a commercial venture.

r. Participation of Private Investors in Aquaculture (Aquaculture Sector):

Relevant public agencies should seek assistance and investments from the private sector to develop the aquaculture; whereby the Government should pave the way by providing and establishing basic infrastructure, zoning, Research & Development (R&D) collaboration and other incentives to private investors. Private investors should also encourage local communities' participation.

(3) Common Projects to Village-wise and Sector-wise Development Plans

The projects that can be defined neither for the Village-wide Development Plan nor the Sector-wise Development Plan but are common to both development plans are discussed in this part. The project profiles are attached as **Annex 17**.

a. Training Program for Strengthening Implementation Capacity:

Leaders and office bearers of the various CBOs, such as FO, FCS, LIBCO, and their federations shall have appropriate trainings to manage the institutions for implementation

of various activities. Such trainings shall be conducted repeatedly so that activities of the institutions will be sustainable.

b. Regional Training Center and Training Program Development Project:

Well-facilitated training centers are indispensable to conducting many programs for large numbers of beneficiaries along with rehabilitation and development works of agriculture, livestock, income generation and fisheries, etc. Without repeated inputs on basic knowledge of technology and management, O&M of facilities rehabilitated and sustainability of development activities may not be secured. In this point of view, training programs shall be updated and renewed periodically.

c. Study on the Prevention of Seawater Intrusion:

Seawater intrusion at river mouths as well as to groundwater, which causes difficulties in utilizing fresh water for irrigation purposes and higher salinity contents of wells, has been reported by the officers and the public. The mechanism of seawater intrusion is a comprehensive phenomenon and it is related to the environmental aspects. In this viewpoint, a study on the seawater intrusion shall be conducted to grasp the present conditions and seek a future solution.

d. Monitoring and Evaluation Systems Improvement Project for Agriculture and Regional Development:

Without follow-up activities, most of the projects will fail to achieve expected outcomes and impacts. Planning, implementation, monitoring and evaluation are a series of operations as a project cycle to bring expected outcomes. In this point of view, improvement of the monitoring and evaluation system is an essential aspect to make projects sustainable.

e. Strengthening of Mannar DFAR Office:

The Mannar DFAR office is weak in terms of the total lack of technical staff and mobility to conduct extension, inspection and supervision of its coastal fisheries areas. It needs to recruit and fill the vacancies, impart training to officers, etc. in tandem with the development policy by the Government.

f. Establishing and Strengthening of NAQDA Office in Mannar:

NAQDA is in charge of inland fisheries including aquaculture. It has no direct representation in Mannar to conduct extension, training and supervision of inland fisheries activities. In view of the vast potential of freshwater water bodies and the aquaculture potential, NAQDA should establish an office in Mannar with adequate technical staff and mobility.

(4) List of Proposed Priority Projects and Prioritization

The proposed priority projects briefly explained above and evaluation of the priority projects based on the selection criteria discussed in the preceding Section 6.4.1 are summarized in the following Table 6.57.

Table 6.57 List of Proposed Priority Projects

No		Name of Project	Selection Criteria				Cluster and/or Sector	Priority
			Necessity	Urgency	Relevance	Impact		
(1)		**Projects for Village-wise Development Plan (Vision 1)**						
	a.	Institutional Development Project for FOs of Irrigation Systems	◎	△	○	○	Cluster I	A
	b.	Pali Aru Diversion and Karayankannadhi Development	◎	○	○	◎	Cluster II	AA
	c.	Minor Tank Reactivation Project	◎	○	○	◎	Cluster I & II	AA
	d.	Northern Musali Water Supply Scheme	◎	○	○	○	Cluster II	A
	e.	Mannar Island Regional Water Supply Scheme	○	○	○	○	Cluster III	B
	f.	Strengthening CBO on Non Paddy Agriculture and Livestock Project	○	○	○	○	Cluster II	A
	g.	Mixed Farming Development Project for Small Scale Farmers	○	△	○	○	Cluster I & II	B
	h.	Rural Community Water Supply and Sanitation Development Project	○	○	○	△	All Clusters	B
	i.	Women-led Activities Development Project	◎	○	○	○	All Clusters	A
	j.	Vocational Training for Women and Youths with Micro Credit Services	◎	○	○	△	All Clusters	B
	k.	Village Road Improvement Project	○	○	○	○	All Clusters	B
	l.	Replacement of Damaged Fishing Crafts & Equipment	◎	○	○	○	Cluster III & I	A
	m.	Fish Landing/Handling & Marketing Facilities	◎	○	○	◎	Cluster III	A
	n.	Dry Fish Processing Improvement	◎	○	○	○	Cluster III & I	A
	o.	Supply & Stocking or Release of Fish Fingerlings Inland Water Bodies	◎	○	○	○	Cluster I	A
(2)		**Projects for Sector-wise Development Plan (Vision 2)**						
	a.	Northern Province Master Plan Study	◎	-	○	○	All Sectors	A
	b.	Land Use Study	◎	○	○	◎	Agriculture Sector	A
	c.	Marketing Study on Agriculture Products	◎	◎	○	○	Agriculture Sector	AA
	d.	Maluwatu Oya Development Project	○	-	○	○	Agriculture Sector	B
	e.	Parangi Aru Development Project	◎	△	○	○	Agriculture Sector	A
	f.	Kurai Tank Development Project	◎	○	○	○	Agriculture Sector	AA
	g.	Post Harvest and Marketing Promotion Project	◎	○	○	◎	Paddy Sector	AA
	h.	Marketing Study on Non-Paddy Agriculture Products	◎	○	○	○	Non-Paddy Agriculture Sector	A
	i.	Paddy Seed Production and Marketing Project	○	○	○	◎	Paddy Sector	A
	j.	Livestock Development Project	◎	○	△	○	Livestock Sector	A
	k.	Private Enterprise Promotion through District Chamber of Commerce	○	△	○	○	All Sectors	B
	l.	Vocational / Entrepreneurship Training with Credit Services	○	△	○	○	All Sectors	B
	m.	Perennial Crop Development Project	○	△	○	◎	Non-Paddy Agriculture Sector	A
	n.	OFC and Vegetable Development Project	○	△	○	◎	Non-Paddy Agriculture Sector	A
	o.	Development of Off-Shore Fishery	○	○	○	△	Marine Fishery Sector	B
	p.	Fish Landing/Handling & Marketing Facilities	◎	○	○	○	Marine Fishery Sector	A
	q.	Development of Coastal Marine Aquaculture	○	○	○	△	Aquaculture Sector	B
	r.	Participation of Private Investors in Aquaculture	○	△	△	○	Aquaculture Sector	B
(3)		**Common Projects to Village-wise and Sector-wise Development Plans (Vision 1 & 2)**						
	a.	Training Programs for Strengthening Implementation Capacity	◎	○	◎	○	Government Sector	AA
	b.	Regional Training Centre and Training Program Development Project	◎	○	○	◎	Government Sector	AA
	c.	Study on the Prevention of Seawater Intrusion	○	○	○	△	ID (Provincial) & WRB	B
	d.	Monitoring & Evaluation Systems Improvement Project for Agriculture & Regional Development	◎	○	○	○	Government Sector	A
	e.	Strengthening of Mannar DFAR Office	○	○	○	△	Government Sector	B
	f.	Establishing & Strengthening of NAQDA Office in Mannar	◎	○	○	○	Government Sector	A

Note: AA: first priority, A: second priority, B: third priority

(5) Cost of The Priority Projects

The cost estimates of the proposed projects have been prepared based on the experience of the Pilot Projects and other project experience as shown in Table 6.58.

Table 6.58 Cost Estimates of the Proposed Priority Projects

No		Name of Project	Priority	Project Cost (Rs.1000)	Implementing Agency
(1)	**Projects for Village-wise Development Plan (Vision 1)**				
	a.	Institutional Development Project for FOs of Irrigation Systems	A	10,800	ID
	b.	Pali Aru Diversion and Karayankannadhi Development	AA	**40,000**	ID (Provincial)
	c.	Minor Tank Reactivation Project	AA	**75,000**	DAD & ID (Provincial)
	d.	Northern Musali Water Supply Scheme	A	251,010	NWS&DB
	e.	Mannar Island Regional Water Supply Scheme	B	648,480	NWS&DB
	f.	Strengthening CBO on Non Paddy Agriculture and Livestock Project	A	300,000	DCD & DAD
	g.	Mixed Farming Development Project for Small Scale Farmers	B	161,875	DOA
	h.	Rural Community Water Supply and Sanitation Development Project	B	511,268	Pradeshiya Sabha
	i.	Women-led Activities Development Project	A	31,600	DS Office
	j.	Vocational Training for Women and Youths with Micro Credit Services	B	89,592	IDB
	k.	Village Road Improvement Project	B	350,000	Pradeshiya Sabha
	l.	Replacement of Damaged Fishing Crafts & Equipment	A	172,000	DFAR & NAQDA
	m.	Fish Landing/Handling & Marketing Facilities	A	20,000	DFAR
	n.	Dry Fish Processing Improvement	A	6,000	DFAR & NARA
	o.	Supply & Stocking or Release of Fish Fingerlings Inland Water Bodies	A	15,250	NAQDA
(2)	**Projects for Sector-wise Development Plan (Vision 2)**				
	a.	Northern Province Master Plan Study	A	104,195	NPC
	b.	Land Use Study	A	30,308	DOA, ID, DAPH
	c.	Marketing Study on Agriculture Products	AA	**20,261**	DOA, DEA, etc.
	d.	Maluwatu Oya Development Project	B	5,000,000	ID (Central)
	e.	Parangi Aru Development Project	A	4,000,000	ID (Provincial)
	f.	Kurai Tank Development Project	AA	**1,000,000**	ID (Provincial)
	g.	Post Harvest and Marketing Promotion Project	AA	**11,813**	MOA
	h.	Marketing Study on Non-Paddy Agriculture Products	A	15,000	DOA
	i.	Paddy Seed Production and Marketing Project	A	40,500	DOA
	j.	Livestock Development Project	A	281,327	DAPH & DOA
	k.	Private Enterprise Promotion through District Chamber of Commerce	B	6,818	MEDIPIP
	l.	Vocational / Entrepreneurship Training with Credit Services	B	116,171	MOYA&SD
	m.	Perennial Crop Development Project	A	132,372	DOA
	n.	OFC and Vegetable Development Project	A	53,439	DOA
	o.	Development of Off-Shore Fishery	B	280,000	DFAR&NARA
.	p.	Fish Landing/Handling & Marketing Facilities	A	145,000	MFARD
	q.	Development of Coastal Marine Aquaculture	B	13,200	NAQDA & NARA
	r.	Participation of Private Investors in Aquaculture	B	5,500	NAQDA
(3)	**Common Projects to Village-wise and Sector-wise Development Plans (Vision 1 & 2)**				
	a.	Training Programs for Strengthening Implementation Capacity	AA	4,593	GA Office
	b.	Regional Training Centre and Training Program Development Project	AA	21,713	GA Office
	c.	Study on the Prevention of Seawater Intrusion	B	100,000	ID (Provincial) & WRB
	d.	Monitoring & Evaluation Systems Improvement Project for Agriculture & Regional Development	A	5,967	GA Office
	e.	Strengthening of Mannar DFAR Office	B	14,000	DFAR
	f.	Establishing & Strengthening of NAQDA Office in Mannar	A	7,410	NAQDA
		Total of Priority AA		**1,173,380**	
		Total of Priority A		**5,622,178**	
		Total of Priority B		**7,296,904**	
		Grand Total		**14,092,462**	

Note: Costs of priority projects AA are in bold.

(6) Implementation Schedule

The implementation schedule of the proposed Projects is presented in Figure 6.9. The priority projects AA shall be started earlier.

No	Name of Project	Priority	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
(1)	**Projects for Village-wise Development Plan (Vision 1)**												
a.	Institutional Development Project for FOs of Irrigation Systems	A											
b.	Pali Aru Diversion and Karayankannadhi Development	AA											
c.	Minor Tank Reactivation Project	AA											
d.	Northern Musali Water Supply Scheme	A											
e.	Mannar Island Regional Water Supply Scheme	B											
f.	Strengthening CBO on Non Paddy Agriculture and Livestock Project	A											
g.	Mixed Farming Development Project for Small Scale Farmers	B											
h.	Rural Community Water Supply and Sanitation Development Project	B											
i.	Women-led Activities Development Project	A											
j.	Vocational Training for Women and Youths with Micro Credit Services	B											
k.	Village Road Improvement Project	B											
l.	Replacement of Damaged Fishing Crafts & Equipment	A											
m.	Fish Landing/Handling & Marketing Facilities	A											
n.	Dry Fish Processing Improvement	A											
o.	Supply & Stocking or Release of Fish Fingerlings Inland Water Bodies	A											
(2)	**Projects for Sector-wise Development Plan (Vision 2)**												
a.	Northern Province Master Plan Study	A											
b.	Land Use Study	A											
c.	Marketing Study on Agriculture Products	AA											
d.	Maluwatu Oya Development Project	B											
e.	Parangi Aru Development Project	A											
f.	Kurai Tank Development Project	AA											
g.	Post Harvest and Marketing Promotion Project	AA											
h.	Marketing Study on Non-Paddy Agriculture Products	A											
i.	Paddy Seed Production and Marketing Project	A											
j.	Livestock Development Project	A											
k.	Private Enterprise Promotion through District Chamber of Commerce	B											
l.	Vocational / Entrepreneurship Training with Credit Services	B											
m.	Perennial Crop Development Project	A											
n.	OFC and Vegetable Development Project	A											
o.	Development of Off-Shore Fishery	B											
p.	Fish Landing/Handling & Marketing Facilities	A											
q.	Development of Coastal Marine Aquaculture	B											
r.	Participation of Private Investors in Aquaculture	B											
(3)	**Common Projects to Village-wise and Sector-wise Development Plans (Vision 1 & 2)**												
a.	Training Programs for Strengthening Implementation Capacity	AA											
b.	Regional Training Centre and Training Program Development Project	AA											
c.	Study on the Prevention of Seawater Intrusion	B											
d.	Monitoring & Evaluation Systems Improvement Project for Agriculture & Regional Development	A											
e.	Strengthening of Mannar DFAR Office	B											
f.	Establishing & Strengthening of NAQDA Office in Mannar	A											

Figure 6.9 Implementation Schedule of Priority Projects

CHAPTER 7 LESSONS LEARNED AND RECOMMENDATIONS

7.1 Lessons Learned

Through implementation of the Project, important lessons to promote resettlement of IDPs and sustainable development in Mannar District have been learned as follows.

7.1.1 Effectiveness of Strategies and Approaches to Promote Resettlement of IDPs

As illustrated in 5.4.1, the strategies and approaches framed by the Project to promote resettlement of IDPs have been verified to be effective through implementation of the Pilot Projects as follows.

(1) Strategy (1): Assistance Based on the Needs

Since the situation of the target areas changed according to the progress of resettlement and reconstruction activities, needs and priorities of activities were carefully identified by the Project through workshops and discussions with the stakeholders such as communities and the government officers. Villagers actively participated and were keenly interested in all the Pilot Projects of Community-based Activities, and there was sincere cooperation from the government officers throughout the implementation period. Classification of the target areas according to their socio-economic characteristics and identification of development potentials and disincentives also helped to grasp the ground situation of the areas and plan the longer-term development activities.

(2) Strategy (2): Rehabilitation Process with the Scope for Sustainable Development

Even in the rehabilitation/ reconstruction phase it is significant to incorporate approaches to fulfill the mid- to longer-term development needs of IDPs into any assistance so as to ensure their resettlement and self-sustaining lives. As the past experiences including the former JICA Project, MANRECAP, show, communities and CBOs have played crucial roles also in rehabilitation/ reconstruction activities introduced by the Project. The capacity of the community and CBOs have been fostered through the process of self- and mutual-help activities implemented as the Pilot Projects such as trainings for livelihoods and income generation activities, introduction of a revolving loan fund scheme of providing fishing crafts and equipment to the fishing communities and group saving activities, and adoption of the community contract method.

(3) Strategy (3) Connectedness to the Government/Local System

Throughout the implementation period, the Project tried to establish a collaborative working relationship between the community and the Government to ensure the future

sustainability of the activities. For the implementation of the Pilot Projects, government officers working in Mannar District as well as officers of the central and provincial government field offices have been identified and closely collaborated with. The Memorandum of Understanding (MOU) has been concluded with the relevant local governments, mainly Pradeshiya Sabha, on handing over of community infrastructure constructed under the Pilot Projects to foster their sense of ownership towards the infrastructure and secure their assistance in the operation and maintenance. Not only the Pilot Projects of Small-scale Infrastructure Rehabilitation, but also the Pilot Projects of Community-based Activities have been implemented in collaboration with the relevant government departments such as (1) DFAR on the revolving loan fund scheme for fishing crafts and equipment, (2) DAPH on the design and operation of a poultry breeding farm, (3) DOA on the planning and operation of nursery farms, and so on.

7.1.2 Reconstruction of Conflict-affected Community

It is observed that there has been a lack of leadership in CBOs and trust among community members due to the prolonged conflicts, which has weakened the capacity for problem-solving in a community. Absence of mutual trust in a community/ between communities might lead to trouble over utilization of resources that were not accessed during the conflicts and newly became accessible through the progress of resettlement and mine clearing.

There exist a variety of socio-economic groups in a community. In addition, the conflict has resulted in large numbers of socially vulnerable people such as women-headed households and people with disabilities. The case studies and interviews from CBO leaders revealed that there were some families who were still unable to get out from under the consequences of the conflicts and displacements such as mental instability, absence of bread-winners, fluctuation of family relationships and others.

Taking the above-mentioned situation into account, particular emphasis should be given to the necessary assistance to the vulnerable groups. However, there is a possibility that an overemphasis on targeting the socially vulnerable people would make other members of the community feel neglected by or excluded from the outside assistance. This could be followed by a social disharmony within a community and isolation of the socially vulnerable people.

Therefore, it is important to take into consideration relations between the vulnerable groups and the rest of the members in a community when any activity is planned. To mitigate tensions and facilitate social inclusion of the vulnerable people, it is important to design

activities to create opportunities for the targeted vulnerable population that also benefit the whole community. In this respect, incorporation of the support for the socially vulnerable people into the community-based approach in combination with the activities targeting those people such as priority distribution of chicks and home gardening was effective, especially in the post-conflict regions where the whole community has been affected by the conflict. It is also important to reestablish interpersonal communication among the affected people and reconstruct a community through implementing community-based activities such as women's saving groups and group-based income generation activities, so that a sense of mutual understanding and care are enhanced.

7.1.3 Lessons Learned from Project Administration

In the conflict-affected areas in Mannar District, IDPs had lost almost all public and private assets, so that swift actions to assist them in returning to their normal lives through rehabilitation of livelihoods and basic infrastructure are needed. Construction under the Pilot Projects of Small-scale Infrastructure Rehabilitation (SSIR) was planned and implemented based on the needs identified through workshops with communities and discussions with the relevant government department. Expectations of the communities for the construction of community infrastructure were very high, and the completed infrastructure such as tube wells, a poultry breeding farm, a bakery and multi-purpose halls, and a supply of fishing crafts and equipment are well utilized by the communities and contribute to improving their income levels and living conditions.

The Project, however, could not yet satisfy part of the urgent needs of the resettled communities because a period of construction was extended due to various reasons such as an exceptionally heavy rain and UXOs found at work sites. In particular, one of the lessons learned from the implementation of the Pilot Projects of SSIR is that a wide range of the Pilot Projects in terms of the number and kind of facilities caused the delay in implementation of the construction works. Therefore, the size of any activities jointly implemented by the local authorities, communities and a donor(s) needs to be decided in consideration of the implementing capacity of not only the donors but also the recipients including contractors, communities and local authorities.

With due consideration of the urgency of the needs of the resettled communities, it is also necessary to simplify and expedite administrative procedures such as the process of project approval and procurement of contractors, and create expected outputs in a short time.

7.2 Recommendations

Taking the above-mentioned lessons learned into consideration, the following recommendations are proposed by the Project Team.

7.2.1 Swift Fulfillment of Urgent Needs of IDPs

From the lessons learned from the implementation of the Pilot Projects of Small-scale Infrastructure Rehabilitation, when any project is planned in the conflict-affected regions, the Project Team recommends dividing the activities into two categories: one is to be carried out immediately after the launch of the project in consultation with GA and other donor organizations such as UNHCR, which includes water supply and provision of fishing boats and agriculture inputs, and the other shall be rehabilitation and construction of infrastructure to be decided through participation of beneficiaries for their future necessity. The division will contribute towards fulfilling urgent needs of IDPs swiftly, which will help them realize the peace dividends soon after the termination of a conflict. This division shall be adopted not only for the construction of infrastructure, but also for community-based activities.

7.2.2 Consideration to a Fluid Situation in the Conflict-affected Regions

For two years from October 2009 to October 2011, more than 80,000 IDPs from Mannar District, whose total population is 157,000, returned to their original villages. In addition, the return of IDPs and refugees from Puttalam District and India is still ongoing. For those returnees, a variety of organizations have rendered assistance. Under such a fluid situation, issues related to the conflicts, displacements and resettlement such as land issues and disputes over outside assistance or resources tend to happen. On implementation of any project, necessary measures to avoid post-conflict issues need to be taken through information gathering from all the stakeholders and figuring out the background of the issues. In addition, needs of IDPs also change with the passage of time. To meet their needs, any plan needs to be flexible and ready to change according to the ground situation.

7.2.3 Support to Reconstruct a Conflict-affected Community

The lessons learned from the Project show that the community-based activities with full consideration for the socially vulnerable groups is appropriate and effective to reconstruct a community, especially in the post-conflict regions where the whole community has been affected by the conflict. Accordingly the methodology taken by the Project is recommended to be adopted in other activities implemented in the conflict-affected regions. It is also effective to conduct a reconciliation workshop to restore mutual trust among the community.

7.2.4 Implementation of Proposed Priority Projects in the Road Map

It is recommended that the Government of Sri Lanka implements the projects identified through preparation of the Road Map at an early date in consideration of the following points in order for the people in Mannar District to recover from the negative effects of the conflicts, move along with the development stream of the Sri Lankan economy and improve their living conditions and livelihoods to the level equal to the other parts of the country before 2020.

(1) Capacity Development in Planning

As suggested in Section 1.3.1, the Road Map is expected to be utilized by the central, provincial and district administration, namely the Ministry of Economic Development, the Northern Provincial Council and the District Secretariat of Mannar, as a tool to appropriately prioritize the reconstruction and development needs of Mannar District and to negotiate with donors on necessary assistance in accordance with the set priority.

The proposed priority projects in the Road Map include various sectors and stakeholders since the Road Map aims at a comprehensive community as well as area development, and some projects are planned to cover not only Mannar District but also the adjoining districts. Taking the characteristics of the Road Map into consideration, when the central, provincial and district administrations utilize the Road Map as the above-mentioned tool, higher planning capacity is required. At first, it is recommended to strengthen the planning function of the District Planning Secretariat and to have close coordination with the Provincial Planning Committee for appropriate planning and coordination of the development projects.

(2) Assistance to the Government Officers

It is necessary to enhance the level of knowledge and skills of the field officers on community development in order for them to grasp the communities' needs and render appropriate assistance to the communities, in addition to the improvement in their working environment such as ensuring transportation. It is recommended to utilize facilities of the *Project for Training in Community Development for Front Line Officers in the Northern and Eastern Provinces* being implemented under JICA's technical cooperation at present for trainings of such field officers in the Northern and Eastern Provinces including Mannar District.

7.2.5 Development of Other Sectors Outside the Scope of the Road Map

The Road Map was prepared for the urgent necessity of rehabilitation and development of Mannar District, which gave priority to the agriculture and fisheries sectors. Taking the

objective of the Road Map into account, some sectors such as tourism were excluded from the Road Map, though the Project Team well recognized the importance of these sectors. It is recommended to carry out a study on tourism and other industries under the Master Plan study in the Northern Province proposed in the Road Map.

List of Annexes

SCOPE OF WORK
FOR
THE PROJECT FOR DEVELOPMENT PLANNING FOR THE URGENT REHABILITATION OF THE RESETTLEMENT COMMUNITY IN MANNAR DISTRICT IN THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
AGREED UPON BETWEEN
MINISTRY OF NATION BUILDING AND ESTATE INFRASTRUCTURE DEVELOPMENT
AND
JAPAN INTERNATIONAL COOPERATION AGENCY

Colombo, 19 January, 2010

Mr. W. K. K. Kumarasiri
Secretary
Ministry of Nation Building and Estate
Infrastructure Development
The Democratic Socialist Republic of Sri Lanka

Mr. Mikio Ishiwatari
Team Leader
Preparatory Study Team
Japan International Cooperation Agency

Mr. J. H. J. Jayamaha
Director General
Department of External Resources
Ministry of Finance and Planning
The Democratic Socialist Republic of Sri Lanka

Mr. A. Sivaswamy
Chief Secretary
Northern Province
The Democratic Socialist Republic of Sri Lanka

Mr. A. Nicholaspillai
Government Agent / District Secretary
District Secretariat of Mannar
The Democratic Socialist Republic of Sri Lanka

I. INTRODUCTION

In response to the official request of the Government of the Democratic Socialist Republic of Sri Lanka (hereinafter referred to as "GOSL"), the Government of Japan (hereinafter referred to as "GOJ") decided to conduct "the project for development planning for the urgent rehabilitation of the resettlement community in Mannar district" (hereinafter referred to as "the Project"), in accordance with the relevant laws and regulations in force in Japan.

Accordingly, the Japan International Cooperation Agency (hereinafter referred to as "JICA"), the official agency undertaking for the implementation of the part of the official development assistance programmes of GOJ, will conduct the Project in close cooperation with the authorities concerned of GOSL.

On the part of GOSL, the Ministry of Nation Building and Estate Infrastructure Development (hereinafter referred to as "MNB") shall act as the representative of counterpart agency to the Japanese Project team (hereinafter referred as "the Team") and also as the coordinating body in relation with other concerned governmental and non-governmental organizations for the smooth implementation of the Project and its related pilot project(s).

II. OBJECTIVE OF THE PROJECT

The objectives of the Project are as follows:

1) To formulate road map to promote rehabilitation of resettled internally displaced persons (IDPs) and of socio-economic activities in Mannar district.

2) To implement the pilot projects and to reflect the feedback of lessons learned from the projects to the road maps.

III. PROJECT AREA

The project area will cover Mannar district where secured access provided for the Team in Attachment 1.

IV. SCOPE OF THE PROJECT

The Project will cover following items.

1. Review and Analysis of the Relevant Situation

1-1. To collect and analyze relevant data and information.

1-2. To review existing laws, regulations, policies and institutional arrangements related to post-conflict rehabilitation.

1-3. To review on-going projects and plans in the northern province of Sri Lanka including Mannar district.

1-4. To profile communities including present composition, resettlement process of IDPs and returning residents, structure of communities, land ownership, local manufacturing activities, and activities of community based organizations and cooperatives.

1-5. To collect updated mine clearance records and location maps.

1-6. To assess secured access in the project area.

1-7. To collect other relevant information.

2. Formulation of Road Map to Recover Economic Activities in Mannar District

2-1. To clarify development needs and potential obstacles to be solved in short and medium term (in coming 5 to 10 years) in Mannar district.

2-2. To clarify the strength and weakness for promoting resettlement of IDPs at community level

2-3. To support to build consensus of rehabilitation visions among key stakeholders

2-4. To examine measures to rehabilitate public services including community infrastructures so as to support their sustainable livelihoods

2-5. To formulate plans of capacity development of organizations concerned.

