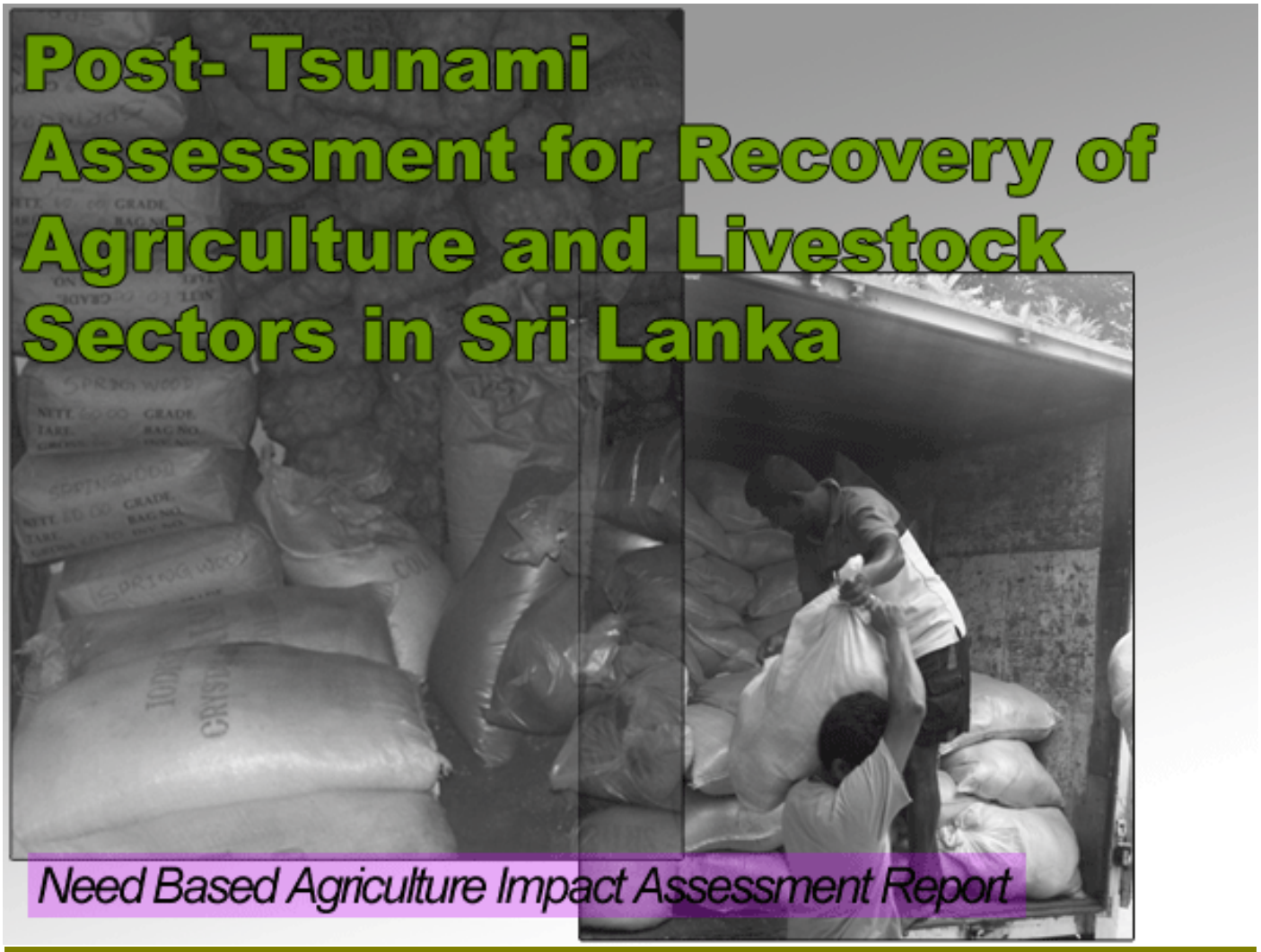
Post- Tsunami Assessment for Recovery of Agriculture and Livestock Sectors in Sri Lanka



Need Based Agriculture Impact Assessment Report

Surveyed by Jaffna, Eastern & Ruhuna Universities

28th February 2005

Green Movement of Sri Lanka

The Green Movement of Sri Lanka is a consortium of 131 local NGOs and CBOs in 22 districts in Sri Lanka and collaborates with 78 international organizations, universities, and government ministries including the Norwegian Development Fund (NDF) and UN agencies. Our work focuses on environmental conservation, consumer rights and sustainable development in Sri Lanka. Established in 1998, the Green Movement of Sri Lanka is motivated to achieve natural resource based sustainable development through empowerment of the poorest and conservation of the environment through environment-friendly lifestyles. While focusing on current environmental problems, we provide solutions through collective effort. We devise effective measures for the conservation of flora and fauna while protecting the country's national wealth and natural resources from being exploited by multinationals. We endeavour to promote the health of the people and provide support for the development of conventional and sustainable agriculture, while ensuring bio-diversity conservation. Activities launched by GMSL with people's participation envisage the emergence of vibrant, environment-friendly communities throughout the island.

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PREFACE

Green Movement of Sri Lanka (GMSL) on hearing of Tsunami and the destruction followed acted swiftly to assess the situation. This was done by sending our teams, on 26th December itself to ten districts around coastal belt of Sri Lanka to gather information, and soon thereafter GMSL started giving support to the neediest victims of the disaster.

As a result of this destruction, which struck nearly 1200 km of the costal belt of Sri Lanka, people living close to beach have lost lives, livelihoods and property amounting to several billions of rupees. Since the initial assessment covered only the basic data, we were short of the information on the damage to the agriculture and livestock within the costal belt - a pillar of Sri Lankan economy. The main livelihood of people living in the costal areas of the Southern, Eastern, Northern provinces is in primary production, namely agriculture and fisheries. Livestock sector is another sub sector, which is well established in Tsunami struck area, which consisted of domesticated animals such as poultry, cattle, and goats.

In the absence of the vital information in the agriculture and livestock sector, the Green Movement of Sri Lanka decided to initiate a survey to assess the extent of damage before starting any programme of rehabilitation and restoration of Agriculture and Livestock sectors. As a result a concept paper was prepared and forwarded to our main partner: Norwegian Development Fund (NDF). They promptly supported our idea to conduct a survey through the academics and students of Sri Lankan Universities situated in the disaster affected areas.

We are very happy to provide you with the information gathered in the survey conducted by the three universities, namely:

University of Jaffna: - Mulaitivu, Jaffna and Killinochchi Districts
University of Ruhuna: - Hambantota, Matara, Galle and Kalutar
Eastern University: - Ampara, Batticaloa and Trincomalee,

While thanking the three universities and NDF for the assistance provided in conducting the survey, we hope that this information will be used by the relevant authorities in the process of rehabilitation of Agriculture and Livestock sectors damaged by Tsunami.

It is time to look ahead. Recovery and rehabilitation from tsunami disaster is well under way. For the Green Movement of Sri Lanka, a consortium of local NGOs working on rural development and environmental conservation, the main concern now is that the help and assistance reaches the ones that needs it the most, and also that the assistance promotes truly sustainable development.

Suranjan Kodithuwakku,
Chief Organizer,
Green Movement of Sri Lanka

CONTENT

FOREWORD

On the 26th December, the Asian Tsunami hit the coastal districts of Sri Lanka, causing massive damage and destruction to the property and loss of lives. The surging seawater and flooding of farmland have caused extensive destruction to agriculture and livestock sectors in coastal area and its surroundings. It was therefore; deemed necessary to review the damage to agriculture and livestock sectors and assess the needs of farmers by conducting a survey.

The survey had two objectives, one was to assess the damage caused by Tsunami on agriculture and livestock and, the second was to assess the needs of the affected individual farm families and farmer communities. This survey covered ten coastal districts of Sri Lanka, comprising 03 in the Northern region (Jaffna, Killinochchi and Mulaithivu) 03 in Eastern region (Trincomalee, Ampara and Baticaloa) and 03 in the Southern region (Hambantota, Matara and Galle) and 01 in the South Western region (Kalutara).

To collect data, a general questionnaire was prepared and later modified to suit the region. These data were tabulated, analyzed and interpreted to estimate the cost of damage and financial requirements of the farmers for the recovery programme.

The report provides district level data, narrowing down to divisional secretariat (DS) and Grama Niladari (GN) division levels. All three administration level data are now available for those who are keen to assist the affected families and improve their livelihoods. I sincerely hope these results would be helpful to the government policy makers and planners, INGOs' and NGOs' and donors in planning and designing an effective programme to assist Tsunami affected farmers and small-scale enterprises.

The three Universities Viz. University of Jaffna, Eastern University and University of Ruhuna and Faculties of Agriculture have jointly conducted the survey with the help of academic staff, past and final year students and coordinated with the government administration and line agencies engaged in agriculture and livestock.

For the first time in the recent history of Sri Lanka, all three Universities have come forward whole-heartedly in a national issue. They have conducted the survey and prepared comprehensive reports to assess the needs of Tsunami affected families covering all three regions. Also the Green Movement of Sri Lanka agreed to support this study and the Norway Development Fund sponsored the study through Green Movement.

I wish to express my deep appreciation to the NDF who sponsored this study, the staff of GM for coordinating the activities and the staff and students of three Universities for their valuable contribution.

Dr. Lionel Weerakoon
Chief Advisor
Agriculture and Livestock Recovery Programme
Green Movement of Sri Lanka
25 February, 2005

Introduction

Sri Lanka has a coastline of 1700 kilometers. It is significant to note that coastal zone accounts for as much as one-third of the total population and almost one-fourth of the land area of the country.

On the 26th December 2004, Sri Lanka experienced perhaps the worst natural disaster recorded in the history, as a result of deadly Tsunami waves triggered by undersea quake that occurred in the Indian Ocean near Sumatra Island. The Tsunami tidal waves that struck the coastal belt along the Northern, Eastern, Southern and Southwestern parts of Sri Lanka stretched over 1200km or two thirds of the country's coastal line, left around 40,000 people dead, 5000 missing, 15000 injured and between 300,000-500,000 displaced, according to official estimates as at January 2005. In addition to the loss of life, this catastrophe devastated the livelihoods of people and caused colossal damage to property, including public and private establishments, houses, roads, bridges and railways. The people most affected were the poor inhabited along the coastal belt whose livelihoods mostly fisheries, tourism and agriculture, have been devastated which may have had a negative impact on the poverty reduction programmes in the country. The total cost of implementing the rebuilding and reconstruction programme in affected areas is estimated to be approximately US $ 1.7 billion for providing infrastructure facilities and US $ 300million for housing.

It was abundantly clear that the deadly Tsunami waves also triggered flash floods resulting a surge of sea water spreading swiftly into inland areas, sometimes up to 1 km or more, inundating large extents of agricultural lands, damaging irrigation canals and polluting water bodies. Therefore, another important aspect of the Tsunami impact which needs to be addressed is the extent of damage that may have occurred to lowland and upland agriculture, loss of livestock and loss of livelihoods of the people engaged in agriculture/livestock and agro-based industries, either directly or indirectly. To date no attempt has been made to estimate the magnitude of damage to these vital sectors of the economy in Sri Lanka. In this context it is utmost important to estimate such damage and assess the needs of people engaged in these sectors. At the request of the Green Movement of Sri Lanka, the Faculties of Agriculture at the University of Jaffna, Eastern University and University of Ruhuna conducted a rapid field survey to gather detailed information of the magnitude of damage to agriculture/ livestock sectors and agro-based industries and, assess the needs of the affected people in the coastal zone districts.

Scope and objectives

The scope of the study is to estimate the scale of damage and assess the needs of the people engaged in agriculture and livestock sectors and agro-industries by conducting a survey in the Northern, Eastern, Southern and South Western coastal districts.

The information collected from the field survey formed the basis of reviewing the impact of the damage and assessing actual needs of the affected people. This would facilitate the revival of the livelihoods of affected farming communities and small entrepreneurs and quick recovery of agriculture/livestock sectors, and agro-based industries, particularly those manufacturing products and by –products for exports. Recovery from the damage and restoring the livelihoods of traumatized people whose lives are in disarray is a more complex and challenging national issue than providing basic necessities such as food , clothing , shelter and infrastructure facilities.

Methodology

To collect reliable data on the magnitude of the damage and assess the needs of affected people at the grass root level, a field survey was conducted at each Grama Niladhari (GN) division in the coastal districts of the all four regions viz Northern, Eastern, Southern and Southwestern regions. Background information of the district and particulars of people engaged in agriculture and agro-industries in each affected GN division were obtained with the support of the District Secretary and Divisional Secretaries of each District. The individual farmers and entrepreneurs in each GN division were visited in consultation with the Provincial Directors (Agriculture/livestock), provincial and extension staff particularly AOs, SMOs, AMOs, AIs and Agriculture Research and Production Assistants.

A structured questionnaire was employed as the survey instrument. Staff members of the Universities and some of the past and final year students were deployed as enumerators. In addition, the Eastern University used the staff of the Department of Agriculture in the survey team as they are familiar with the geographical location and the farmers. Each team was guided and closely supervised by district coordinator

Working groups

University of Jaffna

Prof. S. Rajadurai	Team leader Dean of the Faculty of Agriculture
Dr. (Mrs.) S. Sivachandran	Head and Senior Lecturer, Dept of Agronomy
Mr. S. Uthayathas	Head and Senior Lecturer, Dept of Animal Science
Mr. S. Sooriyakumar	Head and Senior Lecturer, Dept of Agric. Economics

Eastern University
Advisors

Prof. S. Raveendranath	Vice Chancellor, Eastern University
Prof. V. Arulnandy	Professor of Agronomy

District co-ordinators

Mr. A. S. M. Harees (Ampara)	ADA, Trincomalee/Ampara District
Mr. K. Naveenthran (Batticaloa)	ADA, Batticaloa
Mr. M. Karthikeyan (Trincomalee)	Former ADA, Trincomalee

University of Ruhuna
Advisor

Prof. Ranjith Senarathne	Vice Chancellor

Consultants

Associate Prof. S. Subasinghe	Team leader, Head of Dept of Crop Science
Prof. M.de S. Liyanage	Dept of Crop Science and former Director of Coconut Research Institute of Sri Lanka

District Co-ordinators

Mr. A. A. Kumara (Hambantota)	Asst. Lecturer, Dept of Crop Science
Mr. I. R. Palihakkara (Matara)	Lecturer, Dept of Crop Science
Dr. L. Nugaliyadda (Galle)	Senior Lecturer, Dept Agricultural Biology
Dr. N. Iddagoda (Kalutara)	Senior Lecturer, Dept of Crop Science

The individual level needs were identified by visiting farmers and entrepreneurs and conducting personal interviews. The community level needs were appraised by conducting focus group discussions with the affected community.

The field survey lasted for 8-10 days. Thereafter, data collected from the survey were processed and tabulated on a spreadsheet. From the survey data, the scale of damage in terms of approximate loss of assets and output was estimated and needs of affected people were assessed both at individual level and community level.

Limitations

The survey teams wish to list out the limitation experienced in carrying out the rapid survey.

Since vast area has to be covered and a quite a number of people were to be interviewed to collect data the time allocated was found to be inadequate to complete the entire process.

The majority of the Tsunami affected farmers were displaced and migrated to various places, which mean not found in the original location. Therefore it took quit sometime to access to them. This causes loss of time.

The Tsunami affected farmers and their families were under mental trauma (at different levels) Hence it was necessary to carry out some level of counselling to make them comfortable to o speak clearly and provide precise answers.

Northern Region

POST TSUNAMI NEED ASSESSMENT RECOVERY OF AGRICULTURE AND LIVESTOCK SECTORS IN SRI LANKA

1. JAFFNA DISTRICT

1.1 District Profile

1.1.1 Location and Topography

The Jaffna peninsula is situated in the extreme north of Sri Lanka. It is a part of the peninsula consisting of fourteen D.S Administrative Divisions. The total land area including inland water is 1,030 sq. kms. The terrain of the region is almost flat and of low elevation except in the central part of the western sector in the area around Tellippalai, where elevation rises up to 10.5 m above the main sea level. From here it slopes down gently towards south and south east, but to the north elevation tends to drop abruptly towards the sea.

1.1.2 Climate and Soil

The climate of Jaffna region is considered as Tropical monsoonal with seasonal rhythm of rainfall. The temperature ranges from 26o C to 33o C Annual precipitation ranges from 696 mm to 1125 mm. It is evenly spread over the area. The north east monsoon (October to January) rain accounts for more than 90 % of the annual rainfall. The Jaffna peninsula is divided into two agro-ecological regions of DL3 and DL4.

The soil found in Jaffna belongs to the following three major soil groups,

i) Calcic Red-yellow latosols
ii) Solodized solonetz and solon chaks
iii) Regosols

1.1.3 Water Resource

Water is extracted from the open dug wells for domestic and agricultural purpose. Approximately 28,000 wells are being constructed for both domestic and agricultural purpose. Water available in these wells and its quality varies from place to place. In majority of the deep wells in Valikamam division water is available for irrigation through out the year. These wells are situated in the calcic red-yellow latosols and their depth varies from 20 25 feet. The wells available in other areas are shallow (10 to 15 feet).

1.1.4 Socio Economic Condition

The total population of the district is around 600,000. Agriculture and fisheries had been the principal economic activities of the district. Over 60 % of the work force in the district depends on agriculture for their livelihood. About 86,000 families are engaged in agriculture while 15,000 families engaged in fishing.

Agriculture in the district contributed substantially to the GNP of the country. It is found that the land cultivated by 48 % of the farmers are not belongs to them. The average land holding capacity is around 0.5 to 0.75 acres. The unemployment in the rural areas is 27.9 % while in the urban area 25.8 %.

1.2 Crop Production

The agriculture sector including crop and livestock has contributed around 65 % of the total gross domestic product of the district. In terms of production, major cash crops like chilli, onion, tobacco, potato and banana are produced in large extent to meet the substantial portion of the national requirement. Further fruit crops like mango, Grapes and jack are also produced in large quantities. The extent cultivated under different crops during 1985, 1997 and 2004 is given in table II.

1.2.1 Paddy

Total paddy land available for the cultivation is 12,000 ha. Of which nearly 8000 ha (64.6 %) is being cultivated. About 2000 ha of paddy land is being identified as marginal due to the salinity problem.

Paddy is cultivated as mono crop in 85 % of the paddy land and in the balance 15 % paddy is followed by vegetable and field crops with the help of left irrigation. The average yield is about 50 bushels per acre (2.5 mt/ha). However, 30 40 % of farmers who cultivate improved varieties are able to obtain yield of 70 bushels per acre (3.5 mt/ha).

1.2.2 Vegetables

Vegetables are being cultivated through out the year with the help of left irrigation from the dug wells. Low country vegetables such as brinjal, tomato, long bean, okra, snake gourd, bitter gourd and other leafy vegetables are being cultivated and available through out the year. Exotic vegetables like cabbage, leeks, beet, beans, and carrots are also cultivated in large extent.

1.2.3 Field crops

Among the other field crops, onion, potato, tobacco, chilli and banana are cultivated as cash crops because farmers obtain considerable income from these crops. Total extent of high land available for cultivation is 7,851 ha. Of which 1.642 ha (21 %) is unable to cultivate due to security reas on. At present field crops and vegetables are cultivated in 4200 ha with the help of left irrigation from the dug wells.

1.2.4 Perennial Crops

Perennial crops include the orchard crops like mango, jack, grapes and citrus and other crops like palmyrah and coconut. Coconut is grown in home stead in the extent of 1470 ha. Other perennial crops are grown in 1500 ha. Further nearly 3.5 million palmarah palms are available in Jaffna. Farmers generate considerable income from fruit crops, like mango, jack, grapes etc c ultivated in 1850 ha. Grapes were cultivated in 380 ha during 1985 is reduced to 55 ha in 2004.

1.3 Live Stock

The live stock sector is an important component of the farming system. Up to 1950, only local cattle and goats were reared for milk and meat, with the establishment of artificial insemination in 1950 exotic cross breeds such as Jersey and Indian breeds of cattle were introduced and high milk yield was obtained. Further Jamunapari and Sannan breeds of goats were also introduced for meat and milk. With this introduction of new breeds many farmers started rearing cross breeds of cattle, goat and poultry. From 1950 to 1984 live stock enterprise developed very fast and it was a single or supplementary source of income for nearly 30 % of the district population.

Backyard poultry and rearing milking cows and goat for milk and meat generate additional income for the farmers. Live stock population reduced to a considerable extent during the last two decades due to the civil war.

1.4 Agro Allied Industries

Very few agro allied industries are in operation which includes rice mills, grinding mills and few processing industries. Development of agro industries has two main aims. One is to process farm produce for adding value to primary product. The other is to manufacture, repair and service the machineries, tools and implements used by farmers. The development of agro-allied industries is justified by the fact that the Jaffna district is producing many crops in surplus which would available for processing.

1.5 TSUNAMI DISASTER

Northern and Eastern coast of the peninsula are badly affected by the tsunami, this includes the villages in the Northern cost from Thondaimanaru to Thumpalai and Eastern coast from Vallipuram to Kuddarappu.

The damages caused to the eastern coast ar e higher than that of northern coast. Fisheries sectors of this district were badly affected. Estimation of damages caused to different sectors is not yet completed.

Available data revealed that a total of 1,256 people lost their lives while 1,647 were in jured and 1,204 are missing. 37,255 people belonging to 9,885 families were displaced, of which 15,034 people belonging to 4038 families are living in the welfare camps and the balance 22,221 people belonging to 5,847 families are living with their friends and relatives.

People displaced from the coastal villages of Kankesanthurai, Myliddy and Palali due to the formation heavy security zone were already settled in the above villages and are involving in fishing. Fisheries and agriculture sector in the above villages are affected badly.

1.5.1 Crop damage

Two D.S divisions of Vadamarachchi North and Vadamarachchi East are affected by the tsunami in Jaffna distric t. Crop damage occurred mainly in Vadamarachchi North D.S division, which is in the northern coast of peninsula. Cropland from Valveddithurai to Suppermadam is damaged due to the spread of salt water. The major cash crops cultivated in these areas are onion and tobacco. These crops are cultivated only in one season from December to March with the help of lift irrigation from the dug wells. Water available in these wells is not adequate to cultivate crops after March. However farmers cultivate onion in these areas obtain very high profit since this produce goes as seed onion to be cultivated in the rest of the peninsula during the major season of June, July. The yield of onion is high (8,000-9,000kg per acre) compared to the yield of other divisions. Most of the farmers get a gross income of Rs.320, 000 from an acre of which 50% (160,000) will be the profit. These onion lands were flooded with salt water and have become unsuitable for cultivation. Farmers who prepared their lands for onion cultivation were unable to cultivate. Further considerable extents of land planted with onion were also damaged. Quick reclamation of these fields is necessary.

The other important crop affected by tsunami is tobacco. Farmers raise commercial tobacco nursery to supply tobac co seedlings to the rest of the regions in Jaffna,and Vanni. Seedlings are raised in beds of 18 m2 and maintained for 6 months from October to March. Farmers who maintain 100 m2 nurseries will get a profit of Rs. 1,00,000 in six months. Most of these tobacco nurseries established in the village of Polikandy were damaged due to the flooding of salt water. Details of loss of income from crops and value of the crop damage are given in table 1.1 .

117 acres of onion field is damaged and the estimated loss of income is Rs. 1.17 million. Total of 3805 m2 tobacco nurseries were damaged in Polikandy East G.S divisions and the value of the damage is Rs.3.17 million. Total damage caused for crops is estimated as Rs 14.89 million.

1.5.2. Loss of L ivestock

Jaffna dist rict is popular for intensive livestock production. Farmers in these area rear cattle chiefly for milk and only surplus or culled animals are used for beef. High yielding European cross bred cattle are reared successfully in this area with improved management practices. Considerable number of local cattle is also managed on common grazing land. Total of 149 neat cattle were lost in this district. Out of this, 20 cows in Viyaparimoolai and Pointpedro Girama Niladari divisions are of high value with average daily milk yield of 12 liters. These high yielding animals are separately valued costing average Rs. 20,000. Value of this component is 0.4 million. A flat rate of Rs. 8,000 per cattle is taken for valuing local cattle and cost of this stock is Rs. 1.032 million. Value of cattle loss in the district is Rs. 14.32 million.

Goats are reared in Jaffna for the purpose of meat, milk and manure. Similar to cattle, Local breeds and improved breeds such as Jamunapari, Sanan, etc. comprise the goat population in this district. Total of 574 goats were lost due to the Tsunami attack. Based on average price in the market, a flat rate of Rs. 4000 per goat is taken for valuation. Value of goat loss is Rs. 2.296 million.

Poultry sector in the Tsunami affected area of Jaffna district had both broiler and layer birds at small to medium scale operation. Total of 7,570 domestic fowl of both broiler and layer was lost. Based on the flat rate of Rs. 300 per bird, value of poultry loss is Rs. 2.271 million. A rabbit farmer lost his 19 rabbits of total value Rs. 5,700.

Total damage caused in the district to the livestock sector is Rs 6.01 million. Details of the damage to the livestock population and the value of damage in 19 Grama Niladari divisions belong to two divisional secre tariats namely Vadamarachi North and Vadamarachi East of Jaffna district are presented in

1.5.3 Cropland Damage Due to Salt Water Intrusion

Croplands closer to the North Sea coast from Valluvettithurai to Suppermadam were severely affected due to the flooding of salt water. About 200 meter width strip of land closer to the sea coast where farmers grow onion is badly affected and need immediate reclamation. Many farmers who prepared their land for planting onion are unable to plant due to high salinity. Soil and water tested from these areas show very high salinity level not suitable for onion crop. Many farmers lost their income without cultivating the land. Further the reclamation process also will cost large amount of money. Immediate reclamation is not possible since adequate amount of water is not available in the shallow wells to pump and wash out the excess salt. However the following reclamation processes are necessary since the land value is very high in this area.

Raise the bund to harvest maximum rainwater to wash out the excess salt. Construct drainage channel on the northern side of the land parallel to sea coast and construct a pit to collect the drained water and pump out the water collected in this pit. Add more organic manure at the rate of 25-30 mt/acre. Cattle manure application is the best. Grow green manure crop like Sun hemp during maha season and incorporate them into the soil. If the salinity is very high apply gypsum salt. The process of reclamation will coast considerable amount of money to the farmers. The details of the extent of crop land damage in each G.S division and the estimated cost for reclamation is given in table 1.3.