2-6. To formulate the road-map taking lessons learned from the pilot projects.

2-7. To estimate costs and schedule for implementation of the road map.

3. Formulation and Implementation of the Pilot Project(s)

3-1. To formulate the concept of pilot projects of (a) community-based activities and (b) small-scale infrastructure rehabilitation with the following purposes;

(i) To verify the validity of road map implementation,

(ii) To accelerate rehabilitation processes, and

(iii) To develop the capacity of the Sri Lankan counterpart personnel, communities and cooperatives

3-2. To select targeted (a) communities and (b) infrastructures

3-3. To plan activities at pilot communities utilizing the mutual-help functions of CBOs and cooperatives

3-4. To plan and design of rehabilitating structures

3-5. To examine implementation mechanism of pilot projects utilizing local resources and CBOs.

3-6. To implement pilot projects

3-7. To monitor the process and evaluate the outputs of pilot projects

3-8. To reflect the feedback of the pilot projects to the road map

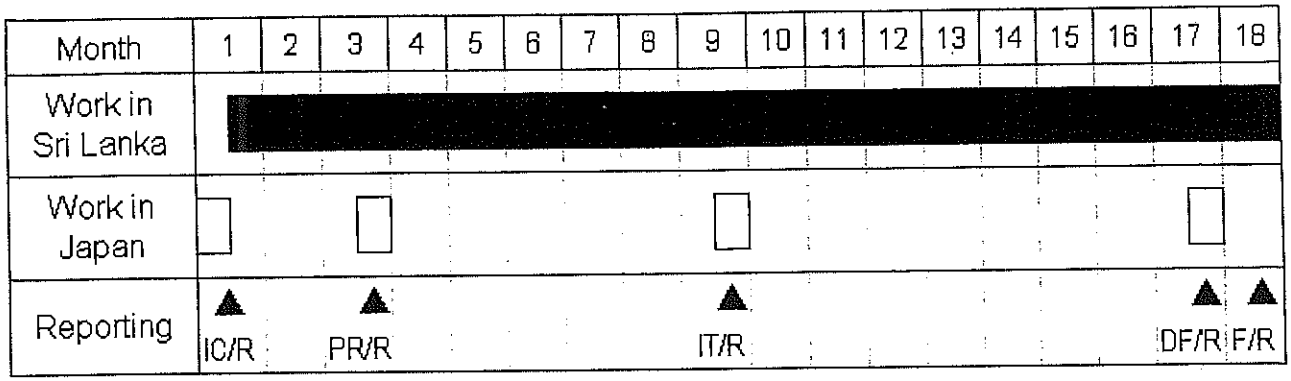
4. Consideration on Environment and Society

4-1. To evaluate adverse social and environment impacts cause by proposed activities in the road map and to examine counter measures against the negative impacts

V. PROJECT SCHEDULE

The Project will be carried out within 18 months period including implementation of pilot project(s) subject to the finding of the Project in accordance with following tentative schedule. The schedule, including report submission dates stated in the next clause (VI), is tentative and subject to be modified when both sides agree upon and any necessity arises in the course of the Project.

Tentative Schedule



Note IC/R: Inception Report, PR/R: Progress Report, IT/R: Interim Report, DF/R: Draft Final Report, F/R: Final Report

VI. REPORTS

JICA will prepare and submit the following reports to GOSL in English.

1. Inception Report
   20 copies at the commencement of the Project
2. Progress Report
   20 copies within 6 months after the commencement of the Project.
3. Interim Report
   20 copies within 9 months after the commencement of the Project.
4. Draft Final Report (DFR)
   20 copies within 18 months after the commencement of the Project.
   The written comments on the DFR from GOSL shall be submitted to JICA within 1 month after submission of the DFR.
5. Final Report (FR)
   20 copies within 1 month after the receipt of the comments on the DFR.

VII. UNDERTAKING OF THE GOSL

1. GOSL shall accord privileges, exemptions and other benefits to the Team in accordance with the Agreement on Technical Cooperation Between the Government of Japan and the Government of Sri Lanka on October 12, 2005.

2. GOSL shall bear claims, if any arises, against the Team resulting from, occurring in the course of, or otherwise connected with, the discharge of their duties in the implementation of the Project, except when such claims arise from gross negligence or willful misconduct on the part of the Project.

3. MNB shall act as counterpart agency to the Project and also as coordinating bodies in relation with other necessary governmental and non-governmental organizations concerned for the smooth implementation of the pilot project(s) in the Project.

4. GOSL shall, at its own expense, provide the Project with the following, in cooperation with other organization concerned:
   1) Security-related information on as well as measures to ensure the safety of the member(s) of the Project;
   2) Information on as well as support in obtaining medical service;
   3) Available data and information related to the Project;
   4) Counterpart personnel;
   5) Suitable office space with necessary office equipment and furniture; and
   6) Credentials or identification cards

5. MNB will, as the executing agency of the Project, take responsibilities that may arise from the products of the Project and the pilot project(s).

6. GOSL assures that the matters referred to in this form will be ensured for the smooth conduct of the pilot project(s) by the Team.

VIII. UNDERTAKING OF JICA

For the implementation of the Project including the provisional pilot project(s), JICA shall take the following measures:

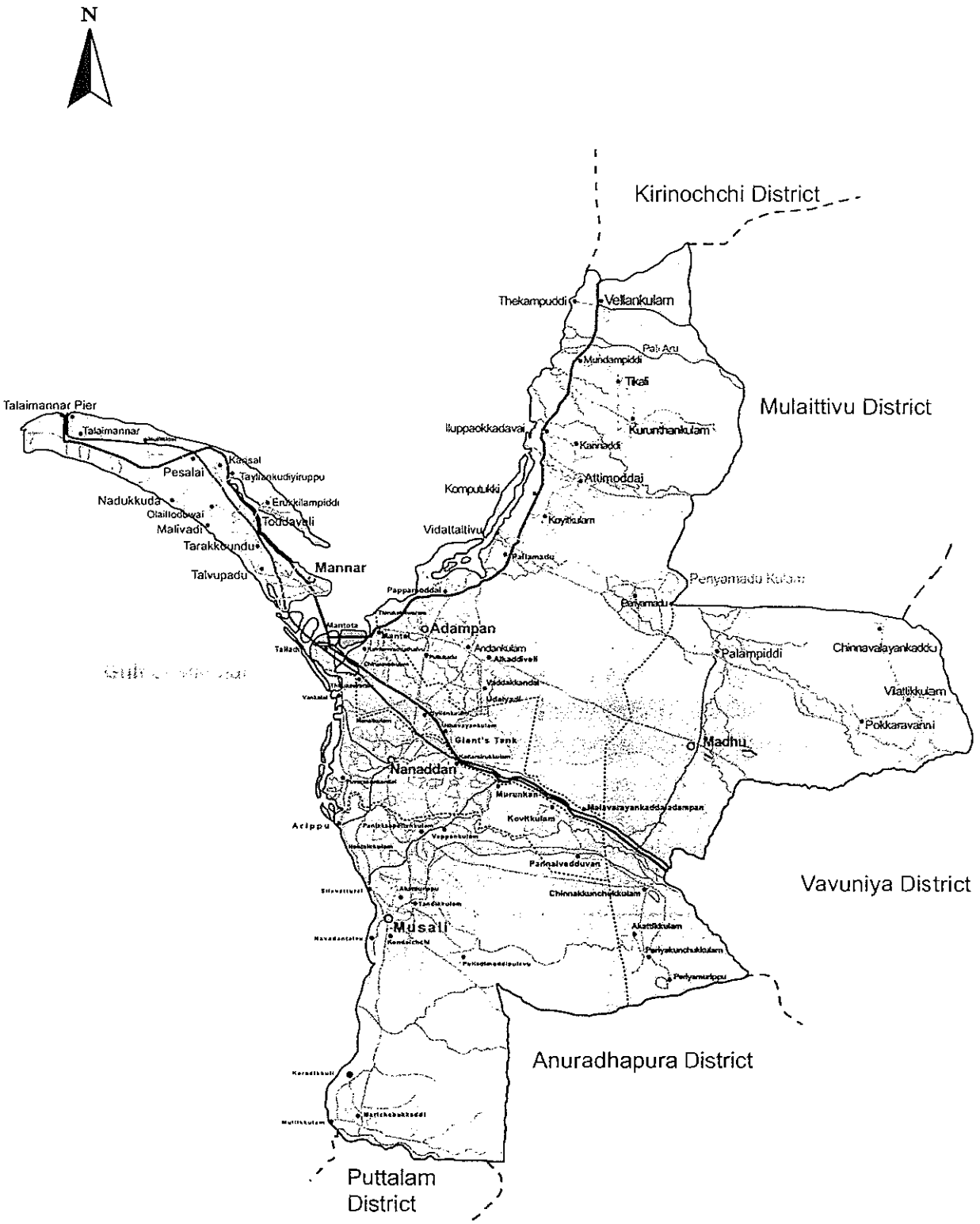
1) To dispatch, at its own expense, the Team to the Democratic Socialist Republic of Sri Lanka; and
2) To pursue technology transfer to Sri Lankan counterpart personnel in the course of the Project.

IX. OTHERS

1. JICA and GOSL shall maintain the constant communication and consult with each other in respect of any matter that may arise from or in connection with the Project.

Attachment 1 : the Project area

Attachment 1



The Project Area: Mannar District

Minutes of Meeting

on the Scope of Work

for

the Project for Development Planning for the Urgent Rehabilitation of the Resettlement Community in Mannar District

Agreed Upon Between the Authorities Concerned of

the Democratic Socialist Republic of Sri Lanka

and

Japan International Cooperation Agency

Colombo, 19 January, 2010

Mr. W. K. K. Kumarasiri
Secretary
Ministry of Nation Building and Estate
Infrastructure Development
The Democratic Socialist Republic of Sri Lanka

Mr. Mikio Ishiwatari
Team Leader
Preparatory Study Team
Japan International Cooperation Agency

Mr. J. H. J. Jayamaha
Director General
Department of External Resources
Ministry of Finance and Planning
The Democratic Socialist Republic of Sri Lanka

Mr. A. Sivaswamy
Chief Secretary
Northern Province
The Democratic Socialist Republic of Sri Lanka

Mr. A. Nicholaspillai
Government Agent / District Secretary
District Secretariat of Mannar
The Democratic Socialist Republic of Sri Lanka

In response to the official request of the Government of the Democratic Socialist Republic of Sri Lanka (hereinafter referred to as "the GOSL"), the Preparatory Study Team (hereinafter referred to as "the Japanese side"), headed by Mr. Mikio Ishiwatari was dispatched to Sri Lanka by Japan International Cooperation Agency (hereinafter referred to as "JICA") from 7th to 20th January, 2010 for the purpose of discussing and drafting the Scope of Works (hereinafter referred to as "S/W") for "the Project for Development Planning for the Urgent Rehabilitation of the Resettlement Community in Mannar District" (hereinafter referred to as "the Project").

Ministry of Nation Building and Estate Infrastructure Development (hereinafter referred to as "MNB"), Ministry of Finance and Planning (hereinafter referred to as "MFP"), Presidential Task Force (hereinafter referred to as PTF), District Secretariat of Mannar (hereinafter referred to as DSM) and the other related authorities concerned (hereinafter referred to as "the Sri Lankan side") and the Japanese side exchanged views and had a series of discussions, the Sri Lankan side and the Japanese side (hereinafter referred to as "the both sides") agreed and summarized the Minutes of Meeting (hereinafter referred to as "M/M") and S/W for the Project.

The main points of discussions are summarized below. The officials involved in the Projects and attendants to the discussions are listed in the attachment.

1. Background

An internal conflict, which continued over twenty years in Sri Lanka, disrupted livelihoods, resulted in a loss of productive assets, and damaged socio-economic infrastructures. Internal displaced persons (IDPs) are resettling to their original communities. The progress of rehabilitating socio-economic activities of returned IDPs differs from community to community. Project aims at resuming socio-economic life of the communities affected by the conflict through rehabilitating livelihood activities and basic public services. In particular, the project supports needy communities where the progress of rehabilitation is delayed. The project consists of two components: (a) a road map of rehabilitation and reconstruction in the district, and (b) pilot projects of community-based rehabilitation. Priority is put on rehabilitating livelihood, and resuming daily life. Agriculture, fishery, and water are priority areas considering characteristic of the district.

2. Title of the Project

The both sides agreed to change the title of the Project as "the Project for Development Planning for the Urgent Rehabilitation of the Resettlement Community in Mannar District" from the original title of the Project in the request, "the Project for Promotion of Reconstruction and Development of Conflict Affected Areas in Mannar District".

3. Managerial Structure of the Project

MNB is the executing agency, and DSM is the implementing agency. To implement community-based rehabilitation, local resources, such as NGOs and experts will be engaged in project activities. The national steering committee will be established at the central level: (a) to monitor overall project progress, (b) to coordinate ministries concerned and (c) to report progress of the Project and seek advice to PTF.. The district steering committee will be established at the district level:

(a) to monitor progresses of each component; (b) to review working plans, such as pilot community selection; and (c) to coordinate organizations concerned. The members of these committees are as follows:

(1) National steering committee

- Secretary, MNB (Chair)
- Director General, Department of External Resources, Ministry of Finance and Planning
- Director General, Department of National Planning, Ministry of Finance and Planning
- Chief Secretary, Northern Province
- A Designate Consultant of PTF
- Government Agent / District Secretary, DSM
- JICA Project team leader
- Representative of JICA Sri Lanka office
- Representative, Embassy of Japan (observer)

(2) District steering committee

- Government Agent / District Secretary, DSM (Chair)
- Assistant Commissioner, Department of Agrarian Development, Mannar District
- Assistant Director, Department of Fisheries and Aquatic Resources, Mannar District
- Assistant Commissioner, Department of Cooperative Development, Mannar District
- Representative of Chief Secretary, Northern Province
- Representative of MNB
- Observers, such as development partners, if necessary
- JICA Project team leader
- Representative of JICA Sri Lanka office
- Representative, Embassy of Japan (observer)

4. Component A: Formulation of Road map

The road map will include visions, priority projects, action plans in rehabilitation and reconstruction of socio-economic activities in Mannar District. A reconstruction forum will be established to build consensus on these contents among key stakeholders. The members of a forum will be arranged through the mutual understanding between the Sri Lankan side and Japanese side.

5. Component B: Pilot project of community-based rehabilitation

To recover from the devastating effects of the long internal conflict, it is vital to respond to various needs of the community. To identify various needs, the most important is to work with the communities. Responding the needs of the communities and enhancing the capacity of them through that process will ensure inclusive and balanced development in future. Vulnerable communities, where IDPs delayed in resettlement, are targeted.

(1) Approach: Support to people will be conducted through utilizing and enhancing mutual-assistance functions of community-based organizations (CBOs) and cooperatives. Despite the long disturbance of the internal conflict, CBOs played

vital roles to sustain the people's life. Its structure and members kept strong relationship before, during, and after the conflict. In this reconstruction process, these organizations would be reactivated to become a main platform for communities. Communities play crucial roles in rehabilitation following the disasters. Mutual-assistance is supplemented by self-assistance, and government–assistance. This approach is one of the most important lessons from the Kobe Earthquake in 1995 in Japan, and the Indian Ocean Tsunami in 2004. Also, gender balance is considered in the pilot projects.

(2) **Selection of pilot community**: 10 to 15 Grama Niladhari divisions will be selected as the pilot communities. Selected criteria are as follows:
- No duplication with other donors' projects
- Number and percentage of returned IDPs
- Progress of basic service supply, such as water
- Ethnic and area balance
- Poverty
- Mine clearance certificates
- Security and Access

(3) **Activities:** Potential areas are agriculture, and fishery as livelihood, and water supply as basic service.

6. Environmental and Social Considerations

The Sri Lankan side understood the contents of the JICA guideline for environmental and social considerations (basic principles, procedure etc.). The project activities including pilot projects will be complied with this guideline. JICA will support Sri Lankan organizations to adapt the guidelines into the project.

7. Others

(1) Cooperation Period: The term of cooperation is planned to be 18 months.

(2) Provision of Project Office Space and Allocation: DSM will provide office spaces equipped with furniture such as desk, chairs, telephone lines, in DSM office.

(3) Counterpart Personnel: Chief Secretary of Northern Province and DSM will provide counterpart personnel in the following areas:

(a) Agrarian service
(b) Agriculture
(c) Community development
(d) Infrastructure
(e) Fishery
(f) Cooperative
(g) Regional planning
(h) Gender
(i) Construction management/ procurement
(j) Environment and social consideration
(k) Social survey

(4) Reports: Final report of the Project will be open to the public.

(5) Capacity Building of the counterparts: JICA project team will conduct technical transfer to counterpart personnel through day-to-day works, and training program.

(6) Procurement Procedure: JICA project team will provide the procurement plan for the pilot project(s) in order to facilitate MNB's budgetary arrangement process based on the Clause VII. in the Scope of Works.

Attachment: Attendant List of the Meetings

Attachment

Attendant List of the Meetings

Members of Sri Lankan side

<Ministry of Ministry of Nation Building and Estate Infrastructure Development>

➢ Mr. W. K. K. Kumarasiri	Secretary

< Ministry of Finance and Planning>

➢ Mr. J. H. J. Jayamaha	Director General, Department of External Resources

<President Task Force>

➢ Mr. S. B. Divaratne	Secretary

< District Secretariat of Mannar>

➢ Mr. A. Nicholaspillai	Government Agent / District Secretary
➢ Mrs. S. Mohanathas	Additional Government Agent
➢ Mrs. Stanly De Mel	Mannar Divisional Secretary
➢ Mr. S. Ketheeswaran	Musali Divisional Secretary
➢ Mr. C. A. Chnadriah	Nanaddan Divisional Secretary
➢ Mr. S. R. Soosauiayaga	Manthai West S.A.
➢ Mr. J. Thireskumov	Madhu Assistant Government Agent

Members of Japanese side

<JICA Preparatory Study Team>

➢ Mr. M. Ishiwatari	Team Leader
➢ Ms. S. Imoto	Cooperation Planning
➢ Mr. S. Sugita	Project Planning

<JICA Sri Lanka Office>

➢ Ms. Y. Nishino	Senior Representative
➢ Mr. T. Otsuka	Representative
➢ Mr. K. Yuasa	Representative
➢ Mr. Y. Ikegami	Project Formulation Advisor

List of Major Ongoing Assistance in Mannar District

As of the end of December 2010

Type of assistance		Name of the Organization	Project period	Main activities
Demining and Mine Risk Education		Sri Lanka Army – Humanitarian Demining Unit	-	Demining
		Sarvatra	-	Demining
		HORIZON	-	Demining
		Swiss Foundation for Demining (FSD)	-	Demining
		Danish Demining Group (DDG),	-	Demining
		HALO Trust	-	Demining
		Mines Advisory Group (MAG),	-	Demining
		UNICEF/ Community Trust Fund	-	Mine Risk Education
		UNICEF/ Sarvodaya	-	Mine Risk Education
Humanitarian assistance		UNHCR	-	Return assistance: protection monitoring, shelter assistance and non-food items
		WFP: Protracted relief and recovery operation for Sri Lanka	January 2009 - December 2010	- Targeted relief food distribution, - Food for Work, - Mother-and-child health and nutrition activities, - Food for education
		IOM	-	- Emergency assistance: provision of emergency shelter kits and transitional shelters, transport, water and sanitation projects, - Income-generating livelihood projects
Rehabilitation/ Reconstruction	Government	GOSL: Waddakkil Wasanthan (Spring in the North)	-	- Construction of roads etc
		Pradeshiya Sabha	-	- Renovation of village roads
	Donor agencies	World Bank: Community Livelihood in Conflict Affected Areas Project ("Re-awakening Project")	December 2009 - March 2013	- Village rehabilitation and development, - Rehablitation of major irrigation schemes, - cluster level livelihood activities, - institutional capacity building and project implementation support
		World Bank: Emergency Northern Recovery Project (ENREP)	December 2009 - June 2012	- Emergency assistance to IDPs, - Cash-for-Work program, - Rehabilitation and Reconstruction of Essential Public and Economic Infrastructure, - Project Management, Monitoring and
		UNDP: Livelihood Development Programme	March 2008 - February 2011	- Livelihood assistance in traditionally productive sectors, - Promotion of alternative income sources, - Construction of livelihood-related community infrastructure, - Promotion of social cohesion
		FAO	2010 - 2011	- Provision of Essential Agricultural Inputs
		UNICEF	-	- Nutritional program for the pregnant mothers returned from Manic Farm
	NGOs	Sewa Lanka Foundation	-	- Construction of temporary shelters and toilets, - Support for livelihood such as home gardening, - Renovation of agro wells, etc
		ZOA Refugee care	-	- Community strengthening Program, - Provision of fishing nets
		World Vision	-	Distribution of livestock and agriculture tools
		Sarvodaya	-	- Supply of vegetable seeds and livelihood packages, - Provision of fishing nets - Supply of temporary shelters, - renovation of toilets,
		Valvuthayam (Caritas)	-	- Supply of temporary shelters, - Assistance in livelihood and income generation
		Room to Read	-	Construction of primary and preschool
		JRS	-	Support for preschool education

Socio-economic Classification of the Shortlisted GN Divisions

DS Division	GN No.	GN Division	No. of Villages	No. of H.H.	Female Headed H.H	Ethnicity	Religion	Main Livelihood	Re-settlement Started in	Safe Drinking Water	Present Situation of Safe Drinking Water	Housing Conditions	Toilets	Economic Infrastructure	External Assistance (Recently & On-going)	External Assistance (Plan)	Note
Mannar T	MN 96	Parapankandal	3 (re-settlement only in 3 villages out of 4)	224	35	Tamil	RC - 88% NRC - 6% Hindu - 6%	Paddy - Maha only Inland fishery OFC - a lot	Dec. 2009	Part	The three villages, except Periyakulam, have only 1 drinking water well, which is 2 km away from the villages.	All the houses were damaged or destroyed. Now live in temporary sheds.	None	* Sirukkulam tank has not been renovated for the past 20 years. * Inland fishery has not started as the villagers do not have boats. * Outlet canals to paddy fields are damaged.	* Temporary sheds - Sewa Lanka * Bicycles (170nos) - YGRO * Cleaning of drinking water/agro wells - Sarvodaya * Repair of drinking water wells - ZOA	Sewa Lanka plans to construct 25 new toilets.	Electricity supply - work going on.
Nanaatan	MN 109	Valkaipettankandal	6 (out of 6, only 2 were studied)	562	14	Tamil	RC - 98% Hindu - 2%	Paddy - Maha (Fully) Daily farming	2008	Part	Two wells in the villages can used for drinking purposes	Permanent houses	Yes	* Valkaipettankandal (58 fa.) owns 333 acres of paddy land. Manangaveli (27 fa.) owns 150 acres of paddy land * Paddy yield is around 5 ton/acre * The villagers collect cow milk daily from 248 cows. * There is one private rice mill. * One tank out of 3 need repairs. Irrigation canal (3.5 km) is damaged.	* Renovation of 2 irrigation tanks and construction of RDS Community Hall -NEIAP * Construction of 32 nos. of houses - NEHRP * Solar Panel at Community hall - IOM	No	DS specially requested to consider these 2 villages in the GN Division, which have difficulties in safe drinking water, toilets and renovation of the internal roads.
	MN 126	Cheddiyarmagan Kaddaiadampan	2	71	18	Tamil	Hindu - 48% RC - 43% Non RC -9%	Paddy - Maha only OFC - a little inland fishery - 8 families	Jan.2010	Part	There are 7 drinking water wells, but only 3 can be used as water level of other wells are very low.	All destroyed except 8. Now live in temporary sheds.	None	There is a tank or minor irrigation, which does not have sufficient water in Yala.	None	No	Electricity supply - work going on.
Musali	MN 139	Maruthamadhu	3	154	10	Muslim/ Tamil	Islam - 53% RC - 40% Hindu - 7%	Paddy - Maha only OFC - a little labor (fishing)	Jun. 2009 (Tamil) Aug. 2009 (Muslim)	No	No well to supply safe drinking water in Maruthanmadhu village. In Pichchaivanipanedunkulam, only one well to supply safe drinking water, which is very deep and does not have enough volume.	All destroyed. Now live in temporary houses.	Temporary	* Water in the tank depends on rain fall, therefore, the villagers cultivate only in Maha. * They used to do animal husbandry, but currently no resources .	* Permanent houses - UNDP * Supply of goats - OFFER * Temporary toilets - OFFER * Provision of a two wheel tractor and bowser and construction of a tube well for drinking water - Sewa Lanka * Loan of 30,000 to 22 beneficiaries (DS)	* Sewa Lanka has a plan to continue their support. * The villagers may obtain support from Varvothayam (CARITAS) for livelihood. The program started last April targeting 500 families in Musali DS division.	Electricity supply - work going on.
	MN 147	Koolankulam	3	323	10	Tamil/ Muslim	RC - 72% Hindu - 28%	Paddy (50%) - Maha only Sea fishing (50%)	Jun.2009	Part	All the villages share one drinking water well. Currently, PS is supplying water by bowser.	Permanent houses funded by NEHRP. Some damaged during the last displacement. Now repaired.	Some were repaired	* Water in the tank depends on rainfall, therefore, the villagers cultivate only in Maha.* Fishery families do not engage in fishing at the moment, as if off-season. Some of them have pawned jewelry to purchase basic fishing inputs. * They used to do animal husbandry, but currently no resources.	* Permanent houses - NEHRP* Renovation of partly damaged toilets - IOM * Repairing damaged houses - OFFER * Training in sewing for women - MP of Mannar * Construction of a tube well -Sewa Lanka		Electricity supply - work going on.
	MN 148	Kokkupadayan	3	148	11	Muslim	Islam	Paddy (75%) - Maha only Sea fishing (25%) OFC - a little	Aug. 2009	No	48 families close to the main road do not have a drinking water well, while other villagers living interior do have. Currently, PS is supplying drinking water by bowser.	Most of the villagers live in permanent houses build by NEHRP. Some live in temporary shelters funded by IOM.	Repaired	* Water in the tank depends on rain fall, therefore, the villagers cultivate only in Maha. * 25% of families are engaged in fishing activities as helpers for the fishermen in Chilavaththurai. * They used to do animal husbandly, but currently no resources .	* Temporary shelters, toilets, renovation of damaged toilets - IOM * Permanent houses - NEHRP * Seeds for OFC and door and window frames - OFFER		Electricity supply - work going on.
Madhu	MN 40	Palampiddy	1	178	?	Tamil	Hindu - 85% RC - 15%	Paddy OFC	Apr. 2010	Part	Three shared drinking water wells cleaned by PS.	No suppor, yet. Currently live in tents.	None	The tank and canal need renovation. Most of the villagers have their own paddy fields.	* Cleaning of wells - PS	Tank and canal renovation by PEACE (JICA)	
	MN 43	Vilathikulam	2	65	8	Tamil	Hindu	Paddy - Maha only OFC - a little	Feb. 2010	Part	There are 6 DWW, but only 1 can be used as other 5 need de-silting.	All destroyed. Now live in temporary sheds.	None	Every villager own paddy land, but they do not have sufficient water for Yala.	No	No	
	MN 44	Parasankulam	3	102	15	Tamil	Hindu	Paddy - Maha only OFC - a little	Mar. 2010	Part	I parasankulam (28HH), there are 8 DWW, but only 1, which is very far away, can be used. In Sinnavelayankaddu (80HH), there are 42 DWW, but only 5 can be used.	All destroyed. Now live in temporary sheds.	None	Every villager owns paddy land. The three tanks that supply water to the paddy fields are damaged.	No	No	

DS Division	GN No.	GN Division	No. of Villages	No. of H.H.	Female Headed H.H	Ethnicity	Religion	Main Livelihood	Re-settlement Started in	Safe Drinking Water	Present Situation of Safe Drinking Water	Housing Conditions	Toilets	Economic Infrastructure	External Assistance (Recently & On-going)	External Assistance (Plan)	Note
Manthai West	MN 01	Vellankulam	3	137	26	Tamil	Hindu - 97% NRC - 3%	Paddy - Maha only OFC	Mar. 2010	No	Sewa and Ganeshapuram villages do not have water source. ZOA is supplying water by bowser. Vellankulam has some drinking water wells.	All the houses were damaged or destroyd. Now live in temporary sheds. Some in Vellankulam village live in partly damaged houses.	None	* Sewa and Ganeshapuram villages do not have their own paddy land and mainly engaged in OFC cultivation. * Vellankulam has 450 acres of paddy land, but only 400 acres is cultivated as others have no irrigation facilities.	Water supply by bowser (Sewa & Ganesha) - ZOA	No	Water supply system introduced to Sewa and Ganesha by MANRECAP was damaged and need repair.
	MN 02	Thevanpiddy	2	204	37	Tamil	RC - 95% NRC - 5%	Sea fishing Animal husbandry	Feb. 2010	No	No source of drinking water. Many NGOs and NWS&DB had promised to install a water supply scheme, but nothing has been done so far. PS is supplying water by bowser	Most of the houses were damaged and some were fully damaged. Some live in temporary sheds, while some lives in damaged house.	Some were repaired	* The villagers lost all the fishing gear and nets during the last displacement. At present they are hiring boats from Palimunai. No assistance for fishing, so far. * 8 families were rearing cattle & goats. At present none.	* Toilet repairs - Sarvodaya *Water supply by bowser - PS	Water supply by ENREP	The teachers' quarters at Thevanpiddy school constructed by MANRECAP was damaged.
	MN 03	Pali Aru	3	255	36	Tamil	Hindu - 66% RC - 34%	Paddy - No? OFC Fishing	Mar. 2010	No	No source of drinking water. ZOA and Sarvodaya are supplying water by bowser. Water supply system was introduced by MANRECAP to Pali Aru village, but damaged.	Temporary shed. Temporary houses in Moonrampiddy	None	* Renovation of Thethavaadi tank and the teeder Tank needed * Fisher families in Moorampiddy lost all their fishing gear. (75 fibre glass boats with OBM and 90 nos. of canoes). Now some villagers are hiring boats from Pallimunai.	* Water supply by bowser - ZOA & Sarvodaya * Cleaning of wells - Sarvodaya * Construction of temporary houses (some) and toilet repair (some) - Sarvodaya	No	Water supply system introduced to Sewa and Ganesha by MANRECAP was damaged and need repair.
	MN 04	Illuppaikadavai	4	148	37	Tamil	Hindu - 77% RC - 22% NRC - 1%	Sea fishing Paddy - 10 families	Dec. 2009	No	No drinking wells. Currently, Sarvodaya is supplying water by bowser. One tube well constructed by the coordination of MANRECAP could be used if repaired (motor and pump are missing)	Among the permanent houses, only 7 can be used. Other were fully damaged. No shelter assistance. Now live in tin-sheets.	Some were repaired	Fishery families are hiring boats from Palimunai. Some had pawned jewelry for the purpose.	Construction of temporary shelters and renovation of toilets - Sarvodaya	No	
Manthai West	MN 05	Anthoniyarpuram	1	126	32	Tamil	RC	Fishing Paddy - a few	Dec. 2009	No	No drinking wells. Currently, Sarvodaya is supplying water by bowser.	All destroyed. No shelter assistance. Now live in tin-sheets.	Some were repaired	Fisher families are hiring boats from Palimunai. Some had pawned jewelry for the purpose. Sarvidaya supplied nets, but the villagers returned them as the nets were not suitable. Few families engaged in paddy cultivation. There is an abandoned tank, which used to feed 150 acres.	* Construction of temporary shelters & temporary toilets - IOM * Renovation of tiolets - Sarvidaya	No	
	MN 10	Vidataltivu West	3	119	33	Tamil	RC - 78% NRC - 17% Hindu - 5%	Fishing -all	Dec. 2009	No	No drinking water at all. The villagers have to walk 3km. PS is supplying water by bowser. Gravity water scheme was introduced, but is damaged and not currently used.	All damaged. No shelter assistance. Now living in tin-sheets.	Some have temporary toilets.	Arnold's Canal should be de-sited and deepened. 34 boats, engine and nets were donated by the Govt. They are hiring boats.	No shelter assistanc 34 boats with engine and nets - Govt. Toilet repair - Sarvodaya	Water supply by ENREP	
	MN 11	Vidataltivu North	1	111	20	Tamil	RC - 97% Hindu - 2% NRC - 1%	Fishing- all Paddy - about 5 families	Dec. 2009	No	No drinking water at all. The villagers have to walk 3km. PS is supplying water by bowser. Gravity water scheme was introduced, but damaged and not used now.	All damaged. No shelter assistance. Now living in tin-sheets.	Some have temporary toilets.	Arnold's Canal should be de-sited and deepened. 5 boats, engine and nets were donated by the Govt. They are hiring boats.	No shelter assistance 5 boats with engine and nets - Gov. Toilet repair - Sarvodaya	Water supply by ENREP	
	MN 15	Kaya Nagar	1 (resettlement started only in one village out of 2)	110	20	Tamil	RC - 33% Hindu - 67%	Paddy - Maha onlyOFC - a little daily labor carpentry and masonry	Mar. 2010	No	The wells in the village cannot be used for drinking purpose. They walk or use bicycle to go to Periyamadhu (3km far) to collect drinking water.	*There were about 72 houses constructed by DRC through Sewa Lanka. Now, about 30 live in partly damaged houses, while others live in temporary sheds.	Some were repaired	* No one has paddy land. They hire paddy land in Periyamadhu, which is owned by Muslims. They are worried that they won't have such opportunity once the owners come back for resettlement.	* Cleaning of wells-Sarvodaya * Donation of bicycles (44) -Valvuthayam * Water supply by bowser - ZOA * Repairs - Sewa Lanka	No	

DS Division	GN No.	GN Division	No. of Villages	No. of H.H.	Female Headed H.H	Ethnicity	Religion	Main Livelihood	Re-settlement Started in	Safe Drinking Water	Present Situation of Safe Drinking Water	Housing Conditions	Toilets	Economic Infrastructure	External Assistance (Recently & On-going)	External Assistance (Plan)	Note
	MN 18	Pappamoddai	3	91	17	Tamil	RC - 64% Hindu - 36%	Fishing - 60 families Paddy - 24 families masonry and carpentry - a few	Oct. 2009	No	Pappamoddai (45 families) has only two DWWs. One is used by a contractor of the road. Therudayan (40 families) has 2 drinking water wells. Kandal has two DWWs. No water problem in Kandal (6 families)	Temporary houses	Some were repaired	Dept of Fisheries donated one Canoe and three fiberglass boats with OBM to FCS. IOM donated three canoes to FCS. FCS intends to rent the boats out to members on a rotation basis. * At present fishermen are hiring boats from Pallimunai.	* Temporary shed and toilets - UNOPS * Cleaning of wells - Sarvodaya	No	
	MN 19	Veddaiyamurippu	2	68	12	Tamil	Hindu - 71% RC - 29%	Paddy - Maha only OFC - in Maha Daily labour	Oct. 2009	No	There are 3 DWW which were cleaned by Sarvodaya. But the water cannot be used for drinking, because it is salty. The villagers have to walk about 1.5 km to get safe drinking water.	All destroyed. Now live in temporary houses.	Repaired	* Only a few did cultivation last Maha, because demining of their paddy fields was not completed. * Some own paddy land, while some do not own and depend on daily labor work.	Water supply by bowser (ZOA)	No	
	MN 21	Maligaithiddal	3	71	9	Tamil	Hindu - 69% RC - 31%	Paddy - Maha only OFC - in Maha daily labor	Oct. 2009	No	There are 3 DWW which were cleaned by Sarvodaya. All the 71 families use only one of the wells for drinking purposes, as others have salty water.	All destroyed. Now live in temporary houses.	Repaired	* Only a few did cultivation last Maha, because demining of their paddy fields was not completed. * Some own paddy land, while some do not own and depend on daily labor work.	Water supply by bowser (ZOA)	No	
	MN 22	Adampan	3	173	33	Tamil	RC - 37 Hindu - 120	Paddy - Maha & Yala (sometimes) OFC	Oct. 2009	No	Some living around the hospital do not have any drinking water and have to walk 1.5 km. Others have water.	All damaged. Now live in temporary sheds.	Some have temporary toilets.	Most of the villagers have their own paddy land. Some of the farmland has not been cleared (jungle)	* Temporary sheds and toilets - IOM * Cleaning of wells - Sarvodaya	Water supply by ENREP	
	MN 23	Palaikuly	8	167	46	Tamil	RC - 62% Hindu - 38%	Paddy - Maha Only OFC Inland fishery - 3 families mason and carpentry	Oct. 2009	Partly	Karampaikulam village has only one well, and it is salty. They go to Palaikuli village, about 1.5 km away from this village to get drinking water. In other villages, there seems to be not much problem with water.	Temporary sheds	Temporary	* The tanks of Vaddavan and Puthulladu have been abandoned for the last 20 years and have not been renovated. * The spill of the Puthukkadu tank is fully damaged and need to be repaired to reserve sufficient water. * The culvert at Parankaman, which is used by school children, is damaged.	* Temporary shed and toilets - IOM * Cleaning of wells - Sarvodaya	No	
	MN 24	Nedunkandal	1	99	15	Tamil (88%) Muslim (1%)	RC - 86% Hindu - 13% Islam - 1%	Paddy - Maha & Yala (small scale) OFC - a little	Oct. 2009	Yes	DWW needs de-siting & cleaning (now in progress by Sarvodaya)	Some permanent houses need repairs. Others live in temporary houses.	Some were repaired	* Feeder canals to tank need cleaning for agro needs * Sufficient water in the tank even for small scale in Yala	* Temporary shed - IOM * Cleaning of DWW & toilet repairs - Sarvodaya * Subsidy for Maha cultivation - Govt	No	Electricity supply - work going on.
	MN 25	Sornapuri	3	136	33	Tamil/ Muslim	Hindu - 66% RC - 21% Islam - 12% NRC - 1%	Paddy - Maha only OFC - a little Daily labour	Oct. 2009	Partly	Sornapuri (61fa) has only one drinking water well. Puriyankulam (34fa) also has only one drinking water well. The families have to walk about 0.5 km to collect water.Veppankulam (41fa) has no drinking water well. They must go to other neighboring villages for water.	Most of the houses (permanent) were destroyed. Now live in temporary houses.	Some were repaired	* Average yield of 40 bags per acre. Most of the villagers have their own paddy land.	* Temporary sheds - IOM * Cleaning of DWW - Sarvodaya * Temporary toilets - IOM	No	
	MN 27	Kannaddy	4	205	41	Tamil/ Muslim	RC - 58% Islam - 23% Hindu - 19%	Paddy - Maha only OFC - a little	Oct. 2009	No	* Kannaddy village has six drinking water wells, but only one is good for drinking. * A hand pump tube well in Church compound is not working. * There are about 44 water wells in four cluster villages. But all cannot be used for drinking purposes.	Most of the houses (permanent) were destroyed. Now live in temporary houses.	Some were repaired	* Their minor tank is unable to reserve more water for cultivation.	Temporary shelters (15 only) - UNOPS Temporary toilets - IOM Cleaning of wells - Sarvodaya	No	* Housing construction by NEHRP in two villages. * Some Muslim families are still moving.
	MN 33	Palay Permalkaddu	5	210	43	Tamil	Hindu - 57% RC - 39% NRC - 4%	Paddy - Maha & Yala (sometimes) OFC - a little Inland fishery - few villagers	Oct. 2009	Partly	No problem with drinking water, except Manalmoddai, where they have only one DWW. They have to go one km to fetch water.	All damaged. Now living in temporary sheds.	Some have temporary toilets.	* Only 50% of the villagers have own paddy. Some paddy land does not have sufficient water.	* Some temporary sheds & semi-permanent toilets - UNOPS * Cleared and renovated 4 wells - ZOA	No	

Options and Assessment/Proposal of Drinking Water Supply for the 11 GN Divisions for the Pilot Project

DS/ AGA Division	GN Division	Name of the village	Drinking Water Supply		
			Rehabilitation/ Reconstruction (Recommendations in the shaded cells)		Development (Road Map)
			Options	Assessment/ Proposal	
1. Mannar Town DS	1. Parapankandal	1. Periyakulam 2. Sirukkulam 3. Adaikalamoddai	1. Cleaning of existing open dug wells + Hand-pumps + Well covers (rids), 2. Construction of new open dug wells + Hand-pumps + Well covers (rids), 3. Supplying "chlorine" for periodical disinfection	Considered not to be suitable because water quality may not be maintained drinkable due to possible contamination by agro-chemical, subject to water quality test.	An integrated regional water supply net-work covering entire 'Rice Bowl area": - Tube wells near the Giant's Tank, - Elevated tanks where required, - A water treatment facility at the pumping station, - Transmission, distribution line, - Public taps or house connections
			4. Rainwater harvesting	Considered not to be suitable as a reliable facility because of unreliable water source in quantity and quality. Combination with other sources is required.	
			5. Water distribution delivered by bowsers from a tube well near the Giant's Tank; 6. Water distribution through a piped system from a tube well near the Giant's Tank	One tube well at a point of Giant's Tank Option 5 may be proposed for Periyakulam and Adaikalamoddai; Option 6 be for Sirukkulam.	
		4. Palaithalvu	---	---	---
2. Nanaddan DS	2. Cheddiyarmagan Kaddaiadampan	5. Cheddiyarmagan Kaddaiadampan	1. Cleaning of existing open dug wells + Hand-pumps + Well covers (rids), 2. Construction of new open dug wells + Hand-pumps + Well covers (rids), 3. Supplying "chlorine" for periodical disinfection	Considered not to be suitable because: - Water dries up in dry season	- One more well for stand-by, - House-connection
			4. Rainwater harvesting	Considered not to be suitable as a reliable facility because of unreliable water source in quantity and quality. Combination with other sources is required.	
			5. Water distribution from reliable water sources through a piped system	One tube well in the village may be provided; plus:- - An elevated tank - Distribution line - Public taps	

DS/ AGA Division	GN Division	Name of the village	Drinking Water Supply		
			Rehabilitation/ Reconstruction (Recommendations in the shaded cells)		Development (Road Map)
			Options	Assessment/ Proposal	
3. Madhu AGA	3. Vilathikulam	6 . Vilathikulam 7. Ampadda Illupaikulam	1. Cleaning of existing open dug wells + Hand-pumps + Well covers (rids), 2. Construction of new open dug wells + Hand-pumps + Well covers (rids), 3. Supplying "chlorine" for periodical disinfection	Considered not to be suitable because: - Water dries up in dry season	- One more well for stand-by, - House-connection
			4. Rainwater harvesting	Considered not to be suitable as a reliable facility because of unreliable water source in quantity and quality. Combination with other sources is required.	
			5. Water distribution e through a piped system from tube wells in each village	One tube well in the village may be provided; plus:- - An elevated tank - Distribution line - Public taps	
	4. Parasankulam	9. Parasankulam 10. Sinna Valayankaddu & Periya Valayankaddu	1. Cleaning of existing open dug wells + Hand-pumps + Well covers (rids), 2. Construction of new open dug wells + Hand-pumps + Well covers (rids), 3. Supplying "chlorine" for periodical disinfection	Considered not to be suitable because: - Water dries up in dry season	- One more well for stand-by in each village, - House-connection
			4. Rainwater harvesting	Considered not to be suitable as a reliable facility because of unreliable water source in quantity and quality. Combination with other source is required.	
			5. Water distribution e through a piped system from tube wells in each village	One tube well may be provided; plus:- - An elevated tank in each village - Distribution lines in each village - Public taps in each village	

DS/ AGA Division	GN Division	Name of the village	Drinking Water Supply		
			Improvement (Recommendations in the shaded cells)		Development (Road Map)
			Options	Assessment/ Proposal	
4. Manthai West AGA	5. Vellankulam	10. Sewa Village 11.Ganeshapuram	Water distribution from reliable water sources through a piped system	- Rehabilitation of the existing water supply system including the tube wells constructed by MANRECAP,	- One more well for stand-by in each village, - House-connection
		12. Vellankulam	A WB project- ENReP has been committed to a water supply scheme for Thevanpiddy. Vellankulam may be included in this ENReP scheme.	To coordinate with ENReP to include Vellankuam in the Thevanpiddy scheme. NWS&DB of Vavunia has agreed to this proposal.	- House-connection
	6. Thevanpiddy	13. Thevanpiddy 14. Puthukadu	ENReP has been committed to a water supply scheme for these villages.	- No further proposals are required.	- House-connection
	7. Pali Aru	15. Pali Aru	ENReP has been committed to a water supply scheme for these villages.	- Hand-pump to be installed to the existing tube wells provided by MANRECAP	- House-connection
		16.Moonrampiddy 17.Theththavaady	1. Cleaning of existing open dug wells + Hand-pumps + Well covers (rids), 2. Construction of new open dug wells + Hand-pumps + Well covers (rids), 3. Supplying "chlorine" for periodical disinfection	Considered not to be suitable because water quality may not be maintained drinkable due to possible contamination by agro-chemical.	Moonrampiddy and Theththavaady will have to be included into the Thevanpiddy Water Supply Scheme (Option-7);
			4. Rainwater harvesting	Considered not to be suitable as a reliable facility because of unreliable water source in quantity and quality. Combination with other sources is required.	
			5. The ENReP water supply scheme for Thevanpiddy may include these villages.	To coordinate with ENReP on the demarcation or possible interventions for those villages.	
			6. Water supply scheme from reliable water sources by bowser; or,	Construction of one tube well and a pumping station in Ganeshapuram area, procurement of bowsers, and providing water receiving tanks,	
			7. Water supply scheme through pipe line from reliable water sources	Extension of Thevanpiddy Water Supply Scheme to these two villages is recommended.	

DS/ AGA Division	GN Division	Name of the village	Drinking Water Supply		Development (Road Map)
			Improvement (Recommendations in the shaded cells)		
			Options	Assessment/Proposal	
4. Manthai West AGA	8. Illupaikadavai 9. Anthoniyarpuram	18.Illupaikadavai 19. Padakuthurai 20.Kaddaduvayal 21.Muthaliyrakamam 22.Parankikamam 23.Anthoniyarpuram	1. Cleaning of existing open dug wells + Hand-pumps + Well covers (rids), 2. Construction of new open dug wells + Hand-pumps + Well covers (rids), 3. Supplying "chlorine" for periodical disinfection	Considered not to be suitable because water quality may not be maintained drinkable due to possible contamination by agro-chemical.	The Option 7 + house-connection is recommended. One well for stand-by will be required.
			4. Rainwater harvesting	Considered not to be suitable as a reliable facility because of unreliable water source in quantity and quality. Combination with other source is required.	
			5. Connection to the ENReP water supply scheme of Thevanpiddy	To seek for a possibility that ENReP could include Pali Aru or not.	
			6. Water supply scheme from reliable water sources by bowsers; or,	Construction of one tube well and a pumping station in the western hilly area, procurement of bowsers, and providing water receiving tanks,	
			7. Water supply scheme from reliable water sources through a piped system	Construction of one tube well and pumping station in western hilly area, construction of transmission lines from the water source to the villages, one elevated tank, distribution lines and public taps in each village;	

DS/ AGA Division	GN Division	Name of the village	Drinking Water Supply		
			Improvement (Recommendations in the shaded cells)		Development (Road Map)
			Options	Assessment/Proposal	
4. Manthai West AGA	10. Nedunkandal	24. Nedunkandal	1. Cleaning of existing open dug wells + Hand-pumps + Well covers (rids), 2. Construction of new open dug wells + Hand-pumps + Well covers (rids), 3. Supplying "chlorine" for periodical disinfection	Considered not to be suitable because water quality may not be maintained drinkable due to possible contamination by agro-chemical.	An integrated regional water supply net-work that shall cover the entire 'Rice Bowl area": - Tube wells at the Giant's Tank, - Elevated tank if required, - A water treatment facility at the pumping station, - Transmission and distribution lines, - Public taps or house connections
			4. Rainwater harvesting	Considered not to be suitable as a reliable facility because of unreliable water source in quantity and quality. Combination with other sources is required.	
			5. The WB project- ENReP has been committed to a water supply scheme for Adampan neighboring to Nedunkandal. This WB project- ENReP Adampan water supply scheme may include Nedunkandal village.	To coordinate with ENReP for the inclusion of Nedunkandal to their scheme.	
			(same as options 5 and 6 for 1 Mannar town DS, Parapankandal)		
			6. Water distribution from reliable water sources by bowser 7. Water distribution from reliable water sources through a piped system	One tube well at a point of Giant's Tank	

DS/ AGA Division	GN Division	Name of the village	Drinking Water Supply		Development (Road Map)
			Improvement (Recommendations in the shaded cells)		
			Options	Assessment/Proposal	
4. Manthai West AGA	11. Kannaddy	25. Kannaddy 26. Chalampan 27. Naduvarambu 28.Maruthonduvan Velakulam	1. Cleaning of existing open dug wells + Hand-pumps + Well covers (rids), 2. Construction of new open dug wells + Hand-pumps + Well covers (rids), 3. Supplying "chlorine" for periodical disinfection	Considered not to be suitable because water quality may not be maintained drinkable due to possible contamination by agro-chemicals.	An integrated regional water supply net-work covering the entire 'Rice Bowl area": - Tube wells near the Giant's Tank, - Elevated tanks where required,
			4. Rainwater harvesting	Considered not to be suitable as a reliable facility because of unreliable water source in quantity and quality. Combination with other sources is required.	- A water treatment facility at the pumping station, - Transmission and Distribution lines, - Public taps or house connections
			5. The WB project- ENReP has been committed to a water supply scheme for Adampan. This WB project- ENReP Adampan water supply scheme may include these villages.	To seek for a possibility if WNReP should include these villages.	
			6. Water distribution from reliable water sources by bowsers	One tube well at a point of the Giant's Tank	
			7. Water distribution from reliable water sources through a piped system	Construction of tube wells in the areas near the Giant's Tank, elevated tank, transmission/distribution pipe public taps	

Village-wise Summary of the Pilot Projects

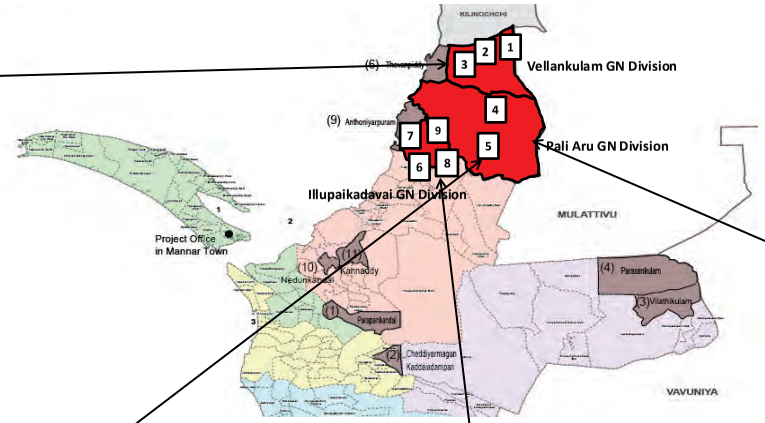
Cluster	GN Division	Name of the Village	Small-scale Infrastructure Rehabilitation													Community-based Activities					
																Agriculture			CBO, IGA, MF		
			MPH / Community Center	Preschool	Village Internal Road	Irrigation Tank	MPCS facilities	FCS Building	Fish Pond for Fry Rearing*2	Tube Well (drinking & highland crop)	Village Water Supply System	Market facilities	Nursery Farm	Poultry Hatchery facilities	Bridge & Flood Dike	Fishing Crafts & Equipment	Paddy Reactivation Program	OFC Cultivation Reactivation Program	Poultry Reactivation Program	Strengthening CBOs	Income Generation Activities	Microfinance Activities
A	Vellankulam	Sewa Village	■							■	■		■	■					Chick rearing		Block making	■
		Ganeshapuram	■							■	■							■	■			
		Vellankulam	■	■	■		■					■					■	■	■			■
	Pali Aru	Pali-Aru	■		■					■								■	■		Mat weaving	
		Theththavaady	■		■												■	■	■			■
	Illupaikadavai	Illupaikadavai*1	■							■							■	■	■		Bakery	
		Kaddaduvayal																■	■			
		Parankikaman				■												■	■			
		Muthaliyarkaman				■												■	■			
B	Thevanpiddy	Thevanpiddy			■			■								■		■	■			■
		Puthukadu			■													■	■			■
	Pali Aru	Moonrampiddy																■	■		Dry Fish	■
	Illupaikadavai	Illupaikadavai*1																■	■			
	Anthoniyarpuram	Anthoniyarpuram	■		■											■		■	■			■
C	Parapankandal	Periyakulam			■	■											■	■	■			
		Sirukkulam	■	■	■	■			■	■	■						■	■			Dry Fish/ Fish fingerling rearing*2	
	Cheddiyarmagan Kaddaiadampan	Cheddiyarmagan Kaddaiadampan			■	■				■	■			■	■	■	■	■	Hatchery			
	Nedunkandal	Nedunkandal			■	■											■	■	■			
	Kannady	Kannady				■											■	■	■			■
		Chalampan	■	■		■											■	■	■			■
		Neduvarambu			■												■	■	■			
		Velakulam			■	■											■	■	■			
D	Vilathikulam	Vilathikulam	■		■	■	■			■	■			■			■	■	Chick rearing			■
	Parasankulam	Parasankulam	■	■	■					■	■		■					■	■			■
		Sinna Valayankaddu / Periya Valayankaddu	■							■	■						■	■	■		Block making	■

*1 People in Illupaikadavai are engaged in both agriculture and fisheries.
*2 These activities were cancelled due to the land issue.