It was found that total 135 acres cropland is being damaged and the cost of reclamation is Rs 13.48 million.

1.5.4 Damage to Agro wells

Damage caused to the structure of the wells is very much less. But the water in the well is polluted due to the inflow of salt water; hence farmers are unable to utilize these wells for irrigation. Water sample collecte d from these wells were tested and found to contain high- level of salinity and chloride.

The salt water has to be pumped out continuously and the salt content of the water has to be monitored. Farmers need water pumps and accessories for the pumping out of this salt water. The number of wells affected in each G.S divisions and estimated cost for the reclamation is given in table 1.4. Total of 114 agro wells are polluted due to the salt water and the estimated cost for reclamation is Rs 2.85 million.

1.5.5 Total Estimated Loss of the District

Total estimated loss of the district for the following four components crops, livestock, crop land damage and damage of agro wells are computed from the detail list of loss incurred to each component. The estimated loss for these four components is given in table 1.5. Total estimated loss for Jaffna district is estimated to be Rs 37.29 million.

Table 1.1: Crop damage and value – Jaffna District

D.S. division	G.S division	Crop damage and value						Total (Rs)
		Onion		Tobacco plant		Commercial Tobacco Nursery		
		Ext. (ac)	Value (Rs)	Ext. (ac)	Value (Rs)	Ext. (m^2)	Value (Rs)	
Vadamarachchi North	Viyaparimoolai	15.28	1528125	0.00	0	0.00	0	1528125
	Point Pedro	0.25	25000	0.00	0	0.00	0	25000
	Point Pedro East	1.25	125000	0.00	0	0.00	0	125000
	Alvai North Center	9.09	909375	0.06	1250	0.00	0	910625
	Puloly West	45.03	4503125	0.88	17500	0.00	0	4520625
	Puloly Center	6.25	625000	0.38	7500	0.00	0	632500
	Alvai North West	18.03	1803125	0.00	0	0.00	0	1803125
	Alvai West	14.97	1496875	0.00	0	0.00	0	1496875
	Polikandy East	3.50	350000	0.00	0	3805.20	3171000	3521000
	Alvai North	3.16	315625	0.00	0	0.00	0	315625
Vadamarachchi East	Maruthankerney	0.125	12500	0.00	0	0.00	0	12500
Total		**116.94**	**11693750**	**1.31**	**26250**	**3805.20**	**3171000**	**14891000**

Table 1.2 Loss of Livestock – Jaffna District

D.S. division	G.S division	Loss of Livestock and value								Total (Rs)
		Cattle		Goat		Poultry		Rabbit		
		No.	Value (Rs)	No.	Value (Rs)	No.	Value (Rs)	No.	Value (Rs)	
Vadamarachchi North	Viyaparimoolai	13	260000	35	140000	921	276300	0	0	676300
	Point Pedro	7	140000	189	756000	4416	1324800	19	5700	2226500
	Point Pedro East	0	0	1	4000	200	60000	0	0	64000
	Alvai North Center	7	56000	16	64000	27	8100	0	0	128100
	Puloly West	55	440000	79	316000	834	250200	0	0	1006200
	Puloly Center	6	48000	8	32000	120	36000	0	0	116000
	Alvai North West	5	40000	13	52000	60	18000	0	0	110000
	Alvai West	4	32000	18	72000	18	5400	0	0	109400
	Polikandy East	7	56000	11	44000	0	0	0	0	100000
	Alvai North	1	8000	4	16000	5	1500	0	0	25500
Vadamarachchi East	Maruthankerni	6	48000	43	172000	105	31500	0	0	251500
	Chundikulam	19	152000	77	308000	156	46800	0	0	506800
	Ampan	4	32000	26	104000	48	14400	0	0	150400
	Chempianpattu North	5	40000	2	8000	378	113400	0	0	161400
	Vettilaikaerni	2	16000	21	84000	85	25500	0	0	125500
	Pokkaruppu	0	0	13	52000	84	25200	0	0	77200
	Mulliyan	4	32000	11	44000	34	10200	0	0	86200
	Uduthurai	2	16000	0	0	22	6600	0	0	22600
	Aliyavalai	2	16000	7	28000	57	17100	0	0	61100
Total		**149**	**1432000**	**574**	**2296000**	**7570**	**2271000**	**19**	**5700**	**6004700**

Table 1.3: Cropland damage due to salt water intrusion – Jaffna District

D.S. division	G.S division	Ext. (ac)	Cost for reclamation (Rs)
Vadamarachchi North	Viyaparimoolai	19.00	1900000
	Point Pedro	4.08	408000
	Point Pedro East	1.31	131000
	Alvai North Center	11.03	1103000
	Puloly West	45.47	4547000
	Puloly Center	7.06	706000
	Alvai North West	17.43	1743000
	Alvai West	17.97	1797000
	Polikandy East	8.33	833000
	Alvai North	3.16	316000
Total		**134.83**	**13483000**

Table 1.4: Damage of Agro wells – Jaffna District

D.S. division	G.S division	No	Cost for renovation (Rs)
Vadamarachchi North	Viyaparimoolai	0	0
	Point Pedro	7	175000
	Point PedroEast	0	0
	Alvai North Center	25	625000
	Puloly West	22	550000
	Puloly Center	6	150000
	Alvai North West	4	100000
	Alvai West	27	675000
	Polikandy East	19	475000
	Alvai North	4	100000
Total		**114**	**2850000**

Table 1.5: Total estimated loss – Jaffna District

(Rs. Mill)

D.S. Division	G.S Division	Crop	Livestock	Crop land damage	Agro wells	Total
Vadamarachchi North	Viyaparimoolai	1.53	0.68	1.90	0.00	4.11
	Point Pedro	0.03	2.23	0.41	0.18	2.85
	Point Pedro East	0.13	0.06	0.13	0.00	0.32
	Alvai North Center	0.91	0.13	1.10	0.63	2.77
	Puloly West	4.52	1.01	4.55	0.55	10.63
	Puloly Center	0.63	0.12	0.71	0.15	1.61
	Alvai North West	1.80	0.11	1.74	0.10	3.75
	Alvai West	1.50	0.11	1.80	0.68	4.09
	Polikandy East	3.52	0.10	0.83	0.48	4.93
	Alvai North	0.32	0.03	0.32	0.10	0.77
Vadamarachchi East	Maruthankerni	0.01	0.25	0.00	0.00	0.26
	Chundikulam	0.00	0.51	0.00	0.00	0.51
	Ampan	0.00	0.15	0.00	0.00	0.15
	Chempianpattu North	0.00	0.16	0.00	0.00	0.16
	Vettilaikaerni	0.00	0.13	0.00	0.00	0.13
	Pokkaruppu	0.00	0.08	0.00	0.00	0.08
	Mulliyan	0.00	0.09	0.00	0.00	0.09
	Uduthurai	0.00	0.02	0.00	0.00	0.02
	Aliyavalai	0.00	0.06	0.00	0.00	0.06
Total		**14.9**	**6.03**	**13.49**	**2.87**	**37.29**

1.6 NEED ASSESSMENT OF FARMERS

Need assessment of the farmers is being identified based on their immediate requirement to recommence their agricultural activities. This include the inputs required for crops such as seeds, fertilizer, agrochemicals and planting materials along with the livestock required to replace the loss and also the capital required for the reclamation of the crop land and agro well affected by salt water.

1.6.1 Need A ssessment for Crops

Need assessment is calculated for the onion crop damaged and the income lost by the farmers for not cultivating the fields due to the salt water flooding in the onion fields. Input needs for onion crop is calculated in terms of the requirement of seed onion, fertilizer and agro chemical. The estimated value for the supply of these inputs per acre is Rs 55,575. Total estimated value of the need assessment of crop is Rs 6. 50 million. The details of need assessment for crops are given in tables 1.6 (A) and 1.6(B).

1.6.2 Need Assessment for the Livestock Sector

Cons iderable number of livestock keepers in Jaffna district, unlike other districts, undertakes it as a full time venture. Families in this area are left with no income generating avenues after the Tsunami disaster. It is proposed to implement a project to distribute live animals and necessary inputs among beneficiaries to bring each unit a sustainable one.

Poultry farming

Poultry has two components, one is the backyard poultry with laying hens and the other is a small scale broiler unit. All the beneficiar ies have lost poultry in Tsunami attack and therefore possess necessary experience in keeping poultry. Each beneficiary of backyard poultry will be issued with 15, month old pullets and required feed for these birds to bring them up to the point of lay. Fina ncial support has to be given to purchase the materials for constructing poultry house. Cost for backyard poultry per beneficiary is Rs 11,100. Beneficiary in broiler farm has to be given 60 day old broiler chicks with feed and assistance to construct poultry house. Cost for broiler unit per beneficiary is Rs 22,500. The assistance required for poultry sector in this district is estimated as Rs 4.083 million.

Cattle Farming

Each beneficiary has to be issued with two cross bred heifers or milking cows. Need for a stud center or supply of stud bulls is not necessary as farmers in this area depend mainly on artificial insemination services. Cost for two dairy cows per beneficiary is Rs. 40,000. The assistance required to rehabilitate Tsunami damage of dairy sector in this district is estimated as Rs 2.88 million.

Goat Farming

Each of the beneficiary has to be provided with 5 cross bred she goats. Cost for supplying five goats to a goat unit is Rs 20,000. Though farmers are accustomed to artificial insemination services, a stud center is proposed to cover the remote villages. The fund required to goat sector in this district is estimated as Rs. 2.24 million.

Assistance required to rehabilitate livestock sectors is Rs. 9.203 million. The details of the investment required to replace the livestock are given in the table **1.7.**

1.6.3 Total Estimated Need Assessment for the District

Total need assessment of the Jaffna district is calculated based on the input requirements for crops, replacement of livestock and the cost required for the reclamation of the salt water affected land and agro wells. The total need assessment for the district for crop, livestock, land reclamation and agro well are estimated as 32.038 million. The summary of the need assessment is given in **Table 1.8.**

Table 1.6 (A): Input requirements to the need assessment of Onion crops – Jaffna District

Item	Quantity and cost for the supply of inputs for Crop (Rs)		
	Onion		Total
	Qty	Value	
Extent	117 ac		
Seed/Seedling	117000 kg	5850000	5850000
Fertilizer			
TSP	4680 kg	187200	187200
MOP	2340 kg	93600	93600
Ammonium sulphate	7020 kg	210600	210600
Herbicide			
Goal	11.7 lit	43875	43875
Insecticide	117 lit	117000	117000
Total		**6502275**	**6502275**

Table 1.6 (B): Need assessment of the farmers to the crop production – Jaffna District

D.S Division	G.S Division	Cost for the supply of inputs (Rs in Million)	
		Onion	
		Ext. (ac)	Total value of inputs
Vadamarachchi North	Viyaparimoolai	15.28	0.85
	Point Pedro	0.25	0.01
	Point Pedro East	1.25	0.07
	Alvai North Center	9.09	0.51
	Puloly West	45.03	2.50
	Puloly Center	6.25	0.35
	Alvai North West	18.03	1.00
	Alvai West	14.97	0.83
	Polikandy East	3.50	0.19
	Alvai North	3.16	0.18
Total		**116.81**	**6.49**

Table 1.7: Need assessment of livestock – Jaffna District

DS division	G.S. Division	Cattle		Goat		Poultry (Broiler)		(Poultry) Layers		Total (Rs)
		No.	Value	No.	Value	No.	Value	No.	Value	
Vadamarachi North	Viyaparimooli	12	240000	35	140000	360	135000	555	410700	925700
	Point Pedro	6	120000	190	760000	2640	990000	1605	1187700	3057700
	Point Pedro East	2	40000	0	0	0	0	195	144300	184300
	Alvai North Center	6	120000	15	60000	0	0	30	22200	202200
	Puloly West	54	1080000	80	320000	300	112500	525	388500	1901000
	Puloly Centre	6	120000	5	20000	300	112500	0	0	252500
	Alvai North West	4	80000	15	60000	0	0	60	44400	184400
	Alvai West	4	80000	15	60000	0	0	15	11100	151100
	Polikandy East	6	120000	10	40000	0	0	0	0	160000
	Alvai North	2	40000	5	20000	0	0	0	0	60000
Vadamarachi East	Maruthankerni	6	120000	40	160000	60	22500	45	33300	335800
	Chundikulam	18	360000	75	300000	120	45000	30	22200	727200
	Ampan	4	80000	25	100000	0	0	45	33300	213300
	Chempianpattu North	4	80000	0	0	240	90000	150	111000	281000
	Vettilaikerni	2	40000	20	80000	60	22500	30	22200	164700
	Pokkaruppu	0	0	15	60000	60	22500	30	22200	104700
	Mulliyan	4	80000	10	40000	0	0	30	22200	142200
	Uduthurai	2	40000	0	0	0	0	15	11100	51100
	Aliyavalai	2	40000	5	20000	0	0	60	44400	104400
Tota1		**144**	**2880000**	**560**	**2240000**	**4140**	**1552500**	**3420**	**2530800**	**9203300**

Table 1.8: Value of Need Assessment – Jaffna District

(Rs. Mill.)

D.S.division	G.S.Division	Crop	Livestock	Land reclamation	Agro wells	Total
Vadamarachi North	Viyaparimooli	0.849	0.926	1.900	0.000	3.675
	Point Pedro	0.014	3.058	0.408	0.175	3.654
	Point Pedro East	0.069	0.184	0.131	0.000	0.385
	Alvai North center	0.505	0.202	1.103	0.625	2.436
	Puloly West	2.503	1.901	4.547	0.550	9.500
	Puloly Centre	0.347	0.253	0.706	0.150	1.456
	Alvai North West	1.002	0.184	1.743	0.100	3.030
	Alvai West	0.832	0.151	1.797	0.675	3.455
	Polikandy East	0.195	0.160	0.833	0.475	1.662
	Alvai North	0.185	0.060	0.316	0.100	0.661
Vadamarachi East	Maruthankerni	0.000	0.336	0.000	0.000	0.336
	Chundikulam	0.000	0.727	0.000	0.000	0.727
	Ampan	0.000	0.213	0.000	0.000	0.213
	Chempianpattu North	0.000	0.281	0.000	0.000	0.281
	Vettilaikerni	0.000	0.165	0.000	0.000	0.165
	Pokkaruppu	0.000	0.105	0.000	0.000	0.105
	Mulliyan	0.000	0.142	0.000	0.000	0.142
	Uduthurai	0.000	0.051	0.000	0.000	0.051
	Aliyavalai	0.000	0.104	0.000	0.000	0.104
Tota1		**6.502**	**9.203**	**13.483**	**2.850**	**32.039**

2. MULLAITIVU DISTRICT

2.1 District Profile

2.1.1 Location and Topography

Mullaitivu is one of the newly created districts in Sri Lanka in 1979. This district was formed by pooling together sections from Trincomale, Vavuniya and Mannar and occupies the eastern part of main land of Northern Province. The land area of the district is approximately 2516 sq km, which is 3.5 % of the country s total area.

The district has 5 divisional secretariat divisions, 127 Grama Sevaka officers divisions and 632 villages. The divisional secretariat division of Maritimepattu and Puthukkudiyiruppu are located along the western sea coast. The district has 70 km of coastal belt and four lagoons viz Kokulai, Nayaru, Nanthikkadal and Mathalan. The elevation varies from sea level to 36.5 meters. This district had a population of 77,515 as per 1981 census. The population as on 31.12.2003 was 1,40,675 of which 53,031 is the population displaced from other districts. After signing the MOU most of the displaced people are returned to their districts.

2.1.2 Climate and soil

Soil of the Mullaitivu district belongs to the major soil groups of Reddish brown earth and Red yellow latosol. Regosol also found along the sea coast. Alluvial and grumosol also found in small extent. The district is sit uated in the dry zone of the low country and majority of the area falls under agro ecological region of DL1 and little land area on the northern part of the district falls under the agro ecological region of DL2.

The average annual precipitation varies fr om 626 mm to 3276 mm and most of the rain is received during the north east monsoon between October and January. The average monthly temperature ranges from 23oC to 39oC. Low temperature is found during the months of October to January.

2.1.3 Water Resource and Irrigation

The district is bestowed with water resources for both agriculture and domestic purpose. There are no major perennial rivers that could be tapped to provide irrigation to crops. The district has 19 major irrigation tanks with the total capacity to irrigate 9665 ha and 167 minor tanks with the capacity to irrigate 9,164 ha. Large number of agro wells (1984) is being constructed from which water is lifted for irrigating crops and domestic purposes.

2.1.4 Socio Economic Condition

Two major economic sector of the district are agriculture and fisheries. Approximately 17,935 families engaged in agriculture while 3,104 families engaged in fisheries. Fishing sectors play an important roll in generating employment opportunities and income facilitie s to a considerable number of families in the district. This sector is further improved after signing MOU between the government and LTTE.

Health facilities are very much limited in the district. District hospital is temporarily functioning at Puthukkudiiruppu with limited facilities. Education also badly affected in the district. There are 106 schools in this district but the available teachers of 1,014 are not adequate to meet the requirement of the all schools. The infrastructure facilities available in terms of building; electricity and other equipments are highly inadequate. None of the school is provided with electricity.

2.2 Crop Production

Paddy is the major crop of this district. Approximately 17,000 families are engaged in crop production. Vegeta bles and other field crops are cultivated under left irrigation. Considerable extents of field crops are also cultivated under gravity irrigation. Among the field crops groundnuts are cultivated in larger extent in the regosol of the coastal belt. Orchard crops, coconut and palmyrah also cultivated in a considerable extent.

2.2.1 Paddy

Total extent of paddy land available is 15,662 ha of which 5,848 ha belongs to major irrigation while 3164 ha under minor irrigation and 6650 ha rain fed. During 2002 / 2003 maha season total of 9341 ha of paddy was cultivated. This includes 3,335 ha under major irrigation, 2,264 ha under minor irrigation and 3,754 ha rain fed. Total production of maha season is 30,616 mt. The average yield during maha section is 3.2 mt / ha i.e 64 bushels per acre. During yala 2003 total of 2,427 ha was cultivated with the production of 9,693 mt. Average yield of the district during yield is 3.9 mt / ha i.e 78 bushels per acre. Total average paddy production on the district is around 40,000 mt per year.

2.2.2 Field crops

Vegetables and other field crops are cultivated under lift irrigation from dug wells. Limited extent of field crops is being cultivated under gravity irrigation. Ground nut is the important field crops of this district. Crops like Chilli, Onion, Black gram, Green gram and Cowpea also cultivated in a large extent.

2.2.3 Orchard Crops

Orchard crops like banana, lime, orange, mango, papaw, passion, grapes, guava and jack are cultivated in 1,252 ha. Among this fruit crops Banana is cultivated in 524 ha, mango 203 ha, lime 170 ha and jack is cultivated in 140 ha.

2.2.4 Perennial Crops

Major perennial crops available in the district are coconut and palmyrah. Coconut is being cultivated in 10309 ha. Of which coconut cultivated as sole crop in 10,021 ha, intercrop with banana 107 ha and inter crop with groundnuts and chillies in 181 ha. Large extent of coconut is being cultivated at Mulliyawalai, Alampil, Puthukkudiyiruppu and Udayarkaddu areas. About 50,000 palmyrah trees are available in the district.

2.3 Livestock

Cattle, buffaloes, goats and poultry are the important livestock available in the district. About 25,000 neat cattle, 3600 buffaloes, 13,700 goats and 1,34,000 poultry are available. Average milk production of the distric t is 14,000 liters per day.

2.4 Agro Allied Industries

Few agro-allied industries are functioning in the district. This includes coconut coir industry, fishmeal industry and other few small scale processing industries.

2.5 TSUNAMI DISASTER

Mullaitivu is one of the very badly affected districts by tsunami in Sri Lanka. Tsunami waves went up to 1.5 km distance from the sea coast and caused severe damage to lives and properties. Available records reveal that 1,932 people died and 2,590 are injured while 1,06 8 are missing. Total of 21,128 people belonging to 5,484 families are displaced. Among them 11,872 people belonging to 3,256 families are living in the welfare camps while 1,298 peoples belonging to 318 families are living with friends and relatives. Fisheries sector of the district is totally devastated. Thousands of people lost their houses and belongings. Many government properties and infrastructure were also damaged. Agriculture sector is also badly affected by tsunami; crops and cropping lands were damaged due to the intrusion of seawater.

2.5.1 Crop Damage

Tsunami tidal waves went up to 1.5 km distance from the seacoast and caused damage to crops. Crop damage occurred only in one D.S. division of Maritimepattu. In this division crop damage was recorded in 13 G.S divisions. Crops such as paddy, onion, vegetables, groundnuts, orchard crops, coconuts and palmyrah are damaged.

Vast extent of paddy field cultivated under rain -fed condition is completely damaged due to the flooding of salt water. It was found that the rain fed paddy sown in October was in the stage of flowering at the time of the damage. The value of the damage was calculated considering the value of the standing crop at the time of damage and the expected revenue. Total of 1,028 acres of paddy field is damaged in 13 G.S. divisions of Maritimepattu divisional secretariat division. The value of the damage of paddy crop is estimated as Rs 17.476 million.

The other important cash crop damaged is groundnut. Groundnut is cultivated as rain fed crop during maha season in the regosol. Large extent of crops cultivated in Alampil, Mullaitivu South and Chemmalai G.S. divisions are completely destroyed due to the flooding of salt water. The crop was in the stage of pod formation at the time of damage and therefore caused severe financial loss to farmers. Total of 118 acres were damaged and the value of damage is 4.71 millions. Considerable extents of onion and vegetable crops were also damaged.

The extent of onion field damaged is 14.75 acres and the value of damage is Rs 0.885 million. Vegetable crops cultivated in the field and home garden were also damaged. Total of 78 acres vegetable fields to the value of 3.12 million are estimated to be damaged.

Perennial crops cultivated in the homestead, orchard crops and coconut were also damaged. Orchard crops of 8.45 acre to the value of Rs 0.253 million and coconut in 203 acres to the value of Rs 6.09 million are damaged. Apart from this palmyrah plants in 28.3 acres to the value of 1.13 million are also damaged. Total value of crop damage in the district is 33.67 million. Particulars of the crop damage and the value of damage in 13 G.S divisions of Maritimepattu Divisional Secretariat are given in table 2.1 .

2.5.2 Loss of Livestock

Majority of the householders had livestock component to supplement their income and also to meet their nutritional requirements. Livestock population and damaged to infrastructure destroyed by Tsunami tidal waves resulted in severe losses to the livestock breeders. A conside rable number of animals died during the Tsunami attack and a large number of livestock went astray and owners are unable to trace them.

Farmers in this area rear cattle chiefly for manure and beef. A considerable stock is also used for milk. Many farms are under extensive system of management and depend on the common grazing lands and shrub jungle. Total of 2,209 neat cattle were lost in this district consisting of improved breeds and large number of local breeds. Valuation of this loss is a difficult task and an average price of Rs 8,000 was taken per head irrespective of age, breed and sex. This value is purely on the basis of meat and milk value in this area. Total value of cattle loss in the district is Rs 17.67 million. Buffaloes in this district are used for draft, milk and manure. Farmers in two Grama Niladari divisions lost a total of 44 buffaloes and the value is estimated as Rs 0.44 million.

Goat is reared for meat and manure in this area and a total of 2,388 goats were lost. Based on average pric e in the market, a flat rate of Rs 4,000 per goat is taken for valuation. Value of goat loss is estimated as Rs 9.552 million.

Almost every householder had domestic fowl as a backyard poultry, which gave a substantial income to the family. Tsunami has caused extensive damage to poultry sector in this area. Total of 12,093 domestic fowl and 08 ducks were lost and both account for Rs 3.63 million.

Total damage caused to the livestock sector in the district is Rs 31.3 million. This direct loss should be ma gnified if interpreted in terms of loss of expected income from this sector. In other words the investment required to restore the livestock sector in this area would be much higher than the actual loss.

Particulars of the damage to the livestock population and the value of damage in 13 Grama Niladari division of Maritimepattu Divisional Secretariat are presented in table 2.2. Damage caused by Tsunami to the support facilities of the livestock sector is also severe but difficult to quantify. Large extent of natural pastureland and shrub jungles was destroyed due to salt-water intrusion. Further, ponds and fresh water streams that are usual places of drinking water for stock were damaged by contamination with salt water.

2.5.3 Damage for Agro Allied Industries and Service Units

The following five agro allied industries and service units were established by livestock breeders cooperative society ltd (LIBCO). These units were established at Mullaitivu district when total economic embargo was implemented to northern region. These industries and units did an excellent service to the local farmers and helped them in many ways for the livestock industry. Buildings of these units, machineries and products were damaged due to the tsunami disaster.

1. Fish meal factory at Chemmalai West
2. Poultry feed factory at Vallankulam
3. Poultry production unit at Alambil South
4. Livestock feed and veterinary medicine sale centre at Kalappadu West
5. Goat breeding, upgrading and stud centre at Mullaitivu East damaged.

Total value of the damage of the above mentioned industries and serving units is Rs. 38.3 million. Particulars of the damage are given in table 2.3 .

2.5.4 Loss of Agricultural Implements and Machineries

Considerable amount of farm implements and machineries were lost in Mullaitivu district during the tsunami disaster. Apart from the implements sprayers and water pumps were also lost. In Maritimepatu D.S division 63 sprayers, 54 water pumps, 5 Block cards, 4 two-wheel tractors and one four wheel tractor were lost in 13 G.S divisions. The value of the implements and machineries lost in the district is 7.305 million. The details of agric implements and machineries lost and their value are given in table 2.4 .

2.5.5 Cropland Damage Due to the Salt Water Intrusion

Intrusion of salt water in to the cropping land affected the soil properties and reduced the fertility. A quick reclamation process is necessary to commence cultivation in these fields. Soil test reports indicate the high salinity level in the field affected by intrusion of salt water. The following activities are recommended for the reclamation process to the affected fields.

Construct bunds to prevent further salt water intrusion and also retain rainwater to wash away the excess salt Construction of drainage channel to remove the salt water drained out from the field Increase the infiltration rate by proper land preparation to enable to wash away the salt during rainy days Addition of more farm yard manure 30 40 tons / acre and green manure to increase the organic matter content of the soil.

Initially cultivate paddy varieties tolerant to salinity or other crops that can tolerate salinity. If the sodium concentration is very high gypsum salt could be applie d. Adoption of this reclamation process will cost considerable amount to the farmers. Therefore the cost for the reclamation process is computed based on the recommended reclamation process. The total cost for the reclamation of 1,547 acres is Rs. 154.713 million. The details of crop land affected in each G.S division are given in the table 2.5 .