Cluster-wise Photo Summary of the Pilot Projects

Cluster A: OFC Cultivation Area

Northern Part of Manthai West AGA Division



Vellankulam GN Division	1	Sewa Village
	2	Ganeshapuram
	3	Vellankulam
Pali Aru GN Division	4	Pali Aru
	5	Theththavaady
Illupaikadavai GN Division	6	Illupaikadavai
	7	Kaddaduvayal
	8	Parankikamam
	9	Muthaliyarkamam

Vellankulam GN Division 1 2 3

Rehabilitation of Socio-economic Infrastructure

⇒ *Village Intrenal Road - 3*

⇒ *Tube Well - 1,2*

⇒ *Village Water Supply System - 1,2*



Restoration of Livelihoods

⇒ Paddy Reactivation Program - 3
- ◆ Quality Seed Paddy Distribution
- ◆ Paddy Cultivation Training
- ◆ Water Management Training
- ◆ Integrated Plant Nutrition System

⇒ OFC Cultivation Reactivation Program
- ◆ *Nursery Farm - 1*
- ◆ Saplings and Seeds Distribution - 1,2,3
- ◆ Home Gardening Training - 1,2
- ◆ Nursery Establishment - 1
- ◆ Nursery Management Training - 1

⇒ Poultry Reactivation Program - 1
- ◆ *Poultry Hatchery Facility*
- ◆ Chick Hatching/Rearing Facility
- ◆ Construction of Chick Hatching/Rearing Facility
- ◆ Hatchery Management Training

⇒ Income Generation Activity
- ◆ Block Making - 2

⇒ *Market - 3*

Pali Aru GN Division 4 5

Rehabilitation of Socio-economic Infrastructure

⇒ *Tube Well - 4*

Restoration of Livelihoods

⇒ Paddy Reactivation Program - 5
- ◆ Quality Seed Paddy Distribution
- ◆ Paddy Cultivation Training
- ◆ Water Management Training
- ◆ Integrated Plant Nutrition System Training

⇒ OFC Cultivation Reactivation Program - 4,5
- ◆ Saplings and Seeds Distribution
- ◆ Home Gardening Training

⇒ Income Generation Activity - 4
- ◆ Mat Weaving

Illupaikadavai GN Division 6 7 8 9

Rehabilitation of Socio-economic Infrastructure

⇒ *Tube Well (Hand Pump) - 6*

Restoration of Livelihoods

⇒ Paddy Reactivation Program
- ◆ *Rehabilitation of Irrigation Tank - 9*
- ◆ Quality Seed Paddy Distribution - 7,9
- ◆ Paddy Cultivation Training - 7,9
- ◆ Water Management Training - 7,9
- ◆ Integrated Plant Nutrition

⇒ OFC Cultivation Reactivation Program
- ◆ Saplings and Seeds Distribution - 6,7,8,9
- ◆ Home Gardening Training - 6,7,9

⇒ Income Generation Activity
- ◆ Bakery - 6
- ◆ Dry Fish Production - 6,8


Cluster A: All Villages

Strengthening of CBOs

⇒ *Multi-Purpose Hall - 1,2,4*
⇒ *Community Centre - 6*



⇒ Study Tour on Operation and Maintenance
⇒ Training in Financial Management
⇒ Construction Skill Training



Social Inclusion of Vulnerable Persons/Promotion of Social Unity

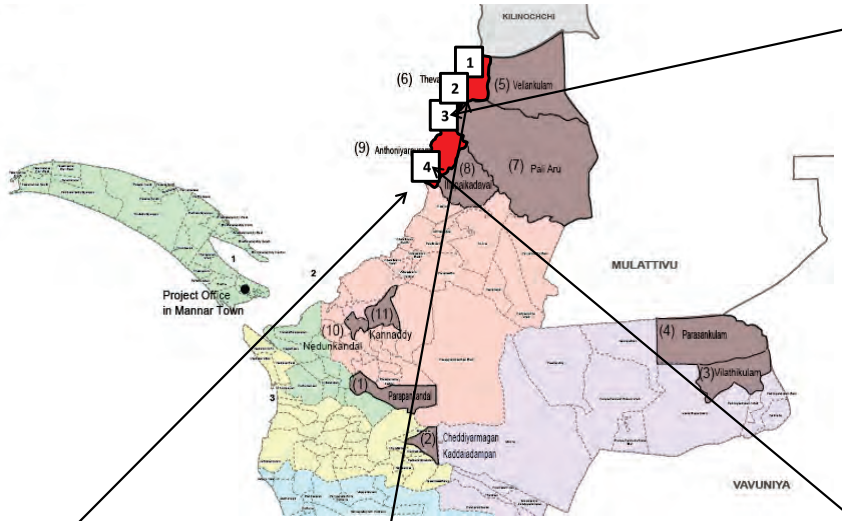
⇒ Micro Finance Activity
⇒ Peace Reconciliation Workshop
⇒ Chick Distribution



*1 Pilot Projects of Small-scale Infrastructure Rehabilitation (SSIR) is in *Italic*.
*2 Figures next to the facilities/activities represent the ones given to the villages on the map.

Cluster B: Fishing Villages

Manthai West AGA Division



Thevanpiddy GN Division	
1	Thevanpiddy
2	Puthukadu
Pali Aru GN Division	
3	Moonrampiddy
Anthoniyarpuram GN Division	
4	Anthoniyarpuram

All Villages

Strengthening of CBOs

⇒ *FCS Building - 1*
⇒ *Community Centre - 4*


⇒ Study Tour on Operation and Maintenance
⇒ Training in Financial Management
⇒ Construction Skill Training



Social Inclusion of Vulnerable Persons/Promotion of Social Unity

⇒ Chick Distribution
⇒ Microfinance
⇒ Peace Reconciliation Workishop - 1,4



Thevanpiddy GN Division 1 2

Rehabilitation of Socio-economic Infrastructure

⇒ *Village Internal Road - 1,2*


Restoration of Livelihoods

⇒ *Fishing crafts & equipment - 1*
⇒ Dry Fish Production


⇒ OFC Cultivation and Reactivation Program - 1,2
◆ Saplings and Seeds Distribution
◆ Home Gardening Training


Anthoniyarpuram GN Division 4

Rehabilitation of Socio-economic Infrastructure

⇒ *Village Internal Road - 4*

Restoration of Livelihoods

⇒ *Fishing crafts & equipment - 4*
⇒ Dry Fish Production - 4


⇒ OFC Cultivation and Reactivation Program - 4
◆ Saplings and Seeds Distribution
◆ Home Gardening Training


Pali Aru GN Division 3

Restoration of Livelihoods

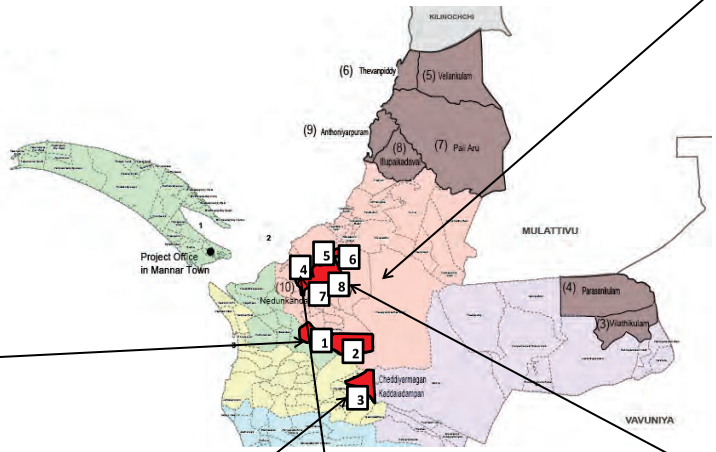
⇒ Dry Fish Production


⇒ OFC Cultivation and Reactivation Program - 3
◆ Saplings and Seeds Distribution
◆ Home Gardening Training


Cluster C: Rice Bowl Area

Manthai West AGA Division

Parapankandal GN Division	
1	Periyakulam
2	Sirukkulam
Cheddiyarmagan Kaddaiadampan GN Divisio	
3	Cheddiyarmagan Kaddaiadampan
Nedunkandal GN Division	
4	Nedunkandal
Kannady GN Division	
5	Kannady
6	Chalampan
7	Neduvarambu
8	Maruthonduvan Velakulam



All Villages

Strenghthening of CBOs

⇒ *Multi-purpose Hall - 2,6*
⇒ Study Tour on Operation and Maintenance - 1,2,3,4,5,6,7
⇒ Training in Financial Management - 1,2,3,4,5,6
⇒ Construction Skill Training - 2,3,4,5,6,7



Social Inclusion of Vulnerable Persons/Promotion of Social Unity

⇒ Micro Finance Activity - 5,6,8
⇒ Peace Reconciliation Workshop - 1,2
⇒ Chick Distribution



Parapankandal GN Division 1 2

Rehabilitation of Socio-economic Infrastructure

⇒ *Preschool - 2*

⇒ *Village Internal Road - 1,2*

⇒ *Tubewell - 2*

⇒ *Village Water Supply System - 2*



Restoration of Livelihoods

⇒ Paddy Reactivation Program
- ◆ *Rehabilitation of Tank*
- ◆ Quality Seed Paddy Distribution
- ◆ Paddy Cultivation Training
- ◆ Water Management Training
- ◆ Integrated Plant Nutrition System Training

⇒ OFC Cultivation and Reactivation Program
- ◆ Saplings and Seeds Distribution
- ◆ Home Gardening Training

⇒ Income Generation
- ◆ Dry Fish Production - 2

Cheddiyarmagan Kaddaiadampan GN Division 3

Rehabilitation of Socio-economic Infrastructure

⇒ *Village Internal Road*

⇒ *Tubewell*

⇒ *Village Water Supply System*

⇒ *Bridge with Flood Dike*

Restoration of Livelihoods

⇒ Paddy Reactivation Program
- ◆ *Rehabilitation of Tank*
- ◆ Quality Seed Paddy Distribution
- ◆ Paddy Cultivation Training
- ◆ Water Management Training
- ◆ Integrated Plant Nutrition System Training

⇒ OFC Cultivation and Reactivation Program
- ◆ Saplings and Seeds Distribution
- ◆ Home Gardening Training

⇒ Poultry Reactivation Program
- ◆ *Poultry Hatchery Facility*
- ◆ Chick Hatching/Rearing Facility
- ◆ Construction of Chick Hatching/ Rearing Facility
- ◆ Hatchery Management Training

Nedunkandal GN Division 4

Rehabilitation of Socio-economic Infrastructure

⇒ *Village Internal Road*

Restoration of Livelihoods

⇒ Paddy Reactivation Program
- ◆ *Rehabilitation of Tank*
- ◆ Quality Seed Paddy Distribution
- ◆ Paddy Cultivation Training
- ◆ Water Management Training
- ◆ Integrated Plant Nutrition System Training

⇒ OFC Cultivation and Reactivation Program
- ◆ Saplings and Seeds Distribution
- ◆ Home Gardening Training


Kannady GN Division 5 6 7 8

Rehabilitation of Socio-economic Infrastructure

⇒ *Preschool - 6*

⇒ *Village Internal Road - 7,8*

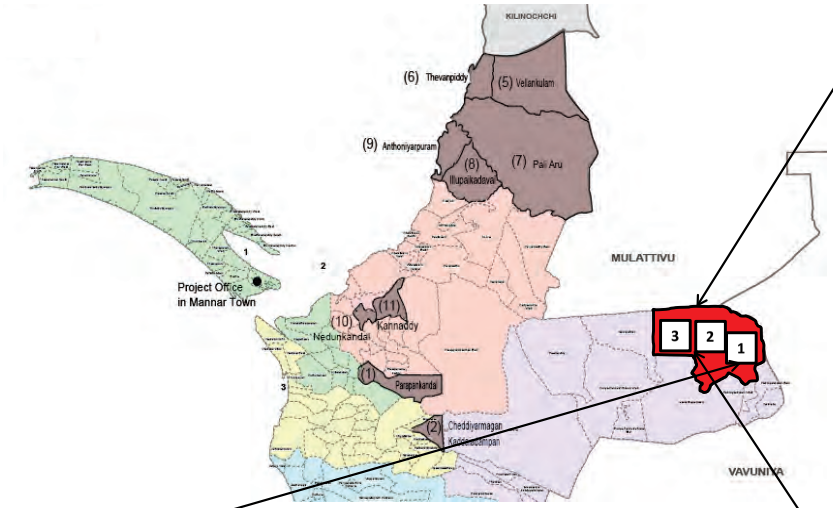
Restoration of Livelihoods

⇒ Paddy Reactivation Program
- ◆ *Rehabilitation of Tank - 6,8*
- ◆ Quality Seed Paddy Distribution - 4,5,6,7,8
- ◆ Paddy Cultivation Training - 4,5,6,7,8
- ◆ Water Management Training - 4,5,6,7,8
- ◆ Integrated Plant Nutrition System Training - 4,5,6,7,8

⇒ OFC Cultivation and Reactivation Program
- ◆ Saplings and Seeds Distribution
- ◆ Home Gardening Training - 6,7,8

Cluster D: Paddy and OFC Cultivation Area

Madhu AGA Division



Vilathikulam GN Division	
1	Vilathikulam
Parasankulam GN Division	
2	Parasankulam
3	Sinna Valayankaddu/ Periya Valayankaddu

All Villages

Strengthening CBOs

⇒ *Community Centre*
⇒ Study Tour on Operation and Maintenance
⇒ Training in Financial Management
⇒ Construction Skill Training



Social Inclusion of Vulnerable Persons/Promotion of Social Unity

⇒ Microfinance
⇒ Peace Reconciliation Workshop
⇒ Chick Distribution



Vilathikulam GN Division 1

Rehabilitation of Socio-economic Infrastructure

⇒ *Village Intenal Road*

⇒ *Tubewell*

⇒ *Village Water Supply System*




Restoration of Livelihoods

⇒ Paddy Reactivation Program
- ◆ *Rehabilitation of Tank*
- ◆ Quality Seed Paddy Distribution
- ◆ Paddy Cultivation Training
- ◆ Water Management Training
- ◆ Integrated Plant Nutrition System Training

⇒ OFC Cultivation Reactivation Program
- ◆ Saplings and Seeds Distribution
- ◆ Home Gardening Training

⇒ Poultry Reactivation Program
- ◆ *Poultry Hatchery Facility*
- ◆ Chick Hatching/Rearing Facility
- ◆ Construction of Chick Hatching/Rearing Facility
- ◆ Hatchery Management Training


Parasankulam GN Division 2 3

Rehabilitation of Socio-economic Infrastructure

⇒ *Village Intenal Road - 2*
⇒ *Tubewell - 2,3*
⇒ *Village Water Supply System - 2,3*
⇒ *Preschool - 2*


Restoration of Livelihoods

⇒ Paddy Reactivation Program - 3
- ◆ Quality Seed Paddy Distribution
- ◆ Paddy Cultivation Training
- ◆ Water Management Training
- ◆ Integrated Plant Nutrition System Training

⇒ OFC Cultivation and Reactivation Program
- ◆ *Nursery Farm - 2*
- ◆ Saplings and Seeds Distribution - 2,3
- ◆ Home Gardening Training - 2,3
- ◆ Nursery Establishment - 2
- ◆ Nursery Management Training - 2



List of Small Scale Infrastructure Rehabilitation (SSIR)

Name of GN Division	Name of the Village	Description of Work	Quantities of Primary Works (Km/Nos./Area)	Employer	Contractor	Government Organization to Take Over	CBO for O&M	Estimated/ Implemented Amount (Rs.)
Manthai West AGA Division								
Vellankulam	Sewa Village	Nursery Farm	1 No.	Project	FO	DOAD	FO	1,297,000.00
		Poultry Hatchery facilities (Chick Rearing Hut)	1 No.	Project	FO	DAPH	WRDS	457,000.00
		Multi-purpose Hall	1 No.	Project	WRDS	AGA	WRDS	1,195,000.00
		Tube Well Rehabilitation & Generator	2 Nos.	JICA	WRB	P. Sabha	FO	4,304,450.00
		Village Water Supply System	Pipe Length 622m	Project	FO	P. Sabha	FO	1,730,000.00
	Ganeshapuram	Block Making Hut	1 No.	Project	SLF	P. Sabha	WRDS	400,000.00
		Multi-purpose Hall	1 No.	Project	WRDS	AGA	WRDS	1,225,000.00
		Tube Well Rehabilitation & Generator	2 Nos.	JICA	WRB	P. Sabha	WRDS	6,398,034.00
		Village Water Supply System	Pipe Length 1210 m	Project	WRDS	P. Sabha	WRDS	2,056,000.00
	Vellankulam	Market facilities	Area about 312 m2	JICA	Finite Lanka	P. Sabha	P. Sabha	6,659,744.00
		MPCS facilities	Area about 105 m2	JICA	Finite Lanka	DOCD	Coop.	2,771,110.00
		Preschool	Area about 72 m2	JICA	Finite Lanka	P. Sabha	WRDS	1,665,747.00
		Community Center	Area about 95 m2	JICA	Finite Lanka	P. Sabha	RDS	1,133,620.00
		Village Internal Road	400 m Road with 1 Culvert	JICA	Squire Mech	P. Sabha	RDS	762,864.00
Thevanpiddy	Thevanpiddy	FCS Building	Floor area about 72 m2	JICA	Finite Lanka	DFAR	FCS	2,041,024.00
		Village Internal Road	1900m Road with 2 Culverts	JICA	Squire Mech	RDD/ P. Sabha	FCS	2,086,839.00
		Supply of Fishing Crafts & Equipment	8 FRP Boats & 6 Vallans with OBM & Nets	JICA	Neil Marine	DFAR	FCS	6,406,169.42
	Puthukadu	Village Internal Road	875m Road with 1 Culvert	JICA	Squire Mech	P. Sabha	FSC	1,332,768.00
Pali Aru	Pali Aru	Village Internal Road	3000 m Road with 5 Nos. Culverts Repair	JICA	Squire Mech	P. Sabha	RDS	4,637,435.00
		Mat Weaving Center	Area about 81m2	Project	SLF	P. Sabha	WRDS	800,000.00
		Multi-purpose Hall	1 No.	Project	WRDS	P. Sabha	WRDS	1,415,000.00
		Tube Well Rehabilitation & Hand Pump	2 Nos.	JICA	WRB	P. Sabha	WRDS	1,176,934.00
	Theththavaady	Village Internal Road	1530m Road with 3 Culverts	JICA	Squire Mech	P. Sabha	RDS	2,578,074.00
		Community Center	Floor area about 96 m2	JICA	Finite Lanka	P. Sabha	RDS	1,703,550.00

Name of GN Division	Name of the Village	Description of Work	Quantities of Primary Works (Km/Nos./Area)	Employer	Contractor	Government Organization to Take Over	CBO for O&M	Estimated/ Implemented Amount (Rs.)
Illupaikadavai	Illupaikadavai	Community Center (Bakery)	Floor area about 72 m2	JICA	Finite Lanka	DFAR	FCS	1,369,459.00
		Tube Well Rehabilitation & Hand Pump	1 No.	JICA	WRB	P. Sabha	RDS	897,103.00
	Muthaliyarkaman	Muthaliyarkaman Tank	1080m bund, 2 sluices,1Spill	JICA	Squire Mech	DOAD	FO	2,497,167.00
Anthoniyarpuram	Anthoniyarpuram	Village Internal Road	690m Road with 2 Culverts	JICA	Squire Mech	P. Sabha	RDS	1,801,565.00
		Community Center	Floor area about 92 m2	JICA	Finite Lanka	P. Sabha	FCS	2,594,659.00
		Supply of Fishing Crafts & Equipment	4 FRP Boats & 22 Vallans with OBM & Nets	JICA	Neil Marine	DFAR	FCS	16,562,223.73
Nedunkandal	Nedunkandal	Nedunkandal Tank	1800m bund, 11sluices, 1spillway	JICA	Ed. & Christie	ID (C)	FO	6,529,450.00
		Village Internal Road	445 m Road with 02 Culverts	JICA	Ed. & Christie	P. Sabha	RDS	974,948.00
Kannaddy	Kannaddy	Kannaddy Tank	1050m bund, 7 sluices, 1spillway	JICA	Ed. & Christie	ID (C)	FO	4,739,160.00
	Chalampan	Chalampan Tank	2240m bund, 11sluices, 1spillway	JICA	Ed. & Christie	ID (C)	FO	3,358,615.00
		Community Center	Floor area about 85 m2	JICA	Finite Lanka	P. Sabha	WRDS	2,585,706.00
		Preschool	Floor area about 55 m2	JICA	Finite Lanka	P. Sabha	WRDS	1,211,467.00
	Neduvarambu	Village Internal Road	250m Road with 1 culverts	JICA	Ed. & Christie	P. Sabha	RDS	410,750.00
	Velakulam	Velakulam Tank	1240m Bund, 05 sluices	JICA	Ed. & Christie	ID (C)	FO	4,773,710.00
		Village Internal Road	375m Road with 2 culverts	JICA	Ed. & Christie	P. Sabha	RDS	766,600.00
		Total for Manthai West AGA Division						**107,305,945.15**

Name of GN Division	Name of the Village	Description of Work	Quantities of Primary Works (Km/Nos./Area)	Employer	Contractor	Government Organization to Take Over	CBO for O&M	Estimated/ Implemented Amount (Rs.)
Mannar Town DS Division								
Parapankandal	Periyakulam	Periyakulam Tank	1500m Bund, 5Sluices, 1Spillway	JICA	Squire Mech	ID (C)	FO	3,274,276.00
		Village Internal Road	550m Road 02 new culvert	JICA	Squire Mech	P. Sabha	RDS	2,068,449.00
	Sirukkulam	Sirukkulam Tank	775m Bund, 3Sluices, 1 Spillway	JICA	Squire Mech	ID (C)	FO	4,437,080.00
		Village Internal Road	3000m Road 12 new culverts	JICA	Squire Mech	P. Sabha	RDS	5,676,347.00
		Tube Well Construction & Generator	1 Set	JICA	WRB	P. Sabha	RDS	2,302,897.00
		Village Water Supply System	Overhead Tank with 2385m pipe line	JICA	Squire Mech	P. Sabha	RDS	5,211,297.00
		Fish Pond for Fry Rearing	Dropped except completed works	JICA	Squire Mech	-	-	487,500.00
		Community Center	Floor area about 85 m2	JICA	Finite Lanka	P. Sabha	WRDS	1,506,942.00
		Preschool	Floor area about 88 m2	JICA	Finite Lanka	P. Sabha	WRDS	844,066.00
		Total for Mannar Town DS Division						**25,808,854.00**
Nanaddan DS Division								
Cheddiyarmagan Kaddaiadampan	Cheddiyarmagan Kaddaiadampan	Poultry Hatchery facilities (Breeding Farm: 05 nos. buildings)	Total Area about 432 m2	JICA	Finite Lanka	DAPH	LIBCO	11,106,559.00
		Cheddiyarmagan Kaddaiadampan Tank	1100m long bund, 03 sluices, 1 inlet and 1 spillway	JICA	Ed. & Christie	DOAD	FO	4,600,650.00
		Village Internal Roads	2700mRoad with 5 culverts	JICA	Ed. & Christie	P. Sabha	RDS	4,142,360.00
		Tube Well Construction	1 No.	JICA	WRB	P. Sabha	RDS	1,784,639.00
		Village Water Supply System	Over Head Tank with 1450 m pipe line	JICA	Ed. & Christie	P. Sabha	RDS	4,574,625.00
		Bridge & Flood Dike	1550 m long flood dike	JICA	Ed. & Christie	DOAD	FO	5,435,920.00
		Total for Nanaddan DS Division						**31,644,753.00**

Name of GN Division	Name of the Village	Description of Work	Quantities of Primary Works (Km/Nos./Area)	Employer	Contractor	Government Organization to Take Over	CBO for O&M	Estimated/ Implemented Amount (Rs.)
Madhu AGA Division								
Vilathikulam	Vilathikulam	Vilathikulam Tank	750m Bund, 03 Sluices	JICA	Dharmadasa	DOAD	FO	3,485,220.00
		Village Internal Road	2840m Road 03 new culverts	JICA	Dharmadasa	P. Sabha	RDS	2,476,000.00
		Tube Well Construction & Generator	2 Nos.	JICA	WRB	P. Sabha	RDS	5,968,288.00
		Village Water Supply System	Overhead Tank with 3300 Pipe Line	JICA	Dharmadasa	P. Sabha	RDS	8,035,121.00
		Community Center	Floor area about 90 m2	JICA	Dharmadasa	RDS	RDS	2,485,990.00
		MPCS facilities	Floor area about 85 m2	JICA	Dharmadasa	DOCD	Coop.	2,729,125.00
		Poultry Hatchery facilities (Chick Rearing Hut)	Floor area about 18 m2	JICA	Dharmadasa	DAPH	WRDS	506,000.00
Parasankulam	Parasankulam	Community Center	Floor area about 92 m2	JICA	Dharmadasa	WRDS	WRDS	3,104,541.00
		Preschool	Floor area about 75 m2	JICA	Dharmadasa	WRDS	WRDS	2,158,120.00
		Nursery Farm	1 No.	Project	FO	DOAD	FO	1,158,000.00
		Tube Well Construction & Hand Pump	1 Nos.	JICA	WRB	P. Sabha	RDS	1,681,637.00
		Village Water Supply System	Overhead Tank with 3650 m Pipe Line	JICA	Dharmadasa	P. Sabha	RDS	7,281,839.00
Sinna Valayankaddu / Periya Valayankaddu	Sinna Valayankaddu	Community Center	Floor area about 92 m2	JICA	Dharmadasa	P. Sabha	RDS	3,118,741.00
		Block Making Hut	1 No.	Project	SLF	P. Sabha	WRDS	400,000.00
		Tube Well Construction	2 Nos. Well, (1 Submergible Pump & 1 Hand Pump)	JICA	WRB	P. Sabha	RDS	4,506,319.00
		Village Water Supply System	Over Head Tank with 2760 m pipe line	JICA	Dharmadasa	P. Sabha	RDS	3,607,739.00
		Total for Madhu AGA Division						**52,702,680.00**
		Grand Total						**217,462,232.15**

Note: 1. The amounts of the works that have not completed is the estimated ones.

2. Tube Well Construction includes cleaning works and pumping tests conducted by the WRB under the Project.

3. Construction of two block making huts and a mat weaving center was implemented under the Pilot Projects of Community-based Activities.

Abbreviations:

DOAD:	Department of Agrarian Development	FO:	Farmer Organization
DAPH	Department of Animal Production and Health	RDS:	Rural Development Society
AGA:	Assistant Government Agent	WRDS:	Women's Rural Development Society
P. Sabha:	Pradeshiya Sabha	Coop.:	Cooperative Society
RDD:	Road Development Authority	FCS:	Fisheries Cooperative Society
DOCD:	Department of Cooperative Development	SLF:	Sewa Lanka Foundation
DFAR:	Department Fishery and Aquatic Resources	WRB:	Water Resources Board
ID (C):	Irrigation Department (Central)		

Cost and Benefit Breakdown of Paddy Cultivation (1ha)

Operation	Input Cost				Labor Cost									
	Q'ty	Unit	Unit Cost (Rs./unit)	Total (Rs)	No. of Hired (M/D) m: Male, f: Female				Cost of Hired (Rs./M/D)	No. of Own (M/D) m: Male, f: Female				Cost of Own (Rs./M/D)
1. Land preparation														
- Ploughing	1	ha	15,000	15,000										
- Leveling					2.5	m		f	2,000	2.5	m		f	2,000
2. Sowing/seeding														
- Seed	7.5	bu	697	5,228										
- Sowing						m		f		7.5	m		f	6,000
3. Fertilizer														
- Urea	313	kg	40	12,500										
- TSP	125	kg	40	5,000										
- MOP	75	kg	40	3,000										
Application						m		f		5.0	m		f	4,000
4. Pest & Disease Control														
- Insecticides				5,000		m		f			m		f	0
- Fungicides				2,500		m		f			m		f	0
Application						m		f		5.0	m		f	4,000
5. Weed Control														
Weedicides				5,000		m		f			m		f	0
Application						m		f		2.5	m		f	2,000
6. Water Management						m		f		2.5	m	15.0	f	9,500
7. Harvesting & Threshing														
Hiring Combined Harvester	1	ha	32,000	32,000	6.0	m	2.0	f	5,800	2.0	m	2.0	f	2,600
8. Drying, Winnowing & Bagging					3.5	m	3.0	f	4,300	8.0	m	5.0	f	8,900
9. Transport	1	LS	1,250	1,250										
10 Total				86,478	12.0	m	5.0	f	12,100	35.0	m	22.0	f	39,000

Note: LS stands for lump sum. M/ D or Man/ Day means labor of one person of male or female for full one day.
Source: Prepared by the Project Team based on the data of DOA and Depertment of Census and Statistics

Summary

Description	Amount (Rs.)
Total cost of cultivation (Rs.)	137,578
Cost of cultivation excluding family labor cost (Rs.)	98,578
Average yield (7,000kg/ha)	-
Price of produce (Rs.28/kg)	-
Gross income (Rs.)	**196,000**
Net Income including value of family labor	58,422
Net Income excluding value of family labor	**97,422**

Labor Charge
Male: Rs.800/day
Female: Rs.500/day

Cost and Benefit Breakdown of Agriculture Activities

Table 1: Pulse (Cowpea) Cost and Benefit Breakdown (1 acre, 0.4 ha)

No.	Description	Unit	Unit Rate	Quantity	Cost (Rs)	Income (Rs)	Remarks
1	Land Preparation						
	Ploughing by Machine	Acre	3,000	1	3,000		
	Hired Labor (Male)	man/day	800	3	2,400		
	Family Labor (Male)	man/day	800	5	4,000		
2	Sowing						
	Seeds	No.	100	17	1,700		
	Family Labor (Male)	man/day	800	1	800		
	Family Labor (Female)	man/day	500	0.5	250		
3	Fertilizer (Female)	man/day	500	1	500		
	Urea	kg	10	150	1,500		
	Family Labor (Male)	man/day	800	5	4,000		
4	Earthing up						
	Hired Labor (Male)	man/day	800	3	2,400		
	Hired Labor (Female)	man/day	500	3	1,500		
	Family Labor (Male)	man/day	800	1	800		
	Family Labor (female)	man/day	500	1	500		
5	Pest & Disease Control						
	Chemical	Lump Sum (LS)	-	LS	2,000		
	Family Labor (male)	man/day	800	1	800		
6	Irrigation (female)	man/day	500	6	3,000		Family Labor
7	Harvesting & Threshing						
	Hired Labor (Male)	man/day	800	2	1,600		
	Hired Labor (Female)	man/day	500	20	10,000		
	Family Labor (Male)	man/day	800	2	1,600		
	Family Labor (female)	man/day	500	2	1,000		
	Drying, Winnowing & Bagging						
	Family Labor (Male)	man/day	800	1	2,000		
	Family Labor (female)	man/day	500	2	2,000		
8	Transport Hiring	LS	-	LS	500		
9	Production & Sale	kg	450	139		**62,550**	
10	Total Cost without Family Labor				**26,600**		
11	Net Income					**35,950**	Included Family Labor
	Family Labor Total :	Male:	**10**		Female:	**12**	

Source: Prepared by the Project Team based on the data of Department of Agriculture

Table 2: Dairy Farming Cost and Benefit Breakdown (3 cows)

	Operation	1st Year Input Cost Q'ty	Unit	Unit Cost (Rs.)	Total (Rs)	1st Year No. of Labor (M/D) m: Male, f: Female				Cost of Labor (Rs.)	2nd Year - 5th Year, Annual Cost & Benefit Input Cost Q'ty	Unit	Unit Cost (Rs./unit)	Total (Rs)	No. of Labor (M/D)*3 m: Male, f: Female				Cost of Labor (Rs.)
1	Cattle-shed (80ft x 6ft.)						m		f	-						m		f	-
	- Material	1	LS	10,000	10,000		m		f	-						m		f	-
	- Construction					5	m		f	4,000						m		f	-
2	Cattle						m		f	-						m		f	-
	- Cross-bred cow	3	no.	50,000	150,000		m		f	-						m		f	-
	- Transport charge						m		f	-						m		f	-
3	Equipment																		
	- Milk Cans	1	no.	6,000	6,000														
4	Feeding									-						m		f	-
	Feeding (grazing)					23	m	23	f	29,250					23	m	23	f	29,250
5	Medicine & vaccination				2,200		m		f	-				2,200		m		f	-
6	Artificial insemination (AI)			600	600		m		f	-			600	600		m		f	-
	Total of Cost				168,800					33,250				2,800					
7	Production of Milk (Income)*2						m		f	-						m		f	-
	- Milk production 4 liter /day	1,920	liter	50	96,000		m		f	-	1,920	liter	50	96,000		m		f	-
8	Sale of Calf																		
	- Calf	1	no.	10,000	10,000		m		f	-	1	no.	10,000	10,000		m		f	-
	Total of Income				106,000	28		23						106,000	23		23		

Note: *1 It is assumed to collect grasses and rice straw in the vicinity by family laborers for feeding three cows.
*2 Milk production of a cow is planned for 6.7 months a year.
*3 Labor rates are Rs.800/day for male and Rs.500/day for female.
Source: Prepared by the Project Team based on DAPH data and hearing from farmers

Description	Amount (Rs) 1st Year	2nd - 5th Year Annual	Total for 5 years
Total Cost for Dairy Farming	202,050	32,050	362,300
Cost of Dairy Farming excluding family labor	168,800	2,800	182,800
Total Gross Income of Dairy Farming	106,000	106,000	636,000
Profit from Total Cost	(96,050)	73,950	273,700
Profit including Family Labor Cost	**(62,800)**	**103,200**	**453,200**
Income per Month	**(5,233)**	**8,600**	**7,553**

Table 3: Layer Poultry Cost and Benefit Breakdown (20 nos.)

	Operation	Input Cost				Family Labor Cost				
		Amount	Unit	Unit Cost (Rs./unit)	Total (Rs)	No. of Labor (M/D) m: Male, f: Female				Cost Labor (Rs./MD)
1	Chicken-shed (80ft x 6ft.)						m		f	-
	- Material				2,500		m		f	-
	- Construction					2	m		f	1,600
	-						m		f	-
2	Chick						m		f	-
	- Chicks (One Month Old)	20	no.	240	4,800		m		f	-
	- Transport charge				600		m		f	-
3	Equipment						m		f	-
	- Watering cans-small	2	no.	200	400		m		f	-
	- Feeding cans-small	2	no.	175	350		m		f	-
4	Feed until starting lay egg						m		f	-
	After 1Month						m		f	-
	- for 1st 2 months	24	day	335	8,040		m		f	-
	- for 2nd 1.5 months	18	day	100	1,800		m		f	-
	- for 3rd after 4.5 months for 15 month	180	day	50	9,000		m		f	-
	Feeding work for chicks (1 months)						m	1	f	500
	Feeding & rearing care (18 months)						m	40	f	20,000
							m		f	-
5	Medicine & vaccination				880		m		f	-
	Sub-total of Cost				28,370					
6	Production (Income)						m		f	-
	- Cock meat (10 cocks)	10	bird	700	7,000		m		f	-
	- Hen meat (40 hens after 15 months)	10	bird	700	7,000		m		f	-
	Egg production by 10 Nos. of Hens						m		f	-
	- 1st 3 months at 20-50% ratio (40%)	360	no.	15	5,400		m		f	-
	- 2nd 9 months at 75%	2,025	no.	15	30,375		m		f	-
	- 3rd 6 months at 50%	900	no.	15	13,500		m		f	-
	Sub-total of Egg Production & Income	3,285			63,275	4	m	41	f	23,700

Source: Prepared by the Team based on the data of FAO and DAPH

Labor Cost Male: Rs.800/day Female: Rs. 500/day

Summary **Unit: Rs.**

Description	Amount
Total cost of back-yard poultry(Rs.)	52,070
Cost of Back-yard poultry excluding family labor cost(Rs.)	28,370
Total egg production in 19 months, 3852 Nos.	
Price of produce (Rs.15.0 /egg)	
Gross income: Egg & Meat (Rs.)	63,275
Profit from total cost (Rs.)	11,205
Profit from excluding family labor cost (Rs.)	**34,905**
Income per month	**1,837**

Table 4: Banana Cost and Benefit Breakdown (100 m2, 17 Plants)

No.	Description	Unit	Unit Rate	Quantity	Cost (Rs)	Income (Rs)	Remarks
1	Land Preparation (Male)	man/day	800	1	800		Family Labor (FL)
2	Planting						
	Seedlings	No.	100	17	1700		
	Labor (Female)	man/day	500	0.5	250		Family Labor
3	Fertilizer (Female)	man/day	500	1	500		
4	Pest & Disease Control						
	Chemical	LS	-	LS	75		
	Labor (Male)	man/day	800	0.5	400		Family Labor
5	Weed Control						
	Chemical	LS	-	LS	52		
	Labor (Female)	man/day	500	0.5	250		Family Labor
6	Irrigation (Male)	man/day	800	0.5	400		Family Labor
7	Harvesting (Male)	man/day	800	0.5	400		Family Labor
8	Transport (Female)	man/day	500	0.5	250		Family Labor
	Hiring	LS	-	LS	50		
	Labor (Female)	man/day	500	0.5	250		Family Labor
9	Production & Sale	kg	40	340		**13,600**	
10	Total Cost without Family Labor				**1,877**		
11	Net Income					**11,723**	Included Family Labor

Source: Prepared by the Project Team based on data of Department of Agriculture

Table 5: Mango Cost and Benefit Breakdown (200 m2, 3 Plants)

No.	Description	Unit	Unit Rate	Quantity	Cost (Rs)	Income (Rs)	Remarks
1	Land Preparation (Male)	man/day	800	1	800		Family Labor
2	Planting						
	Seedlings	No.	150	3	450		
	Labor (Female)	man/day	500	0.5	250		Family Labor
3	Fertilizer (Female)	man/day	500	1	500		Family Labor
4	Pruning	man/day	500	0.3	150		Family Labor
5	Pest & Disease Control						
	Chemical	LS	-	LS	58		
	Labor (Male)	man/day	800	0.3	240		Family Labor
6	Weed Control (Female)	man/day	500	0.3	150		Family Labor
7	Harvesting (Male)	man/day	800	1	800		Family Labor
8	Packing (Female)	man/day	500	1	500		Family Labor
9	Transport	LS	-	LS	500		Family Labor
10	Production & Sale	kg	40	340		**13,600**	
	Total Cost without Family Labor				**1,008**		
	Net Income					**12,592**	Included Family Labor

Source: Prepared by the Team based on data of Department of Agriculture

Table 6: Chili Cost and Benefit Breakdown (100 m^2, 74 Plants)

No.	Description	Unit	Unit Rate	Quantity	Cost (Rs)	Income (Rs)	Remarks
1	Land Preparation (Male)	man/day	800	1	800		Family Labor
2	Planting						
	Seedlings	No.	1.5	74	111		
	Labor (Female)	man/day	500	1	500		Family Labor
3	Fertilizer Application						
	Fertilizer	LS	-	LS	208		
	Labor (Female)	man/day	500	1	500		Family Labor
4	Pest & Disease Control						
	Chemical	LS	-	LS	225		
	Labor (Male)	man/day	800	0.3	240		Family Labor
5	Earthing up (Labor)	man/day	800	0.8	640		Family Labor
6	Weed Control (Labor)	man/day	500	1	500		Family Labor
7	Irrigation (Male)	man/day	800	0.5	400		Family Labor
8	Harvesting (Male)	man/day	800	1	800		Family Labor
9	Drying & Bagging (Labor)	man/day	500	0.5	250		Family Labor
10	Transport	LS	-	LS	50		Family Labor
11	Production & Sale	kg	100	150		**15,000**	
	Total Cost without Family Labor				**594**		
	Net Income					**14,406**	Included Family Labor

Source: Prepared by the Team based on data of Department of Agriculture

Table 7: Egg Plant Cost and Benefit Breakdown (50 m^2, 50 Plants)

No.	Description	Unit	Unit Rate	Quantity	Cost (Rs)	Income (Rs)	Remarks
1	Land Preparation (Male)	man/day	800	0.5	400		Family Labor
2	Planting						
	Seedlings	No.	1.3	50	65		
	Labor (Female)	man/day	500	1	500		Family Labor
3	Fertilizer Application						
	Fertilizer	LS	-	LS	208		
	Labor (Female)	man/day	500	1	500		Family Labor
4	Pest & Disease Control						
	Chemical	LS	-	LS	175		
	Labor (Male)	man/day	800	0.3	240		Family Labor
5	Earthing up (Labor)	man/day	800	0.3	240		Family Labor
6	Weed Control (Labor)	man/day	500	0.3	150		Family Labor
7	Harvesting (Female)	man/day	500	2	1,000		Family Labor
8	Drying & Bagging (Labor)	man/day	500	0.5	250		Family Labor
9	Transport	LS	-	LS	500		Family Labor
10	Production & Sale	kg	62	100		**6,200**	
	Total Cost without Family Labor				**948**		
	Net Income					**5,252**	Included Family Labor

Source: Prepared by the Team based on data of Department of Agriculture

Table 8: Red Onion Cost and Benefit Breakdown (50 m^2, 7,500 Plants)

No.	Description	Unit	Unit Rate	Quantity	Cost (Rs)	Income (Rs)	Remarks
1	Land Preparation (Male)	man/day	800	0.5	400		Family Labor
2	Planting						
	Seedlings	kg	140	6.25	875		
	Labor (Male)	man/day	800	1	800		Family Labor
	Labor (Female)	man/day	500	1	500		Family Labor
3	Fertilizer Application						
	Fertilizer	LS	-	LS	208		
	Labor (Female)	man/day	500	1	500		Family Labor
4	Pest & Disease Control						
	Chemical	LS	-	LS	53		
	Labor (Male)	man/day	800	0.3	240		Family Labor
5	Earthing up (Labor)	man/day	800	0.3	240		Family Labor
6	Weed Control (Labor)	man/day	500	0.5	250		Family Labor
7	Harvesting (Female)	man/day	500	1	500		Family Labor
8	Drying & Bagging (Labor)	man/day	500	1	500		Family Labor
9	Transport	LS	-	LS	63		Family Labor
10	Production & Sale	kg	62	100		**6,200**	
	Total Cost without Family Labor				**1,678**		
	Net Income					**4,522**	Included Family Labor

Source: Prepared by the Team based on data of Department of Agriculture

Note: LS stands for lump sum.

Table 9 Chili Cultivation Cost and Benefit Breakdown (2000 m2)

	Operation	Input Cost				Labor Cost								
		Q'ty	Unit	Unit Cost (Rs./unit)	Total (Rs)	No. of Hired (M/D)				Cost of Hired (Rs./MD)	No. of Own (M/D)			Cost of Family (Rs./MD)
1	Field Preparation													
	- Ploughing, Hiring Tractor	LS		LS	1,500									
	- Leveling & Bed Preparation					1.0	m	2.5	f	2,050	1.0	m	2.5	f 2,050
2	Planting													
	- Seedlings	1,480	no.	1.5	2,220									
	- Planting						m	3.5	f	1,750		m	2.5	f 1,250
3	Fertilizer													
	- Urea	64	kg	40	2,560									
	- TSP	20	kg	40	800									
	- MOP	20	kg	40	800									
	Application						m	5.0	f	2,500		m	2.5	f 1,250
4	Earthing up						m	5.0	f	2,500	1.0	m	2.5	f 2,050
5	Weed Control													
	- Hand weeding						m	2.5	f	1,250		m	2.5	f 1,250
6	Irrigation													
	Labor Cost						m		f	0		m	5.0	f 2,500
7	Pest & Disease Control													
	- Insecticides				3,000		m		f	0		m		f 0
	- Fungicides				1,500		m		f	0		m		f 0
	Application						m		f	0	4.0	m		f 3,200
8	Harvesting						m	20.0	f	10,000		m	20.0	f 10,000
9	Drying & Bagging						m		f	0		m	10.0	f 5,000
#	Transport													
	Vehicle Hiring	LS	-	LS	1,000		m		f	0		m		f 0
	Total of Cost				**13,380**	1.0	m	38.5	f	**20,050.00**	6.0	m	47.5	f 28,550.00
	Income Production of Chili	750	kg	113	**84,750**									

Note: Labor wedge, Male; Rs.800/day, Female; Rs.500/day

Source: Prepared by the Project Team based on various data on DOA, Department of Census & Statistics, etc. in a rain fed condition.

Summary

Description	Amount (Rs.)
Total cost of cultivation (Rs.)	61,980
Cost of cultivation excluding family labor cost (Rs.)	33,430
Gross income (Rs.)	84,750
Profit from total cost (Rs.)	22,770
Profit excluding family labor cost (Rs.)	**51,320**

Table 10: Red Onion Cost and Benefit Breakdown (1000 m2)

Operation	Input Cost				Labor Cost									
	Q'ty	Unit	Unit Cost (Rs./unit)	Total (Rs)	No. of Hired (M/D)				Cost of Hired (Rs./MD)	No. of Own (M/D)				Cost of Family (Rs./MD)
1 Field Preparation														
- Ploughing, Hiring Tractor	LS		LS	750										
- Leveling & Bed Preparation					2.4	m	1.5	f	2,670	2.5	m		f	2,000
2 Planting														
- Seedlings	125	kg	140	17,500										
- Planting					0.3	m	3.0	f	1,740	0	3	2.5	f	1,490
3 Fertilizer														
- Urea	35	kg	40	1,400										
- TSP	12.5	kg	40	500										
- MOP	18.8	kg	40	752										
Application						m	2.5	f	1,250		m	1	f	650
4 Earthing up						m	2.5	f	1,250	0.5	m	1.3	f	1,050
5 Weed Control														
- Hand weeding						m	5.0	f	2,500		m	4	f	1,750
6 Irrigation														
Labor Cost						m		f	0		m	2.5	f	1,250
7 Pest & Disease Control														
- Insecticides	LS	-	LS	2,500		m		f	0		m		f	0
- Fungicides	LS	-	LS	1,250		m		f	0		m		f	0
Application						m		f	0	2.0	m		f	1,600
8 Harvesting					0.8	m	5.0	f	3,140	1	m	0.5	f	890
9 Drying & Bagging						m		f	0	1	m	2.5	f	1,650
# Transport														
Vehicle Hiring	LS	-	LS	1,250		m		f	0		m		f	0
Total of Cost				**25,902**	3.5	m	19.5	f	**12,550.00**	6.6	m	14.1	f	12,330.00
Income														
Production of Red Onion	1,250	kg	114	**142,500**										

Note: Labor wedge, Male; Rs.800/day, Female; Rs.500/day

Source: Preparedby the Project Team based on the various data on DOA, Department of Census & Statistics, etc. in a rain fed condition.

Summary

Description	Amount (Rs.)
Total cost of cultivation (Rs.)	50,782
Cost of cultivation excluding family laboure cost (Rs.)	38,452
Gross income (Rs.)	142,500
Profit from total cost (Rs.)	91,718
Profit excluding family laboure cost (Rs.)	**104,048**

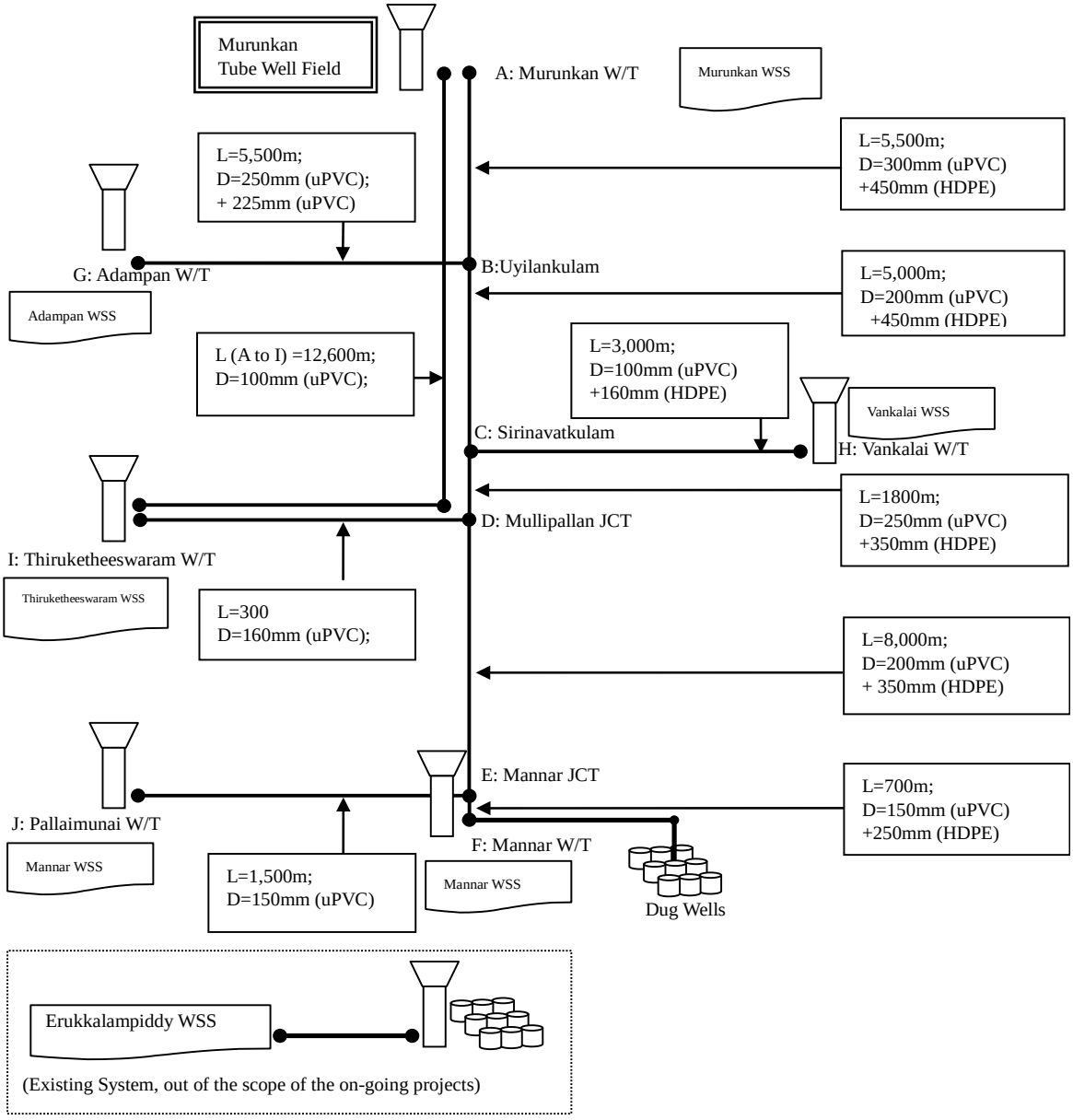
Table 11: Egg Plant Cultivation Cost and Benefit Breakdown (1000 m2)

Operation	Input Cost				Labor Cost								
	Q'ty	Unit	Unit Cost (Rs./unit)	Total (Rs)	No. of Hired (MD)				Cost of Hired (Rs./MD)	No. of Own (MD)			Cost of Family (Rs./MD)
1 Field Preparation													
- Ploughing, Hiring Tractor	LS		LS	750									
- Leveling & Bed Preparation					0.5	m	1.3	f	1,050	0.5	m	1.3	f 1,050
2 Planting													
- Seedlings	1,000	Nos.	1.3	1,300									
- Planting						m	1.8	f	900		m	1.3	f 650
3 Fertilizer													
- Urea	30	kg	40	1,200									
- TSP	32.5	kg	36	1,170									
- MOP	17	kg	30	510									
Application						m	2.5	f	1,250		m	1	f 650
4 Earthing up						m	2.5	f	1,250	0.5	m	1.3	f 1,050
5 Weed Control													
- Hand weeding						m	1.3	f	650		m	1	f 650
6 Irrigation													
Labor Cost						m		f	0		m	2.5	f 1,250
7 Pest & Disease Control													
- Insecticides				3,000		m		f	0		m		f 0
- Fungicides				1,500		m		f	0		m		f 0
Application						m		f	0	2.0	m		f 1,600
8 Harvesting						m	7.5	f	3,750		m	2.5	f 1,250
9 Drying & Bagging						m		f	0	1	m	2.5	f 1,650
# Transport													
Vehicle Hiring	LS	-	LS	1,000		m		f	0		m		f 0
Total of Cost				**10,430**	0.5	m	16.9	f	**8,850.00**	3.5	m	14.0	f 9,800.00
Income													
Production of Egg Plant	1000	kg	62	**62,000**									

Note: Labor wedge, Male; Rs.800/day, Female; Rs.500/day
Source: Prepared by the Project Team based on the various data on DOA, Department of Census & Statistics, etc. in a rain fed condition.

Summary

Description	Amount (Rs.)
Total cost of cultivation (Rs.)	29,080
Cost of cultivation excluding family labor cost (Rs.)	19,280
Gross income (Rs.)	62,000
Profit from total cost (Rs.)	32,920
Profit excluding family labor cost (Rs.)	**42,720**



Note 1: W/T: Water Tank, WSS: Water Supply System, L: Length, D: Diameter, A-J: Points
Note 2: Lengths of transmission lines indicated in the figure are approximate.
Source: Prepared by the Project Team based on the information from the NWS&DB of Mannar (2011)

Schematic Diagram of Transmission Lines from Murunkan

List of Existing/ Ongoing Water Supply Schemes/ Facilities

Scheme Name	DS/AGA Division	Grama Niladhari Division		Project Status	Project/ Funding
Erukkalampiddy Water Supply Scheme (WSS)	Mannar Town	MNR/063	Erukkalampiddy West	Existing	-
		MNR/064	Erukkalampiddy North		
		MNR/065	Erukkalampiddy East		
		MNR/066	Erukkalampiddy South		
		MNR/067	Erukkalampiddy Central		
Mannar WSS (Rehabilitation/expansion)	Mannar Town	MNR/068	Tharapuram West	Ongoing	ADB 5th
		MNR/069	Tharapuram East		
		MNR/070	Thalvupadu		
		MNR/071	Pattim		
		MNR/072	Eluthoor		
		MNR/073	South Bar		
		MNR/074	Emil Nagar		
		MNR/075	Chavatkaddu		
		MNR/076	Panankaddikoddu West		
		MNR/077	Panankaddikoddu East		
		MNR/078	Sinnakadai		
		MNR/079	Pettah		
		MNR/080	Periyakadai		
		MNR/081	Moor Street		
		MNR/082	Uppukulam North		
		MNR/083	Uppukulam South		
		MNR/084	Pallimunai East		
		MNR/085	Pallimunai West		
Murunkan WSS (Rehabilitation/expansion)	Nanaddan	MNR/117	Chemmantivu	Ongoing	ADB 5th
		MNR/118	Murunkan		
		MNR/119	Chundikuly		
Thiruketheeswaram WSS (Rehabilitation/expansion)	Mannar Town	MNR/086	Thiruketheeswaram	Ongoing	ADB 5th
Vankalai WSS (Rehabilitation/expansion)	Nanaddan	MNR/097	Vankalai North	Ongoing	ADB 5th
		MNR/098	Vankalai West		
		MNR/099	Vankalai East		
		MNR/100	Thomaspuri (Vankalai South)		
Adampan WSS (Rehabilitation/expansion)	Manthai West	MNR/020	Minukkan	Ongoing	WB-ENReP
		MNR/022	Adampan		
		MNR/024	Nedunkandal		
		MNR/025	Sornapuri		
		MNR/026	Karunkandal		
Thevanpiddy WSS	Manthai West	MNR/001	Vellankulam	Ongoing	WB-ENReP
		MNR/002	Thevanpiddy		
		MNR/003	Pali Aru		
Vidataltivu WSS (Rehabilitation/expansion)	Manthai West	MNR/010	Vidataltivu West	Ongoing	WB-ENReP
		MNR/011	Vidataltivu North		
		MNR/012	Vidataltivu Central		
		MNR/013	Vidataltivu East		
		MNR/014	Pallamadhu		
		MNR/009	Kovitkulam		
MANREP-WSS (New Construction)	Madhu	MNR/043	Vilathikulam	Ongoing	JICA-MANREP
		MNR/044	Parasankulam		
	Mannar Town	MNR/096	Parapankandal		
	Nanaddan	MNR/126	Cheddiyarmagan Kaddaiadampan		
MANRECAP-WSS	Mannar Town	MNR/091	Puthukamam	Completed	JICA-MANRECAP
Palampiddy RWSS	Madhu	MNR/040	Palampiddy	Ongoing	NWS&DB
Arippu WSS	Musali	MNR/134	Arippu West	Completed	WB-RAP
Deep Well+Hand Pump (HP) (2)	Nanaddan	MNR/101	Naruvilikulam	Completed	WB-RAP
Deep-Well+HP (1)	Madhu	MNR/130	Poomalarnthan	Completed	WB-RAP
Deep-Well+HP (1)	Musali	MNR/149	Kondachchi	Completed	WB-RAP
Deep-Well+HP (2)	Musali	MNR/150	Karadikuly	Completed	WB-RAP
Deep-Well+HP (3)	Musali	MNR/152	Palaikuly	Completed	WB-RAP
Total	57 Divisions				
JICA Project Team (2011)					

Population and Water Supply Scheme Coverage of GN Divisions (Existing/ under construction and/or rehabilitation/ expansion)

The latest population information of each GN Division (153 Divisions in total) as of 30th May, 2011 was available at the GA office of Mannar. Based on the information, the populations of the years of 2020 and 2030 were calculated[1] with the population growth rate of 1.7 % a year. The population of Mannar District is approximately 152,000, 177,000 and 210,000 for the years of 2011, 2020 and 2030 respectively. A summary of the calculation results is as shown in the Table-1 below.