2.5.6 Damage of Agro Wells

Total of 474 agro wells have been damaged in 13 G.S divisions of Martimepattu divisional secretariat division in Mullaitivu district. The wells are damaged in both ways by inflow of salt water into the wells and damage to the structure. Salt water in these wells has to be removed by continuous pumping. Further damage to structure also has to be repaired. These dug wells are being used for both domestic purposes and irrigation for crops. The total cost for the renovation of agro wells is Rs 11.85 million. The details of wells damaged in each G.S division and the cost for renovation is given in table 2.6 .

2.5.7 Total Estimated Loss of the District

Tota l estimated loss of the district for the following six components, crops, livestock, agro allied industries, crop land damage, damage of agro wells, loss of implements and machineries are computed from the detail lists of loss incurred for each component. The estimated loss for the above components is given in table

Table 2.1: Crop damage and value – Mullaitivu District

D.S.Division: Maritimepattu

G.S division	Crop damage and value														Total (Rs)
	Paddy		Onion		Ground nuts		Coconut		Palmayrah		Orchard crops		Vegetable crops		
	Ext. (ac)	Value (Rs)	Ext. (ac)	Value (Rs)	Ext. (ac)	Value (Rs)	Ext. (ac)	Value (Rs)	Ext. (ac)	Value (Rs)	Ext. (ac)	Value (Rs)	Ext. (ac)	Value (Rs)	
Alampil South	11.00	187000	3.00	180000	18.75	750000	8.65	259500	0.40	16000	0.25	7500	5.00	200000	1600000
Ambalavan pokkanai	354.00	6018000	0.50	30000	1.00	40000	85.10	2553000	14.53	581000	0.00	0	24.00	960000	10182000
Kallappadu North	10.00	170000	0.00	0	1.00	40000	15.53	465750	0.25	10000	0.50	15000	7.00	280000	980750
Kallappadu South	3.00	51000	0.00	0	1.00	40000	39.70	1191000	0.50	20000	3.50	105000	11.00	440000	1847000
Kovil Kudiyiruppu	6.00	102000	0.00	0	0.00	0	3.63	108750	0.00	0	0.10	3000	0.00	0	213750
Mullaitivu South	306.00	5202000	4.50	270000	27.25	1090000	15.45	463500	3.15	126000	1.25	37500	12.00	480000	7669000
Mullaitivu Town	18.00	306000	2.00	120000	4.00	160000	4.75	142500	0.00	0	0.25	7500	0.50	20000	756000
Mullivaikkal East	52.00	884000	0.25	15000	0.00	0	13.35	400500	0.85	34000	0.75	22500	8.00	320000	1676000
Selvapuram	4.00	68000	0.00	0	0.50	20000	2.45	73500	0.25	10000	0.50	15000	0.50	20000	206500
Semmalai	62.00	1054000	0.00	0	31.00	1240000	6.43	192750	7.13	285000	1.00	30000	1.50	60000	2861750
Semmalai West	37.50	637500	0.50	30000	9.50	380000	4.35	130500	1.15	46000	0.00	0	3.00	120000	1344000
Silawaththai	152.50	2592500	4.00	240000	23.75	950000	3.15	94500	0.10	4000	0.35	10500	5.50	220000	4111500
Vattappalai	12.00	204000	0.00	0	0.00	0	0.50	15000	0.00	0	0.00	0	0.00	0	219000
Total	**1028.00**	**17476000**	**14.75**	**885000**	**117.75**	**4710000**	**203.03**	**6090750**	**28.30**	**1132000**	**8.45**	**253500**	**78.00**	**3120000**	**33667250**

Table 2.2: Loss of Livestock – Mullaitivu District

D.S.Division: Maritimepattu

G.S division	Loss of Livestock and value										Total (Rs)
	Cattle		Buffalo		Goat		Poultry		Duck		
	No.	Value (Rs)	No.	Value (Rs)	No.	Value (Rs)	No.	Value (Rs)	No.	Value (Rs)	
Alampil South	40	320000	0	0	163	652000	246	73800	0	0	1045800
Ambalavan pokkanai	1182	9456000	0	0	574	2296000	2423	726900	2	600	12479500
Kallappadu North	61	488000	0	0	205	820000	1008	302400	6	1800	1612200
Kallappadu South	107	856000	0	0	284	1136000	2322	696600	0	0	2688600
Kovil Kudiyiruppu	32	256000	0	0	56	224000	514	154200	0	0	634200
Mullaitivu South	105	840000	0	0	194	776000	1358	407400	0	0	2023400
Mullaitivu Town	21	168000	16	160000	26	104000	363	108900	0	0	540900
Mullivaikkal East	176	1408000	0	0	538	2152000	1709	512700	0	0	4072700
Selvapuram	17	136000	0	0	74	296000	145	43500	0	0	475500
Semmalai	356	2848000	28	280000	132	528000	793	237900	0	0	3893900
Semmalai West	45	360000	0	0	65	260000	652	195600	0	0	815600
Silawaththai	67	536000	0	0	70	280000	520	156000	0	0	972000
Vattappalai	0	0	0	0	7	28000	40	12000	0	0	40000
Total	**2209**	**17672000**	**44**	**440000**	**2388**	**9552000**	**12093**	**3627900**	**8**	**2400**	**31294300**

Table 2.3: Damage for Agro allied industries and service units – Mullaitivu District

D.S Division: Maritimepattu

S. No	Name of G.S Division	Particulars of agro allied industries and service unit	Value of the damage (Million)
1	Semmalai west	Fish meal factory	2.0
2	Vallankulam	Poultry feed factory	16.0
3	Alambil	Poultry production service unit	8.0
4	Kalappadu west	Livestock feed and vetenary medicine sale centre	3.0
5	Mullaitivu east	Goat breeding, upgrading and stud centre	7.0
6	Chemmalai	Coconut coir fibre factory and palm product sales centre	2.3
Total			**38.3**

Table 2.4: Loss of agric implements and machineries – Mullaitivu District

D.S.Division: Maritimepattu

G.S division	Implements																				Total (Rs)
	Mammoty		Sickle		Axe		Knife		Allavanku		Cycle		Sprayer		Water pump		Block card		2W.Tractor		4W.Tractor		
	No.	Value (Rs)	No.	Value (Rs)	No.	Value (Rs)	No.	Value (Rs)	No	Value (Rs)	No.	Value (Rs)	No.	Value (Rs)	No.	Value (Rs)	No.	Value (Rs)	No	Value (Rs)	No.	Value (Rs)	
Alampil South	7	3360	0	0	5	2250	0	0	0	0	1	8000	0	0	0	0	0	0	0	0	0	0	13610
Ambalavan pokkanai	187	89760	91	22750	23	10350	30	9000	4	1400	6	48000	13	156000	12	540000	5	300000	0	0	0	0	1177260
Kallappadu North	89	42720	31	7750	18	8100	20	6000	0	0	0	0	2	24000	2	90000	0	0	0	0	0	0	178570
Kallappadu South	187	89760	29	7250	89	40050	68	20400	0	0	0	0	1	12000	2	90000	0	0	1	250000	0	0	509460
Kovil Kudiyiruppu	46	22080	16	4000	19	8550	9	2700	2	700	0	0	1	12000	0	0	0	0	0	0	0	0	50030
Mullaitivu South	105	50400	51	12750	22	9900	26	7800	3	1050	44	352000	9	108000	12	540000	0	0	0	0	0	0	1081900
Mullaitivu Town	31	14880	12	3000	12	5400	17	5100	2	700	0	0	3	36000	2	90000	0	0	0	0	0	0	155080
Mullivaikkal East	172	82560	56	14000	32	14400	24	7200	2	700	26	208000	27	324000	21	945000	0	0	0	0	0	0	1595860
Selvapuram	14	6720	8	2000	3	1350	5	1500	0	0	0	0	0	0	1	45000	0	0	1	250000	1	1400000	1706570
Semmalai	47	22560	7	1750	18	8100	3	900	0	0	0	0	1	12000	0	0	0	0	0	0	0	0	45310
Semmalai West	53	25440	4	1000	25	11250	17	5100	0	0	1	8000	1	12000	0	0	0	0	0	0	0	0	62790
Silawaththai	37	17760	24	6000	6	2700	5	1500	1	350	6	48000	4	48000	2	90000	0	0	2	500000	0	0	714310
Vattappalai	2	960	0	0	2	900	1	300	0	0	0	0	1	12000	0	0	0	0	0	0	0	0	14160
Total	**977**	**468960**	**329**	**82250**	**274**	**123300**	**225**	**67500**	**14**	**4900**	**84**	**672000**	**63**	**756000**	**54**	**2430000**	**5**	**300000**	**4**	**1000000**	**1**	**1400000**	**7304910**

Table 2.5: Crop land damage due to salt water intrusion – Mullaitivu District

D.S.Division: Maritimepattu

G.S division	Extend (ac)	Cost for reclamation (Rs)
Alampil South	47.05	4705000
Ambalavan pokkanai	479.35	47935000
Kallappadu North	66.25	6625000
Kallappadu South	83.875	8387500
Kovil Kudiyiruppu	13.5	1350000
Mullaitivu South	369.85	36985000
Mullaitivu Town	29.5	2950000
Mullivaikkal East	76.08	7608000
Selvapuram	8.20	820000
Semmalai	109.30	10930000
Semmalai West	62.33	6233000
Silawaththai	189.35	18935000
Vattappalai	12.5	1250000
Total	1547.135	154713500

Table 2.6: Damage of agro wells – Mullaitivu District

D.S.Division: Maritimepattu

G.S division	Number	Cost for renovation (Rs)
Alampil South	5	125000
Ambalavan pokkanai	100	2500000
Kallappadu North	57	1425000
Kallappadu South	130	3250000
Kovil Kudiyiruppu	21	525000
Mullaitivu South	25	625000
Mullaitivu Town	13	325000
Mullivaikkal East	49	1225000
Selvapuram	10	250000
Semmalai	35	875000
Semmalai West	15	375000
Silawaththai	14	350000
Vattappalai	0	0
Total	**474**	**11850000**

Table 2.7: Total estimated loss – Mullaitivu District

D.S.division: Maritimepattu

(Rs. Mill.)

G.S.Division	Crops	Livestock	Agro allied industries	Crop land damage	Agro Wells	Implements &Machineries	Total
Alampil South	1.60	1.05	8.00	4.71	0.13	0.01	15.50
Ambalavan pokkanai	10.18	12.48	0.00	47.94	2.50	1.18	74.28
Kallappadu North	0.98	1.61	0.00	6.63	1.43	0.18	10.83
Kallappadu South	1.85	2.69	3.00	8.39	3.25	0.51	19.69
Kovil Kudiyiruppu	0.21	0.63	0.00	1.35	0.53	0.05	2.77
Mullaitivu South	7.67	2.02	0.00	36.99	0.63	1.08	48.39
Mullaitivu Town	0.76	0.54	16.00	2.95	0.33	0.16	20.74
Mullivaikkal East	1.68	4.07	7.00	7.61	1.23	1.60	23.19
Selvapuram	0.21	0.48	0.00	0.82	0.25	1.71	3.47
Semmalai	2.86	3.89	2.30	10.93	0.88	0.05	20.91
Semmalai West	1.34	0.82	2.00	6.23	0.38	0.06	10.83
Silawaththai	4.11	0.97	0.00	18.94	0.35	0.71	25.08
Vattappalai	0.22	0.04	0.00	1.25	0.00	0.01	1.52
Total	**33.67**	**31.29**	**38.3**	**154.74**	**11.89**	**7.31**	**277.2**

2.6 NEED ASSESSMENT FOR FARMERS

Need assessment of the farmers is being identified based on their immediate requirement to recommence their agricultural activities. This include the inputs required for crops such as seeds, fertilizer, agrochemicals and planting materials along with the livestock required to replace the loss and also the capital required for the reclamation of the cropland and agro wells affected by salt water. Further the implements and machineries required for the farmers are also taken into account while estimating the total needs.

2.6.1 Need Assessments for Crops

Need assessment is calculated for paddy, groundnut and other crops damaged due to the salt water flooding. Input needs for these crops are calculated in terms of the requirement of see ds, fertilizer, agro chemicals and planting materials. Total estimated value of the need assessment of crop is Rs. 12.9 million. The details of need assessment for crops are given in tables 2.8 (A) & 2.8 (B).

2.6.2 Need Assessment for the Livestock Sector

Today as the prospect of rehabilitation becomes increasingly a reality, the true extent of the work to be done to rebuild and rehabilitate the communities directly affected by the Tsunami is being realized. Assessment revealed that mainly three livestock species namely; cattle, goat and poultry were severely damaged and beneficiaries need assistance to restore previous stock position. It is proposed to implement a project to distribute live animals and necessary inputs among beneficiaries to bring each unit a sustainable one.

Poultry Farming

The need to engage affected families in poultry rearing has been remarkably increased in this area due to the prevailing inadequate facilities for fishing after the Tsunami disaster. Families in this area are left with no income generating avenues. Backyard poultry is one of the alternatives that could generate income in a short period and most importantly, all the beneficiaries have necessary experience in keeping poultry. Each beneficiary has to be issued with 15 mon th old pullets and required feed to bring them up to the point of lay. Financial support should be given to purchase the materials for housing such as cadjan, timber etc. Cost for backyard poultry per beneficiary is Rs 11,100/=. The fund required to poultry sector in this district is Rs 8.88 million.

Cattle Farming

Each beneficiary has to be issued with 2 cross bred heifers or milking cows. One genetically superior stud bull will be given to be shared by 20 beneficiaries. Alternatively, two stud bull centers could be established to cover all 13 Grama Niladari divisions. These stud centers will be managed by Livestock breeders cooperative society limited (LIBCO) of that area. Cattle farmers will be charged for each service and this income makes this unit a sustainable. Cost for dairy per beneficiary is Rs 24,000. Cost to establish a stud bull center is Rs 340,000. The fund required to dairy sector in this district is Rs 6.68 million.

Goat Farming

Each of the beneficiaries has to be provided with 5 goats of local breed. Goat rearing programme has two components. Basically it provides an income generating capacity for affected families. At the same time the indigenous she goats will be bred with purebred Jamunapari or Sannan breeds to increase its production potential. In order to achieve this, two stud centers could be established with genetically superior stud goats to cover all 13 Grama Niladari divisions.

These stud centers will be managed by Livestock breeders cooperative society limited (LIBCO) of that area. Goat farmers will be charged for each service and this income makes this unit a sustainable one. Tentative cost for goat unit is Rs 20,000. Cost to establish a stud center is Rs 1,02,000. The fund required to goat sector in this district is Rs 7.204 million.

Investment needed to rehabilitate livestock sector in this district is Rs 22.765 million. The details of the investment required to replace the livestock are given in the table 2.9.

2.6.3 Need Assessment for Implements and Machineries

The implements and machineries lost by the farmers have to be replaced. The requirements of farm implements including water pump and sprayers are calculated and estimated as Rs. 3.93 million. Details of implements required are given in Table 2.10.

2.6.4 Total Estimated Need Assessment for the District

Total need assessment of the Mullaitivu district is calculated based on the input requirements for crops, replacement of livestock, replacement of implements and machineries lost and the cost required for the reclama tion for the salt water affected land and agro wells. Total need assessment for the district is estimated as 206.23 million. The summary of the need assessment is given in Table 2.11.

Table 2.8 (A): Input requirements to the need assessment of crops – Mullaitivu District

D.S.division: Maritimepattu

Item	Quantity and cost for the supply of inputs for Crop (Rs)												Total value
	Paddy		Onion		Ground nut		Vegetable		Orchard		Coconut		
	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	Qty	Value	
Extent	1028		14.75		117.75		78		8.45		203.03		
Seed/Seedling	61680 kg	1850400	14750 kg	737500	5887.5 kg	471000					12182	730920	3789820
Brinjal							2340 g	9360					9360
Tomato							2340 g	23400					23400
Okra							31200 g	43680					43680
Long Bean							93600 g	131040					131040
Bitter Gouard							39000 g	195000					195000
Mango									203	20300			20300
Jack									81	6075			6075
Pomagranate									380	7600			7600
Lime									508	10160			10160
Orange									80	8000			8000
Fertilizer													
TSP	25700 kg	1028000	590 kg	23600	5887.5 kg	235500	7800 kg	312000					1599100
MOP	46260 kg	1850400	295 kg	11800	3532.5 kg	141300	3900 kg	156000					2159500
Urea	61680 kg	925200			3532.5 kg	52987.5	7020 kg	105300					1083488
Ammonium sulphate			885 kg	26550									26550
Herbicide													
Nominee	123.36 lit	1542000											1542000
MCPA	822.4 lit	575680											575680
Goal			1.475 lit	5531.3									5531.25
Insecticide	1542 lit	1542000	14.75 lit	14750	117.75 lit	117750	54.34 lit	54337.5					1728838
Total		**9313680**		**819731**		**1018538**		**1030118**		**52135**		**730920**	**12965121**

Table 2.8 (B): Need assessment of the farmers to the crop production – Mullaitivu District

D.S.division: Maritimepattu

G.S division	Cost for the supply of inputs (Rs in Million)												
	Paddy		Onion		Ground nuts		Coconut		Orchard crops		Vegetable crops		Total Value of inputs
	Ext. (ac)	Value	Ext. (ac)	Value	Ext. (ac)	Value	Ext. (ac)	Vale	Ext. (ac)	Value	Ext. (ac)	Value	
Alampil South	11	0.10	3	0.17	18.75	0.16	8.65	0.03	0.25	0.00	5	0.07	0.53
Ambalavan pokkanai	354	3.21	0.5	0.03	1	0.01	85.1	0.31	0	0.00	24	0.32	3.88
Kallappadu North	10	0.09	0	0.00	1	0.01	15.53	0.06	0.5	0.00	7	0.09	0.25
Kallappadu South	3	0.03	0	0.00	1	0.01	39.7	0.14	3.5	0.02	11	0.15	0.35
Kovil Kudiyiruppu	6	0.05	0	0.00	0	0.00	3.63	0.01	0.1	0.00	0	0.00	0.06
Mullaitivu South	306	2.77	4.5	0.25	27.25	0.24	15.45	0.06	1.25	0.01	12	0.16	3.49
Mullaitivu Town	18	0.16	2	0.11	4	0.03	4.75	0.02	0.25	0.00	0.5	0.01	0.33
Mullivaikkal East	52	0.47	0.25	0.01	0	0.00	13.35	0.05	0.75	0.00	8	0.11	0.64
Selvapuram	4	0.04	0	0.00	0.5	0.00	2.45	0.01	0.5	0.00	0.5	0.01	0.06
Semmalai	62	0.56	0	0.00	31	0.27	6.43	0.02	1	0.01	1.5	0.02	0.88
Semmalai West	37.5	0.34	0.5	0.03	9.5	0.08	4.35	0.02	0	0.00	3	0.04	0.51
Silawaththai	152.5	1.38	4	0.22	23.75	0.21	3.15	0.01	0.35	0.00	5.5	0.07	1.89
Vattappalai	12	0.11	0	0.00	0	0.00	0.5	0.00	0	0.00	0	0.00	0.11
Total	**1028**	**9.31**	**14.75**	**0.82**	**117.75**	**1.02**	**203.04**	**0.74**	**8.45**	**0.04**	**78**	**1.05**	**12.98**

Table 2.9: Need assessment for livestock – Mullaitivu District

D.S.division: Maritimepattu

G.S. division	Cattle		Goat		Poultry		Total (Rs)
	No.	Value (Rs)	No.	Value (Rs)	No.	Value (Rs)	
Alampil South	18	235800	80	325600	285	210900	772300
Ambalavan pokkanai	154	2017400	360	1465200	2400	1776000	5258600
Kallappadu North	24	314400	130	529100	1035	765900	1609400
Kallappadu South	28	366800	225	915750	2445	1809300	3091850
Kovil Kudiyiruppu	16	209600	45	183150	405	299700	692450
Mullaitivu South	54	707400	190	773300	1215	899100	2379800
Mullaitivu Town	8	104800	25	101750	210	155400	361950
Mullivaikkal East	80	1048000	410	1668700	1590	1176600	3893300
Selvapuram	8	104800	40	162800	225	166500	434100
Semmalai	52	681200	45	183150	555	410700	1275050
Semmalai West	40	524000	140	569800	975	721500	1815300
Silawaththai	28	366800	70	284900	600	444000	1095700
Vattappalai	0	0	10	40700	60	44400	85100
Total	**510**	**6681000**	**1770**	**7203900**	**12000**	**8880000**	**22764900**

Table 2.10: Need assessment of implements and machineries – Mullaitivu District

D.S Division: Maritimepattu

G.S division	Types of implements and machineries														Value
	Mammoty		Scikle		Axe		Knife		Allavanku		Sprayer		Water pump		
	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	No.	Value	
Alampil South	7	3360	0	0	5	2250	0	0	0	0	0	0	0	0	5610
Ambalavan pokkanai	187	89760	91	22750	23	10350	30	9000	4	1400	13	156000	12	540000	829260
Kallappadu North	89	42720	31	7750	18	8100	20	6000	0	0	2	24000	2	90000	178570
Kallappadu South	187	89760	29	7250	89	40050	68	20400	0	0	1	12000	2	90000	259460
Kovil Kudiyiruppu	46	22080	16	4000	19	8550	9	2700	2	700	1	12000	0	0	50030
Mullaitivu South	105	50400	51	12750	22	9900	26	7800	3	1050	9	108000	12	540000	729900
Mullaitivu Town	31	14880	12	3000	12	5400	17	5100	2	700	3	36000	2	90000	155080
Mullivaikkal East	172	82560	56	14000	32	14400	24	7200	2	700	27	324000	21	945000	1387860
Selvapuram	14	6720	8	2000	3	1350	5	1500	0	0	0	0	1	45000	56570
Semmalai	47	22560	7	1750	18	8100	3	900	0	0	1	12000	0	0	45310
Semmalai West	53	25440	4	1000	25	11250	17	5100	0	0	1	12000	0	0	54790
Silawaththai	37	17760	24	6000	6	2700	5	1500	1	350	4	48000	2	90000	166310
Vattappalai	2	960	0	0	2	900	1	300	0	0	1	12000	0	0	14160
Total	**977**	**468960**	**329**	**82250**	**274**	**123300**	**225**	**67500**	**14**	**4900**	**63**	**756000**	**54**	**2430000**	**3932910**

Table 2.11: Value of need assessment – Mullaitivu District

D.S.Division: Maritiempattu

(Rs. Mill.)

G.S. Division	Crop	Livestock	Land reclamation	Agro wells	Implements	Total
Alampil South	0.5273	0.772	4.705	0.125	0.00561	6.13491
Ambalavan pokkanai	3.8670	5.259	47.935	2.5	0.82926	60.39026
Kallappadu North	0.2507	1.609	6.625	1.425	0.17857	10.08827
Kallappadu South	0.3456	3.092	8.388	3.25	0.25946	15.33506
Kovil Kudiyiruppu	0.0680	0.692	1.350	0.525	0.05003	2.68503
Mullaitivu South	3.4800	2.380	36.985	0.625	0.7299	44.1999
Mullaitivu Town	0.3341	0.362	2.950	0.325	0.15508	4.12618
Mullivaikkal East	0.6434	3.893	7.608	1.225	1.38786	14.75726
Selvapuram	0.0591	0.434	0.820	0.25	0.05657	1.61967
Semmalai	0.8790	1.275	10.930	0.875	0.04531	14.00431
Semmalai West	0.5050	1.815	6.233	0.375	0.05479	8.98279
Silawaththai	1.8955	1.096	18.935	0.35	0.16631	22.44281
Vattappalai	0.1105	0.085	1.250	0	0.01416	1.45966
Total	**12.9652**	**22.764**	**154.714**	**11.85**	**3.93291**	**206.2261**

3. KILINOCHCHI DISTRICT

3.1 District Profile

3.1.1 Location and Topography

Kilinochchi district is situated in the northern part of the island. It covers a land area of approximately 1,237 sq km. District also having an inland waterway of 443 sq km. The total est imated population as at 2003 inclusive of those displaced from other districts is 140,145.

Kiliochchi district is surrounded by three districts; north by Jaffna, east and south by Mullaitivu and west and south by Mannar. The district is divided into 4 administrative divisions (Divisional secretariat divisions) as Karachchi, Kandawalai, Poonakary and Pachchilaipalli. It also consisting of 95 newly demarcated Grama Sevaka divisions.

About 75 % of the land in the district is under forest cover. The cultivable land is in the region of 18.5 %. Nearly 70 % of the cultivable land is cultivated with paddy while 15 % with other field crop and the balance 15 % with perennial crops.

3.1.2 Climate and Soil

The district falls in the low country dry zone climatological division and the DL2 and DL3 of the agro ecological region. The average annual rain fall is in the range of 900 to 1100 mm per year. More than 80 % of the rain fall is received during the north east monsoon period between October and January. The average monthly temperature ranges from 25o C to 30o C. The driest months of the district are June, July, and August. The major soil groups found in the district are Red Yellow latosol and Regosol. Soladized and Solo chack also found closer to internal lagoons.

3.1.3 Wat er Resources and Irrigation

There are 7 perennial rivers available in the district with the total catchmental area of 1,823 sq km. Further nine major irrigation tanks are available in the district with the total capacity of 1,575,55 acre feet of water. The total irrigable extent under the major irrigation is 13172 ha. Total of 283 minor tanks are also available in the district. Each of these tanks has the capacity of irrigating less than 80 ha. Among them 106 minor tanks are abandoned. Among the major irrigation tanks Irranaimadukkulam, kalmadukkulam and Akkarajan kulam are the largest tanks in the district. Iranaimadullulam has the capacity to irrigate 8,897 ha while Kalmadukkulam and Akkarjan kulam has the capacity of 1,396 and 1,382 ha respectively. Ope n dug wells constructed in the district are also being used for irrigation and domestic purposes. Deep wells are also constructed for irrigation in Mulangavil area where large extents of other field crops are being cultivated.

3.1.4 Socio Economic Conditions

Agriculture and fisheries are the major income generating sectors of the district. Over 85 % of the population in the district depends on agriculture for their livelihood. Most of the population except the people in the Purana village was colonized in Kilinochchi under various settlement schemes from Jaffna district.