Table-1 Population Growth

Population of DS / AGA Division	2011	2020	2030
01. Manthai West	23,465	27,309	32,324
02. Madhu	11,524	13,412	15,875
03. Mannar Town	68,081	79,235	93,783
04. Nanaddan	21,391	24,895	29,467
05. Musali	27,806[2]	32,361	38,303
Total	152,267	177,213	209,751
Population in 2011: Obtained from the Mannar District Office Population growth ratio: 1.7% (Based on the information provided by GA office of Mannar)			

Table-2-A shows the population of 2011, and prospected populations of 2020 and 2030. Table-2-B shows the beneficiaries who are water-supplied from those facilities/ systems according to the information made available from NWS&DB and Table-2-C shows the balance of supply and demand. 'Supply excessive" in some cells in Table-2-C is possible due to the discrepancies of the base population data between the Project and other projects. Other projects might have estimated it based on the information available soon after the termination of the conflict when accurate estimation might have been difficult. The total beneficiaries in the Table-2-B did not therefore include 'the supply excessive'.

[1] $Population_{(target\text{-}year)} = Population_{(present\text{-}year)} \times (1+r)^{y}$; r: growth rate, y: year

[2] It is noted that the population of Musali DS/AGA Division had increased suddenly in December 2010.

Table -2 Population and Water Supply Scheme Coverage

Table-A
Population in GN divisions. with on-going/existing WSS (except un-protected dug well)

Enrep-On-going	2011	2020	2030
Thevanpity WSS	2,574	2,996	3,546
Vellankulam	557	648	767
Thevanpity	832	968	1,146
Pali Aru	1,185	1,379	1,632
Vidataltive WSS	4,917	5,723	6,773
Adampan WSS	2,922	3,401	4,025
Enrep-Ongoing Total	10,413	12,119	14,344

ADB 5th	2011	2020	2030
Mannar WSS	31,323	36,455	43,148
Thiruketheeswaram WSS	771	897	1,062
Vankalai WSS	4,251	4,947	5,856
Murunkan WSS	1,859	2,164	2,561
ADB 5th Ongoing Total	38,204	44,463	52,627

RAP	2011	2020	2030
Poomalarntahn	541	630	745
Arip WSS	1,214	1,413	1,672
Naruvilikulam (TW-HP)	964	1,122	1,328
Umanagari	478	556	658
Kondachchi (TW-HP)	1,804	2,100	2,485
Karadikuly (TW-HP)	1,591	1,852	2,192
Marichchukaddy (TW-HP)	1,983	2,308	2,732
Palaikuly (TW-HP)	1,350	1,571	1,860
RAP Total	9,925	11,551	13,672

JICA-Manrep	2011	2020	2030
Vilathikulam	323	376	445
Cheddiarmagan Kaddaiadampan	274	319	377
Parasankulam/Sinna Valayankaddu	516	601	711
Parappankandal Sirukulam	921	1,072	1,269
JICA-Manrep Total	2,034	2,367	2,802

JICA-ManriCap	2011	2020	2030
Puthukamam/Vadduptiththanmadhu	1,180	1,373	1,625
JICA-ManripCap	1,545	1,798	2,128
	-	-	-

Existing	2011	2020	2030
Erukkalampiddy WSS	11,817	13,753	16,278

NWS&DB On-going	2011	2020	2030
Palampiddy RWSS	857	997	1,181

Total	74,795	87,048	103,032

* Population of May 2011was provided by the Mannar GA office
* Population Growth rate was taken 1.7 %

* TW-HP: Tube Well with Handpump

Prepared by JICA Project Team (2011)

Table-B
Coverage by the on-going /existing WSS

Enrep-On-going	2011	2020	2030
Thevanpiddy WSS	2,070	2,431	2,900
Vellankulam	-		-
Thevanpity	-		-
Pali Aru	-		-
Vidataltivu WSS	6,067	7,124	8,500
Adampan WSS	4,183	4,912	5,860
Enrep-Ongoing Total	12,320	14,466	17,260

ADB 5th	2,012	2020	2030
Mannar WSS	32,128	38,025	45,855
Thiruketheeswaram WSS	1,320	1,393	1,478
Vankalai WSS	5,168	5,454	5,787
Murunkan WSS	500	782	1,285
ADB 5th Ongoing Total	39,116	45,654	54,405

RAP	2011	2020	2030
Poomalarnthan (1xTW-HP)	100	100	100
Arip piped WSS	1,214	1,413	1,672
Naruvilikulam (2xTW-HP)	200	200	200
Umanagari-Kowvankulam-Piped WSS with Dug well	478	556	658
Kondachchi (1xTW-HP)	100	100	100
Karadikuly (2xTW-HP)	200	200	200
Marichchukaddy (3xTW-HP)	300	300	300
Palaikuly (3xTW-HP)	300	300	300
RAP Total	2,792	3,069	3,431

JICA-Manrep	2011	2020	2030
Vilathikulam	323	376	445
Cheddiarmagan Kaddaiadampan	274	319	377
Parasankulam/Sinna Valayankaddu	516	601	711
Parappankandal Sirukulam	921	1,072	1,269
JICA-Manrep Total	2,034	2,367	2,802

JICA-ManriCap	2011	2020	2030
Puthukamam/Vadduptiththanmadhu	1,180	1,373	1,625
JICA-ManripCap	1,545	1,798	2,128

Existing	2011	2020	2030
Erukkalampiddy WSS	500	500	500

NWS&DB On-going	2011	2020	2030
Palampiddy RWSS	857	997	1,181

Total	*59,164*	*68,851*	*81,706*
Total after adjustment for the surplus supplies in the Table C	54,482	63,367	75,091
	73%		

* Coverage population of 2011 and 2030 for ADB 5th and Enrep were provided by NWS&DB of Mannar
* Population of 2020 and 2030 for ADB 5th and Enrep was calculated by the Project according to the coverage population given.
* Tube well with handpump scheme covers 40 HH (100 person).
* It was assumed that population growth for piped water schemes were considered.
* It was assumed that Erukkalampiddy WSS covers 4,000 population with a consideration of yield of 7 dug wells.

Prepared by JICA Project Team (2011)

Table C
Demand - Supply in GN divisions. with on-going/existing WSS (except un-protected dug well)

Enrep-On-going	2011	2020	2030
Thevanpiddy WSS	(504)	(565)	(646)
Vellankulam	-	-	-
Thevanpity	-	-	-
Pali Aru	-	-	-
Vidataltivu WSS	1,150	1,401	1,727
Adampan WSS	1,261	1,511	1,835
Enrep-Ongoing Total	1,907	2,347	2,916

ADB 5th	2011	2020	2030
Mannar WSS	805	1,570	2,707
Thiruketheeswaram WSS	549	496	416
Vankalai WSS	917	506	(69)
Murunkan WSS	(1,359)	(1,382)	(1,276)
ADB 5th Ongoing Total	912	1,191	1,778

RAP	2011	2020	2030
Poomalarntahn	(441)	(530)	(645)
Arip piped WSS	-	-	-
Naruvilikulam (2xTW-HP)	(764)	(922)	(1,128)
Umanagari-Kowvankulam-Piped WSS with Dug well	-	-	-
Kondachchi (1xTW-HP)	(1,704)	(2,000)	(2,385)
Karadikuly (2xTW-HP)	(1,391)	(1,652)	(1,992)
Marichchukaddy (3xTW-HP)	(1,683)	(2,008)	(2,432)
Palaikuly (3xTW-HP)	(1,050)	(1,271)	(1,560)
RAP Total	(6,592)	(7,852)	(9,496)

JICA-Manrep	2011	2020	2030
Vilathikulam	-	-	-
Cheddearman Kaddaiadanpan	-	-	-
Parasankulam/Sinna Valayankaddu	-	-	-
Parappankandal Sirukulam	-	-	-
JICA-Manrep Total	-	-	-

JICA-ManriCap	2011	2020	2030
Puthukamam/Vadduptiththanmadhu	-	-	-
JICA-ManripCap	-	-	-

Existing	2011	2020	2030
Erukkalampiddy WSS	(11,317)	(13,253)	(15,778)

NWS&DB On-going	2011	2020	2030
Palampiddy RWSS	-	-	-

Total of surplus	4,682	5,485	6,616
Total of deficit	(20,213)	(23,582)	(27,841)

* Demand> Supply (deficit) is indicated as negative (in parentheses), to be considered in Road Map.
* Demand < Supply (surplus) is indicated as positive. Excessive supply plan may be due to differences of base population for the calculation, not considered in this Road Map.

Prepared by JICA Project Team (2011)

Detail Data for Fisheries Sector

Table 1: Species Composition and Usage of Fish Landings (2010)

Species	Use of Fish Landings (mt)		
	Fresh	Drying	Total
Seer	755	98	853
Mullet	767	128	895
Trevally	861	121	982
Mackeral	410	9	419
Rock fish	930	96	1,026
Salai-Shoe	824	115	939
Others	2,351	302	2,654
Skates	485	81	566
Sharks	140	7	147
Crabs	1,383	-	1,383
Lobsters	11	-	11
Prawns	256	-	256
Cuttlefish	801	-	801
Beach-de-mer	84	-	84
TOTAL	**10,058**	**957**	**11,015**

Source: 1) Fish production compiled from Mannar DFAR data.

Table 2: Trend of Marine Fish Landing by F. I. Divisions (1984, 2003-2010)

Unit: mt

F. I. Divisions	1984*	2003	2004	2005	2006	2007	2008	2009	2010
Mannar		2,188	1,974	1,008	3,047	2,562	2,648	2,274	2,154
Pesalai		2,925	4,327	1,563	2,138	1,061	1,110	1,977	3,393
Chilavathurai		1,490	664	440	821	582	-	1,127	1,626
Erukkalampiddy		804	1,265	434	883	840	467	816	1,244
Nanattan		1,452	1,287	647	1,405	1,416	1,937	1,111	1,712
Vidaltaltivu		-	648	727	993	1,009	306	-	886
Total	**19,040**	**8,859**	**10,165**	**4,819**	**9,287**	**7,470**	**6,468**	**7,305**	**11,015**

Remarks: * Fish landing by FI Divisions not available.
Source: Fish production compiled from Mannar DFAR data.

Table 3: Trend of Usage of Marine Fish Landings by FI Divisions (2003-2010)

Unit: mt

F. I. Divisions	2003	2004	2005			2006			2007		
			Fresh	Drying	Total	Fresh	Drying	Total	Fresh	Drying	Total
Mannar	2,188	1,974	852	156	1,008	2,893	154	3,047	2,398	164	2,562
Pesalai	2,925	4,327	1,066	497	1,563	1,763	375	2,138	901	160	1,061
Chilavathurai	1,490	664	359	81	440	762	59	821	537	45	582
Erukkalampiddy	804	1,265	335	99	434	777	106	883	786	54	840
Nanattan	1,452	1,287	581	66	647	1,313	92	1,405	1,312	104	1,416
Vidaltaltivu	-	648	624	103	727	919	74	993	940	69	1,009
TOTAL	**8,859**	**10,165**	3,817	1,002	**4,819**	8,427	860	**9,287**	6,874	596	**7,470**

(continued) Unit: mt

F. I. Divisions	2008			2009			2010		
	Fresh	Drying	Total	Fresh	Drying	Total	Fresh	Drying	Total
Mannar	2,344	304	2,648	2,086	188	2,274	2,060	94	2,154
Pesalai	935	175	1,110	1,761	216	1,977	3,079	314	3,393
Chilavathurai	-	-	-	949	178	1,127	1,432	194	1,626
Erukkalampiddy	466	1	467	814	2	816	1,206	38	1,244
Nanattan	1,694	243	1,937	918	193	1,111	1,471	241	1,712
Vidaltaltivu	294	12	306	-	-	-	809	77	886
TOTAL	5,733	735	**6,468**	6,528	777	**7,305**	10,057	958	**11,015**

Remarks: Usage refers to fresh fish marketing and dry fish processing.
Source: Fish production compiled from Mannar DFAR data.

Table 4: Fish Production Zone - 1

	FISH PRODUCTION ZONE - 1		
DS Division	**Mannar Town**		
F. I. Divisions	**Pesalai**	**Erukkalampiddy**	**Mannar Town**
Fishing villages	6	6	6
Locations of the villages	Pesalai Talaimannar West Talaimannar Pier Talaimannar East, Nadukkudah Sriskanda	Siruthoppu Periyekarisal Sinnakarisal Puthukkudiyiruppu Erukkalampiddy Tharapuram	Pallimunai Panankaddikoddu Thalvupadu South Bar Periyakadai Uppukulam
Fishing community (July 2011)			
- Fishing families	2,210	796	2,246
- Fishing population	8,760	3,010	8,481
- Active fishermen	1,570	850	2,212
- Women (fisheries)	370	130	827
- FCS (membership)	7 (2,511)	5 (890)	6 (2,420)
Fishing crafts (July 2011)			
- Multiday boat	9	-	-
- Day-boat	86	-	1
- OFRP	559	152	355
- MTRB (Vallam)	-	1	73
- NTRB	147	43	147
- NBSB	20	4	4
Total	**821**	**200**	**580**
Fish landed (mt) in 2003 & 2010	2,925 mt (2003) 3,394 mt (2010	800 mt (2003) 1,245 mt (2010)	2,188 mt (2003) 2,154 mt (2010)
On-land Facilities	**Pesalai**	**Erukkalampiddy**	**Mannar Town**
Jetties, Anchorages, etc	None; beach landings	None; beach landings	None; beach landings
Fish receiving & handling centers (wadis)	Wadis – simple sheds located close to sea; individually owned by fishers and fish traders	Wadis	Wadis; traders use the town's fish market for fish collection; auction is conducted here.
Ice making facilities (capacity: tons per day – tpd)	- Akila Ice plant (20 tpd) - Antane Ice Mill (20 tpd) - Anthony Ice (20 tpd) - Coolman Ice (18 tpd) - CFC – Mobile Ice Making Unit (4 tpd) - FCS (Flake ice – not operated)	None	Keeri Ice plant (30 tpd)
Cold store	None	None	None
Ice storage	None	None	None
Fish Market		Erukkalampiddy – Urban fish market hall serves as fish collection for traders	Fish market – Mannar town
Others structures	Pesalai - Conference hall and net making/repair shed (FAO)		Pallimunai & Thalvupadu – Engine rooms and fish handling sheds (FAO)

Table 5: Fish Production Zone - 2

	FISH PRODUCTION ZONE - 2	
DS Divisions	**Nanattan and Musali**	
F. I. Divisions	**Nanattan**	**Chilavathurai**
Fishing villages	3	10
Locations of the villages	**Vankalai** Naruvilikkulam Achankulam	Arippu Saveriyarpuram Thomaiyar Chilavathurai Kulankulam Kokkupadayan Kondachchi Kondachikudah Karadykuli Mullikkulam
Fishing community (April 2011)		
- Fishing families	1,027	583
- Fishing population	3,777	2,441
- Active fishermen	1,090	862
- Women (fisheries)	246	83
- FCS (membership)	3 (1,254)	11 (476)
Fishing crafts (April 2011)		
- Multiday	-	-
- Day-boat	-	-
- OFRP	303	224
- MTRB (Vallam)	-	2
- NTRB	-	114
- NBSB	-	-
Total	**303**	**340**
Fish landed (mt) in 2003 & 2010	1,452 mt (2003) 1,712 mt (2010	1,490 mt (2003) 1,626 mt (2010)
On-land Facilities	**Nanattan**	**Chilavathurai**
- Jetties, Anchorages, etc.	None; beach landings	None; beach landings
- Fish receiving & handling centers (wadis)	Wadis – simple sheds clustered close to the beach; individually owned by fishers and fish traders	Wadis – simple sheds clustered close to the beach; individually owned by fishers and fish traders
- Ice making facilities	None	None
- Ice Fish Storage	None	None
- Ice storage	None	None
- Other facilities	Vankalai – Engine room and fish handling shed (FAO)	

Table 6: Fish Production Zone - 3

	FISH PRODUCTION ZONE - 3
DS Division	**Manthai West**
F. I. Divisions	**Vidataltivu**
Fishing villages	8
Locations of the villages	Pappamoddai, Vidataltivu, Sakiya, Kalliady, Illuppaikadavai, Anthoniyarpuram, Moonrampiddy, Thevanpiddy
Fishing community (April 2011)	
- Fishing families	978
- Fishing population	3,712
- Active fishermen	711
- Women (fisheries)	236
- FCS (membership)	7 (1,112)
Fishing crafts (April 2011)	
- Multiday	-
- Day-boat	-
- OFRP	88
- MTRB (Vallam)	89
- NTRB	129
- NBSB	-
Total	**306**
Fish landed (mt) in 2004 & 2010	648 mt (2004) 886 mt (2010
On-land Facilities	**Vidataltivu**
Jetties, Anchorages, etc.	None; beach landings
Fish receiving & handling centers (wadis)	Wadis – simple sheds clustered close to the beach; individually owned by fishers and fish traders
Ice making facilities	None
Ice fish storage	None
Ice storage	None

Project Profiles for the Village-wise Development Plan

Project Name	a. Institutional Development Project for FOs of Irrigation Systems
Scheme	Technical cooperation
Project Area	Major and medium irrigation scheme areas
Implementing Agency	Irrigation Department (ID), Central/Provincial
Project Cost (Rs.1000)	Rs. 10,800
Population Benefited	1,500 people (FO members and staff of DAD, ID, Divisional Secretariat (DS) and Government Agent (GA) Secretariat)

Background:

Maintenance of irrigation facilities and water management are indispensable in utilizing irrigation water to obtain high paddy yields. FOs are the main actors of those activities below distribution canals of irrigation systems, which are defined by the Irrigation Act. In accordance with the rules and regulations of the Act, FOs and their institutional systems need to be developed along with rehabilitation works through the trainings and study tours.

Project Outline:

(1) Practical trainings are carried out for key members of FOs, canal group leaders and their younger generations, to develop and strengthen FOs' capacity for sustainable maintenance of irrigation systems.

(2) Prior to the above-mentioned trainings, trainings for trainers are also carried out to strengthen extension services and monitoring capacity of the Government staff of ID, DAD, GA and DS.

Involvement of other donors and agencies:

Bi- and multi-lateral donors such as the WB, ADB, JICA and NGOs have rendered assistance with rehabilitation of irrigation systems but institutional development of FOs under major and medium irrigation schemes have so far not been implemented.

Points to be considered and assumptions:

Regional development committees in the District such as the Agriculture Development Committee at the Divisional Secretariat and District Secretariat levels and District Development Committee shall strengthen a good relationship with each other to implement these types of activities, and need to monitor and evaluate based on common perception as district or provincial wise development.

Project Name	b. Pali Aru Diversion and Karayankannaddi Development Project
Scheme	General grant aid
Project Area	Area along the Pali Aru River in Manthai West AGA Division
Implementing Agency	Irrigation Department, Northern Province
Project Cost (Rs.1000)	Rs. 40,000
Population Benefited	280 farm families (1120 people)

Background:

An anicut was halfway constructed on the Pali Aru River near the Pali Aru village in Manthai West AGA Division under the ex-JICA Project, MANRECAP, to feed additionally to the Adampankulam tank on the right bank and provide water to the Karayankannadi tank to be rehabilitated for about 100 ha of paddy land. In addition, the Project provides food security for the people who do not have paddy land in the area.

The Project gives positive impacts to the approximately 30 farm families (120 people) at Vellankulam, and 250 families (1,000 people) who had no paddy land in the area.

Project Outline:

The following activities will be implemented:

(1) Complete halfway-constructed Pali Aru Anicut (diversion weir) on the Pali Aru River
(2) Restore a volume of irrigation water from the Pali Aru Anicut to the Adampankulam irrigation scheme
(3) By providing a channel from the Pali Aru Anicut, rehabilitate 100 ha of paddy land in order to augment irrigation water for the Karayankannadi minor tank
(4) On-farm development of paddy area under the Karayankannadi minor tank

Involvement of other donors and agencies:

There are no specific donors involved.

Points to be considered and assumptions:

Land tenure and paddy land under the Karayankannadi irrigation tank was allocated by the land section of the Divisional Secretariat. The land issue shall be confirmed by the land division and the Irrigation Department (Province) before implementation.

Project Name	c. Minor Tank Rehabilitation Project (All clusters)
Scheme	General grant aid
Project Area	Minor irrigation schemes under the Department of Agrarian Development in the District
Implementing Agency	Department of Agrarian Development, Irrigation Department (Provincial)
Project Cost (Rs.1000)	Rs. 75,000
Population Benefited	520 families

Background:

There are many minor tanks in Mannar District under the Department of Agrarian Development (DAD). The minor tanks under the DAD are self-sufficient in water from their own catchment. People have been requesting the rehabilitation and augmentation of such tanks during the needs assessment. With the new JICA Maps in 1/10,000 scale, hydrological studies could be carried out at each tank and many of them could be augmented based on the precise data. It may help not only to develop paddy cultivation but also to promote irrigation for OFC and other agricultural activities to improve livelihoods of the re-settlers.

Population benefited by the Project would be 520 families (2,080 people), assuming one-third of existing tanks are rehabilitated and one tank supports 20 families.

Project Outline:

Tanks shall be rehabilitated with Community Contract (community-managed rehabilitation scheme) to develop and strengthen FOs' capacity in order to assure the sustainable management of their irrigation systems. In addition, profits obtained from the rehabilitation works could be utilized for their socio-economic development activities accordingly. In this context, a series of trainings from the technical aspect, aspects of financial management and institutional strengthening, etc., are carried out along with rehabilitation works.

Involvement of other donors and agencies:

The WB, ADB, UNDP and NGOs have attended rehabilitation of tanks, and strengthened community-oriented operation and maintenance. However, the works are mostly limited to restoration but not augmentation.

Points to be considered and assumptions:

(1) Since the number of technical staff of the Department of Agrarian Development is not sufficient, collaboration with the provincial Department of Irrigation may be required.
(2) Success in community-managed rehabilitation programs requires a longer-range schedule and more commitment of technical staff than ordinary construction works.

Project Name	d. Northern Musali Regional Water Supply Scheme
Scheme	General grant aid
Project Area	Northern Musali area
Implementing Agency	National Water Supply and Drainage Board (NWS&DB)
Project Cost (Rs.1000)	Rs. 251,010
Population Benefited	23,000 people (14 GN Divisions)

Background:

Most of the people living in this area obtain water from open hand-dug wells constructed near tanks for irrigation, except in Arippu town, where a piped water scheme has been installed. The water in open dug wells becomes insufficient and saline in dry seasons and even water of the pipe-borne water system in Arippu town turns saline in dry seasons. Supplying drinking water throughout the year is thus necessary.

The population of the proposed Northern Musali Water Supply Scheme (WSS) is 19,864 at present and is expected to reach about 23,000 by the year 2020. Implementation of a pipe-borne water supply scheme using a reliable water source will have a significantly positive impact on the people living in this area, including people in Arippu who will be connected to the proposed WSS.

Project Outline:

The amount of water required for this project is estimated to be 5,000m^3 per day for piped-water systems, and the water source for this project will be available from the Murunkan tube well field or the Aruvi Aru River. In addition, one elevated tank and its facilities are required for the water supply scheme. The hygienic condition of the water and water conservation practice would be enhanced through the project.

Involvement of other donors and agencies:

The ADB and WB Projects are ongoing as of 2011.

Points to be considered and assumptions:

The project will be implemented taking into account the ongoing development programs and approaches of the government and development partners in the project area.

Project Name	e. Mannar Island Regional Water Supply Scheme (Cluster III)
Scheme	General grant aid
Project Area	Mannar Island (Erukkanlampiddy, Tralaimannar, Pesalai)
Implementing Agency	National Water Supply and Drainage Board (NWS&DB)
Project Cost (Rs.1000)	Rs. 648,480
Population Benefited	30,000 – 39,000 people (18 GN Divisions)

Background:

The Mannar Island Regional Water Supply Scheme (WSS) will cover four sub-schemes: (1) Enhancement of existing Erukkalampiddy WSS, (2) Extension of Erukkalampiddy WSS, (3) Talaimannar WSS, (4) Pesalai WSS. The scheme shall cover 18 GN Divisions on the Island. Water sources of the existing Erukkalampiddy WSS are seven (7) dug wells constructed in Thoddaveli on Mannar island. There are only 80 connections to this system and approximately 400 people out of the total 11,800 inhabitants in this area are served as of 2010. People at the Talaimannar and Pesalai depend upon open dug wells for water, which are saline especially during the dry season. Therefore, it may be required to supply fresh water from tube wells in the Murunkan area.

Project Outline:

(1) The water source for water supply close to Mannar Island is only available in the Murunkan area. Therefore, the identified schemes on Mannar Island will have to be water-supplied in an integrated manner from Murunkan, either from tube wells or surface water to be treated; or a hybrid of the two sources.

(2) The capacity of the existing main transmission line from Murunkan to Mannar now being enhanced under ADB-5th project will not be sufficient to deliver additional water to other new schemes. Therefore, an additional transmission pipe line has to be placed from Murunkan to the Mannar Island Regional WSS.

(3) In addition, the new additional transmission line will have to be designed with consideration of the several schemes that have been identified for 2030, such as Nanaddan WSS, Extension of Nanaddan WSS, Extension of Adampan WSS and Extension of Thiruketheeswaram WSS; so that future extension should be smoothly implemented.

Involvement of other donors and agencies:

The ADB and WB Projects are ongoing as of 2011.

Points to be considered and assumptions:

Since the projects of the ADB and WB are ongoing in several GN Divisions, prudent planning under the GA/DS coordination is required.