Prior to the ethnic conflict agriculture in this district contributed substantially to the countries GNP. Agriculture in the district is badly affected and the income earning capacity of the farmers is reduced very much compared to 1980 due to the on going war for the last two decades. The internal war during the last two decades reduced the productivity and income earning capacity in crops, livestock and fisheries and also increased the unemploy ment problem. The ethnic conflict started in 1983 has disastrous effect in the agricultural sector due to the extensive damage to public and private sectors, exodus of farmers, declining in investments and shrinkage in supporting services. This has led to a serious decline in productivity, increased losses and negligence of existing assets, growing unemployment, poverty and social unrest. Health and education of the district are badly affected due to the damage of infrastructure, inadequate staff and lack of basic facilities.

3.2 Crop Production

Crop production is the major livelihood of the population in this district. Among the annual crops paddy is the major crop cultivated in larger extent. Field crops like chilli, onion, groundnut, pulse crops and vege tables are also cultivated as cash crops. Coconut and fruit crops cultivated in this district also generate substantial income.

3.2.1 Paddy

Total extent available for paddy cultivation in the district is 25,341 ha, of which 11,884 ha belongs to major irrigation, while 667 ha and 12,790 ha belongs to minor irrigation and rain- fed respectively. During the year 2002 total extent cultivated both maha and yala seasons is 17,313 ha (79 %), of which 12,500 ha was cultivated during maha season (72 %) and 4813 ha cultiva ted during yala season. Yala season is cultivated only under major irrigation. Annual rice production of the district is around 40,000 mt. The average yield of paddy under major and minor irrigation is 2.5 mt / ha while under rain -fed is 2.0 mt / ha.

3.2.2 Field Crops

Field crops are cultivated under left irrigation from the dug wells and deep wells. Major field crops cultivated in the district are chilli, onion, cowpea, green gram, black gram, groundnut, gingili, potato and vegetables.

Total extent of field crops cultivated in the district is 2,956 ha and the production is 11,859 mt. Among them vegetables are cultivated in 956 ha with the production of 9,056 mt. Major cash crop of chili is cultivated in 414 ha with the production of 621 mt.

3.2.3 Perennial Crops

Perennial crops cultivated in the district include fruit crops like mango, lime, banana, orange, jack and coconut plantation. Fruit crops are cultivated in 993 ha with the production of 1,364 mt. Total extent of coconut in Kilinochchi district is 11,600 ha. This includes 4,350 ha under small holding, 5,530 ha under estates and 1,814 ha under homestead. Under the agro forestry system introduced in 2002 teak, jack, arecanut and hulmilla plants were issued. Total of 150 families received 1,710 plants under this scheme.

3.3 Live Stock

Cattle, buffaloes, goat and poultry are the major livestock available in the district from which a substantial income is being generated by the farmers. The number of livestock available in the district is listed bellow.

(i) Neat cattle 43,455 This includes
- Milking cows - 10,565
- Dry cows - 13,325
- Bulls - 8,115
- Calves - 11,450

(ii) Buttaloes - 750

(iii) Goats - 20,365

(iv) Poultry - 97,775 this includes broiler chicken of 1,205

3.4 TSUNAMI DISASTER

Damage caused to Kilinochchi district by tsunami is comparatively less than that of Mullitivu. Total death of the district is 28 and the number of people injured is 670. Total of 1,603 people belonging to 407 families were displaced. Among them 305 belonging to 89 families are staying in the welfare camps and the balance 1,293 people belonging to 318 families are with their friends and relatives. In addition to the affected people of this district there was an influx of affected people from the adjoining districts of Jaffna and Mullaitivu. Considerable damage is being caused to the fisheries sector especially in Chundikkulam area adjoining to Mullaitivu coast. Many fishermen lost their fishing inputs at Kandawalai, Poonakari and Pallai divisions. Damage to the cropland due to intrusion of salt water was prevented by the existing salt-water exclusion bund at Poonakary D.S. Division. However most of these salt-water exclusion bunds (SWEB) are damaged and need immediate reconstruction.

3.4.1 Crop Damage

Considerable extent of rain-fed paddy crop was damaged in the G.S division of Nallur, Cheddiyakurichchi, Uruthirapuram North and Periyaparanthan. The drainage channel leading to lagoon is flooded with salt water and damaged the adjoining paddy fields. A total of 316 acre of paddy land is damaged and the value damage is Rs 3.15 million. The damage was estimated based on the value of standing crop at the time of damage.

Very small extents of vegetable and onion crops were also damaged at Periyaparanthan and Uruthirapuram North G.S division. An extent of 16 acre vegetable and 2.5 acre onion to the value of Rs. 0.66 million and 0.15 million were also damaged. New coconut plantation of 18.6 acres to the value of Rs. 0.558 million is also damaged in the above said two G.S divisions. The detail of crop damage is given in table 3.1 . The total loss of crops in Rs. 4.52 million.

3.4.2 Loss of Livestock

Farmers in this area are traditionally involved in livestock rearing to get the supplementary income for their livelihood. This district has considerable marginal lands and shrub jungles, which are potential resources for cattle and goat production. Farmers in this area rear cattle for milk, beef and manure. Many farms are under extensive system of management and de pend on the common grazing lands and shrub jungle. During the paddy cultivation season, cattle herds in this district are shifted to near by islands and Chundikkulam in Jaffna district for range stocking. As a result, tsunami caused severe loss to the cattle owners of inland areas like Kalmadunagar and Uruthirapuram as well. Total of 1,274 neat cattle including considerable number of improved breeds and large number of local breeds were lost in this district. A flat rate of Rs 8000 per cattle is taken for valuation. Value of cattle loss is Rs 10.192 million. Buffaloes in this district are used for draft, milk and manure. Farmers in the district lost a total of 40 buffaloes and the value of loss is RS. 0.4 Million.

Goats are reared for the purpose of milk, meat and manure. Local breeds called as Vanni goats comprise major portion of the goat population in this district. Total of 482 goats were lost due to the Tsunami attack. Based on average price in the market, a flat rate of Rs 4000per goat is taken for valuation. Value of goat loss is Rs 1.928 million.

Many householders had domestic fowl as a backyard poultry which gave a substantial income to the family. Total of 1,910 domestic fowl in various age and sex were lost. Based on the flat rate of Rs 300 per bird, value of poultry loss is Rs 0.573 million. Total damage caused to the livestock sector in the district is Rs 13.093 million.

Details of the damage to the livestock population and the value of damage in five Grama Niladari divisions of Kilinochchi district are presented in table 3.2. Damage caused by Tsunami to the support facilities of the livestock sector is also severe but difficult to quantify. Large extent of natural pasture land and shrub jungles was destroyed due to salt water intrusion. Furthe r, ponds and fresh water streams that are usual places of drinking water for livestock were damaged by contamination with salt water.

3.4.3 Cropland Damage Due to Salt Water

Total of 353 acre crop land was damaged in G.S divisions Nallur, Cheddiyakurichchi, Ur uthirapuram North and Periyaparanthan. The estimated cost for reclamation is Rs. 3.53 million. The detail of crop land damage is given in table 3.3.

3.4.4 Damage to Salt Water Exclusion B unds

Salt water intrusions to crop lands affects the physical and chemical properties of soil and thereby reduce the soil fertility and eventually affected lands become marginal for crop production. Further intrusion of salt water in cropping land will affect the quality of ground water. Salt water exclusion bund was constructed to prevent the salt water intrusion from lagoons to crop land in 10 Grama Niladari divisions of Poonakary D.S. division and Kandawalai G. S. division belonging to Kandawalai Divisional Secretariat division.

Damage by tsunami tidal waves to paddy crop to a large extent was prevented by these salt water exclusion bunds in Poonakary D.S. Division. These bunds are now damaged and have to be repaired or reconstructed immediately to prevent salt water intrusion to crop lands in future. Estimated cost for the repair or reconstruction of salt water exclusion bunds is given in table 3.4. The cost for the repairing of these bunds is Rs. 23.5 million.

3.4.5 Total E stimated Loss of the District

Total estimated loss of the district for the following four compone nts such as crops, livestock, cropland damage and damage to salt water exclusion bunds are computed from the detail lists of loss incurred for each component. The estimated loss for the above components are given in table 3.5. Total estimated loss for Kilinochchi district is estimated as Rs. 76.47 million.

Table 3.1: Crop damage and value – Kilinochchi District

D.S. division	G.S division	Crop damage and cost								Total (Rs)
		Paddy		Onion		Coconut		Vegetable crops		
		Ext. (ac)	Value (Rs)	Ext. (ac)	Value (Rs)	Ext. (ac)	Value (Rs)	Ext. (ac)	Value (Rs)	
Poonakary	Nallur	22.50	225000	0.00	0	6.03	180750	0.00	0	405750
	Cheddiyakurichchi	24.50	245000	0.00	0	2.10	63000	0.00	0	308000
Karachchi	Uruthirapuram North	118.00	1180000	0.00	0	2.88	86250	7.25	290000	1568750
	Periya Paranthan	150.75	1507500	2.50	150000	7.60	228000	9.35	374000	2259500
Total		**315.75**	**3157500**	**2.50**	**150000**	**18.60**	**558000**	**16.60**	**664000**	**4529500**

Table 3.2: Loss of Livestock – Kilinochchi District

D.S. Division	G.S Division	Loss of Livestock and value								Total (Rs)
		Cattle		Buffalo		Goat		Poultry		
		No.	Value (Rs)	No.	Value (Rs)	No.	Value (Rs)	No.	Value (Rs)	
Poonakary	Nallur	287	2296000	0	0	200	800000	894	268200	3364200
	Cheddiyakurichchi	25	200000	0	0	6	24000	70	21000	245000
Kandavalai	Kalmadunagar	456	3648000	40	400000	11	44000	0	0	4092000
Karachchi	Uruthirapuram North	164	1312000	0	0	124	496000	431	129300	1937300
	Periya Paranthan	342	2736000	0	0	141	564000	515	154500	3454500
Total		**1274**	**10192000**	**40**	**400000**	**482**	**1928000**	**1910**	**573000**	**13093000**

Table 3.3: Crop land damage due to salt water intrusion – Kilinochchi District

D.S.division	G.S division	Ext. (ac)	Cost for reclamation (Rs)
Poonakary	Nallur	28.53	2852500
	Cheddiyakurichchi	26.60	2660000
Karachchi	Uruthirapuram North	128.13	12812500
	Periya Paranthan	170.20	17020000
Total		**353.45**	**35345000**

Table 3.4: Estimate cost for the repair or reconstruction of salt water exclusion bunds – Kilinochchi District

D.S division	G.S. division	Length of Bund damaged (km)	Estimated cost for Reconstruction (Million)
Poonakary	Nallur	2	1.50
	Alankeny	2	1.50
	Kollakuruchchi	3	2.00
	Gnanimadam	2	1.50
	Pallikkuda	8.5	4.25
	Gowtharimunai	5	3.00
	Kariyalai Nagapaduvan	0.5	0.25
	Nachikkuda	1	1.00
	Kiranchi	6	3.00
	ponnavil	6	3.00
Kandawalai	Kandawalai	0.5	2.50
	Total	**36.5**	**23.50**

Table 3.5: Total estimated loss – Killinochchi District

(Rs. Mill.)

D.S.Division	G.S.Division	Crops	Livestock	Crop land damage	Salt water exclusion bunds	Total
Poonagary	Nallur	0.41	3.36	2.85	1.50	8.12
	Cheddiyakurichchi	0.31	0.25	2.66	0.00	3.22
	Alankeny	0.00	0.00	0.00	1.50	1.5
	Kollakuruchchi	0.00	0.00	0.00	2.00	2
	Gnanimadam	0.00	0.00	0.00	1.50	1.5
	Pallikkuda	0.00	0.00	0.00	4.25	4.25
	Gowtharimunai	0.00	0.00	0.00	3.00	3
	Kariyalai	0.00	0.00	0.00	0.25	0.25
	Nachikkuda	0.00	0.00	0.00	1.00	1
	Kiranchi	0.00	0.00	0.00	3.00	3
	Ponnavil	0.00	0.00	0.00	3.00	3
						0
Kandavalai	Kalmadunagar	0.00	4.09	0.00	2.50	6.59
						0
Karachchi	Uruthirapuram North	1.56	1.94	12.81	0.00	16.31
	Periya paranthan	2.26	3.45	17.02	0.00	22.73
	Total	4.54	13.09	35.34	23.5	**76.47**

3.5 NEED ASSESSMENT FOR FARMERS

Need assessment of the farmers is being identified based on their immediate requirements to recommence their agricultural activities. This include the inputs required for crops such as seeds, fertilizer, agrochemicals and plant ing materials along with the livestock required to replace the loss and also the capital required for the reclamation of the cropland affected by salt water.

3.5.1 Need Assessment for Crops

Need assessment is calculated for the crops of paddy, onion, vegetable and coconut. Requirements of inputs such as seeds, fertilizer and agro chemicals are calculated and estimated. Requirements of coconut seedlings are also estimated. Total value of the need assessment for the crops is Rs. 3.44 million. The details of need assessment for crops are given in table 3.6 (A) and 3.6 (B).

3.5.2 Need Assessment for Livestock

The need to rehabilitate livestock sector has been remarkably increased in this district due to the prevailing inadequate facilities for fishing after the Tsunami disaster. Families in this area are left with no income generating avenues. Today as the prospect of rehabilitation becomes increasingly a reality, the true extent of the work to be done to rebuild and rehabilitate the communities directly affected by the Tsunami is being realized. Assessment revealed that mainly three livestock species namely; cattle, goat and poultry were severely damaged and beneficiaries need assistance to restore previous stock position. It is proposed to implement a project to distribute live animals and necessary inputs among beneficiaries to bring each unit a sustainable one.

Poultry farming

Families in this district are left with no income generating avenues. Backyard poultry is one of the alternatives that could generate income in a short period and most importantly, all the beneficiaries have necessary experience in keeping poultry. Each beneficiary will be issued with 15 month old pullets and required feed to bring them up to the point of lay. Financial support will be given to purchase the materials for constructing poultry house such as cadjan, timber etc. Cost for backyard poultry per beneficiary is Rs 11,100. The fund required to poultry sector in this district is Rs 1.443 million.

Cattle Farming

Each beneficiary will be issued with two cross bred heifers or milking cows. Stud bull center would be established to cover all five Grama Niladari divisions. This stud center will be managed by Livestock breeders cooperative society limited (LIBCO) of that area. Cattle farmers will be charged for each service and this income make this unit sustainable. Cost for dairy per beneficiary is Rs 24,000. Cost to establish a stud bull center is Rs 3,27,400. The fund required to dairy sector in this district is RS. 3.327 million.

Goat farming

Each of the beneficiaries has be provided with five goats of local breed. Goat rearing programme has two components. Basically it provides an income generating capacity for affected families. At the same time the indigenous she goats will be bred with purebred Jamunapari or Sannan breeds to increase their

production potential. In order to achieve this, one stud centre could be established with genetically superior stud goat to cover five Grama Niladari divisions. These stud centers will be managed by Livestock breeders cooperative society limited (LIBCO) of that area. Goat farmers will be charged for each service and these incomes make this unit sustainable. Cost for supplying five goats for a goat unit is Rs 20,000. Tentative cost to establish a stud center is Rs. 94,650. The fund required to goat sec tor in this district is Rs 2.015 million. Assistance required to rehabilitate livestock sector is Rs 6.785 million. The details of the investment required to replace the livestock are given in the table 3.7 .

3.5 .3 Total Estimated Need Assessment for the District

Total need assessment of the Kilinochchi district is calculated based on the input requirements for crops, replacement of livestock, and the cost required for the reclamation for the salt water affected cropland. Total need assessment for the district is estimated as Rs 45.58 million. The summary of the need assessment is given in table 3.8.

Table 3.6 (A): Input Requirements to the need assessment of crops – Kilinochchi District

Item	Quantity and cost for the supply of inputs for Crop (Rs)								
	Paddy		Onion		Coconut		Vegetable		Total
	Qty	Value	Qty	Value	Qty	Value	Qty	Value	
Extent	315.75 ac		2.5 ac		18.6 ac		16.6 ac		
Seed/Seedling	18945 kg	568350	2500 kg	125000	1117	83775			777125
Brinjal							498 g	1992	1992
Tomato							498 g	4980	4980
Okra							6640 g	9296	9296
Long Bean							19920 g	27888	27888
Bitter Gouard							8300 g	41500	41500
Fertilizer									
TSP	7893.75 kg	315750	100 kg	4000			1660 kg	66400	386150
MOP	14208.8 kg	568350	50 kg	2000			830 kg	33200	603550
Urea	18945 kg	284175					1494 kg	22410	306585
Ammonium sulphate			150 kg	4500					4500
Herbicide									
Nominee	37.89 lit	473625							473625
MCPA	252.6 lit	303120							303120
Goal			0.25 lit	937.5					937.5
Insecticide	473.625 lit	473625	2.5 lit	2500			24.9 lit	24900	501025
Total		**2986995**		**138938**		**83775**		**232566**	**3442274**

Table 3.6 (B): Need assessment of farmers to the crop production – Kilinochchi District

D.S.Division	G.S division	Cost for the supply of inputs (Rs in Million)								
		Paddy		Onion		Coconut		vegetable		Total Value of inputs
		Ext. (ac)	Value	Ext. (ac)	Value	Ext. (ac)	Value	Ext. (ac)	Value	
Poonakary	Nallur	22.50	0.21	0.00	0.00	6.03	0.03	0.00		0.24
	Cheddiyakurichchi	24.50	0.23	0.00	0.00	2.10	0.01	0.00	0.00	0.24
Karachchi	Uruthirapuram North	118.00	1.12	0.00	0.00	2.88	0.01	7.25	0.10	1.23
	Periya Paranthan	150.75	1.43	2.50	0.14	7.60	0.03	9.35	0.13	1.73
Total		**315.75**	**2.99**	**2.50**	**0.14**	**18.61**	**0.08**	**16.60**	**0.23**	**3.44**

Table 3.7: Need assessment for livestock – Kilinochchi District

D.S. division	G.S.division	Cattle		Goat		Poultry		Total (Rs.)
		No.	Value (Rs.)	No.	Value (Rs.)	No.	Value (Rs.)	
Poonakary	Nallur	88	1152800	200	814000	750	555000	2521800
	Cheddiyakurichchi	18	235800	10	40700	150	111000	387500
Kandavalai	Kalamadunagar	30	393000	5	20350	0	0	413350
Karachchi	Uruthirapuram North	50	655000	140	569800	450	333000	1557800
	Periya Paranthan	68	890800	140	569800	600	444000	1904600
Total		**254**	**3327400**	**495**	**2014650**	**1950**	**1443000**	**6785050**

Table 3.8: Value of Need Assessment – Kilinochchi District

(Rs. Mill.)

D.S.division	G.S.division	Crop	livestock	Land reclamation	Total
Poonakary	Nallur	0.24	2.52	31.58	34.34
	Cheddiyakurichchi	0.24	0.39	0.25	0.88
Kandawalle	Kalamadunagar	0	0.41	0	0.41
Karachchi	Uruthirapuram North	1.23	1.56	1.86	4.65
	Periya Paranthan	1.73	1.91	1.66	5.3
Total		**3.44**	**6.79**	**35.35**	**45.58**

Table 4: Total estimated value of loss for Northern Region

(Rs. Mill.)

District	Crop	Livestock	Agric. Industries	Crop land	Agro wells	Implements	Salt water exclusion bund	Total
Jaffna	14.9	6.03	0	13.49	2.87	0	0	37.29
Mullaitivu	33.67	31.29	38.30	154.74	11.89	7.31	0	277.2
Killinochchi	4.54	13.09	0	35.34	0	0	23.50	76.47
Total	**53.11**	**50.41**	**38.3**	**203.57**	**14.76**	**7.31**	**23.5**	**390.96**

Table 5: Total estimated value of need assessment for Northern Region

(Rs. Mill.)

District	Crops inputs	Livestock replacement	Implements required	Crop land reclamation	Agro wells reclamation	Total
Jaffna	6.50	9.20	0	13.48	2.85	32.03
Mullaitivu	12.97	22.76	3.93	154.71	11.85	206.22
Kilinochchi	3.44	6.79	0	35.35	0	45.58
Total	**22.91**	**38.75**	**3.93**	**203.54**	**14.7**	**283.83**

4. Estimated Loss for the Northern Region

The loss estimated for various components of agriculture sector in the districts of Jaffna, Mullitivu and Kilinochchi was taken together to prepare the total loss incurred to northern region. The total loss for the agricultural sector in the northern region is estimated as Rs 390.96 million. The details of loss in district
basis are given in table 4

5. Total Need Assessment for Northern Region

Total estimated value of need assessment for the value of need assessment calculated for the district for different components of agriculture. The total value of need assessment for the region is Rs 283.83 million. Detail of the need assessment of the region is given in table 5.

Eastern Region

DISTRICTS AND THEIR AGRICULTURAL SETTING

1.1 Ampara District

The Ampara District is the largest District situated in the North-Eastern Province in Sri Lanka. This district covers an area of 4484.9 square kms. The Ampara District comprises 20 Divisional Secretariat areas, 505 Grama Niladaries Divisions and 820 villages. Agriculture, livestock and fisheries have been the principal activity in the district. Over 50% of the total work force in district depends on agriculture for their livelihood.

The Ampara district area is rolling hilly, undulating and flat and flat to slightly undulating and level plain. A major part of which is a depositional plain, namely the alluvial plain of the Gal Oya river system. Bordering the river alluvial plain and the Batticaloa lagoon is a depositional plain consisting of lagoon mud.

The climate of the area is characterized by a seasonal rainfall distribution and prolonged dry season, with moderately high temperatures having only small annual variation. The rainfall experienced is characterized by a bi-model pattern of distribution. A distinct rainfall peak occurs in December. The Yala season rainfall from April-June is minimal with no crop cultivation possible without supplementary irrigation. The Maha season extend from October to late February. A distinct feature of the rainfall distribution is that very high intensity rain occurs during the months of November, December and January.

1.2 Batticaloa District

Batticaloa occupies the central part of the Eastern Province. It has the landmass of approximately 240,391 hectares and internal waterway of about 23,000 hectares. The district covers 3.8 per cent of Sri Lanka with the estimated population of approximately 500000. This district belongs to the agro ecological region DL2, is located in the low country dry zone of Sri Lanka. The Batticaloa district is divided into 12 administrative divisions and agricultural activities are occurring in all the divisions but at varying and hence it is an agricultural sphere.

The population of 509,000 is largely rural (72%). With around 24 per cent being engaged in crop and livestock agriculture and 14 per cent in fishing. It is reasonably well endowed with various bio-physical natural resource for making it an agriculture district. The resources include agricultural lands, an annual rain fall of 1551 mm (mean of 20 years) surface and underground water for irrigation, dense as well as more open natural forests, range lands and a large population of neat cattle and buffaloes. The available soil groups and the climatic conditions can support cultivation of various crop species, including some subtropical crops.

Because of the considerable length of coastline (135 km) and large inland water bodies (230 sq.km) such as lagoons, irrigation tanks and basin estuaries, it is also endowed with a strong resource base for fishing. Batticaloa has been a surplus rice and fish- producing district. Over the past two decades, the district has been engulfed in war complexities, resulting in the disruption of normal economic and social life of people. Excessive damage to public and private assets, displacement of cultivators, herdsmen and fishermen, loss of income, decline in investments, restriction in lagoon

and sea fishing, disruption of supporting services- (Extension, agrarian, veterinary, marketing, input supply transport etc.) Inadequate social and physical infra structural facilities and security limitations have led to a substantial reduction in the crop, fisheries and livestock productions.

Around 68% of the population is reported to be under the poverty line, and majority of it belongs to the farming and fishing communities.

Significant changes in family structure and in the position of women too have taken place by the war situation. Around 10,000 households, due to the loss of breadwinners have become women headed. These women are compelled to shoulder the responsibilities of looking after the dependant s activities. Ways and means of generating income to these affected women are also to be found. Over 30,000 persons (unconfirmed) between 15 - 35 age in the rural area are unemployed. Social and production infrastructures are yet to be rehabilitated or reconstructed for development activities to take place and for active private sector participation.

The key objective of the agriculture sectors development points towards transformation of the subsistence agriculture into a market based commercial production, leading to food security, increased production, income and employment generation for a prosperous rural peasantry. This will be achieved through: making use of the competitive and comparative advantage of the rural resource base, investment in productive infrastructure, incentives for private sector investments, promoting farm and non farm enterprises, productivity improvement through technology transfer and skill development, market technology, value addition, processing, storage improvement, commercial farming, human and institutional capacity building and social mobilization.

The physical feature of the Batticaloa district is flat land at an altitude not exceeding 7.62 metres above the sea level. It contains undulating plains and alluvial flats. The east coast of the district is sandy soil (regosol) and west is clay suitable for paddy cultivation. The land bordering the distinguished historical lagoon contains alluvial soil. It has been estimated that the land area available for agricultural activities was 121,500 hectared, amounts to half the landmass of the district. The annual rainfall varies from 860 mm to 3080 mm with the means of the 1522.2 mm. Most of the rain is being received (75-80 percent) during the months of October- January (Maha or Perumpokam), which is considered to be the major season for agricultural production. The mean maximum and minimum temperatures are respectively 350C and 250C. The rainfall and temperatures, the factors crop production, are favorable for agricultural productivity. It is a confirmed fact that the economy of the district is depending mostly on agriculture and fishing. The district has about 29,000 agriculture families and about 16,000 fisher families.

1.3 Trincomalee District

Trincomalee district is situated in coast of Sri Lanka covers total area of 2738.2 sq km. Out of total area land area is 2630.8sq km and inland water is 98 sq.km. It has strength of coastal area along east up to Mullaithivu district toward north and Batticaloa District towards south.

Total population of the district is about 354,553 with the total families of 83829. Of which 40383 are farming families who are engaged in agriculture and 8123 families are engaged in fishing for their livelihood. The district has all three ethnic groups in equal strength with four electoral division for three constitutes.

Main economic activities in the district include agriculture and fishing. As this district has attractive place in the east coast for tourism and earn a fairly good income to business group.

In crop husbandry major activities on paddy cultivation in RBE, NCBS and Alluvial soil and red onion cultivation in regosol in coastal area. For paddy cultivation 26 major tanks source water for irrigated paddy tract, 60% of the paddy tract comes under irrigated condition. Economically active population is about 60%

Forest covers about 31% of the land area. Average temperature ranges from 260C 350C. The rainfall ranges from 1000-1500mm.

Agriculture is the major occupation for their livelihood. Major crops cultivated are paddy in low land. Red onion, manioc, groundnut and maize are grownin high land. Chilli is cultivated as cash crop is sporadic nature Vegetable cultivation is common practice in all areas.

Open dug wells and major and minor reservoirs serve water for agriculture and domestic purpose. Mahawali river feeds water to major irrigation scheme Kantalai tank and all other scheme Land is highly and very undulating in the west region and flat terrine in east region.

Predominantly Radish Brown Earth (30%), and alluvial soil (35%) and Regosol (10%) in the beach occupy in the district.

2. Agriculture in East Sri Lanka

The East of Sri Lanka constitutes about 15% of Sri Lanka s area and is estimated to have a population of about 1.5 million in 2003(about 8% of national total). However, due to massive IDP movements (past and anticipated) population figures cannot be precise. The population is largely rural, with an estimated 80% living outside the principal towns.

In the East, Tsunami has severely affected rural families and has resulted in reduced cultivation, loss of livestock, inability to engage in fishing, displacement of large number and un-employment. In East the contribution of crop and livestock production has amounted to around 40% where as for the entire country its contribution accounts for
20%. Around half the population of men and women is directly engaged in agriculture but taking into account all sub-sectors (input supply, marketing, processing and other) about 80% of the population relies this sector as their main source of income.

Crop production (table 1.1)

In terms of food security, income levels and employment, crop farming is the main pillar of economy in the East. Around 45% of the economically active population engaged in crop production. The agricultural land area is about 390,300 ha. Paddy is the main crop (167,000 ha) while other important commodities include chillies, onions, mung bean, black gram, sesame and ground nut cultivated in farmers field and to a certain extent grown in homestead mixed gardens. Betel is a cash crop in the Batticaloa district. Cashew is grown in Batticaloa districts while coconut is widespread in the East. The production declined during war conflict period as a consequence of unavailability of inputs such as fertilizers and pesticide, lack of transport vehicles and many other reasons including enforcement of security.

Crop agriculture is closely related to poverty alleviation, income generation and employment opportunities of the rural peasantry and it was affected by Tsunami. The importance of crop agriculture

is evident from the fact that 40 percent of the land of East Sri Lanka is utilized for crop cultivation and majority of the work force is engaged in it. The agro climatic condition, topographic and soil characteristics largely favour the cultivation of a wide range of crop species as mentioned earlier.

Paddy

The importance of paddy cultivation at the national, provincial and district level cannot be overemphasized. It is the major crop and contributes substantially to the socio-economic benefits of the districts in the Eastern Sri Lanka. Paddy is the only crop that can be cultivated in poorly drained wetland soils. East Sri Lanka is famous for rice production and is popularly known as Rice Bowl of Sri Lanka. Total extent of asweddumised of paddy land is about 166,776 ha, which is 43 percent of the land under crop production. The average yield is estimated to be 2.7 mt/ha in Maha and 3.5 mt /ha in Yala seasons. The yield is the highest in Ampara district in the East, over 4 mt/ha.

Other Field Crops (OFC)

This is group of high income generating crops in this region. There is scope for income generation and employment avenues through commercial cultivation of high value cash crops.

a. Low external input low cash value crops

Maize (14,000 ha) and manioc (1000 ha) are two crops cultivated extensively by resource poor farmers in marginal and abandoned chena lands. They are mostly rain fed. Profit per rupee invested is higher in these crops. Profit margins of them can be improved by processing value added products to agro-industries.

b. Medium external input, medium cash value crops

Pulses (5205 ha) in the East including black gram, green gram, cowpea and groundnut are important crops under this category. They are important in terms of improving nutritional standards of people. Yields are low under rain fed conditions. They easily fit into various cropping systems and identified for crop diversification in paddy fields.

c. High external input, high value crops

Vegetables (6811 ha in the East), subsidiary food crops (16,789 ha in the East) including chillies and onions are important high value crops of the district. Chillies are cultivated for both green matured and red dry commodities. They are mainly cultivated under lift irrigation from agro-wells. There is a greater scope for expanding these crops under income and employment generating special project.

Vegetables provide the maximum output and hence more output per unit area of land. Besides country s escalating demand for vegetables, tremendous export opportunities do exist for these commodities, both in fresh and processed form. For developing societies, as one in the East in Sri Lanka, the consequences of micronutrient deficiencies are severe (causing debilitating diseases including blindness), vegetables are the major sources of micro nutrients and only practical and sustainable way to ensure their supply.

2.3 Fruit crops

Mango (600 ha) and bananas (2000 ha) are the two important fruit crops of the three districts in the East. There is potentiality for promoting commercial cultivation of mango and bananas.This sub sector on large scale can facilitate avenues for income and employment directly and indirectly through processing industries.
Multi-purpose tree crops

Coconut and cashew are traditional tree crops cultivated mainly on sandy regosols of coastal area, which is marginal to the cultivation of other annual crops, with special reference to Batticaloa district. Coconut ranks first among multipurpose tree crops. It is a traditional crop and there is evidence of coconut and coconut product export to other countries. It greatly contributes to the districts income and social benefits. About 90 percent of the plantation was devastated by 1978 cyclone. The extent was further reduced by war conflict.

Next in order comes cashew, which is a low input, high profitable tree crop, acclimatized crop growing in the marginal sandy soil of Batticaloa district. It has vast potential in terms of profit maximization in marginal lands, export earnings, Employment Avenue for agro-based industries.

Palmyrah is a tree with high utility value. They are marginally utilized now, mainly for toddy tapping but can be utilized for varieties of food commodities, industrial raw materials, timber and handicraft.

Betel crop

Betel is a special crop for Batticaloa district. This crop is grown in the coastal belt, in sandy regosol. It is a money-spinner and a high value cash crop. The high level of income is sustained for over 25 years from the betel plantation. The extent of betel plantation has been completely devastated by Tsunami.

All the above mentioned crops from paddy to coconut have been partly or completely destroyed by Tsunami waves in filtered into the land, in a matter of few minutes in the districts of Ampara, Batticaloa and Trincomalee of Eastern Sri Lanka.

Table 1 Land use pattern in three districts of East (hectares)

Type	Ampara	Batticaloa	Trincomalee
Agriculture (Total)	139,983	132,210	116,780
Paddy	61,250	60,291	45,235
Other field crop (OFC/Pulses)	3662	831	713
Subsidiary food crops	13,860	985	1924
Vegetables	4310	1407	1094

Source : www.nep.lk

2.4 Livestock Production (Tables 2)

Livestock is an integral component of the rural economy of Eastern Sri Lanka. The three districts in the east provide a strong resource base for the livestock industry. Emphasis need to be placed on the development of livestock industry in view of promoting income, employment, nutrition and maximum utilization by local resources.

Unlike crop agriculture, livestock sector generates a steady income throughout the year. In addition livestock is considered as insurance and cash reserve to get quick money under emergency situation.

The three districts are estimated in 2003 to have a total of 379,470 cattle, 137,937 goats and 1,002,418 poultry.

The neat cattle in the districts are in large herds of 15-35 cows and followers. Very negligible numbers of cows are reared under a combination of open range and hand feeding systems in homesteads. The cattle in the open range herds are mostly indigenous type with a few improved crosses. The animals graze freely on natural grasslands, abandoned chena lands and paddy fields after harvest. The majority of the cows are seldom milked and the average yield is around 1-2 litres. However, they provide substantial income to farmers through milk and meat.

The buffaloes found in the three districts are of indigenous type with negligible number of upgraded breeds. They are mainly used for draught purposes in paddy land preparation and threshing. Fair number of animals is milked for liquid milk supply and curd making. The market price for buffalo milk is higher than cow s milk due to high milk fat and solid contents.

The goats in the three districts are generally indigenous type reared in open grazing / browsing and night stall system mainly for meat purposes. They are very seldom kept under intensive system in stalls.

Rearing of poultry in the backyards is a common practice. In addition, there are a number of small and medium level layer and broiler units in the districts. There is only a very few large-scale poultry farm. An assured supply of day old chicks and the supply of poultry feed are prerequisites for poultry development in the district.

East accounted for 18% of total livestock population in the country. Before war conflict East accounted about 60% of the cattle population of NEP and poultry was 80%. It is found that Eastern region was rich in livestock compared to North. Destruction and loss of animals have, however, caused a significant decline in livestock production. The poor performance of the livestock sector is a direct effect of the conflict, as it led to the unavailability of quality breeding stock, lack of credit facilities to purchase food, medicines and vaccines and the veterinary services. Milk collection and marketing hampered due to damage/ loss of equipment, lack of transport vehicles and the enforcement of security restriction. The general scarcity of pasturelands was another limitation for the livestock sector.

Table 2 Cattle, Poultry and Goat in the districts of Eastern Sri Lanka in 2003

District	Cattle	Poultry	Goat
Ampara	150,900	268,330	49,632
Batticaloa	1,21,181	341,274	44,942
Trincomalee	107,533	392,814	43,362
Total	379,470	1,002,418	137,937

Table 2 Poultry in the districts of Eastern Sri Lank in 2003

The devastation of the agricultural crops and loss of livestock in the three districts in East by Tsunami occurred on 26 December 2004 caused remarkable losses in crop and livestock production and thus, the economy of East has been brought down to rock bottom.

3.0 SURVEY RESULTS AND DISCUSSION

3.1 Tsunami Hit Locations

A survey was conducted in 3 districts namely Ampara, Batticaloa and Trincomalee in Eastern Sri Lanka in order to identify the Tsunami hit Gramaservaka Niladari (GN) divisions in the coastal belt where agriculture (crop and livestock production) has been the primary activity. The survey comprised of 2 parts as follows:

- Personal interview with the farmers
- Collection of predetermined data using a structured questionnaire

It has been found that 116 GN divisions in Ampara 56 in Batticaloa and 35 in Trincomalee districts had been affected by Tsunami as shown in table 3.1 and the annexed maps.

Table 3.1 Tsunami hit GN divisions in numbrs

District	**DS Division**	**No. Of GN Divisions**	***Total***
Ampara	Addalachenai	8	
	Alayadiwembu	5	
	Kalmunai	22	
	Karativu	8	
	Ninthavur	27	
	Pothuvil	23	
	Thirukkovil	6	
	Panama	7	
	Sainthamaruthu	10 116	
Batticaloa	Manmunai South Eruvilpattu-Kaluvanchikudy	22	
	Koralaipattu North-Vakarai	8	
	Koralai pattu South - Kiran	2	
	Koralai pattu	4	
	Kattankudy	3	
	Eravur pattu	2	
	Manmunai Pattu north	11	
	Manmunai pattu	4 56	
Trincomalee	Muthur	08	
	Seruvila	01	
	Eachchilampattu	02	
	Kiniya	05	
	Kuchcheveli	15	
	Town and Gravets	04	35

The larger number of farmers got affected by Tsunami are in the Batticaloa district (table 3.2). The larger extent of coastal belt lengthwise and the land area in between sea and lagoon are the factors attributed to greater damage by Tsunami. In addition the crop cultivation has been along the coastal belt.

Farmers' Involvement

A farmer-to-farmer survey was carried out to fulfill the task. A total of 8099 farmers involved in this process in all three districts and a break down on DS division basis are shown in table 3.2. The interviewed farmers, affected by Tsunami, on GN division basis are in the appendix.

Table 3.2: Number of farm families involved and their details in three districts

District	**DS Division**	*FARMER FAMILIES*		
		Family number	**Family member**	*Live loss*
Ampara	Addalachenai	223	899	11
	Alayadiwembu	333 1665	11	
	Kalmunai	242	968	71
	Karativu	14	56	N/A
	Ninthavur	213	639	01
	Pothuvil	489 1956	215	
	Thirukkovil	240	960	N/A
	Panama	127	635	N/A
	Sainthamaruthu	227 1135	120	
Ampara	Total	**2109**	**8913**	
Batticaloa	Manmunai South Eruvilpattu- Kaluvanchikudy	1735	5205	5
	Koralaipattu North-Vakarai	1155	4042	0
	Koralai pattu South - Kiran	34	136	0
	Koralai pattu	218	784	0
	Kattankudy	616 2833	12	
	Eravur pattu	97 388	2	
	Manmunai Pattu north	548	2137	39
	Manmunai pattu	480 1920	4	
	Batticaloa total	**4853**	**17445**	**62**
Trincomalee Muthur		240	987	2
	Seruvila	40 158	0	
	Eachchilampattu	281 1384	0	
	Kiniya	40 221	25	
	Kuchcheveli	450 1870	1	
	Town and Gravets	86	360	4
	Trincomalee total	**1137**	**4983**	**32**
Grand total		**8099**	**31341**	**94**

All the farmers involved in this survey had been affected by Tsunami and some families lost their members who were dead. It appeared that many of them were under "Mental Trauma" at different degree.

The enumerators, who carried out the survey had to spend sometime to make them comfortable in order to bring the in a form to answer the questions that were put to them. It is necessary to mention that a greater proportion of the farmers got displaced and reside elsewhere. Time had to be spent to locate in order to be access to them.

3.1 Damage to Agriculture

The damages to agriculture sector are mainly confined to the destruction of standing crops in paddy and other field crops and home gardens along the entire coastal belt and washing away of parts of cashew and betel cultivations. Entry of sea water to productive fields has induced soil salinity at a substantial level in some areas. Consequently, farmers may have difficulties to grow crops in those soils for a period until seasonal monsoon rains naturally flush out the salinity. However, alternate locations for cultivations may be found for these farmers. In terms of livestock, many poor families have lost domestic animals, which served as a safety net against vulnerability of crop failures, provided supplementary incomes and added health and nutritional benefits. Agricultural infrastructure was also damaged, including a number of public buildings.

In order to assess the damage to agriculture data were collected on the extent of damage to cultivated crops and losses to livestock and farm equipment and tools directly from the affected farmers.

Damage to Crops

The crops devastated by Tsunami, as a result of sea water intrusion inland are broadly categorized into field crops and permanent crops that were cultivated by the farmers. A wide range of field crops were included as follows:

Paddy and other cereals, pulses, subsidiary food crops (SFC) including chillies and onions, tuber crops, vegetables, etc. The permanent crops namely coconut, cashew, betel and fruits mainly banana, mangoes and citrus were included in the survey. The extents of damage to different crops in 3 districts are given in table 3.3 and the details on GN division basis are in appendix.

Table 3.3: Extent of damage to different crops in three districts

District	***Field crops in acres***			***Permanent Crops***			
Paddy	OFC	Vegetables		Coconut (Number)	Cashew (Number)	Betel (ac)	Fruit crops (Num)
Ampara	4833 105		258	2371	-	-	-
Batticaloa	137 244		850	18629	6447	26	13430
Trincomalee	179	583	125	2914	-	-	-
Total	**5,149 932**	**1,233**		**23,914**	**6,447 26**		**13,430**

Damage to paddy was the highest in Ampara, which was 94 % of that in East. Maximum damage to OFC was in Trincomalee district. (63% of East), vegetables in Batticaloa district (69 % of East). The other field crops (OFC) grown in this part of Sri Lanka are pulses, chillies, onions, etc., and the vegetables primarily include brinjal, okra, tomato, cucurbits, etc.

A total of 5149 hectares of paddy land, 932 hectares of other field crops, and 1233 hectares of vegetable cultivation were completely destroyed in Ampara, Batticaloa and Trincomalee districts. The extent of damage was highest to paddy crop (4833 ha) in Ampara district, it was the highest for other field crops

(583 ha) in Trincomalee district and that for vegetables, was 850 ha in Batticaloa district. The analysis showed that the extent of damage is the reflection of the cultivated extent of the crops in different districts.

As far as the permanent crops are concerned, the count of damaged coconut in Ampara, Batticaloa and Trincomalee were 2371, 18627 and 2914 respectively and 13,430 fruit crops were damaged in Batticaloa district. Betel and cashew are special and specific crops for Batticaloa district and 6447 cashew trees and 26 acres of beetle were destroyed.

Among the permanent crops, damage to coconut was at the highest level in Batticaloa district. Damaged coconuts were mostly in very early stage of growth and development. The damage to cashew and betel plantation were in the same district. The plantations of these crops were located within the close range from sea. It was observed that more than 90 percent of betel plantation has been wiped away by Tsunami waves.

Ampara district had the largest extent of paddy damaged by Tsunami among the total field crops grown in that district whereas the biggest damage was to vegetables in Batticaloa district and to other field crops in Trincomalee district.

3.2 Livestock losses

Seawater forced by Tsunami waves into the land swept away the livestock and caused losses of cattle, goats and poultry. Since livestock provides assurance of round the year income, their losses impose a serve setback on the livelihood of the farmers. The losses of different livestock in 3 districts are shown in table 3.4 and losses on GN division basis are in appendix.

Table 3.4:Number of livestock losses in three districts

District	**Livestock (Number)**		
	Cattle	**Goat**	**Poultry**
Ampara	1208	1192	91398
Batticaloa	2449	3034	68441
Trincomalee	472	1092	8022
Total	**4,129**	**5,318**	**167,861**

The number of cattle lost was 2449 (59% of East) in Batticaloa district, which was the highest recorded from the survey meanwhile, it was the highest for goat again in Batticaloa district, estimated 57% of Eastern Sri Lanka. In Ampara district loss of poultry was maximum, which is 54% of the total loss of this region. However, it is evident that poultry experienced the largest loss in all three districts indicated by figures 3.4, 3.5 and 3.6.

3.3 Farm Equipment Losses

Farm equipment such as 4 wheel tractors, 2 wheel tractors, water pump and sprayers are the essential items in farming for crop establishment and maintenance of crops in good conditions for economic crop production. Their losses invariably affect the farming in a remarkable manner. Therefore, these items were considered in the survey and their losses in 3 districts are indicated in table 3.5 and losses in GN division basis are in appendix.

Table 3.5: Loss of farm equipment

District	**Farm equipment (No)**				
	4W tractor	2W tractor	Water pump	Sprayer	Others
Ampara	-		96	131	-
Batticaloa	7	1	303	450	7
Trincomalee	-	-	231	166	-
Total	**7**	**3**	**630**	**747**	7

Losses of Farm Tools

It is a well known fact that mammoty is an important tool used by our farmers. Other tools like fork and weeders are also used and therefore these tools were considered in the survey. The losses in number on district basis are given in table 3.6 and on GN division basis in appendix.

Table 3.6: Losses of farm tools in three districts

Districts	**Farm tools (No)**			
	Mammoty	Knife	Axe	Others
Ampara	667	-	-	-
Batticaloa	3686	3208	1638	3295
Trincomalee	1200	547	316	160
Total	**5,553**	**3,755**	**1,954**	**3,455**

The survey indicates that the farmers have lost their mammoties, which are generally used in farm work and also at their homes.

4 Need Assessment

Another important aspect in this survey was to assess the need of affected farmers to revive the agricultural activities in order to restore their livelihood. This forms the vital part of the survey to prepare an estimate for financial assistance. The needs were grouped into:

1. Input requirements for crop production
2. Livestock requirement
3. Requirement of farm machineries and tools
4. Requirement for infrastructure development

4.1 Input requirement for crop Production

In order to establish a crop and get an economic return, good quality seed, fertilizers and pesticides are the needy inputs. Good quality seeds or vigorous healthy seedlings are the basic requirement for crop production.

Application of recommended levels of fertilizers and appropriate pesticides are required to achieve economic crop yield. Having all these in mind, the affected farmers were interviewed to obtain their requirements, which are tabulated in table 3.7 for 3 districts and requirements for GN divisions are found in appendix.

From the requirement made by the farmers, it is possible to visualize that there is demand for paddy cultivation in Ampara district meanwhile demand exists for vegetables, chillies and betel cultivation in Batticaloa and Trincomalee districts. Farmers showed keen interest to re-establish the crops that had been traditionally grown in the respective locations. It has been observed that handful farmers have already started land preparation and a few of them already established the crop like betel in the Batticaloa district, irrespective of the soil conditions.

Table 4.1 Input requirement for three districts

District	**Crops**	***Inputs requirement***		
		Seed (kg)	Seedlings	Fertilizer (kg)
Ampara	Paddy	289960	-	966535
	Vegetables 51524		-	51524
	Coconut	-	6646	6646
	Permanent crop	-	2370	2370
	OFC	1055	-	10550
Batticaloa	Paddy	8220	-	27400
	Vegetables 180460		-	180460
	Coconut	-	18943	18943
	Cashew	-	6447	6447
	Betel	-	946000	157666
	Other Permanent crop	-	15534	15534
	OFC	2490	-	24900
Trincomalee	Paddy	10801	-	38000
	Vegetables	75	-	75230
	Coconut	-	2455	2455
	Permanent crop	-	2270	2270
	OFC	123282	-	46564
Total		**667,867**	**1,000,665**	**1,633,494**

4.2 Livestock Requirement

Unlike crop agriculture, livestock sector generates a steady income throughout the year. Livestock is considered as an insurance and cash stock reserve to get quick money under emergency situation. The farmers affected by Tsunami are really keen to receive livestock such as cattle, goats and poultry to revive their livelihood. The survey assessed the need for livestock by interviewing the farmers and is given on district basis in table 4.1 and on GN division basis in the appendix.

Table 4.1 Requirement of livestock in three districts

District	***Livestock requirement***		
	Cattle	Goat	Poultry
Ampara	1209	1193	91399
Batticaloa	2449	3034	68441
Trincomalee	759	1133	3560
Total	**4,417**	**5,360**	**163,400**

The requirement for cattle ranked highest in Batticaloa district while it is at the highest level for goats also in Batticaloa district and the demand for poultry is in Ampara district. It is noted that demand for poultry is great as it can be easily managed and marketing seems to be not difficult. In addition, women of whom can manage it, many of them are war affected widows who are again victims of Tsunami.

4.3 Requirement of Farm Equipment and Tools

Farm machineries and tools are essential to re-establish crop and to maintain crops under good management conditions. The farmers were keen to request for these items. The affected farmers have no purchasing power as their home economy is brought down to rock bottom after tsunami. The actual need of the farm equipment and tools were identified through personal interview and are given in table 4.2 on district basis. The details on GN division basis are in appendix.

Table 4.2 Requirement of farm equipment and tools in three districts

District	***Farm equipment***				***Farm tools***		
	4W tractor	2W tractor	Water pump	Sprayer	Mammoty	Knife	Others
Ampara	- -	96	131	667	-	-	
Batticaloa	14	2	696	548	4375	3565	5270
Trincomalee	0	0	527	215	2885	1795	1603
Total	**14 2**	**1319**	**894**	**7927**	**5360**	**6873**	

Paddy farmers who have more than one acres of paddy land requested tractors. Vegetable growers and the farmers involved in the cultivation of subsidiary food crops such as chillies and onions and vegetables and in betel cultivation also expressed their need for water pumps. Invariably all the crop growers were in need of sprayers for the application of insecticides and weedicides to enhance productivity.

Mammoty is a versatile tool for various purposes in crop production and in day-to-day work.

4.4 Other Requirements

Group discussions revealed that infrastructure needs development. This includes repairing of roads, construction of access roads to cultivated areas, establishment of stores for dry seed storage, cold storage to preserve vegetables and fruits, improving transport and marketing channel etc. The lack of facilities did exist even before Tsunami.

Paddy farmers expressed that they are badly in need of paddy threshers as they undergo difficulties to seek labourers during harvesting period. They are in opinion that if 4 wheel tractors, 2 wheel tractors and threshers/ combined harvesters are provided to Farmer Organizations or APCs they would be able to utilize these machineries effectively when required.

Most of the vegetable growers are interested to see that seedling nurseries are established in Agricultural Instructors' divisions or at APCs for the supply of seedlings of some vegetable crops such as chillies, brinjals, tomato etc. and also for the supply of grafts of some fruit crops namely mangoes and citrus.

5. Estimation of Damage to Agriculture

The losses estimated in terms of rupees and cents for different crops, livestock and farm equipment and tools on district basis are shown in tables 5.1, 5.2, 5.3 and 5.4

Table 5.1 Value of crop damage in three districts (Rs.)

DISTRICT	**Paddy**	**OFC**	**Vegetables**	**Coconut**	**Cashew**	**Betel**
Ampara	57,992,160 1,050,000		7,728,680	-	-	-
Batticaloa	1,644,000	2,490,000	26,289,000	4,735,500	16,117,500 8,221,600	
Trincomalee	3,097,400	22,461,700	4,949,072	-	-	-
Total	**62,733,560**	**26,001,700**	**38,966,752**	**4,735,500**	**16,117,500**	**8,221,600**

The value of loss to crop sector, resulted from the damage of standing crops has been estimated to be Rs 66,770,840 for Ampara district, Rs 59,497,600 for Batticaloa district and Rs 30,508,172 for Trincomalee district. The total loss of Rs. 156,776,612 (about 157 million rupees) was experienced in crop sector in the eastern part of Sri Lanka and this accounts only for the damage of standing crops.

Table 5.2 Values of livestock losses in three districts (Rs.)

District	**Cattle**	**Goat**	**Poultry**
Ampara	12,088,700	5,963,725	22,849,700
Batticaloa	12,245,000	15,170,000	17,110,250
Trincomalee	4,720,000	5,460,000	2,005,500
Total	**29,053,700**	**26,593,725**	**41,965,450**

In livestock sector, Ampara experienced a loss of Rs. 40,902,125 meanwhile the value of losses in this sector in Batticaloa and Trincomalee districts were Rs 44,525,250 and Rs 12,185,000 respectively. The total estimated loss in livestock sector in Eastern Sri Lanka was Rs.97,612,250 (about 98 million rupees).

Table 5.3 Value of farm equipment lost (Rs)

District	**4W tractor**	**2W tractor**	**Water pump**	**Sprayer**	**Others**
Ampara	-	500,000	2,880,000	655,000	-
Batticaloa	4,200,000	250,000	8,820,000	2,215,000	2,800,000
Trincomalee	--	-	6,930,000	830,000	-
Total	**4,200,000**	**750,000**	**18,630,000**	**3,700,000**	**2,800,000**

Table 5.4 Value of farm tool lost (Rs)

District	**Farm tools (No)**			
	Mamooty	Knife	Axe	Others
Ampara	333,000	-	-	-
Batticaloa	1,812,500	641,600	484,800	3,259,000
Trincomalee	600,000	109,400	94,800	-
Total	**2,745,500**	**751,000**	**579,600**	**3,259,000**

It was realized that there had been substantial losses of water pumps and sprayers and tools like mammoties in these three districts and the value of their losses were estimated to be Rs.3,535,000 for Ampara district, Rs 11,035,000 for Batticaloa district and Rs. 7,760,000 for Trincomalee district.