Project Name	f. Strengthening of CBOs on Non-Paddy Agriculture and Livestock Project (Cluster I & II)
Scheme	Technical cooperation with credit scheme
Project Area	Highland cultivation areas of Cluster I & II
Implementing Agency	Department of Co-operative Development (DCD) in collaboration with Department of Agrarian Development (DAD) and Divisional Secretariat
Project Cost (Rs.1000)	Rs. 300,000
Population Benefited	6,000 members of CBOs

Background:

It is inevitable to promote non-paddy agriculture to improve livelihoods of the returnees in Mannar District since paddy agriculture alone does not ensure sufficient income under the present condition that a farmer owns approximately 1 ha of paddy field on average. CBOs should play important roles in non-paddy agriculture and livestock development. In this point of view, strengthening of CBOs on Non-Paddy Agriculture and Livestock needs to be implemented.

Project Outline:

A community-oriented approach is applied to utilize regional resources as much as possible in a sustainable way to provide a series of awareness programs for farmers and frontline officers, and practical action plans are formulated by CBOs and other relevant institutions including private companies. Based on the action plans, technical trainings for CBO members and other farmer groups are carried out, and micro credit through the Department of Cooperative or other proper financial institutions are introduced to develop a production base such as small-scale irrigation facilities, new varieties of perennial crops for export quality and pasture/production facilities of fodder and AI for livestock. In the process of implementation of the above-mentioned activities, CBOs will be strengthened to become business organizations that give a positive economic impact on the regions.

Involvement of other donors and agencies:

Existing credit facilities operated by the government are sometimes available in the areas.

Points to be considered and assumptions:

Spontaneous actions by CBOs and their members are indispensable to run business-oriented community-based organizations in a sustainable way. Careful and continuous assistance to each CBO is necessary until management capacity is developed. Therefore capable front-line officers are indispensable to succeed in this project.

Project Name	g. Mixed Farming Development Project for Small-Scale Farmers (Cluster I & II)
Scheme	Technical cooperation with credit scheme
Project Area	Mainly highland cultivation areas of Cluster I & II
Implementing Agency	Provincial and Interprovincial Department of Agriculture in collaboration with Divisional Secretariat
Project Cost (Rs.1000)	Rs. 161,875
Population Benefited	7,500 farmers

Background:

Multiple income sources are required for farmers, especially small-scale farmers in rural areas, to secure sustainable livelihoods. It is necessary for farmers to utilize farmland to the maximum extent through a combination of several periodic & perennial crops and livestock in addition to paddy cultivation with implementation of the strategic plan and proper technologies. Livestock rearing shall also help to reduce input costs by producing compost to be applied for farm lands.

Project Outline:

Collecting practical ideas and information from farmers and other concerned organizations in order to prepare a combinational optimization model of mixed farming and income generation activities based on agricultural products, and develop multiple income systems for small-scale farmers for maximizing their average income per month. With regard to the prepared model of multiple income systems, the project provides a series of awareness seminars, trainings and workshops for relevant front line officers, members of regional development committee and farmers, and selects pilot farmers to improve further programs to be implemented by the project. The divisional secretariat will undertake monitoring roles in collaboration with relevant organizations to evaluate the agriculture development committee at the district level and to assure sustainable socio-economic development.

Involvement of other donors and agencies:

UNDP and other donor agencies have similar projects through the provincial Department of Agriculture.

Points to be considered and assumptions:

Since the provincial Department of Agriculture has similar programs in collaboration with UNDP and other donor agencies, all prepared programs should be evaluated at the District level with the coordination of the District Secretariat.

Project Name	h. Rural Community Water Supply and Sanitation Infrastructure Development (All Clusters)
Scheme	ODA Loan
Project Area	Rural / remote areas without water supply facilities
Implementing Agency	Pradeshiya Sabha
Project Cost (Rs.1000)	Rs. 511,268
Population Benefited	7,000 people (including provision of safe drinking water, sanitation systems, training and education programs)

Background:

There have been substantial numbers of Village Water Supply Projects implemented since 2010. However, many villages remain without tap water. In such villages installation of new Water Supply Systems (WSS) or extensions of WSS constructed under the ADB fund and ENReP need to be carried out.

Project Outline:

The main activities of the project are supplying potable and safe water with sanitation programs in rural areas with community-oriented operation and management systems as introduced by the Community-Based Rural Water Supply and Sanitation program of the ADB. The community will be involved in all the processes of the project in order to build the capacity of CBOs, and finally the community-based organization (CBO) could carry out the operation and maintenance of the water supply system. In addition, according to the project implementation stages, awareness programs for hygiene and water conservation, etc., will be practiced especially for the younger female generation to improve their health conditions, reduce malnutrition and introduce income generation activities by utilizing time saved from collecting water.

Involvement of other donors and agencies:

The ADB funded project and small-scale community water supply and sanitation programs

Points to be considered and assumptions:

The project will be implemented taking into account the ongoing development programs and approaches of the Government and development partners in the project areas.

Project Name	i. Women-led Activities Development Project (All Clusters)
Scheme	Technical cooperation with credit scheme
Project Area	All DS/ AGA Divisions
Implementing Agency	Divisional Secretariat in collaboration with the Provincial Department of Rural Development
Project Cost (Rs.1000)	Rs. 31,600
Population Benefited	1,500 persons

Background:

Women-headed families are not uncommon in conflict-affected areas, and they are facing various difficulties. However, forming women's groups will create an opportunity to exchange their issues, find practical solutions by themselves, and even think of business ideas. To introduce women-led activities such as Women's Groups for Micro Finance, Group Insurance Systems and Micro Enterprises will help women to take action and cultivate their initiative for development of future livelihoods in a positive way. Relevant organizations could support their spontaneous actions created through group activities. The Project shall initiate and promote such activities in broad areas.

Project Outline:

The Project term will be divided into two phases. The first phase will build capacity of officers and beneficiaries of women-headed families by providing seminars, study tours and other training activities, and organize women's groups to commence initial activities such as group savings, etc. Through focused discussions and actions by each women's group, it will prepare a women-led action plan, and the project will provide skill trainings for them. As the second phase, micro-credit facilities will be provided for further income generation activities.

Involvement of other donors and agencies:

The Provincial Department has a similar program in collaboration with UN agencies.

Points to be considered and assumptions:

Insufficient staff in the Divisional Secretariat for implementation of the project

Project Name	j. Vocational Training for Women and Youths with Micro Credit Services (All Clusters)
Scheme	Technical cooperation with credit scheme
Project Area	All DS/ AGA Divisions
Implementing Agency	Industrial Development Board (IDB) (in collaboration with the Department of Agriculture, Department of Export Agriculture, Institute of Post Harvest Technology, Sri Lanka Cashew Corporation, National Aquaculture Development Authority, Palmyra Development Board, National Youths Services Council, etc.)
Project Cost (Rs.1000)	Rs. 89,592
Population Benefited	Age group would be 18-44 years old: 45,303 x 0.5 x 0.5 = @11,000 + youths (4,000) = 15,000 persons (3-year program)

Background:

Many talented human resources and a skilled labour force will be required to develop rural industries based on agriculture, livestock and fisheries. In addition, many youths and women who received higher education are living in rural areas without incomes or job opportunities. These human resources should be utilized effectively as desirable local resources instead of resources from outside. Accordingly, vocational trainings in accordance with the demand from the local industry should be considered and implemented.

Project Outline:

A basic concept of vocational training programs according to the district development plan is prepared by conducting workshops with relevant organizations. According to the basic concept, IDB coordinates and manages overall training programs in order to select the most suitable lecturers or institutions according to the selected trainees' capabilities and marketing conditions, etc. Existing credit facilities are to be utilized in collaboration with operating banks.

Involvement of other donors and agencies:

UN agencies, NGOs and government institutions implement income generation activities and vocational trainings.

Points to be considered and assumptions:

Since many donor agencies are implementing vocational training, prudent planning and coordination in collaboration with the District Secretariat is indispensable.

Project Name	k. Village Road Improvement Project (All Clusters)
Scheme	General grant aid
Project Area	Rural / remote areas of all DS/ AGA Divisions
Implementing Agency	Pradeshiya Sabha and Provincial Councils
Project Cost (Rs.1000)	Rs. 350,000
Population Benefited	7,500 persons

Background:

Many trunk roads under the Road Development Authority (RDA) and Department of Road Development are now being rehabilitated in Mannar District. On the other hand, there are many village roads connected to the trunk roads that are yet to be rehabilitated. Such a project could be implemented as a community development project and/or food for work and so on.

Project Outline:

The project will give priority to poor or isolated communities due to their difficult accessibility.

(1) First priority will be given to poor/isolated communities/families and select roads through a participatory approach
(2) Rehabilitate about 300 kilometres of village roads with 70 - 75% of the project budget
(3) Implement food for work activities or provide community contract to CBOs occasionally
(4) Provide basic maintenance trainings, and share maintenance schedule in collaboration with the local government
(5) Provide workshops/trainings/equipment for setting up new income sources

Involvement of other donors and agencies:

ADB

Points to be considered and assumptions:

Capacity building of field officers of local government may be necessary for effective and efficient implementation of the activities during the project period and to secure sustainable maintenance after the project.

Project Name	l. Replacement of Damaged Fishing Crafts & Equipment (Cluster III & I)
Scheme	Partial grant and credit scheme (leading to revolving fund scheme)
Project Area	(1) Coastal fishing villages of Manthai West, Nanaddan & Musali DS/ AGA Divisions (2) Giant Tank (Mannar Town DS Division) and Periyamadu (Manthai West AGA Division)
Implementing Agency	MFARD (DFAR Mannar & NAQDA)
Project Cost (Rs.1000)	Rs. 172,000
Population Benefited and impacts	- Directly benefits 250 fishers (coastal villages of Manthai west, Nanaddan & Musali DS/AGA Divisions in the short term, and 250 inland fishers (inhabiting in the vicinities of freshwater bodies in Mannar Town DS Division). - Securing fish supply (for self-sufficiency and national food security).

Background:

Mannar District suffered the most in the major displacements of coastal fishing communities and inland fishers (fish farmers) during the long conflicts. Frequent displacements resulted in damage & loss of productive assets (boats, nets and equipment). International donors, NGOs, etc. provided emergency assistance (fishing crafts and equipment) to returnees to rehabilitate and revitalize livelihoods. MANREP is one such emergency assistance that provided fishing crafts and equipment to selected beneficiaries in focal villages as a Pilot Project. A similar program or project to replace appropriate fishing crafts and equipment among coastal fishing communities as well as inland fishers' households is proposed to cover the loss and damages. This is a priority to restore and improve livelihoods in order to establish a base for future sustainability.

Project Outline:

(1) Survey of affected coastal fishing villages and households requiring assistance.
(2) Survey & identify returnees' households having access to water bodies and depending on inland fishing (as a supplementary income).
(3) Provision of appropriate number and types of fishing crafts & equipment.
(4) Provision of facilities (stores for fuel, engine, space for net repair space, etc.).

Involvement of other donors and agencies:

UNDP, DFAR, NGOs, MFARD, etc.

Points to be considered and assumptions:

Care should be taken when providing or replacing low-powered and mechanized fishing crafts & equipment in view of not applying pressure on coastal fishery resources. Adjustment and flexibility should be considered to introduce modern technology with efficient fishing methods.

Project Name	m. Fish Landing/Handling & Marketing Facilities (Cluster III)
Scheme	Technical cooperation and MFARD budget
Project Area	Selected fishing villages having substantial fish landings & fishing population, such as Talaimmannar West & Pier, Erukkalampiddy, Panankaddikoddu, Arippu, etc.
Implementing Agency	MFARD through DFAR Mannar
Project Cost (Rs.1000)	Rs. 20,000
Beneficiaries and impacts	- Directly benefits fishers, fish traders, vendors, and transporters. - Improved quality of landed and marketed fish products. - Secures fish supply through reduction in post-harvest losses.

Background:

Fish landing sites both in the coastal areas and inland water bodies (tanks) in Mannar District are exceptionally devoid or have minimal landing/marketing facilities that result in high post-harvest losses (physical and quality losses). Absence of proper infrastructure & facilities is a disincentive to attract private sector investment in the fisheries sector, and also slows down development of fishing and associated industries. Establishing appropriate fish landing/marketing infrastructure and facilities is necessary to attract the modernization of the fishing operation that is currently confined to only the coastal waters and to increase the productive use of the inland water bodies.

Project Outline:

(1) Survey and identify potential fishing villages/sites (coast areas and inland water bodies)
(2) Plan and establish fish landing infrastructure and facilities (jetty, etc.)
(3) Plan and establish fish handling facilities (market hall, stores for ice, fish, fuel, etc.)
(4) Plan and establish properly sited landing places (sites) around reservoirs

Involvement of other donors and agencies:

UNDP, FAO, Ceylon Fishery and Harbours Corporation (CFHC), private sector

Points to be considered and assumptions:

Establishment of landing and marketing centers at village levels will serve as satellite collection and distribution sites, which will link to the strategic fish collection & distribution centers such as Pesalai, which is now a major hub of collection, repacking and consigning to major consumption areas and processing factories.

Government policy for easy access to credit, services, etc. is recommended.

Project Name	n. Dry Fish Processing Improvement (Cluster III & I)
Scheme	Technical cooperation
Project Area	About 20 coastal fishing villages among the 40 villages in the District, and 10 inland villages.
Implementing Agency	MFARD (DFAR, NARA)
Project Cost (Rs.1000)	Rs. 6,000
Beneficiaries and impacts	- Directly benefits women active in fisheries (1,890) as most of them are in dry fish processing. - Increase in domestic supply of dry fish. - Improved and value-added quality products for export potential.

Background:

In the absence of appropriate marketing facilities and services in remote villages, freshness of fish catches suffers, leading to low prices resulting in income loss to fishers. MANREP conducted dry fish training in selected villages (coastal and inland) as community-based activities. The training has been successful and widely accepted by the women. A similar program/project is proposed in order to improve dry fish processing and value addition and develop new fish products that will provide increased income as well as reduce post-harvest loss.

Project Outline:

(1) Provision of dry fish processing techniques (similar to MANREP).
(2) Provision of training on handling & sanitary practices.
(3) Development of new fishery products (with a brand name for Mannar).

Involvement of other donors and agencies:

NGOs

Points to be considered and assumptions:

It is recommended that information on market demand, quality, prices, etc. be provided regularly and disseminated to sustain the industry.

Project Name	o. Supply & Stocking or Release of Fish Fingerlings to Inland Water Bodies (Cluster I)
Scheme	Technical cooperation and MFARD (NAQDA) budget
Project Area	All large perennial water bodies in the District
Implementing Agency	MFARD (NAQDA)
Project Cost (Rs.1000)	Rs. 15,250
Beneficiaries and impacts	- Inland fishers (580 inland fishers' households) directly depending on fishing for livelihood and income. - Farmers who depend on fishing during off-season from agriculture. - Direct impact on increasing the productivity of inland water bodies.

Background:

Long neglect in releasing/stocking of fish fingerlings in the freshwater water bodies due to the civil conflict has resulted in low productivity and declines in fish catches among inland households that depend on fishing for income and livelihoods. Restoring these potential and perennial water bodies is a priority by making available a supply of fish fingerlings for uninterrupted stocking or release.

Project Outline:

(1) Identify potential water bodies requiring stocking of fingerlings.
(2) Provide initial free stocking of fish fingerlings produced at NAQDA breeding & rearing centers.
(3) Encourage CBOs to continue regular stocking through purchase of fingerlings.
(4) Establish an inland fish-breeding center to supply fish fry and fingerlings.
(5) Provision of inland fish fry/fingerling nursing & rearing facilities (similar model of pond facilities planned in MANREP/JICA near the Giant Tank).

Involvement of other donors and agencies:

NGOs

Points to be considered and assumptions:

The fish seed (fingerlings) supply from production centers cannot meet the overall national demand; it is recommended that inland fish farmers (especially women) be empowered to produce fingerlings in Mannar District.

Project Profiles for the Sector-wise Development Plan

Project Name	a. Northern Province Master Plan (All Sectors)
Scheme	Technical cooperation
Project Area	Northern Province including Mannar District
Implementing Agency	Provincial government
Project Cost (Rs.1000)	Rs. 104,195
Population Benefited	Entire population in the North

Background:

A comprehensive master plan study in the North has not been carried out due to prolonged conflicts in the last nearly 30 years. Therefore, the Master plan study of the Northern Province in terms of agriculture including paddy, OFC, livestock and so on, fisheries, processing, marketing and distribution, tourism, environmental conservation, industries, etc., shall be carried out and potentials shall be identified. Further, potential projects would be prioritized to implement. Positioning of Mannar District in the sectors shall also be formulated to focus advantages and promoted to extend them.

Project Outline:

In the Northern Province, development projects for infrastructure and various industries have not been systematically implemented. In this context, the potential of resources such as land, man power, water, etc., have to be identified first, and based on the identified resources, development projects shall be formulated in an integrated manner. Issues on agriculture and fisheries including transportation, marketing, and industries associated with the agriculture and fisheries may be given priority as the majority of people in the area are engaged in those sectors in the short term. For the long term the prospects of maximum utilization of topographical advantages of the area, especially in relation to India, shall also be studied. Further, as tourism has a big potential in connection with the tourism development in the country, a plan of tourism in the Northern Province shall be also be attended in this Master Plan.

Involvement of other donors and agencies:

ADB and/or WB

Points to be considered and assumptions:

The reconciliation process shall be taken into consideration to prepare such a comprehensive master plan.

Project Name	b. Land Use Study (Agriculture Sector)
Scheme	Technical cooperation
Project Area	Manthai West, Musali and Madhu DS/ AGA Divisions in the District
Implementing Agency	Department of Agriculture, Department of Irrigation (Land Use Division) and Department of Animal Production and Health
Project Cost (Rs.1000)	Rs. 30,308
Population Benefited	Approximately 5,000 families (20,000 people)

Background:

There is a vast amount of land in Mannar District not in use along the main road, especially along A32 highway and Musali DS Division. In connection with the Map in 1/10,000 recently prepared by JICA, a land use map together with a soil survey shall be prepared for the future agriculture plan.

Project Outline:

Preparation of Agriculture land use inventory (land use activities, land cover, agriculture practice, soil, irrigation, watercourses, etc.) for: (1) Planning Agricultural Development Areas, (2) Exploring agriculture development options, and (3) Examining proposed development plans and land use changes.

One of the prospective activities to utilize vast unutilized land would be pasture for livestock, especially dairy farming.

Involvement of other donors and agencies:

DB, WB, bi-lateral donors, NGOs, etc. and the private sector

Points to be considered and assumptions:

Project Name	c. Marketing Study on Agriculture Products
Scheme	Technical cooperation
Project Area	Mannar District and consuming areas
Implementing Agency	Department of Agriculture and Hector Kobbekaduwa Agrarian Research and Training Institute in collaboration with the Department of Export Agriculture (DEA) and Chambers of Commerce in Mannar District
Project Cost (Rs.1000)	Rs. 20,261
Population Benefited	25,000 people (farmers and traders, etc.)

Background:

In order to promote various agricultural products, it is important to grasp the present situation of production and consumption of agricultural products such as paddy, OFC, vegetables and fruits in the country and their quantity of import and export. Further marketing channels and prices of such products shall be carefully studied to prepare plans for the production of such items. Based on such information, production and marketing plans will be prepared for promoting specific products.

Project Outline:

The marketing study will include investigation and identification of sales conditions and the potentials of the products in relation to the consumers in several defined areas. In addition to this, feasibility studies for (1) finding potential demand for special products for each division or agricultural product cluster in the short and long term, (2) recommending practical methods for compiling marketing information services for farmers and traders, and (3) recommending potential export products are included in this study. A Technology and Machinery Exhibition to promote marketing activities in Mannar District may also be included in this study.

Involvement of other donors and agencies:

Chambers of Commerce and Industry and Agriculture in collaboration with the Ministry of Industry and Commerce have keen interest in Agriculture and Livestock.

Points to be considered and assumptions:

Development of the private sector’s capacity to expand the marketing scale and bargaining is needed. Therefore, the results of the marketing study shall be shared with at least the district chambers of commerce to take further actions.

Project Name	d. Maluwatu Oya Development Project (Agriculture Sector)
Scheme	Concessional loan
Project Area: Mannar District	Anuradhapura and Vavuniya Districts for reservoir and Anuradhapura and Mannar Districts for command area
Implementing Agency	Irrigation Department (Central)
Project Cost (Rs.1000)	Rs. 5,000,000
Population Benefited	12,000 families in rice bowl and Musali Areas

Background:

The Maluwatu Oya River is the source of water to the Giants Tank on the right bank and Akatimurippu Tank on the left bank of the river. In order to increase in-flow to the Giants Tank and Akatimurippu Tank, thus to increase cropping intensity of Yala season during which only 10-20% of paddy field are cultivated, Maluwatu Oya Reservoir may play an important role. Therefore, the construction of Maluwatu Oya Reservoir shall be planned and implemented. The Reservoir was originally planned under the Mahaweli Master Plan in 1967.

Project Outline:

A reservoir will be constructed on the Maluwatu Oya River near Cheddikulam and will provide irrigation water for new land and the Giants and Akatimurippu Tanks with the water augmented by Mahaweli North Central Province (NCP) canal. If NCP canal is not materialized, the reservoir may provide water to the Giants and Akatimurippu Tanks.

Involvement of other donors and agencies:

Mahaweli Master Plan was prepared by FAO in 1960s. Commitment of other donors is not known.

Points to be considered and assumptions:

There is an anxiety that the construction of the reservoir may cause reduction of water supply to the Giants and Akatimurippu Tanks if new agriculture areas are developed with water from the reservoir. A careful water balance study is required.

Project Name	e. Parangi Aru Development Project (Agriculture Sector)
Scheme	Concessional loan
Project Area	Mannar and Mullaitive Districts
Implementing Agency	Irrigation Department (Provincial)
Project Cost (Rs.1000)	Rs. 4,000,000
Population Benefited	7,000 in Manthai West AGA Division, Mannar and Manthai East and Tunukkai AGA Divisions in Mullaitive

Background:

There are no reservoirs along the river named Parangi Aru, which may cause frequent floods downstream near the A32 road in Mannar District, and there is no flow in the river during the dry season. Construction of a reservoir on the river will reduce floods and water resources could be utilized for strengthening agriculture activities by the reservoir. Therefore the dam construction on the Parangi Aru is to be considered a priority.

Project Outline:

The reservoir will be constructed at the border of Mannar and Mullaitive Districts. The length, height and gross storage capacity of the tank bund are 6,000 m, 28 m and 342 million m^3 respectively, with augmentation of water by the Mahaweli NCP Canal.

Involvement of other donors and agencies:

Originally planned in Mahaweli Master plan by FAO in the 1960s. There are no donors identified so far.

Points to be considered and assumptions:

A preliminary study shall be carried out to explain to donors. The Project will be considered with the construction of the Mahaweli NCP canal.

Project Name	f. Kurai Tank Development Project (Agriculture Sector)
Scheme	Concessional loan or grant
Project Area	Manthai West AGA Division in Mannar District
Implementing Agency	Irrigation Department (Provincial)
Project Cost (Rs.1000)	Rs. 1,000,000
Population Benefited	300-400 families (1500-2000 people) in Manthai West AGA Division

Background:

The Kurai Tank is a key reservoir close to the Parangi Aru, but its own catchment area is not so much compared to the storage capacity of the tank. The function of the Kurai Tank could be enhanced by diverting water from the Parangi Aru to the Kurai Tank, which would also strengthen the function of tanks near Illupaikadavai GN Division. The Project shall be taken into consideration together with e. “Parangi Aru Development Project” discussed above.

Even though the reservoir could not be constructed due to the delay in construction of NCP Canal, an anicut shall be constructed to divert water to the Kurai Tank during the rainy season, which would augment the function of the Kurai tank and minor tanks downstream.

Project Outline:

The anicut near the border of Mannar and Mullaitive Districts close to Attimoddai village will be constructed as well as the feeder canal through Seethuvinayagarkulam to feed to the Kurai Tank.

Involvement of other donors and agencies:

There are no donors identified.

Points to be considered and assumptions:

A preliminary survey shall be carried out for the feasibility of the anicut.

Project Name	g. Post Harvest and Marketing Promotion Project (Agriculture Sector)
Scheme	General grant aid with technical cooperation and credit scheme
Project Area	Whole Mannar District
Implementing Agency	Institute of Post Harvest Technology (IPHT) of the Ministry of Agriculture in collaboration with Hector Kobbekaduwa Agrarian Research and Training Institute and the private sector
Project Cost (Rs.1000)	Rs. 11,813
Population Benefited	1,500 – 2,000 persons (persons involved in rice milling, traders and farmers)

Background:

Paddy is the main agricultural product in Mannar District as more than 60% of the population is engaged in paddy farming. Since the production of rice in Sri Lanka is almost self-sufficient, it is essential to differentiate between rice produced in Mannar District and rice produced in other areas. In this context, other than selection of variety of paddy cultivated, it is very important to introduce better mills and milling technology to produce quality rice for marketing at a higher price.

Project Outline:

The following activities will be implemented and necessary technologies are transferred through related institutions in a practical way:

(1) Evaluate processing machinery, equipment and storage facilities, and prepare technical and feasibility reports for further improvement.
(2) Assess marketing conditions, market mechanism and present trading systems in Mannar District, and prepare feasibility reports for further improvement.
(3) Based on the feasibility reports, design model rice mill, paddy/grains storage facilities, and recommend an overall management plan with efficient trading systems.
(4) Implement technical transfer for pest control and fumigation of warehouses, etc.
(5) Set up laboratory service systems for analysis of paddy/grains/rice samples for physical and chemical parameters, and food microbiological analysis.
(6) Conduct awareness seminars in post harvest and marketing promotion for the relevant government institutions, private sector, operating banks, CBOs and members of agriculture committee and district development committee.

Involvement of other donors and agencies:

WFP has been implementing post-harvest programs.

Points to be considered and assumptions:

The funding and investment aspect will be the most critical matter, especially for private industry to improve their facilities and equipment for post harvest. Therefore, arrangement of credit facilities is indispensable in collaboration with operating banks.

Project Name	h. Marketing Study on Non-Paddy Agriculture Products (Non- Paddy Agriculture Sector)
Scheme	Technical cooperation
Project Area	Mannar District and consuming areas
Implementing Agency	Department of Agriculture in collaboration with Kobbekaduwa Agrarian Research and Training Institute and private sector
Project Cost (Rs.1000)	Rs. 15,000
Population Benefited	2,500 persons (farmers and small-scale business persons)

Background:

In agriculture, inputs of the supply side have been studied for a long time. However, in order to improve the incomes of farmers as well as promote agriculture activities as an industry, support not only for production but also assistance in post-harvest activities for value addition and minimization of waste, and marketing shall be carefully taken into consideration. This project shall cover different sectors of agriculture such as paddy, fruits, livestock, etc. for promotion.

Project Outline:

A marketing study will be conducted in the areas of perennial crops, fruits and vegetables to minimize quantitative loss during harvesting, handling, transportation and storage, and also to improve the quality and safety of agricultural products. For example the following subjects are to be taken into consideration in this study:

(1) Level of post-harvest technology and quality control of grains, fruits and vegetables
(2) Possibilities of manufacturing rice-based bakery products, weaning food, rice and other grain flour, fruit- and vegetable-based products, and their marketing opportunities
(3) Feasibility of value-added agriculture and dairy products
(4) Marketing opportunities for tamarind /wood-apple based products
(5) Utilization of livestock feed using residue of agriculture as recycling-oriented farming system

Involvement of other donors and agencies:

Chambers of Commerce, Industry and Agriculture in collaboration with the Ministry of Industry and Commerce held the Agriculture, Livestock, Technology and Machinery Exhibition to promote marketing activities in Mannar District.

Points to be considered and assumptions:

The private sector needs to be strengthened to increase marketing in scale. Therefore, the results of the marketing study shall be shared with at least the district chambers of commerce to take necessary actions.

Project Name	i. Seed Paddy Production and Marketing Project (Paddy Sector)
Scheme	General grant aid with technical cooperation
Project Area	Mannar District and other Districts in the North
Implementing Agency	Department of Agriculture in collaboration with Kobbekaduwa Agrarian Research and Training Institute and the private sector
Project Cost (Rs.1000)	Rs. 40,500
Population Benefited	Approximately 200 seed production farmers directly and the majority of paddy farmers in the Northern Province indirectly

Background:

Mannar District was once an advanced area of paddy production in Sri Lanka and a large quantity of seed paddy were exported to other districts. Although a paddy seed processing facility was rehabilitated after 2010, it may be appropriate to construct a few additional facilities to produce quality seeds to improve the quality of paddy production and quality of rice.

Project Outline:

The following activities will be implemented with this project:

(1) Evaluate existing seed paddy produce associations and other private sector seed paddy production with respect to organizational capacity and processing facility, machinery, equipment and storage facilities, and prepare technical and feasibility reports for further development.
(2) Assess marketing conditions, market mechanism and present trading system with the government institutions and the private sector, and prepare feasibility reports.
(3) Assess seed facilities and management condition/capacity of production unit of the Department of Agriculture in Mannar District and neighboring areas.
(4) Based on the results of the evaluation and assessment, prepare a recommended action plan for improvement of seed paddy production facilities, equipment and marketing systems.
(5) Conduct awareness seminars for the relevant government institutions, private sector, operating banks, CBOs and members of the agriculture committee and district development committee, and obtain consensus for the recommended action plan. In addition, incorporate a new monitoring and evaluation system into the systems of the District Agriculture Committee.
(6) Implement the recommended action plan in collaboration with the seed paddy producers' association.

Involvement of other donors and agencies:

FAO implements seed paddy production in the Northern province using abandoned land under the control of PTF.

Points to be considered and assumptions:

Since there are various projects in relation to seed paddy cultivation, prudent planning based on GA/DS coordination is required.

Project Name	j. Livestock Development Project (Livestock Sector)
Scheme	General grant aid with technical cooperation and credit scheme
Project Area	Mannar District and consuming areas
Implementing Agency	Department of Animal Production and Health in collaboration with Provincial Department of Agriculture
Project Cost (Rs.1000)	Rs. 281,327
Population Benefited	1,800 persons (farmers and front-line officers)

Background:

Livestock is one of the promising agricultural activities as the government has a clear plan to promote it. In particular, dairy development is a priority as an import substitution. To develop this sector, collaboration of the public and private sectors is important. Replacement to an improved variety of cows, artificial insemination, skills to maintain cows, etc. is looked after mainly by the public sector as the services for farmers, collection, transportation and processing is looked after by the private sector or cooperatives/federation. Credit systems for farmers to invest in the sector with technical support are ultimately important. The private sector and cooperative/federation shall be strengthened to look after the introduction of new varieties, artificial insemination, vaccinations, etc. with proper guidance under the Project.

Project Outline:

The project seeks to provide support for the long-term development of dairying and other livestock farming in Mannar District by: (1) assisting milk producers' co-operative societies and large-scale livestock farmers to be integrated into the livestock industries, (2) improving efficiency in production, collecting, chilling, processing, and marketing of milk, (3) improving and strengthening the district breeding farm and training center/farm, (4) providing proper and timely technical assistance and training, (5) strengthening livestock extension activities including AI services, (6) strengthening the monitoring and evaluation of development projects in the livestock sectors, (7) providing micro-credit facilities.

Involvement of other donors and agencies:

FAO has been providing breeding materials through DAPH

Points to be considered and assumptions:

1) Feed for livestock is one of the major constraints or a key-factor for every livestock management to obtain adequate profits. Developing the feed resource base, including pasture and other natural forages as well as coarse grains, agricultural waste and by-products shall be the most important factor for development of livestock industries.
2) Many livestock farmers, especially dairy cattle farmers are facing difficulties with access to financial services including soft loans. However, past attempts to convince the authorities, including the processors, to provide credit facilities have not been successful. Therefore, prudent planning and implementation of micro-credit systems in the livestock sector is needed.

Project Name	k. Private Enterprise Promotion through District Chamber of Commerce (All Sectors)
Scheme	General grant aid and technical cooperation and credit scheme
Project Area	Major cities and towns in Mannar District
Implementing Agency	District Chamber of Commerce in collaboration with Ministry of Enterprise Development, Industrial Policy & Investment Promotion (MEDIPIP)
Project Cost (Rs.1000)	Rs. 6,818
Population Benefited	1,200 persons (business persons and farmers)

Background:

Promotion of various post-harvest and processing activities to private enterprises and entrepreneurs in all agriculture products is a positive factor for activating agriculture as an industry. It may help farmers to become growers and suppliers for products for processing. The government sector shall provide assistance in land allocation and institutional credits.

Project Outline:

The project will target the small and medium enterprise (SME) sector, especially the agriculture-related sector that could take the lead in generating jobs and economic growth. For that purpose, the potentials of the fisheries, dairy, fruit and vegetable, coconut and palmyra sectors to be developed as SME are studied. Based on the results of the study, workshops for enhancing access to the medium- to long-term financing systems for eligible regional SMEs are conducted in collaboration with Commercial Bank of Ceylon Limited, DFCC Bank, National Development Bank, Sampath Bank, and others.

Involvement of other donors and agencies:

ADB, GTZ and the Central Bank of Sri Lanka implement or have a plan to develop SME with credit facilities.

Points to be considered and assumptions:

Inadequate and unreliable credit information is the critical problem with developing SME at present, especially in remote areas.

Project Name	l. Vocational / Entrepreneurship Training with Credit Services (All Sectors)
Scheme	Technical cooperation with credit scheme
Project Area	Whole Mannar District
Implementing Agency	Ministry of Youth Affairs and Skills Development in collaboration with District Secretariat Mannar (MOYA&SD)
Project Cost (Rs.1000)	Rs. 116,171
Population Benefited	1,000 – 1,500 unemployed youths

Background:

When the credit services are provided, it is appropriate to provide technical knowhow and management skills. Therefore, vocational/entrepreneurship trainings shall be coupled with the credit services for the various agriculture and other income generation activities.

Project Outline:

A preliminary study is implemented with representatives from the Department of Technical Education and Training (DTET), Vocational Training Authority, National Apprenticeship and Industrial Training Authority, Skills Development Fund Ltd., National Youth Services Council, Sri Lanka Institute of Printers, the private sector and operating banks. Following the study, suitable vocational training items are selected, a guideline of applicants is prepared and a scholarship is established as a special program for youths in Mannar District. In addition, a proper credit provision mechanism is also facilitated with operating banks to accelerate training programs and employment opportunities. The project will provide facilities and equipment according to the needs for relevant training institutions.

Involvement of other donors and agencies:

Under the sponsorship of the ADB, the Skill Development and Vocational and Technical Education Ministry implements a program for unemployed youths to commence small-scale businesses with credit facilities through state banks, in collaboration with National Youth Service Council, National Apprentice and Industrial Training Authority, Technical Education and Training Department, Sri Lanka Vocational Training Authority and GTZ/VTW /CEFE.

Points to be considered and assumptions:

Since this project is very similar to the on-going ADB-funded project mentioned above, prudent planning with Ministry-level coordination is required.

Project Name	m. Perennial Crop Development Project (Non-Paddy Agriculture Sector)
Scheme	Grant aid and technical cooperation with credit scheme
Project Area	Cluster II in Mannar District
Implementing Agency	Department of Agriculture in collaboration with Kobbekaduwa Agrarian Research and Training Institute and the private sector
Project Cost (Rs.1000)	Rs. 132,372
Population Benefited	2,000 farmers

Background:

Perennial crop development in Mannar District is very promising as the CIC farm (a private company) will pioneer the activity and many fruit trees are available in the back yards of farmers' premises. Cultivation of intercrops, credit arrangements for the initial investment, establishment of private nurseries, technical input such as pruning of trees, marketing, and so on shall be promoted by the project until the trees grow to produce fruits constantly.

Project Outline:

The project is implemented to develop the potential for crop diversification using an integrated farming system approach for perennial crops (fruits, cashew, coconut, palmyra, wood apple, tamarind, etc.) and intercropped cultivation with short- and medium-term crops. The project also promotes the farming community in the non-paddy agriculture sector to take a more commercialized approach to farming. These approaches foster perennial crop development and commercialization with effective extension services in collaboration with the private sector, and other support services for the perennial crops. The project components are designed through participatory workshops at the divisional, district and provincial levels. In addition to this, the project will assist in rehabilitation of damaged farm trees through skill trainings for farmers to be able to recover their incomes, and those trained persons would be utilized as resource persons for extension. These major activities are expected to enhance production of perennial crops and develop the sector while contributing to the overall improvement of agricultural productivity and efficiency. The following activities are also included:

(1) Providing credit facilities in collaboration with operating banks to maintain planted perennial crops, intercropped cultivation and crop-animal interactions for mixed farming systems
(2) Providing technical advisory, marketing, and technical extension services to beneficiaries on a commercial basis in collaboration with the private sector
(3) Assisting in development of seedlings and planting materials, nursery operations, and agro-processing utilizing existing nursery farms and private institutions in the District or contracting with farmers for the production

Involvement of other donors and agencies:

ADB-funded 'Perennial Crops Development Project'

Points to be considered and assumptions:

There are various projects and strategies in perennial crop development. However, it takes some years to receive stable yields and incomes from cultivation of perennial crops. Hence, continuous proper management (investment) with proper technical/financial assistance is indispensable. Maintaining sustainability after the project is crucial to success in perennial crop cultivation programs.

Project Name	n. OFC and Vegetable Development Project (Non-Paddy Agriculture Sector)
Scheme	Technical cooperation and grant aid with credit scheme
Project Area	Cluster II in Mannar District
Implementing Agency	Department of Agriculture in collaboration with Kobbekaduwa Agrarian Research and Training Institute and the private sector
Project Cost (Rs.1000)	Rs. 53,439
Population Benefited	5,000 farmers

Background:

OFC and vegetables are the important sub-sectors for agriculture development in Mannar District. OFC cultivation in Mannar District is done in very small areas and production is a small fraction of the national production. Therefore there is high potential to promote OFC in the District. Production of vegetables also has high potential. Taking these into account, the project shall be implemented to provide technical knowhow of cultivation, arrangement of inputs, post-harvest technology, marketing, and so on.

Project Outline:

The project is implemented to develop the potential for crop diversification using an integrated farming system approach for other field crops (OFC) and vegetables in the non-paddy agriculture sector with a more commercialized approach to farming. Commercialization is promoted with effective extension services in collaboration with the private sector and other support services for the OFC. The project components are designed through participatory workshops at the divisional, district and provincial levels. In addition to this, the project facilitates organic farming systems through skill trainings to be able to withstand international criteria for the future business gain. These major activities are expected to enhance OFC and vegetable production and develop the sector while contributing to the overall improvement of agricultural productivity and efficiency. The following activities are also included:

(1) Providing credit facilities in collaboration with operating banks to stabilize farm management and crop-animal interactions for mixed farming systems
(2) Providing technical advisory, marketing, and technical extension services to beneficiaries on a commercial basis in collaboration with the private sector
(3) Assisting development of seeds, seedlings and planting materials, nursery operations, and agro-processing utilizing existing nursery farms and private institutions in the district or contracting with farmers for the production

Involvement of other donors and agencies:

Upon the government's invitation with the UN Agencies, national and international NGOs and international organizations prepared the 'Joint Plan for Assistance (JPA) for the Northern Province in 2011', which identifies the priority activities that must be undertaken during 2011.

Points to be considered and assumptions:

Since there are various projects and strategies in OFC and vegetable cultivation, prudent planning under the GA/DS coordination is required for commercialized farming.

Project Name	o. Development of Off-shore Fishery (Marine Fishery Sector)
Scheme	Technical cooperation & credit/loan scheme
Project Area	Chilavathurai (Musali Division); Pesalai and Mannar Town (Mannar Town Division) in Mannar District
Implementing Agency	MFARD (DFAR, NIFNE, NARA)
Project Cost (Rs.1000)	Rs. 280,000
Beneficiaries and impacts	- Directly benefits about 5% of fishing families (7,840); Pesalai, Mannar Town, Chilavathurai - Secures marine fish supply (contributing to self-sufficiency and food security) - Conservation of coastal fisheries resources - Increase in export (foreign exchange earnings)

Background:

The livelihoods and income generation of coastal communities in Mannar District depend heavily on limited coastal marine fishery resources. Their capture fishing activities are mainly limited to coastal waters due to low mechanization of fishing crafts and equipment; this results in high fishing pressure on the limited coastal fisheries resources. Most of the fishery resources may have reached a sustainable level of exploitation. Sector development of the offshore fisheries resources is of utmost importance through introduction of multi-day and day boats and provision of appropriate training in new fishing techniques, etc.

Project Outline:

(1) Provision of improved (modernized) fishing crafts & equipment
(2) Introduction of 50 day-boats and 15 multi-day boats
(3) Provision of training of fishing techniques oriented to offshore fishing

Involvement of donors and agencies:

IOM, CFHC, Cey-Nor, private sector

Points to be considered and assumptions:

Implementation of the project depends on the establishment of adequate fish landing harbor & jetty and on-shore infrastructure and facilities in order to accommodate day-boats and multi-day boats. Establishment of a fishing harbor in Chilavathurai is in the pipeline.

Project Name:	p. Fish Landing/Handling & Marketing Facilities (Marine Fishery Sector)
Scheme:	Technical cooperation, loan & credit scheme
Project Area: Mannar District	Selected strategically located fishing villages and landings with substantial volumes of fish catches
Implementing Agency:	MFARD (Ceylon Fisheries Corporation: CFC, CFHC, National Institute of Fisheries and Nautical Engineering: NIFNE)
Project Cost (Rs.1000):	Rs. 145,000
Beneficiaries and impacts:	- Directly benefits fishers, fish traders, vendors, and transporters. - Improves post-harvest quality and adds value to landed & marketed fish products. - Secures quality fish supply (reduction in post-harvest loss).

Background:

Fish is a very perishable commodity, susceptible to high post-harvest losses (physical and quality losses). These losses have major implications on the nutritional quality and availability of fish products to the population. Availability of appropriate and adequate infrastructure and facilities is a prerequisite to fisheries development. However, in Mannar District all the fish landing sites lack basic fish landing/marketing infrastructure & relevant facilities. Private investors are therefore hindered in investing capital and expertise in the development of Mannar fisheries. Relevant ministries and agencies must provide assistance to establish and develop the basic infrastructure/facilities at strategic fish landing centers, such as fishing jetty/harbors, cold/cool rooms, etc. to entice aggressive private sector involvement. Therefore, this project will provide basic and functional infrastructure and facilities to ensure availability of quality fish and to reduce the post-harvest losses.

Project Outline:

(1) Survey and identification of potential fishing villages/sites
(2) Provision of fish landing infrastructure and facilities (jetty, etc.)
(3) Provision of fish handling facilities (market hall, stores for ice, fish, etc.)

Involvement of donors and agencies:

UNDP, FAO, private sector

Points to be considered and assumptions:

It is expected that the establishment of landing and marketing centers at the village level will serve as satellite collection and distribution sites, which will link to the strategic fish collection & distribution center (Pesalai).

Project Name	q. Development of Coastal Marine Aquaculture (Aquaculture Sector)
Scheme	Technical cooperation and loan/credit scheme
Project Area	Coastal zones of Manthai west and Musali & Nanaddan DS/ AGA Divisions (with lagoons, mangroves, etc.)
Implementing Agency	MFARD (NAQDA & NARA)
Project Cost (Rs.1000)	Rs. 13,200
Beneficiaries and impacts	- Direct impact on fostering a profitable and sustainable aquaculture development of high-value indigenous species - Contributes to regional economy - Contributes to fish supply and foreign exchange earnings through export - Employment opportunities to fishers opting for supplementary income earning and transfer from fishing to culture-base activities

Background:

Rich coastal habitats with resources potential (mangroves, lagoons, etc.) of endemic species of high value and cultivable species (crabs, mussels, sea cucumbers, shrimp, etc.). These resources have not been adequately harnessed and directed to a commercial-base aquaculture except for crab fattening, sea cucumber ranching, and oyster culture to a limited extent. Suitable sites are available and there is potential for commercial interest in investment. Aquaculture development should be considered on a small-scale and large-scale business development depending on types of aquaculture systems. Trials and models tested and proven elsewhere in the country by relevant agencies should be introduced and nurtured to commercial ventures. Aquaculture development shall promote the diversification and broadening of the economic base of fishing communities.

Project Outline:

(1) Review Research & Development (R&D) technology (available with NARA & NAQDA) on cultivable species that can be considered for commercial aquaculture
(2) Identify suitable sites and establish pilot-scale aquaculture facilities to conduct technical and financial feasibility of selected cultivable species
(3) Identify suitable sites and community to conduct the above pilot study with local community participation
(4) Prepare aquaculture zones for integrated coastal area management

Involvement of donor and agencies:

UNDP, FAO, private sector

Points to be considered and assumptions:

The development should be eco-friendly in conformity with the FAO Code of Conduct for Responsible Aquaculture Development.

Project Name	r. Participation of Private Investors in Aquaculture (Aquaculture Sector)
Scheme	Technical cooperation and loan/credit scheme
Project Area	Whole Mannar District
Implementing Agency	NAQDA (MFARD)
Project Cost (Rs.1000)	Rs. 5,500
Beneficiaries and impacts	- Coastal communities intending to diversify economic base and income generation. - Employment opportunities to fishers opting for supplementary income earning and transfer from fishing to culture-base activities. - Contribution to fish supply and foreign exchange earnings through export.

Background:

In spite of significant coastal habitats and endemic cultivable species of high market value, the coastal aquaculture has not taken off to a commercial venture enterprise. Relevant public agencies should seek assistance and investments from the private sector to develop the aquaculture. The government should pave the way by providing and establishing basic infrastructure, zoning, R & D collaboration and other incentives to private investors. Private investors should also encourage local communities' participation.

Project Outline:

(1) Prepare aquaculture zoning plans and investment programs for private investors to lead in capital investments
(2) Disseminate information to attract entrepreneurs
(3) Conduct a feasibility study to establish a joint venture between the public and private sectors.

Involvement of donors and agencies:

Points to be considered and assumptions:

Zone maps of potential sites with adequate facilities are prepared by respective agencies and organizations. Easy credit and loans should be provided to prospective investors; appropriate training provided to coastal communities (intending to participate in aquaculture).

Project Profiles for Common Projects to Village-wise and Sector-wise Development Plans

Project Name	a. Training Program for Strengthening Implementation Capacity
Scheme	Technical cooperation
Project Area	Whole Mannar District
Implementing Agency	GA Office Mannar
Project Cost (Rs.1000)	Rs. 4,593
Population Benefited	400 persons (CBOs' members and front-line officers)

Background:

Leaders and office bearers of the various CBOs such as FO, FCS, LIBCO, and their federations shall be provided appropriate trainings to manage the institutions for implementation of various activities. Such trainings shall be conducted repeatedly so that activities of the institutions will be sustainable.

Project Outline:

The project will be divided into two phases. In the first phase of the project, training will be provided to select capable and active CBOs in each DS Division to be a model and set the pace for other CBOs in the second phase. Front-line officers of relevant organizations will also participate in the trainings as observers and compile lesson-learnt reports for the second phase as utilized for the training materials for the second phase.

In the second phase, general trainings in organizational capacity building are conducted to inactive CBOs, and front-line officers who participated in the first training introduce the capable CBOs' activities as an awareness program. Thus, all trainings will be implemented under the process-oriented approach, and participated front-line officers will monitor trained CBOs occasionally but continuously in the field after the project and provide practical advice. In addition, commencement of fund raising and small-scale credit activities will be recommended through the trainings for further development of CBOs.

Involvement of other donors and agencies:

ADB, International Fund for Agricultural Development (IFAD)

Points to be considered and assumptions:

The capacity of front-line officers participating in this project should be developed drastically, and they will then understand how to strengthen CBOs through their daily routine. Therefore, the design of the project and an expert who can conduct each program of the project are very important.

Project Name	b. Regional Training Center and Training Programs Development Project
Scheme	General Grant Aid and Technical Cooperation
Project Area	Mannar Town DS Division, Mannar District
Implementing Agency	District Secretariat in collaboration with Provincial Council (Planning)
Project Cost (Rs.1000)	Rs. 21,713
Population Benefited	1,000 people (per year)

Background:

Well-facilitated training centers are indispensable to conducting many programs for large numbers of beneficiaries along with rehabilitation and development works of agriculture, livestock, income generation activities and fisheries, etc. Without repeated inputs on basic knowledge on technology and management, O&M of facilities rehabilitated and sustainability of development activities may not be secured. From this point of view, training programs shall be updated and renewed periodically.

Project Outline:

(1) Develop a basic concept and approach of training programs for sustainable development of the District, and prepare training programs and schedule in accordance with the district/province development programs by the District Agriculture Committees in collaboration with provincial and district planning sessions through participatory workshops. Trainings will be conducted by trained persons in the relevant organizations for CBO leaders, farmers and government officers according to the needs.
(2) Set up a monitoring unit and systems in the Divisional and District Agriculture Committee.
(3) Develop existing training centers/equipment in Mannar or adjoining districts according to the developed basic concept and approach in order to conduct intensive residential trainings in the off-season of agriculture.
(4) Provide trainers' trainings to be conducted effectively.
(5) Set up training funds in collaboration with GOSL.

Involvement of other donors and agencies:

FAO, UNDP

Points to be considered and assumptions:

Many kinds of trainings are implemented in the district by several agencies. Therefore, prudent arrangement is needed.

Project Name	c. Study on the Prevention of Seawater Intrusion
Scheme	General Grant Aid
Project Area	Coastal Area, Mannar District
Executing Agency	Irrigation Department (Provincial) and Water Resources Board (WRB)
Project Cost (Rs.1000)	Rs. 100,000
Population Benefited	30,000 persons at the tail end of the irrigation system and coastal area residents

Background:

It has been reported by DS, AGA and other relevant offices that due to intrusion of seawater, potential fresh water to be utilized for irrigation near river outlets as well as groundwater have been saline. It is urged to identify the mechanism of the seawater intrusion and prepare a plan to prevent it.

Project Outline:

In this project, various surveys will be carried out on seawater intrusion to river outlets as well as groundwater during the rainy season and dry season to indentify the present conditions, make assumptions about the causes and prepare a plan to prevent them. Based on the plan, a pilot project shall be implemented to confirm the assumptions. Implementing agencies shall be the Irrigation Department (Provincial) for irrigation-related issues and the Water Resources Board for groundwater.

Involvement of other donors and agencies:

Points to be considered and assumptions:

Will require the involvement of scientists of the academic sectors.

Project Name	d. Monitoring & Evaluation Systems Improvement Project for Agriculture & Regional Development
Scheme	Technical cooperation
Project Area	Whole Mannar District
Implementing Agency	District Secretariat (planning) in collaboration with Provincial Council
Project Cost (Rs.1000)	Rs. 5,967
Population Benefited	250 people (officers of Divisional & District Secretariat and other relevant institutions)

Background:

Without follow-up activities, most of the projects will fail to achieve expected outcomes and impacts. Planning, implementation, monitoring and evaluation are a series of operations in a project cycle to bring expected outcomes. From this point of view, improvement of monitoring and evaluation systems is an essential aspect to making projects sustainable.

Project Outline:

This project will strengthen monitoring and evaluation systems of the existing Agriculture Development Committee at the Divisional Secretariat and District Secretariat levels respectively. All relevant government officers, administrative officers, CBO leaders and other concerned institutions gather in these committee meetings once a month to monitor, evaluate and provide agreed countermeasures. By setting up systematic monitoring and evaluation methods and building up committee members' capacity during the project, efficient, effective and rational regional management will be consolidated.

Involvement of other donors and agencies:

Points to be considered and assumptions:

Requires prudent planning and coordination with the Provincial Council

Project Name	e. Strengthening of Mannar DFAR Office
Scheme	Technical cooperation and MFARD budget
Project Area	Whole Mannar District
Implementing Agency	MFARD (DFAR)
Project Cost (Rs.1000)	Rs. 14,000
Beneficiaries and impacts	- All the fishers in the marine fisheries sector - Direct impacts on DFAR when fisheries inspectors are properly trained, equipped and supported to respond to fishers' needs - Directly fosters integrated alliances between DFAR & fishing communities, and intermediate service providers (NGOs, UNDP, banks, farmer organizations, etc.) for sustainable development

Background:

The Mannar DFAR office is mandated to carry out development and policy decisions of MFARD. However, it is weakened due to severe lack of technical staff and mobility to conduct extension, inspection and supervision of its coastal fisheries areas.

The approved cadre for Mannar DFAR is 22; only 11 are filled. Some 11 vacant posts are essentially technical personnel. Therefore, it is urgent to recruit and fill the vacancies; appropriate training to officers, etc. is to be imparted in tandem with the development policy by the government. Mobility is also a serious issue to be remedied through provision of appropriate transport means (vehicles).

Project Outline:

(1) Provision of office facilities and equipment (such as computers, training materials, audio-video equipment, communication, etc.) for administrative and technical services
(2) Filling the vacancies of fisheries inspectors (FIs) immediately
(3) Strengthening the mobility (4-wheel drive vehicle, motorcycles) to provide regular contacts with fishing communities
(4) Provision of technical trainings for FIs on recent developments directing to offshore fisheries

Involvement of other donors and agencies:

UNDP, FAO, NGOs

Points to be considered and assumptions:

Implementing and sustaining of proposed projects will not be smooth and efficient if the DFAR is not provided for and strengthened accordingly as delineated above.

Project Name	f. Establishing and Strengthening of NAQDA Office in Mannar
Scheme	Technical cooperation and MFARD budget
Project Area	Mannar Town DS Division, Mannar District
Implementing Agency	MFARD (NAQDA)
Project Cost (Rs.1000)	Rs. 7,410
Beneficiaries and impacts	- All the inland fishers (including fish farmers). - Directly benefits fishing communities (coastal & inland) intending to diversify income generation. - Directly impacts district NAQDA when an office is set up in Mannar by ensuring staff are properly trained, equipped and supported to respond to inland fishers' needs. - Directly benefits fishers by closely working with NGOs, provincial & district officials, banks, farmer organizations, etc.) for sustainable development.

Background:

NAQDA is in charge of inland fisheries and aquaculture activities in both the coastal and inland waters. It has no direct representation in Mannar District to conduct extension, training and supervision of inland fisheries activities. In view of vast potential of freshwater water bodies and aquaculture potential, NAQDA should establish an office in Mannar District with adequate technical staff and mobility.

Project Outline:

(1) Establishment of a district level office (located in Mannar District) with adequate technical staff to provide regular technical assistance and extension service
(2) Provision of institutional capacity training & services by NAQDA necessary for inland fisheries and aquaculture activities

Involvement of other donors and agencies:

UNDP, FAO, NGOs

Points to be considered and assumptions:

Implementing and sustaining of relevant proposed projects will not be smooth and efficient without NAQDA presence in the district.