The farmers in 3 districts lost Rs 269,217,947 (estimated value) as a result of Tsunami. Batticaloa district experienced the largest loss, considering crop, livestock and farm equipment and tools. The loss of farm equipment is a handicap to the farmers to reactivate the agricultural activities and it is felt that there is an urgent need to replace them. The estimation of damage on GN division basis are in the appendix.

5.1 Cost Estimates and Financial Assistance Requirement to Crop and Livestock Sectors

Immediate recovery programme covering the next 3-12 months should focus on helping affected farmers from their losses by ensuring that those dependent on crop husbandry and livestock raising and included in any cash assistance programmes.

The following estimates are calculated based on the needs for inputs, livestock and farm equipment and tools.

Table 5.5 Financial costs for inputs requirement (Rs)

District	**Crops**	***Inputs cost***		
		Seed	Seedlings	Fertilizer
Ampara	Paddy	5,799,212	0	57,992,120
	Vegetables	103,049	0	3,091,472
	Coconut	0	166,138	332,275
	Permanent crop	0	237,083	118,541
	OFC	79,125	0	633,000
	Amp. Tot.	**5,981,386**	**403,221**	**62,167,408**
Batticaloa	Paddy	164,400	-	1,644,000
	Vegetables	360,920	-	10,827,600
	Coconut	-	473,565	947,130
	Cashew	-	644,700	322,350
	Betel	-	2,838,000	9,460,000
	Permanent crop	-	1,553,450	776,725
	OFC	186750	-	1494000
	Batti. Tot.	**712070**	**5509715**	**25471805**
Trincomalee	Paddy	216,020	-	2,280,000
	Vegetables	150,460	-	4,513,800
	Coconut	-	61,375	122,750
	Permanent crop	-	227,050	113,525
	OFC	9,246,150	-	2,793,870
	Trinco Tot.	**9612630**	**288425**	**9823945**
Total		**16,306,086**	**6,201,361**	**97,463,158**

The survey has indicated that greater demands do exist for inputs such seeds and planting materials and fertilizers. Recovery needs are Rs 68,522,015 for Ampara, Rs 31,693,590 for Batticaloa and Rs 19,725,000 for Trincomalee as far as these inputs are concerned. The total recovery cost for inputs to be used in crop production in eastern Sri Lanka is estimated as Rs.119,940,605 (120 million rupees).

Table 5.6 Financial costs for livestock requirement in three districts (Rs)

District	***Livestock cost***		
	Cattle	Goat	Poultry
Ampara	8,462,090	3,220,411	11,424,850
Batticaloa	17,143,000	8,191,800	8,555,125
Trincomalee	6,065,000	1,510,000	798,700
Total	**31,670,090**	**12,922,211**	**20,778,675**

The requirements for livestock namely cattle, goats and poultry have been estimated and their recovery cost was calculated based on prevailing prices. The recovery cost for cattle, goats and poultry are Rs 8,462,090, Rs 3,220,411, Rs 11,474,850 respectively in Ampara district. Similarly Rs 17,143,000 for cattle, Rs 8,191,800 for goats, and Rs 8,555,125 for poultry in Batticaloa district. In Trincomalee district the estimated recovery cost for

cattle, goats and poultry are Rs 6,065,000, Rs 1,510,000, Rs 798,700 respectively. The total estimated recovery cost for investment in livestock to rehabilitate this sector in eastern Sri Lanka is Rs.65,370,976 (about 65 million rupees)

Table 5.7 Financial cost for equipment and tools required in three districts (Rs)

District	**Farm equipment**				**Farm tools**			
	4W tractor	2W tractor	Water pump	Sprayer	Mammoty	Knife	Axe	Others
Ampara	-	-	2,880,000	655,000	333,500	-	-	-
Batticaloa	8,400,000	500,000	20,880,000	2,740,000	2,187,500	713,000	507,900	3,577,000
Trincomalee	-	-	15,810,000	1,075,000	1,442,500	1,795	1,603	-
Total	**8,400,000**	**500,000**	**39,570,000**	**4,470,000**	**3,963,500**	**714795**	**509503**	**3,577,000**

The estimated cost for required farm equipment especially water pumps and sprayers and for required tools like mammotty are Rs 3,870,500 for Ampara, Rs 39,485,400 for Batticaloa and Rs 18,327,500 for Trincomalee districts.

It has been estimated that the recovery cost for the development of crop sector is Rs.181,701,105 (about 182 million rupees) and for the development of the livestock sector is Rs. 65,370,976 (about 65 million rupees). These two added up to a total of Rs. 247,072,081 (about 247 million rupees); in order to re-establish the crop and livestock sectors in Tsunami affected areas in three districts of Eastern Sri Lanka. On district basis, Ampara requires Rs.95,527,866 meanwhile Batticaloa and Trincomalee need Rs.105,118,015 and Rs.46,426,200 respectively to rehabilitate and reconstruct these two sectors (table 3.17).

5.2 Cost estimates and Financial Assistance for Infrastructure development

Estimation is Rs. 25 million for each district.
Ampara district Rs. 25,000,000.00
Batticaloa district Rs. 25,000,000.00
Trincomalee district Rs. 25,000,000.00
Total Rs. 75,000,000.00 (75 Million Rupees)
The infrastructure development primarily include:
Establishment of storage structures for dry grains
Establishment of cold storage structures for vegetables and fruits
Repairing of roads to facilitate transport

5.3 Cost for Reclamation and Financial Assistance

Reclamation cost is estimated Rs.10 million for each district
Ampara district Rs. 10,000,000.00
Batticaloa district Rs. 10,000,000.00
Trincomalee district Rs. 10,000,000.00
Total Rs. 30,000,000.00

The process of reclamation involves

- Soil amending
- Improve drainage
- Development of bunds

Table 5.8 Cost estimate and financial assistance for different components in crop and livestock development in three districts

District	Seed andplanting material	Fertilizer	Tractor	Sprayer	Waterpump	Mammoty	Others	Cattle	Goat	Poultry	Total
Ampara	6,384,607	62,167,408	-	655,000	2,880,000	333,500	-	8,462,090	3,220,411	11,424,850	95,527,866
Batticaloa	6,221,785	25,471,805	8,900,000	2,740,000	20,880,000	2,187,500	4,827,000	17,143,000	8,191,800	8,555,125	105118015
Trincomalee	9,901,055	9,823,945	-	1,075,000	15,810,000	1,442,500	-	6,065,000	1,510,000	798,700	46,426,200
TOTAL	**22,507,447**	**97,463,158**	**8,900,000**	**4,470,000**	**39,570,000**	**3,963,500**	**4,827,000**	**31,670,090**	**12,922,211**	**20,778,675**	**247,072,081**

Southern and Southwestern Region

HAMBANTOTA DISTRICT

2.1. District Profile

Hambantota is the largest administrative district in the Southern Province occupying 2,623 sq.km of land area, with a population of approximately 0.52 Mn people (population density 210 persons/km^2). The coastal belt stretches over 150 km with some areas more vulnerable than others. The district is being administered by a District Secretary/GA and includes a total of 12 Divisional Secretariat Divisions/AGA Divisions and 576 Grama Niladari Divisions at grassroot level (Figure 3).

Hambantota district belongs to the Low Country Dry Zone and includes DL_4 and DL_5 agro-ecological regions, with some areas extending to the Intermediate Zone ($1L_2/1L_3$). The coastal area belongs to DL4 and DL5 agro-ecological regions. The average annual rainfall ranges between 1000-1200 mm, received mainly during the 'Maha" season (October-January) showing somewhat skewed bimodal distribution pattern, with a distinct dry period of 3-5 months. The inland areas of the district are dominated by Reddish Brown Earths and in the coastal area; the predominant soils are the Alkaline Sediments with some areas having Low Humic Gley soils.

Hambantota district is one of the premier agricultural districts in the south, with more than 80% of the people engaged in agriculture/livestock and agro-based industries. Among agricultural crops, paddy is the most dominant lowland crop, occupying about 37,000 ha mainly under irrigated conditions, fed by several major irrigation schemes. In inland areas, subsidiary crops and fruits crops are grown especially in smallholdings, home gardens and under shifting cultivation. Meanwhile, the vegetation in coastal area is dominated by groves of coconut palms (Table 2).

Table 2. Agric. Land use pattern in Hambantota District - 2003

Major crop	Area (ha)
Coconut	23,199
Paddy	37,196
Banana	3,883
Cinnamon	1,710
Papaya	793
Vegetables	4,467
Subsiding crops	26,192

The District has a fairly large population of livestock, comprising neat cattle, buffalo, goats and poultry (Table 3). Among agro-industries, coir industry, toddy-tapping industry, rice milling industry and buffalo curd production are well developed, providing livelihood for a large segment of the rural population.

Table 3. Livestock population in Hambantota District - 2003

Category	Number
Neat cattle	78,534
Buffalo	64,465
Goat	17,300
Poultry	98,300

Of the 12 Divisional Secretariat Divisions in Hambantota District, essentially four DS Divisions (Tissamaharama, Hambantota, Ambalantota, Tangalle) have been severely battered by the Tsunami waves. Out of the 201 Grama Niladari Divisions, in the above four DS Divisions, 43 GN Divisions have been affected by Tsunami (Figure 2). Among the four DS divisions, **Tangalle DS Divisions** is the worst affected which included 26 GN Divisions and Tissamaharama was the least affected with only 3 GN Divisions devastated by Tsunami. Therefore, the field survey was conducted in the above mentioned four DS Divisions, namely **Tissamaharama**, **Hambantota**, **Ambalantota** and **Tangalle**.

2.2. Damage Assessment

Hambantota District was one of the hardest hit southern coastal districts of Sri Lanka by the Asian Tsunami, resulting 4500 deaths and 963 missing people, now presumed to be dead. It was clearly evident that locations without coastal vegetation, areas with narrow beaches and low elevation to the sea level have been more valuarable to damage than other areas in the district. Out of 12 DS Divisions, 4 divisions have been affected and in particular Tangalla DS Division, which included 26 GN Divisions, was the worst hit area.

Apart from the loss to human lives and destruction to property, Tsunami waves triggered flash floods, which spread rapidly into inland areas up to a distance of over 1 km, through rivers, streams and irrigation canals, and inundated large extents of cropland and damaged standing crop. It also resulted in the loss of livestock and caused destruction/damage to agro-industries near the coastal zone. An estimation of the scale of damage caused by Tsunami in the Hambantota District is given in this section.

2.2.1. Crop Damage

Rice is a major crop occupying about 37000 ha of lowlands in the district Data from the field survey revealed that the standing rice crop has been extensively damaged, as a result of seawater laden with salt and other toxic material inundating around 388 ha of paddy fields. The financial loss incurred due to the damage of rice crop is estimated to be Rs. 19.8 Mln (Table 4). Rice cultivation being a main livelihood of the rural people in the Hambantota District, many farmers living in coastal areas would have suffered due to the loss of income from damaged rice crop.

Fruit crops and trees

Survey data showed that many varieties of fruit crops/trees suffered heavy damage due to Tsunami waves and surging floodwaters. Among them, Banana was the worst crop affected by salt-water intrusion to the land, damaging more than 18800 clumps, with an estimated loss of Rs. 10.2 Mln. (Table 4). Also, there was a range of fruit trees viz. jak, breadfruit, mango, papaya, citrus mainly grown in smallholdings and home gardens completely destroyed by seawater flooding the area, valued at Rs 11.0 Mln.

Coconut

Among plantation crops, coconut occupies a pre-eminent position in the coastal belt. Coconut being well adapted to the coastal climate, the extent of damage was minimal. As expected, scale of damage to coconut seedlings and young palms was much higher than bearing palms. According to the survey data, about 5388 coconut and king coconut seedlings/young palms have been damaged/destroyed by Tsunami with an estimated loss of Rs. 0.60 Mln, whereas only 287 bearing palms have been damaged/destroyed valued at Rs. 0.60 Mln. (Table 4). Among other upland crops, damage on leafy vegetables and ornamentals caused by Tsunami was 65 ha and 1200 plants, respectively.

Among farm implements, survey data showed damage to Eight (8) 2-wheel tractors, 126 water pumps, 28 threshers, 148 sprayers etc. valued at Rs 9.64 Mln.

The total damage caused to the agriculture sector in affected areas of Hambantota District is estimated at Rs. 57.82 Mln.

Details of the crop damage and estimated values in 20 GN Divisions belonging to 4 DS Divisions are presented in Annex 2.

2.2.2. Loss of Livestock

Although Hambantota District, has a fairly large livestock population (2,58,599) and loss of animals due to Tsunami disaster has been fairly high along the coastal belt. Since most of the livestock farmers are small-scale operators, it was considered important to estimate the loss to the livestock sector.

According to the survey data, a total of 213 neat cattle, mainly local breeds and 71, buffaloes managed on common grazing land have been killed/missing incurring a loss of Rs. 3.20 Mln. Meanwhile, the loss of poultry (962) and goats (06) was minimal (Table 5).

The total loss incurred to the livestock sector in affected areas of the district is Rs 3.40 Mln.

Details of the total loss of livestock population and estimated values in 26 GN Divisions belonging is 4 DS Divisions are presented in Annex 3.

2.2.3. Damage to Agro-based industries

Among agro industries, coir industry is well developed as a cottage industry run by the poor people living along the coastal belt of Hambantota District. As revealed from the survey data, Tsunami has caused a considerable damage to coconut husk pits (141 husk pits), loss of large number of coir yarn spinning machines (133) and coir fibre bales (6302 kg) incurring a total loss of Rs. 0.84 Mln (Table 6, Annex 4).

The survey also identified several damaged/destroyed plant nurseries in the district valued at Rs. 0.015 Mln.

The total damage caused to the agro-industries in affected areas of the district is estimated at Rs. 0.95 Mln.

2.2.4. Damage to cropland

The Tsunami inundated about 388 ha of paddy fields and about 66 ha of the upland with sea water in the Hambantota District. Due to the intrusion of salt water in to paddy fields and deposition of sand and other debris including thorny cactus species transported from the sea shore, these paddy fields have become unsuitable for rice cultivation atleast for sometime. The total extent of damage to croplands is estimated to be around 454 ha.

2.2.5. Damage to village fairs

Village fairs (Pola) is a popular market place for selling the agricultural produce harvested especially from smallholdings and home gardens. The survey established that the Tsunami has completely wiped out four (4) village fairs, located near the seacoast in the Hambantota District. The loss incurred by the damage is estimated at Rs. 3.0 Mln.

2.2.6. Total estimated loss of the District

The total estimated damage to the district resulting from the Tsunami damage to the Agriculture/livestock sectors, agro industries and community infrastructure is **Rs. 65.89 Mln**.

2.3. Needs Assessment

Hambantoa is one of the hardest hit coastal belt districts in the Southern region. As reported in the previous section (2.2) tsunami has caused considerable damage to the agriculture/livestock sectors in coastal areas and agriculture related infrastructure facilities.

The most immediate need, therefore is to restore the livelihoods of affected farmers and get them back on their feet. The recovery needs should be focussed essentially in providing the affected farm families with the required inputs, including planting material, and farm implements/tools and replacing the animal population either killed or lost by tsunami.

The recovery needs for Tangalle DS division, which was the worst affected area would be much higher.

2.3.1. Agriculture

Damage to agricultural crops is mainly confined to the destruction of standing rice crop and a range of upland/timber/fruit crops and trees. Data from the field survey have revealed that the standing rice crop has been extensively damaged in the Hambantota District. The total area of paddy fields that need to be reclaimed before recommencing rice cultivation is about 350 ha. The inputs needed, including seed paddy, fertilizer, agro-chemicals for the recovery of rice cultivation damaged by tsunami are listed in (Table 7, Annex 5). As the seepage of salt water from paddy fields is poor, there is an urgent need to clean drainage canals and remove the sand and other debris deposited on the land. This activity should be undertaken with the participation of rice farmers and should be given priority in the agriculture recovery process. The total need to recover the paddy sector is Rs. 77.8 Mln. Among upland crop varieties needed by the people, there is a big demand for coconut seedlings (3,478), as coconut is well adapted for coastal areas, providing multiple benefits to the family. In contrast, requirement of king coconut is much less (Table 8, Annex 6). Similarly, there is a unprecedented demand for banana plants, which is a very popular fruit crop in the coastal areas, particularly in home gardens and small scale gardens, providing a regular income to the family.According to the requirements, 29,670 banana suckers are needed for replanting the damaged areas.

The survey also reported that there is a need to provide a large quantity of perennial tree seedlings (eg. Jak, breadfruit, mango) for planting in the home gardens and supply 3636 ornamental plants to recommence their livelihood.

The affected people also requested to supply sufficient inputs (planting material, fertilizer) for cultivating 112 ha of damaged vegetable plots and 12000 cinnamon plants for replanting damaged cinnamon plots.

The total value of planting material and erecting plant nurseries required for the recovery of agriculture activities in the district is estimated at Rs. 17.0 Mln.

2.3.2. Farm Implements and machinery

With the action of tsunami waves, farmers in Hambantota district, particularly those engaged in rice farming, have also lost some of their farm implements and mechinery. Their requirement of farm implements and machinary should be supplied, as an inective to get back to their farming. According to the need assessment individual farmers have to be supplied with a range of basic tools/implements, including water pumps, sprayers, mammoties etc. (Table 9, Annex 7).

The toal value of the implements/machinery required to support agricultural activities is Rs. 10.9 Mln.

2.3.3. Livestock

As reported in the previous section (2.2), many poor families in Hambantota District have lost their farm animals due to tsunami disaster, which served as a safety net against vulnerability to crop failure. In addition, farm animals provide supplementary income and nutritional needs of the poor families. In order to recover the livestock sector, animal needs of the farmers have to be met immediately. According to the need assessment, farmers in Hambantota District would require 122 heads of neat cattle, 101 heads of buffaloa, 100 goats, 20 nos. pigs and 2900 birds to recommence their farming activities. It is noteworthy that after the tsunami many people are rather reluctant to eat fish and as a result the demand especially for broiler has increased tremendously. So, many people would be interested to engage in poultry faming and they will need at least few birds to start this activity. There is also a need to have at least a pair of goats to be given for each farmer so that the herd strength and productivity could be sustained. Some of the livestock farmers also required 20 cattle sheds, 29 poultry sheds and 4 pig sheds to provide proper housing. The total estimated value of the needs of individual farmers for the recovery of affected livestock sector in the district is Rs. 7.52 mln.(Table 10,Annex 8)

2.3.4. Agro-industries

Among agro-industries, only the coir industry which is developed alone the coast suffered some damaged. The tsunami has caused considerable damage to husk pits, and loss of coir spinning machines and coir fibre bales which have to be considered in the need assessment to revive the coir industry. A total value of Rs. 2.98 whould be required to recover the damage to the coir industry (Table 11, Annex 9).

2.3.5. Community needs

The survey also considered the community needs of the farmers in Hambantota District. According to the community needs assessment (Table 12), two village fairs in the coastal area and two irrigation canal have to be either repaired or reconstructed to facilitate the recovery process of the Agriculture sector in affected areas.The estimated value for repair/reconstruction work to meet the community needs in Rs. 2.9 Mln.

Table 12. Need Aassessment of support systems

Item	No.	Length (km)	Value (Rs. Mln.)
Village fairs	4	0	3.0
Irrigation canals	8	8	5.6
Total			**8.6**

2.3.6. Total estimated needs

The total estimated needs for implementing the recovery programme in tsunami affected areas of the Hambantota District is Rs. 119.08 Mln.

MATARA DISTRICT

3.1. District Profile

Matara is a well developed and populated coastal district in the South of Sri Lanka, occupying 1283 sq.km of land area. The total population is approximately 0.76 mn (population density 599/km^2). The coastal belt of Matara District stretches over 51 km with an uneven landscape and some areas being more vulnerable than others.

The District is being administered by a District Secretary/GA and includes a total of 11 Divisional Secretariat Divisions/AGA Divisions and 225 Grama Niladari Divisions at grass root level (Figure 4). Matara District belongs mainly to the low country wet zone and includes WL_1, WL_2, WL_4 agro-ecological regions. The coastal area comes within the WL_4 agro-ecological regions. The average annual rainfall exceeds over 2500 mm reaching an upper limit of 5000 mm in inland area, showing a strong bimodal distribution pattern with short dry spells. The predominant soils are the Red Yellow Podsols with some areas having Bog and Half-Bog soils.

Rainfed agriculture is one of the main forms of livelihoods of the people and as much as 80% are engaged in Agriculture/livestock or agro-based industries. Among agricultural crops, paddy occupies about 29,000ha of lowlands, while plantations crops (tea, rubber, coconut) and minor export crops occupy much of the inland areas (Table 13).

Table 13. Agricultural land-use pattern in Matara District - 2003

Major crops	Extest (ha)
Paddy	29,286
Tea	23,436
Rubber	3,614
Coconut	16,123
Cinnamon	7,768
Fruits	990
Vegetables	261
Root & Tubers	540

The total livestock population is much less in Matara District than in the Hambantota district except poultry, and includes neat cattle, buffalo, goats, and poultry (Table 14). Among agro-based industries, tea and coir fibre manufacture, coconut oil production and milk processing are well developed in the district, providing employment for a large segment of the population.

Table 14. Livestock population in Matara District - 2003

Livestock	Number
Neat cattle	30,400
Baffalo	10,400
Goat	3,500
Poultry	148,900

Of the 11 DS Divisions in Matara District, four DS/AGA Divisions (Dickwella, Devinuwara, Matara, Weligama) have been badly hit by the Tsunami. Further, out of the 190 GN Divisions located within the above four AGA Divisions, 63 Divisions have been affected by Tsunami (Figure 3). Among the four DS Divisions, **Weligama DS Divisions** was the worst hit area which included 26 GN Divisions, while other three Divisions were equally affected by Tsunami. Therefore, the field survey was confined to the above mentioned four DS Divisions, namely **Dickwella**, **Devinuwara**, **Matara** and **Weligama**.

3.2. Damage Assessment

Matara is a developed and populated coastal district in the southern province, badly affected by the Asian Tsunami waves, causing loss of human lives and destruction to property. According to available statistics, about 1300 people have been reported dead and 600 still missing. Due to the irregular topography and varying heights between the shoreline and sea level, some areas have been reduced to rubble, in comparision to others. Out of the 11 DS Divisions, 4 DS Divisions have been severely affected and in particular Weligama DS Division was the worst affected area in the district.

Besides the loss of human lives and damage to property, strong force of Tsunami waves spreading into inland area via water bodies have caused considerable damage/destruction to cropland, standing crops/trees, loss of livestock and damage to agro-industries. An assessment of the maguitude of damage caused by tsunami disista in the Matara District is given in this section.

Crop Damage

Rice is a major crop cultivated in the district, occupying about 25000 ha of lowlands. According to the survey data, about 107 ha of paddy field have been inundated with sea water, causing a considerable loss to the standing rice crop valued at Rs. 4.08 Mln.(Table 15, Annex 10).

Fruit crop/tree damage

Among fruit crops, a considerable number of banana clumps and other fruit trees (eg. Jak, breadfruit, mango, citrus) have been damaged due to flooding of salt water into inland areas. Survey data have reported that 19626 banana clumps mainly grown in smallholdings and home gardens scattered along the coastal area have been either damaged/destroyed by Tsunami. The banana crop damage is valued at Rs. 9.8 Mln (Table 15, Annext 11). Similarly, a considerable damage to other fruit trees have been recorded (6343 trees) and the loss incurred is estimated to be Rs. 31.67 Mln (Table 15).

Among plantation crops, coconut is a major crop grown along the coastal areas of the district. As coconut is well adapted to the coastal zone, the extent of damage was much less. According to the data, 5023 seedlings/young palms of coconut and king coconut have been damaged by the strong forces of Tsunami waves and flooding of sea water, and as expected damage to bearing palms was relatively less. The loss incurred by the damage to coconut and king coconut seedlings and bearing palms is estimated at Rs. 1.35 Mln.

Other important upland crops damaged were low-country vegetables, and leafy vegetables, as a result of flooding of sea water and inundating a total area of 32 ha. The loss of crop damage is estimated at Rs. 2.6 Mln. (Table 15). A small extent (1.3 ha) of cinnamon was also reported to be either damaged/destroyed by the tsunami valued at Rs. 0.13 Mln. and 17894 ornamental plants valued at Rs. 5.2 Mln. (Table 15).

Apart from the crop damage, a few farm implements have been damaged/destroyed and according to the survey data one two-wheel tractor and two thresher 15 water pumps, 21 sprayers etc. have been lost valued at Rs. 1.44 Mln. (Table 16, Annex 12).

Further, in Matara District, there is a huge demand for planting material and many plant nurseries have come up along the costal belt. The survey data showed that as many as 52 palnt nurseries havebeen damaged/destroyed by Tsunami, valued at Rs. 2.7 Mln. (Table 15).

The total loss of the Agriculture sector in affected areas of the district is estimated at Rs 57.40 Mln.

Details of the total loss of crop damage and estimated values in 63 GN Divisions located in 4 DS Divisions are presented in Annex 6.

3.2.1. Loss of Livestock

The total livestock population in Matara District is much less (1,93000) compared to that of Hambantota district, except poultry with 148900 birds. As revealed from the survey data, poultry sector suffered the heaviest blow due to tsunami attack with an estimated loss of 9609 birds valued at Rs. 2.1 Mln (Table 17, Annex 13). Further, the loss of neat cattle (88) and goat (133) has been reported valued at about Rs. 1.0 Mln. The survey also identified six damaged poultry sheds and one goat shed, valued at Rs. 0.06 Mln.

The total damage caused to the livestock sector in affected areas of the district is estimated at Rs. 3.27 Mln.

Details of the total loss of livestock popular and estimated value in 24 GN Divisions belonging to 4 DS Divisions and presented in Annex 7.

3.2.2. Damage to Agro-based industries

Few coconut-based industries are well established in Matara District and among them the coir industry in particular incurred heavy losses from Tsunami. According to the survey data, 222 coconut husk pits, 04 small scale coir fibre mills, 202 coir yarn spinning machines and pieces of finished coir products have been completely destroyed/damaged. Apart from this, two coconut oil extraction machine have been destroyed, valued at Rs. 0.8 Mln. (Table 18, Annex 14).

The total loss caused to the agro-industries in the district is estimated at Rs. 2.51 Mln.

3.2.3. Damage to cropland

In Matara District, about 107 ha of paddy fields in coastal areas have been inundated with salt water and other debris deposited on the surface, making it unsuitable for rice cultivation atleast for few seasons. Among upland crops, about 1.3 ha under cinnamon, 32 ha under low-country vegetables and leafy vegetables have been affected due to flooding of seawater. The total extent of damage to cropland is estimated to be 140 ha.

3.2.4. Damage to Village fairs

The Tsunami waves did not even spare the village fairs (pola) located in the coastal areas of the district. The survey established that six village fairs close to the seacoast have been completely destroyed and the loss is estimated at Rs. 4.5 Mln.

3.2.5. Total estimated damage of the district

The total estimated damage of the district to the agriculture/livestock sectors, agro industries and village fairs is Rs. 67.28 Mln.

3.3. Need Assessment

Matara district affected by tsunami needs redress urgently. As reported in the previous section (2.2) violent action of the tsunami waves and flooding of salt water into inland areas have caused extensive damage to standing crops/trees, loss of livestock and damage to several agro-industries needing immediate attention. According to the survey data, four DS Divisions in the district have been affected by tsunami and a recovery programme should be implemented in these areas to revive the agriculture, livestock sectors and related activities.

3.3.1. Agriculture

Among crops, tsunami has affected paddy fields in and around the coastal areas which need to be reclaimed soon, to enable farmers to resume their rice cultivation. According to the survey data, there are about 116 ha of paddy fields that, need to be rehabilitated. Further, individual farmers' seed paddy requirements, and other inputs such as fertilizer, insecticides etc. have to be met before theystart cultivation. The total investment required to satisfy the input needs for rice cultivation is estimated at Rs 24.9 mln (Table 19, Annex 15).

As revealed in the previous section (2.2) tsunami also caused extensive damage or destruction to a range of upland crops, including coconut, banana, other fruit trees etc. Coconut being a popular crop in the coastal areas, there is a heavy demand for coconut seedlings by the people in affected areas (Table 20). Banana is a very popular fruit crop in the coastal area, which suffered heavy losses during tsunami due to the flooding of salt water. For this reason, there is very high demand for banana suckers, in excess of 22,000 for replanting in affected areas. Other perennial fruit trees (eg. jak, breadfruit, mango) affected by tsunami need to be replaced early to re-develop the home garden. There are small scale businessmen who raised ornamental plants for sale and tsunami has caused considarable damage, over 17,000 plants to which needs replacement and assist the poor people to get on with their business activities soon (Table 20, Annex 16).

Some farmers in affected areas also need inputs for vegetable and cinnamon cultivation and according to the need assessment, inputs such as seed material, fertilizer, agro-chemicals are needed to cultivated 32 ha of vegetable and about 1.8 ha of cinnamon in the district which have been destroyed by the tsunami.

Due to the heavy demand for planting material of various crops/trees, a large number of plant nurseries have existed in coastal areas and at least some of these plant nursaries have been damaged or destroyed by tsunami. According to the need assessment, about 44 plant nursaries have to be repaired or reconstructed in coastal areas of the district. Given the quick income earning capacity establishment of plant nursaries need to be given priority, which will be a further implements to the affected people. The value of the recovery process for plant nursaries is estimated at Rs 8.7 mln (Table 20).

The total value of inputs and plant nursaries required to compensate for the loss of upland crops and plant nursaries is estimated at Rs 19.2 Mln.

3.2.2. Farm implements and machinary

There is also a need to replace farm implements machinery lost during the tsunami disaster in affected areas, which include water pumps, sprayers, mammoties etc. (Table 21, Annex 17). The investiments required to supply these items to the farmers in the district would be around Rs 7.06 mln.

3.2.3. Livestock

Livestock farming near the coastal area also suffered by Tsunami resulting the loss of some farm animals raised mainly in homesteads. Since poultry is usually managed under enclosed systems, a large number of birds have been found either killed or missing. Consequently, the need to replace the lost birds for the affected people is very high. According to the need assessment, over 22,000 birds have to be given to the farmers and encourage them to make a fresh start (Table 22). The demand for cattle and goats is also high, needing 125 improved cattle and over 200 goats. Some farmers also want to erect sheds for animals and according to the need assessment, 40 goat sheds and 23 poultry sheds are needed (Table 22, Annex 18).

The total value for the recovery of livestock sector is estimated at Rs 5.98 Mln.

3.2.4. Agro-industries

There are also few coconut based industries which have been completely damaged or destroyed by tsunami. These are actually being managed by individuals and families who eke a living by selling the products to exporters.

The affected small entrepreneurs are very keen to get back to their vocation but need some support at the initial stage. According to the need assessment, both coir industry and coconut oil milling industry have to be supported, which provide employment for many local people, including women in the affected area. Those engaged in the coir yarn spinning, which is well developed as a cottage industry have to be provided with manually operated machines, and sufficient raw material as an immediate need to start their vocation and follow it up by cleaning the husk pits filled with mud and other debris. In addtion, couple of small scale coir fibre mills along the coastal area in the district have been reported to be damaged by tsunami, which needs to be repaired to recommence operations soon and re-employing the work force who now finds it difficult to make ends meet. Also, there is a damaged coconut oil milling extraction machine, which needs urgent repairs. The value of replacing coir spinning machines, and making repairs to damaged husk pits and coir/oil mills is estimated at Rs 5.98 mln (Table 23, Annex 19).

3.3.5. Community needs

In the survey, some community needs have been assessed, which are related to the agriculture sector. In the Matara district, action of tsunami has caused damage to few village fairs, irrigation canals and eroded banks of water streams, which need urgent repairs to support crop cultivation and marketing the agricultural produce especially harvested from home gardens. The value of repairs and reconstruction of these agriculture support systems including 06 village fairs, 12 irrigation canals is estimated at Rs 33.3 Mln (Table 24).

Table 24. Need Assessment of support systems

Item	No.	Length (km)	Value (Rs. Mln.)
Village fairs	6	0	4.5
Water stream	3	4.5	6.0
Irrigation canals	12	26.4	22.8
Total			**33.3**

3.3.6. Total estimated needs

The total estimated needs to recover the agriculture/livestock and agro-industries in tsunami affected areas of the Matara district is Rs. 96.42 Mln.

GALLE DISTRICT

4.1. District Profile

Galle is another well developed and populated coastal district in the South, occupying a land area of 1652 sq.km, with a total population of approximately 0.99 mn (population density 613 persons/km^2). Galle District, blessed with a natural harbour and historical fortress is a well known tourist destination and the coastal belt with golden beaches stretching over 73 km. In fact Galle district was the worst affected of all districts by tsunami, causing heavy damage to property and loss of lives.

The District is being administered by a District Secretary/GA and includes a total of 18 Divisional Secretariat Divisions/AGA Divisions and 896 Grama Niladari Divisions at grass root level (Figure 5).

Galle District belongs to the low country wet zone and includes WL1, WL2 and WL4 agro-ecological regions. Of these, coastal area belongs to WL4 agro-ecological regions. The average annual rainfall is around 2300 mm reaching a maximum limit of 4000 mm, showing a bimodal distribution pattern. The predominant soils in the district are Red Yellow Podsols with some areas having Bog and Half-Bog soils.

Rainfed agriculture is one of the main livelihoods of the people and the majority (atleast 80%) are engaged in agriculture/livestock and agro-based industries. Among agricultural crops, paddy is the major crop of the lowlands, occupying about 27,000 ha. Meanwhile, the upland area is dominated by plantation crops such as Tea, Rubber, Coconut and Minor Export Crops (Table 25).

Table 25. Agricultural land-use pattern in Galle District - 2003

Crop	Extert (ha)
Paddy	27,890
Tea	24,920
Rubber	6,518
Coconut	12,880
Cinnamon	9,820
Tubers	330

The livestock population has shown a rapid decline with the passage of time and includes neat cattle, buffalo, goat, poultry and swine (Table 26). Among agro-based industries, tea and cinnamon processing, coir fibre and coconut oil manufacture are the main enterprises, which are being operated at the cottage level and commercial level.

Table 26. Livestock population in Galle District - 2003

Category	Number
Neat cattle	4,900
Baffallo	1,500
Goat	1,404
Pigs	178
Poultry	81,236

Of the total 18 DS/AGA Divisions in Galle District, six Divisions (Habaraduwa, Galle, Hikkaduwa, Ambalangoda, Balapitiya and Bentota) have been completely ravaged by Tsunami waves. Furthermore, out of the total of 364 Grama Niladari Divisions located within the above six DS Divisions, 88 GN Divisions have been badly hit by Tsunami (Figure 4). Among the six DS/AGA Divisions in Galle District, **Hikkaduwa DS Division** was the worst hit area which included 37 GN Divisions and Bentota Division was the least affected which included 06 GN Divisions. Therefore, the field survey was concentrated in the six affected DS/AGA Divisions in the District namely **Habaraduwa**, **Galle**, **Hikkaduwa**, **Ambalangoda**, **Balapitiya** and **Bentota**.

4.2. Damage assessment

Galle District is another developed and populated coastal district in the South, which received heavy battering by massive tsunami attack, leaving more than 4200 people dead and 550 missing. Out of the six DS Divisions ravaged by tsunami, Hikkaduwa DS Division was the worst hit area which included 37 GN Divisions. It is now abundantly clear that coral reef mining operating in the area for a long period is the main cause for massive destruction of the property and loss of lives.

Besides the loss of lives and destruction to the property, strong forces of tsunami waves along with flow of sea water into inland areas have caused considarable damage/destruction to the cropland, standing crops/trees, loss of livestock and damage to agro-industries. An assessment of the extensive damage to the above mentioned agrcultural activities caused by Tsunami in the Galle District is given in this section.

Crop damage

Rice cultivation is a major farming activity in the Galle District, occupying a total extent of 27,000 ha. According to the survey data, 166 ha of paddy fields have been affected due to flooding of salt water and deposits of sand and other debris. The financial loss incurred due to the damage of rice crop is estimated as Rs. 6.35 Mln. (Table 27, Annex 21).

Among the important upland crops, heavy damage has been reported on banana and other tree crops. According to the survey data, about 34,300 banana clumps and 8,000 fruit trees (jak, breadfruit, mango, citrus) have been damaged/destroyed, valued at Rs. 17 Mln. and Rs. 72 Mln, respectively (Table 27). Among other crops, tsunami also caused considerable damage to 38 ha cultivated with vegetables and the standing crop damage is estimated at Rs. 2.95 Mln.

Coconut is an important plantation crop which suffered heavy damage by the strong forces of tsunami waves in the Galle district, despite being well adapted to the coastal environment. According to the survey data, as many as 32,000 coconut and king coconut seedlings/young palms have been damaged/destroyed. Also, a large number of bearing palms (2700 palms) have been damaged, causing a total estimated loss of about Rs. 4.5 Mln (Table 27). Galle District is a major cinnamon growing district and according to the survey data, nearly 21 ha under the cinnamon crop have been affected by tsunami, valued at Rs 2.1 Mln (Table 27). Apart from these crops, a large number of ornamental plants (13,000) were affected.

Due to the heavy demand for planting material, several plant nurseries have been established in the Galle District in recent years. Survey data showed that as many as 36 plant nursaries have been destroyed/damage by the tsunami, incurring a loss of about Rs. 0.60 Mln.

Survey identified damaged or loss to farm machinery/implements including 2 tractors, 5 threshers, 105 water pumps and 42 sprayers valued at Rs. 5.6 Mln. (Table 28, Annex 22).

The total damage caused to the Agriculture sector in affected areas of the district is estimated at Rs. 115.5 Mln. Details of the total damage to crops/trees and estimated value in 103 GN Divisions located in 6 DS Divisions are presented in Annex .21.

4.2.1. Loss of Livestock

Although livestock population in Galle district is much less compared to other three districts surveyed, the highest number of animal losses was reported from this district. Among livestock populations, poultry sector suffered most following the loss of more than 15,000 birds valued at Rs. 3.17 Mln. (Table). Loss of neat cattle was also reported to be higher, with over 400 animals being killed or missing by the violent action of tsunami, valued at Rs. 4.7 Mln. Apart from this, some baffaloa (13),and goats (65) have been found either missing or lost, valued at Rs. 0.29 Mln. (Table 29). The field survey also discovered few damaged poultry sheds (9) and cattle sheds (3) valued at Rs. 0.12 Mln.

To total loss caused to the livestock sector in affected areas of the district is estimated at Rs. 8.4 Mln.

Details of the total loss incurred from the death or missing animals in 38 GN Divisions located in 6 DS Divisions are presented in Annex 23.

4.2.2. Damage to Agro-based industries

Among agro-based industries, coir industry is well developed in the Galle District, mainly as a cottage industry, providing livelihoods to a large number of poor women. It has been reported that more than 90% of the coir industry in the Galle district have been severely affected by Tsunami, particularly in the villages of Madampagama, Akurala, Seenigama, Paraliya, Urawatta, Ratgama and Kahawa in the Hikkaduwa DS Division. Coir yarn produced in this area is widely used in the manufacture of geo-textile, which is being exported mainly to Korea. The survey data revealed a heavy damage to the coir industry as a large number of coir yarn spinning machines (294) have been lost or missing, valued at Rs. 0.59 Mln. (Table 30, Annex 24). In addition, about 28 coconut husk pits, about 108 kg coir fibre bales and pieces of finished coir products have been lost due to tsunami, valued at Rs. 0.09 Mln.

The total loss caused to agro-industries in affected areas is estimated at Rs. 0.67 Mln.

4.2.3. Damage to cropland

In the Galle District, about 160 ha of paddy lands in coastal areas have been affected due to flooding of salt water and deposits of sand and other debris transported from seashore, making it unsuitable for rice cultivation at least for sometime. Among lowland crops, 21 ha under cinnamon cultivation, 38 ha of land under vegetables have been affected by tsunami, making the total affected cropland in Galle District to 225 ha.

4.2.4. Damage to village fairs

In the Galle District, survey data reported that six village fairs have been destroyed by Tsunami, valued at Rs. 5.4 Mln. Given the importance of village fairs as a popular market place for selling agricultural produce harvested from smallholdings, home gardens, the extent of damage is quite significant.

4.2.5. The total damage of the district

The total estimated damage of the district resulting from Tsunami disaster to the Agriculture/Livestock, sectors, agro-industries and village fair is Rs. 129.95 Mln.

4.3. Needs Assessment

Galle is a populated coastal belt in the south which suffered heavy damage and destruction by the tsunami disaster. The violet action of tsunami waves and subsequent flooding of sea water into inland areas have caused extensive damage to agriculture/livestock farmers and agro-industries in and around the coastal zone. Of the six DS Divisions ravaged by Tsunami, Hikkaduwa DS Divisions was the worst affected and therefore the needs of the farmers engaged in agriculture and allied activities are expected to be high.

4.3.1. Agriculture

Of the agricultural crops, rice is a major crop which was affected by tsunami and according to the section (2.2), about 166 ha of paddy fields have been affected due to the flooding of sea water and deposition of sand and other debris. The most urgent need, therefore, is to clean the sand and otherdebris and flush out the salt from the land. Once these paddy fields are reclaimed, rice farmers have to be supplied with inputs such as seed paddy, fertilizer, agrochemicals etc. The kind of investment required for the recovery of damaged paddy lands is estimated at Rs 36.10 mln. (Table 31, Annex 25).

As revealed in section 2.2, tsunami also caused considerable damage or destruction to many upland crops. Despite their ability to withstand coastal climate, coconut palms both at seedling and bearing stages were not spared by tsunami. According to the need assessment, about 37,000 coconut seedlings and relatively less king coconut palms are needed for replanting the damaged area in the coastal belt. Banana which is a popular fruit crop grown in home gardens and smallholdings also suffered heavy damage from tsunami due to the salt water intrusion and over 34,000 banana suckers are needed for replanting the damaged fields in the coastal zone. Among other upland crops, perennial fruit trees mainly grown in smallholdings and home gardens were also damaged and need replacement. According to the need assessment, over 12,200 fruit/timber perennial trees are required to be distributed among affected people (Table 32, Annex 26). Further, ornametal plants grown in gardens and in nurseries have been damaged and about 13,000 plants are required to be given to affected people.

Galle district is a major cinnamon growing area and efforts should be made to assist the affected cinnamon growers, particularly in Hikkaduwa and Ambalangoda DS Divisions, by providing planting material for replanting the damaged area.

The total investments required to supply the planting material and erecting plant nursaries for recovery of agriculture in the district is estimated and Rs. 53.5 Mln.

4.3.2. Farm implements and machinery

With the surge of sea water, many farm implements/tools and machinery got washed away during tsunami. The farm implements and machinery used for various field operations have to be replaced, in order to encourage farmers to resume their livelihood. Among them, water pumps, tractors, threshers, sprayers and mammoties are needed urgently for a quick recovery of agricultural activities in coastal areas. The list of agricultural implements and machinary for each DS Division is given in Table 33, Annex 27.

The value of farm implements that need replacement is estimated at Rs 8.1 Mln.

4.3.3. Livestock

As revealed in section 2.2, apparently, all types of livestock have been affected by tsunami flood waters but the greatest loss in the district has occured to poultry farmers. Consequently, the requirement of birds for affected people seems to be high, exceeding over 23,000 (Table 34, Annex 28). Some of the affected poultry farmers need poultry sheds to house their birds.

Further, the requirement of neat cattle, buffalo, goat and pigs varies with the DS Divisions. According to the needs assessment, about 490 heads of cattle, 32 baffaloa, 100 goats and 50 pigs are required to revive the sector.

The value of the replacement of livestock and repairs to sheds in affected areas of the district is estimated at Rs. 9.7 Mln.

4.3.4. Agro-industries

In the Galle District, coir industry is well developed particularly in Hikkaduwa DS Division. This industry has been managed as a cottage industry, where many women are engaged in the production of coir yarn, which is mainly used for the manufacture of geo-textile. During the tsunami attack, most of these manually operated coir yarn spinning machines have got washed away. Considering the economic importance of the coir industry in the Galle District, efforts should be made soon to restore the coir industry by providing manually operated machines, raw coir fibre and cleaning damaged husk pits filled with mud and other debris. The estimated value for the recovery of coir industry in the Galle district is Rs. 0.99 Mln. (Table 35, Annex 29).

4.3.5. Community needs

Tsunami also caused considerable damage or destruction to agriculture related support services such as village fairs, agro-wells, irrigation canals etc. In the process of recovery of the agriculture sector, these infrastructure facilities need to be provided. According to the need assessment, 06 village fairs, 14 agro-wells and four (4) irrigation canals need to be either repaired or rehabilitated to assist the farming community in affected areas of the district.

The total value of rehabilitating/repairing of damaged infrastructure is estimated at Rs 17.2 Mln.

Table 36. Need assessment of support systems

Item	No	Area (ha)	Lenght (km)	Value (Rs. Mln.)
Village fairs	6	-	-	5.4
Agro wells	14	-	-	0.98
Irrigation canals	4	-	10	10.8
Total				17.18

4.3.6. Total estimated needs

The total estimated needs to recover the agriculture/livestock sectors and agro-industries in tsunami affected areas of the Galle District is Rs. 125.59 Mln.

KALUTARA DISTRICT

5.1. District Profile

Kalutara is the largest coastal district in the Western Province, covering a land area of 1598 sq.km, with a population of approximately 1 mn people (population density 673 persons/km^2). The coastal belt extends over 32 km. The district is being administered by a District Secretary/GA and includes a total of 11 Divisional Secretariat Divisions and 762 Grama Niladari Divisions at the grass root level (Figure 6). Kalutara district belongs to the low country wet zone and includes WL1, and WL4 agro-ecological regions. The coastal area belongs to WL4 agro-ecological region. The average annual rainfall is 2000mm reaching a maximum of 4000 mm and shows a bimodal distribution pattern without a distinct dry period. The predominant soil group is Red Yellow Podsols with Bog and Half-Bog soils present is some areas.

Of the total population, about 30% are engaged in agriculture. Kalutara district is predominantly a rubber growing district but in recent years, there has been a gradual expansion of the area for cultivation of tea and minor export crops. In the lowlands, paddy is the most dominant crop, occupying about 25,000 ha, cultivated mainly under rainfed conditions (Table 8).

Table 37. Land use pattern in Kalutara District - 2002/2003

Major crop	Area (ha)
Paddy	25,417
Tea	7,067
Rubber	29,922
Coconut	12,754
Cinnamon	2,399

Kalutara District is considered as a well developed district with a multi-ethnic and multi-religious society. The district has a very large livestock population, including neat cattle, buffalo, goat, poultry and swine (Table 38). Among agro-based industries, tea, rubber, cinnamon industries are well established in inland areas, while toddy tapping industry and coir fibre industry are well developed in coastal areas.

Table 38. Livestock population in Kalutara District - 2003

Category	Population
Neat cattle	33,500
Baffalo	23,200
Goat	11,100
Pig	4,800
Poultry	890,400

Of the 11 Divisional Secretariat Divisions in Kalutara District, three DS Divisions (Beruwala, Kalutara, Panadura) have been completely destroyed by Tsunami. Further, out of 241 GN Divisions within the three affected DS/AGA Divisions, 56 GN Divisions have been affected (Figure 5). Among the three DS/AGA Divisions, **Beruwala DS Division** was the worst hit including 23 GN Divisions, while both Kalutara and Panadura were more or less equally damaged. Therefore the field survey was conducted in the above three DS/AGA Divisions, mainly **Beruwala**, **Kalutara** and **Panadura**.

5.2. Damage assessment

Kalutara District is a developed and populated district in the Southwestern coastal belt of Sri Lanka, affected by the tsunami. However, the magnitude of damage in terms of the number of people reported dead (256) and missing (155) is much less than in other three districts surveyed. Further, of the three affected DS, Divisions, Bentota was the worst affected. Apart from the loss of lives and damage to property, action of tsunami was responsible for causing some damage to cropland and standing crops, agro industries and loss of livestock, due to the flooding of sea water into inland areas. An assessment of the damage caused to the agriculture/livestock sectors and agro-industries in Kalutara district is given in this section.

Crop damage

Although rice is a major crop cultivated in the district, most of the paddy lands are distributed towards inland areas. Therefore, damage to paddy fields (0.85 ha) was negligible. Among important upland crops, tsunami has caused extensive damage to standing crops of banana and fruit/timber trees. According to survey data, over 10,400 banana clumps and 4000 fruit trees (perennials) in smallholdings and home gardens scattered over the coastal area have been badly damaged by tsunami, due to the flooding of salt water (Table 39). The loss of banana crop and fruit trees is estimated at Rs. 5.2 Mln. and 19 Mln, respectively. Also, the survey reported a considerable damage to 89 ha under leafy vegetables and another 18 ha planted with cinnamon, valued at Rs. 6.7 mln and 1.8 mln, respectively.

Since groves of coconut palms are distributed right along the coastal belt of the Kalutara District, Tsunami has caused a considerable damage to both seedlings and bearing palms, despite their ability to thrive well in the coastal environment. The survey data reported damage to over 4,000 coconut/king coconut seedlings and 860 adult palms valued at Rs. 2.58 Mln (Table 39). Apart from this, considerable extent of vegetables (89 ha) and a large number of ornamental plants (7900) have been damaged. The total loss of vegetable crop and ornamental plants is estimated at Rs. 9.00 Mln. Among farm implements, it was reported that 14 threshers and four two-wheel tractors, 63 water pumps, 74, sprayers etc. have been either missing or lost during the tsunami disaster valued at Rs. 5.14 Mln (Table 40, Annex 31).

Managing plant nursaries have become a well established agro-enterprise for many people living along the coastline. According to the survey data about 15 plant nurseries in the Kalutara District have been damaged/destroyed, valued at Rs. 1.7 mln.

The total damage caused to the agriculture sector in affected areas of the district is estimated at Rs. 44.6 Mln.

Details of the total damage to crop and trees and estimated values in 42 GN Divisions located in 3 DS Divisions are presented in Annex 30.

5.2.1. Loss of Livestock

Of all the districts surveyed, Kalutara district has a very large livestock population (over 900, 000), which includes neat cattle, buffalo, goats, pig and poultry. As revealed from the survey data, poultry industry, which is well developed, suffered most by tsunami attack, due to the loss of some 20,000 birds and the value of birds either. missing or killed is estimated at Rs. 1.23 Mln (Table 41). Among other important livestock categories, tsunami also caused heavy losses to the domesticated pig population particularly in Payagala area with a high population of christians. According to the survey data, over 20% of the total pig population in Kalutara district have been reported to be either dead or missing (1136) and the loss is estimated at Rs. 9.09 mln. Meanwhile, tsunami damage to other
categories of livestock such as neat cattle (52), baffaloa 45 and goats (186) was estimated at Rs 12 Mln Table. Some poultry farmers also lost few poultry sheds (5).

The total damage caused to the livestock sector in affected areas of the district is estimated at Rs. 12.12 mln.

Details of the total loss of livestock population and estimated value in 38 GN Divisions located in 3 DS Divisions are presented in Annex 32.

5.2.2. Damage to Agro-based industries

Among agro-industries, toddy tapping and coir industries are well established in the Kalutara district and suffered considerable damage by tsunami. According to the survey data, considerable number of tapping tool boxes (39), bundles of coir fibre (1200), over 10,000 clay pots and 46 toddy collecting wooden barrels (Peeppa) have been reported to be washed out and the total loss is estimated at Rs. 1.53 mln.

The coir industry has been affected in a similar manner resulting in the loss of coir fibre bales (2650 kg) and 298 coir yarn spinning machines valued at Rs. 0.6 mln (Table 42, Annex 33).

The total damage caused to the agro-industries in affected areas is estimated at Rs 2.19 Mln.

5.2.3. Damage to cropland

In the Kalutara District, extent of damage to paddy fields caused by flooding of sea water was negligable, except uplands planted with cinnamon (18 ha) and vegetables (89 ha).

5.2.4. Damage to village fairs

Survey data revealed that one of the popular village fairs close to the beach in Payagala area in the Kalutara District has been completely destroyed by Tsunami waves and the value of damage is estimated at Rs. 1 mln.

5.2.5. The total damage to the district

The toal estimated loss of the district resulting from tsunami damage to the Agriculture/Livestock sectors, agro-industries and village fairs is Rs. 58.9 Mln.

5.3. Needs Assessment

Kalutara district located in the Southwestern coastal belt of Sri Lanka was also affected by tsunami and caused considerable damage to upland crops, particularly in home gardens, economically important agro-industries in the district and loss of farm animals. Of the 3 affected DS Divisions in the district, Beruwala DS Division was the worst affected area and needs an urgent recovery programme to assist the people engaged in these vocations.

5.3.1. Agriculture

In Kalutara district, damage to paddy fields was negligible and needs for recovery programme are not very much (Table 43, Annex 34). But, most damage has occured to upland crops by the surging sea waves during tsunami. The replacement of damaged/destroyed coconut and king coconut palms should receive priority considering its importance in coastal areas. According to the needs assessment, nearly 5,000 coconut/king coconut seedlings are required for replanting in the home gardens well spread out in the coastal area. Banana is another upland crop which suffered extensive damage by tsunami due to the flooding of sea water. A large quantity of banana suckers, more than 10,000 would be required to replant the damaged area. The survey also reported damage to about 18 ha of cinnamon land near the coastal zone and more than 180,000 plants would be required to replant the damaged cinnamon lands (Table 44, Annex 35).

Further, a large number of perennial tree crops eg. jak, breadfruit, mango grown in small plots and home gardens have been damaged and over 4000 seedlings would be needed to be distributed among affected people.

Another group of plants that suffered from tsunami damage was the ornamental plants which have been raised in home gardens and small plots as a commercial venture. According to the needs assessment, nearly 8000 plants need to be issued to the affected people to componesate for the loss. There is also a need to supply inputs such as seed material, fertilizer, agro-chemicals to farmers wholost nearly 100 ha of vegetable cultivation during tsunami. There were also about 15 nursaries damaged by tsunami which needs replacement.

The total value of inputs required for the recovery of agriculture activities in the district is estimated at the Rs. 13 mln.

5.3.2. Farm implements and machinery

As revealed is section 2.2, a large quantity of farm implements and machinary, including water pumps, two wheel tractors, threshers mamoties etc. have been washed away during the tsunami. These items need replacement to assist agricultural activities. The list of implements and their value is given in Table 45, Annex 36. The total value of farm implements needed to support the recovery of agriculture is estimated at Rs. 6.0 Mln.

5.3.3. Livestock

Kalutara District has a very high livestock population including pigs mainly raised by the christian population. Howerver, the greatest damage has occurred to poultry and pig farmers in the district who lost a large population of birds and pigs during the tsunami disaster. According to the need assessment more than 24,000 birds, some 1500 pigs, 240 goats, 64 neat cattle and 50 baffaloa would be required to be distributed among affected farmers (Table 46, Annex 37). Some of these farmers also need to be provided with poultry, goat and pid sheds. The total value of the animals and other inputs required for the recovary of damaged livestock sector is estimated at Rs 22.0 Mln.

5.3.4. Agro-industries

Among agro-industries, toddy tapping and coir industry are well developed in the district, providing employment for the poor community. In fact, Kalutara district has a reputation for its successful toddy industry, which has suffered damage due to the loss of tapping tool boxes, wooden barrals and clay pots. Therefore every effort should be made to replace these accessories and revive the toddy industry, which is considered as the bed rock of the fementation industry. Coir industry is another important cottage industry which needs to be recovered soon following the damage caused by tsunami. The lost items such as coir spinning machines, coir fibre bales need to be replaced and damaged husk pits need cleaning to reactivate the industry (Table 47, Annex 38).
The total value of items needed for the recovery of the agro industries is estimated at Rs. 11.7 mln.

5.3.5. Community needs

Tsunami also caused considerable damage or destruction to agriculture support system such as village fairs, agro-wells, irrigation canals etc. In the recovery process these damaged items need to be repaired or rehabilitated. According to the need assessment, 10 agro-wells, 1 village fair and 6 irrigation canals have to be repaired or renovated to enable the farming community to share these facilities to revive agricultural activities in affected areas (Table).

The total value for repairs reconstruction work to meet the community need is Rs. 5.7 Mln.

Table 48. Need assessment of support systems

Item	No	Lenght (km)	Value (Rs. Mln.)
Village fairs	1	-	1
Agro wells	10	-	0.7
Irrigation canals	6	6	4
Total			5.7

5.3.6. Total estimated needs

The total estimated needs to recover the agriculture/livestock sectors and agro-industries in tsunami affected areas of the Kalutara District is Rs. 58.4 Mln.

Table 4. Crop damage and values in Hambantota district																			
DS. division	Paddy		Coconut				Cinnamon		Banana		* Perennials		Vegetables		Ornamentals		Nurseries		Total value
	Area (Ha)	Value (Rs Mln.)	Seedlings (No)	Value (Rs Mln.)	Bearing Palms (No)	Value (Rs Mln.)	Area (Ha)	Value (Rs Mln.)	No of Clumps	Value (Rs Mln.)	No of plants	Value (Rs Mln.)	Area(ha)	Value (Rs Mln.)	Number	Value (Rs Mln.)	Number	Value (Rs Mln.)	Value (Rs Mln.)
Ambalantota	196.5	10.19	1703	0.13	167	0.27	0.0	0.00	11253	5.63	1198	5.51	14.9	1.19	1142	0.340	1	0.015	**23.275**
Tangale	99.3	5.17	2875	0.22	74	0.13	1.2	0.12	5887	2.94	975	5.07	17	1.42	45	0.010	0	0	**15.080**
Hambantota	43	2.24	126	0.01	5	0.09	0.0	0.00	549	0.27	87	0.33	6.15	1.41	0	0.000	0	0	**4.354**
Tissa	49.4	2.24	684	0.05	41	0.07	0.0	0.00	1185	0.59	145	0.27	27.25	1.21	40	0.010	0	0	**4.444**
Total	**388.2**	**19.84**	**5388**	**0.60**	**287**	**0.60**	**1.2**	**0.12**	**18874**	**10.20**	**2405**	**11.18**	**65.3**	**5.23**	**1227**	**0.400**	**1**	**0.015**	**48.185**

* Perennials:Jack, Breadfruit, Mango, Citrus

Table 6. Agro-based industries in Hambantota district

DS divition	Coir machine		Coir ropes (Bundle)		Husk Pits		Coir Stores		Total Value (RsMln)
	No	Value (Rs Mln.)	Bundle	Value (Rs Mln.)	No	Value (Rs Mln.)	Kg	Value (Rs Mln.)	
Tissa	13	0.026	0	0.000	113	0.340	0	0.000	**0.366**
Hambantota	0	0.000	1	0.001	0	0.000	0	0.000	**0.001**
Ambalantota	0	0.000	176	0.088	28	0.084	5000	0.100	**0.272**
Tangalle	120	0.266	40	0.020	0	0.000	1302	0.026	**0.312**
Total	**133**	**0.292**	**217**	**0.109**	**141**	**0.424**	**6302**	**0.126**	**0.951**

Table 5. Loss of livestock in Hambantota district

DS. division	Cattle		Baffaloa		Goat		Poultry		Total Value (RsMln)
	Number	Value (RsMln)	Number	Value (RsMln)	Number	Value (RsMln)	Number	Value (RsMln)	
Tissa	20	0.200	20	0.300	6	0.018	4	0.0008	**0.519**
Hambantota	82	0.820	0	0.000	0	0.000	0	0.0000	**0.820**
Ambalantota	20	0.200	4	0.060	0	0.000	3	0.0006	**0.261**
Tangalle	91	0.910	47	0.705	0	0.000	955	0.1910	**1.806**
Total	**213**	**2.130**	**71**	**1.065**	**6**	**0.018**	**962**	0.1924	**3.405**

Table 17. Loss of livestock in Matara district

DS division	Cattle		Goat				Poultry				Total Value (RsMln)
	Number	Value (RsMln)	Number	Value (RsMln)	Number of Sheds	Value (RsMln)	Number	Value (RsMln)	Number of Sheds	Value (RsMln)	
Dikwella	23	0.250	30	0.090	0	0.000	7134	1.310	0	0.000	**1.650**
Devinuwara	1	0.010	0	0.000	1	0.007	6	0.000	6	0.060	**0.010**
Matara	17	0.023	27	0.081	0	0.000	2038	0.500	0	0.000	**0.604**
Weligama	40	0.350	76	0.228	0	0.000	1745	0.322	0	0.000	**0.900**
Total	**81**	**0.633**	**133**	**0.399**	**1**	**0.007**	**10923**	**2.133**	**6**	**0.060**	**3.165**

Table 15. Crop Damage And values in Matara district

DS. division	Paddy		Coconut				Cinnamon		Banana		* Perennials		Vegetables		Ornamentals		Nurseries		Total value
	Area (Ha)	Value (Rs Mln.)	Seedlings (No)	Value (Rs Mln.)	Bearing Palms (No)	Value (Rs Mln.)	Area (Ha)	Value (Rs Mln.)	No of Clumps	Value (Rs Mln.)	(No of plants)	Value (Rs Mln.)	Area(ha)	Value (Rs Mln.)	Number	Value (Rs Mln.)	Number	Value (Rs Mln.)	Value (Rs Mln.)
Dikwella	51.7	1.97	970	0.0728	0	0	0	0	2933	1.47	516	3	3.9	0.3	1680	0.47	0	0	7.28275
Devinuwara	7.4	0.28	283	0.0212	6	0.0102	0	0	815	0.41	364	2.37	0.6	0.04	925	0.27	8	0.488	3.889225
Matara	19.375	0.74	1511	0.1133	177	0.2939	0.23	0.023	5250	2.62	1897	8.66	12.84	0.98	6659	1.96	23	1.127	16.516775
Weligama	28.36	1.08	2259	0.1694	391	0.6647	1.05	0.105	10628	5.31	3566	17.64	14.75	1.26	8630	2.5	21	1.128	29.856875
Total	**106.842**	**4.08**	**5023**	**0.3767**	**579**	**0.9688**	**1.28**	**0.128**	**19626**	**9.81**	**6343**	**31.67**	**32.09**	**2.6**	**17894**	**5.19**	**52**	**2.742**	**57.565625**

* Perennials:Jack, Breadfruit, Mango, Citrus

Table 16. Damage of machinery and farm implements in Matara district

DS DIVISION	Water pumps		Tractors		Sprayers		Threshers		Mammoty		Crowbars		Sickles		Rakes		Watering cans		Shovels		Total Value (Rs)
	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	
Dikwella	1	0.030	0	0.000	7	0.035	0	0.000	158	0.071	12	0.009	56	0.014	19	0.005	5	0.001	0	0.001	**0.166**
Devinuwara	0	0.000	0	0.000	3	0.015	0	0.000	35	0.016	20	0.015	0	0.000	13	0.003	0	0.000	0	0.000	**0.049**
Matara	11	0.330	0	0.000	8	0.040	1	0.030	198	0.089	62	0.046	13	0.003	25	0.006	6	0.001	0	0.001	**0.547**
Weligama	3	0.090	1	0.300	3	0.015	1	0.030	291	0.130	130	0.098	11	0.003	51	0.013	3	0.001	3	0.001	**0.680**
Total	**15**	**0.450**	**1**	**0.300**	**21**	**0.105**	**2**	**0.060**	**682**	**0.306**	**224**	**0.168**	**80**	**0.020**	**108**	**0.027**	**14**	**0.003**	**3**	**0.003**	**1.442**

Table 18. Agro-based industries in Matara district

DS divition	Coir machine		Coir ropes		Husk Pits		Oil Mills		Total Value (Rs Mln.)
	No	Value (Rs Mln.)	No	Value (Rs Mln.)	No	Value (Rs Mln.)	No	Value (Rs Mln.)	
Dickwelle	29	0.058	0	0.000	65	0.195	1	0.400	**0.653**
Devinuwara	8	0.016	0	0.000	24	0.072	0	0.000	**0.088**
Matara	77	0.154	400	0.200	10	0.030	0	0.000	**0.384**
Weligama	88	0.176	5	0.003	132	0.396	1	0.400	**0.975**
Total	**202**	**0.404**	**405**	**0.2025**	**231**	**0.693**	**2**	**0.80**	**2.0995**

Table 4. Total Crop damage and values in Galle district

DS. division	Paddy		Coconut				Cinnamon		Banana		* Perennials		Vegetables		Ornamentals		Nurseries		Total value
	Area (Ha)	Value (Rs Mln.)	Seedlings (No)	Value (Rs Mln.)	Bearing Palms (No)	Value (Rs Mln.)	Area (Ha)	Value (Rs Mln.)	No of Clumps	Value (Rs Mln.)	(No of plants)	Value (Rs Mln.)	Area (ha)	Value (Rs Mln.)	Number	Value (Rs Mln.)	Number	Value (Rs Mln.)	Value (Rs Mln.)
Hikkaduwa	83.55	3.19	29980	0.0290	2349	3.8057	3.41	0.17	21683	10.84	7060	65.05	6.60	9.57	7316	2.101	12	0.23	**94.98662275**
Ambalangoda	33.58	1.28	332	0.0003	89	0.1506	11.427	0.57	1361	0.68	120	2.19	8.00	0.48	0	0.000	1	0.015	**5.36601270**
Galukadawath-sathara	17.2	0.66	76	0.0001	3	0.0050	0.8	0.04	986	0.49	111	0.66	11.00	0.68	1580	0.460	3	0.045	**3.04030800**
Habaraduwa	18.6	0.71	763	0.0006	91	0.1463	0.23	0.01	5293	2.65	457	2.15	7.00	4.22	2017	0.593	20	0.307	**10.78300600**
Bentota	6.1	0.23	125	0.0001	12	0.0162	0.4	0.02	1723	0.86	27	0.16	1.60	0.09	200	0.060	0	0	**1.43655650**
Balapitiya	7.6	0.29	864	0.0008	221	0.3757	5.59	0.28	3271	1.64	351	2.15	4.00	2.61	2094	0.615	0	0	**7.95280000**
Total	**166.63**	**6.36**	**32140**	**0.0310**	**2765**	**4.4996**	**21.857**	**1.09**	**34317**	**17.16**	**8126**	**72.35**	**38.20**	**17.65**	**13207**	**3.829**	**36**	**0.597**	**123.56540595**

* Perennials:Jack, Breadfruit, Mango, Citrus

Table : Agro based -industries in Galle

DS divition	Coir machine		Husk Pits		Coir Bundles		Total Value (RsMln)
	No	Value (RsMln.)	No	Value (RsMln.)	Kg	Value (RsMln.)	
Hikkaduwa	222	0.444	23	0.069	106	0.002	**0.515**
Ambalangoda	7	0.014	0	0.000	0	0.000	**0.014**
Habaraduwa	15	0.030	5	0.015	0	0.000	**0.045**
Balapitiya	50	0.100	0	0.000	2	0.000	**0.100**
Total	**294**	**0.588**	**28**	**0.084**	**108**	**0.002**	**0.674**

Table 28. Damage of machinery and farm implements in Galle district

DS DIVISION	Water pumps		Tractors		Sprayers		Threshers		Mammoty		Crowbars		Sickles		Rakes		Watering cans		Shovels		
	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	Total Value (Rs)
Hikkaduwa	78	2.340	1	0.300	28	0.140	0	0.000	1453	0.654	293	0.220	132	0.033	507	0.127	43	0.009	9	0.004	**3.826**
Ambalangoda	4	0.120	0	0.000	2	0.010	2	0.060	133	0.060	16	0.012	33	0.008	47	0.012	1	0.000	0	0.000	**0.282**
Galukadawathsa-thara	0	0.000	0	0.000	2	0.010	0	0.000	62	0.028	9	0.007	16	0.004	24	0.006	6	0.001	0	0.000	**0.056**
Habaraduwa	14	0.420	0	0.000	3	0.015	3	0.090	183	0.082	63	0.047	24	0.006	84	0.021	4	0.001	3	0.001	**0.684**
Bentota	0	0.000	0	0.000	0	0.000	0	0.000	28	0.013	0	0.000	2	0.001	10	0.003	0	0.000	0	0.000	**0.016**
Balapitiya	9	0.270	1	0.300	7	0.035	0	0.000	113	0.051	85	0.064	12	0.003	84	0.021	23	0.005	2	0.001	**0.749**
Total	**105**	**3.150**	**2**	**0.600**	**42**	**0.210**	**5**	**0.150**	**1972**	**0.887**	**466**	**0.350**	**219**	**0.055**	**756**	**0.189**	**77**	**0.015**	**14**	**0.006**	**5.612**

Table 29. Loss of livestock in Galle district

DS division	Cattle				Baffaloa		Goat		Poultry				Total Value (RsMln)
	Number	Value (RsMln)	Number of Sheds	Value (RsMln)	Number	Value (RsMln)	Number	Value (RsMln)	Number	Value (RsMln)	Number of Sheds	Value (RsMln)	
Hikkaduwa	448	4.480	1	0.01	9	0.135	59	0.177	8924	1.785	5	0.050	**6.637**
Ambalangoda	0	0.000	1	0.01	0	0.000	0	0.000	2659	0.532	1	0.010	**0.552**
Galukadawathsatara	3	0.030	0	0.00	4	0.600	0	0.000	0	0.000	0	0.000	**0.630**
Habaraduwa	7	0.070	0	0.00	0	0.000	1	0.003	569	0.114	2	0.020	**0.207**
Balapitiya	13	0.130	0	0.00	0	0.000	5	0.015	3755	0.751	1	0.010	**0.906**
Bentota	0	0.000	1	0.01	0	0.000	0	0.000	0	0.000	0	0.000	**0.010**
Total	**471**	**4.710**	**3**	**0.030**	**13**	**0.735**	**65**	**0.195**	**15907**	**3.181**	**9**	**0.090**	**8.941**

Table : Agro-based industries in Kalutara district													
DS division	Coir Industry				Toddy Industry								Total values (RsMln)
	Coir Bundle (kg)	Value (Rs.Mln.)	Coir machine (No.)	Value (Rs.Mln.)	Pots (No)	Value (Rs.Mln.)	Barrels (No.)	Value (Rs.Mln.)	Coir ropes (No. of Bundles)	Value (Rs.Mln.)	Tool boxes (No.)	Value (Rs.Mln.)	
Panadura	1050	0.021	87	0.174	2701	0.108	0	0.000	419	0.210	1	0.003	**0.516**
Kalutara	1590	0.032	211	0.422	6602	0.264	32	0.256	424	0.212	23	0.069	**1.255**
Beruwala	10	0.000	0	0.000	1560	0.062	14	0.112	388	0.194	15	0.045	**0.413**
Total	**2650**	**0.053**	**298**	**0.596**	**10863**	**0.434**	**46**	**0.368**	**1231**	**0.616**	**39**	**0.117**	**2.184**

Table 40. Damage of machinery and farm implements in Kalutara district

GS DIVISION	Water pumps		Tractosrs		Sprayers		Threshers		Mammoty		Crowbars		Sickles		Rakes		Watering cans		Shovels		Total Value (Rs)
	No.	Value (Rs.Mln.) (Rs.Mln.)	No.	Value (Rs.Mln.) (Rs.Mln.)	No.	Value (Rs.Mln.) (Rs.Mln.)	No.	Value (Rs.Mln.) (Rs.Mln.)	No.	Value (Rs.Mln.) (Rs.Mln.)	No.	Value (Rs.Mln.) (Rs.Mln.)	No.	Value (Rs.Mln.) (Rs.Mln.)	No.	Value (Rs.Mln.) (Rs.Mln.)	No.	Value (Rs.Mln.) (Rs.Mln.)	No.	Value (Rs.Mln.) (Rs.Mln.)	
Panadura	12	0.360	3	0.900	23	0.115	13	0.390	247	0.111	36	0.027	69	0.017	179	0.045	22	0.004	73	0.029	**1.998**
Kalutara	9	0.270	0	0.000	36	0.180	0	0.000	368	0.166	58	0.043	95	0.023	232	0.058	23	0.005	111	0.044	**0.789**
Beruwala	63	1.890	4	1.200	74	0.370	14	0.420	1008	0.454	150	0.112	235	0.058	681	0.170	66	0.013	317	0.127	**4.814**
Ttotal	**84**	**2.520**	**7**	**2.100**	**133**	**0.665**	**27**	**0.810**	**1623**	**0.730**	**244**	**0.183**	**399**	**0.099**	**192**	**0.273**	**111**	**0.022**	**501**	**0.200**	**7.602**

Table 41. Loss of livestock in Kalutara district

DS. Division	Cattle		Buffaloa		Goat		Pigs		Poultry				Total Value (RsMln)
	Number	Value (RsMln)	Number	Value (RsMln)	Number	Value (RsMln)	Number	Value (RsMln)	Number	Value (RsMln)	Number of Sheds	Value (RsMln)	
Panadura	26	0.260	0	0.000	40	0.120	392	3.136	3002	0.180	1	0.010	**3.696**
Kalutara	9	0.090	5	0.075	66	0.198	467	3.736	10291	0.617	0	0.000	**4.716**
Beruwala	17	0.170	40	0.600	80	0.240	277	2.216	7238	0.434	4	0.040	**3.660**
Total	**52**	**0.520**	**45**	**0.675**	**186**	**0.558**	**1136**	**9.088**	**20531**	**1.232**	**5**	**0.050**	**12.073**

able 39. Crop damage and values in Kalutara

DS division	Paddy		Coconut				Cinnamon		Bannana		*Perennials		Vegetables		Ornamentals		Nurseries		Total value
	Area (ha)	(Rs Mln) value	seedlings (No)	(Rs Mln) value	B.No. of bearing plants	(Rs Mln) value	Area(ha)	(Rs Mln) value	No of clumps	(Rs Mln) value	No. of plants	(Rs Mln) value	Area(ha)	(Rs Mln) value	No. of plants	(Rs Mln) value	Number	(Rs Mln) value	(Rs Mln.)
Beruwala	0.85	0.324	2109	0.053	579	0.971	13.01	1.301	5967	2.984	2446	13.750	72.564	5.463	5155	1.477	10	1.217	**27.539**
Kalutara	0	0.000	2084	0.052	235	0.393	5.00	0.500	3305	1.652	1575	4.840	14.889	1.100	1921	0.555	5	0.457	**9.549**
Panadura	0	0.000	103	0.003	52	0.884	0.00	0.000	1219	0.610	132	0.463	1.911	0.147	876	0.254	0	0.000	**2.360**
Total	**0.85**	**0.324**	**4296**	**0.107**	**866**	**2.248**	**18.01**	**1.801**	**10491**	**5.245**	**4153**	**19.050**	**89.363**	**6.710**	**7952**	**2.286**	**15**	**1.674**	**39.445**

* Perennials:Jack, Breadfruit, Mango, Citrus

Table 7. Need assessment and value of planting materials in Hambantota district

DS division	Coconut		Banana		Ornamentals		Peranials		Vegetables		Cinnamon		Nurseries		Total (Rs.Mln)
	No.	Val (Rs. Mln)	No.of clumps	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	
Tissa	725	1.09	1185	0.12	40	0.01	145	0.00	27.25	1.64	0	0	2	0.24	**3.10**
Hambantota	131	0.02	451	0.05	0	0.00	87	0.00	6.15	0.37	0	0	2	0.24	**0.68**
Ambalantota	1892	0.28	11253	1.13	1142	0.34	1198	0.04	14.85	0.89	0	0	2	0.24	**2.92**
Tangalle	11394	1.71	16781	3.36	2454	0.73	2435	0.12	64.36	3.86	12000	0.06	4	0.48	**10.32**
Total	**14142**	**3.10**	**29670**	**4.65**	**3636**	**1.08**	**3865**	**0.17**	**112.61**	**6.76**	**12000**	**0.06**	**10**	**1.2**	**17.02**

Table 8. Need assessment and value of input of Paddy in Hambantota district

DS division	Damaged area (ha)	Recovery cost (Rs. Mln)	Seeds (kg)	Seeds (Rs. Mln)	Fertilizer (Rs. Mln)	Insecticides (Rs. Mln)	Weedicides(Rs. Mln)	Total (Rs. Mln)
Tissa	20.2	4.04	3030	0.08	0.16	0.05	0.05	**4.38**
Hambantota	43	8.6	6450	0.16	0.34	0.11	0.11	**9.32**
Ambalantota	196.45	39.29	29467.5	0.74	1.57	0.49	0.49	**42.58**
Tangalle	99.3	19.86	14895	0.37	0.79	0.25	0.25	**21.52**
Total	**358.95**	**71.79**	**53842.5**	**1.35**	**2.87**	**0.90**	**0.90**	**77.8**

Table 9. Need assessment and value of farm Implements and machinery in Hambantota district

DS division	Water pumps		Tractors		Sprayers		Threshers		Mammoty		Crowbars		Sickles		Rakes		Cans		Shovels		Total (Rs.Mln)
	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	
Tissa	12	0.36	3	0.90	23	0.12	13	0.39	247	0.11	36	0.03	69	0.02	179	0.04	22	0.004	73	0.03	**2.00**
Hambantota	9	0.27	2	0.60	36	0.18	5	0.50	368	0.17	58	0.04	95	0.02	232	0.06	23	0.004	111	0.04	**1.88**
Ambalantota	42	1.26	2	0.60	15	0.08	1	0.03	393	0.18	56	0.04	71	0.02	270	0.07	21	0.004	133	0.05	**2.33**
Tangalle	63	1.89	4	1.20	74	0.38	14	0.42	1008	0.46	150	0.11	235	0.06	681	0.17	66	0.012	317	0.01	**4.71**
Total	**126**	**3.78**	**11**	**3.3**	**148**	**0.76**	**33**	**1.34**	**2016**	**0.92**	**300**	**0.22**	**470**	**0.12**	**1362**	**0.34**	**132**	**0.024**	**634**	**0.13**	**10.94**

Table 10. Need assessment and value of livestock and livestock sheds in Hambantota district

DS division	Cattle		Buffaloes		Goats				Pigs				Poultry				Total (Rs.Mln)
	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	Sheds No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	Sheds No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	Sheds No.	Val (Rs. Mln)	
Tissa	20	0.2	20	0.3	30	0.09	6	0.06	0	0	0	0	400	0.024	4	0.4	**1.07**
Hambantota	82	0.82	30	0.45	30	0.09	6	0.06	0	0	0	0	200	0.012	2	0.2	**1.63**
Ambalantota	20	0.2	4	0.06	10	0.2	2	0.02	10	0.08	2	0.02	300	0.018	3	0.3	**0.82**
Tangalle	100	1	47	0.71	30	0.09	6	0.06	10	0.08	2	0.02	2000	0.12	20	2	**4**
Total	**222**	**2.22**	**101**	**1.52**	**100**	**0.47**	**20**	**0.2**	**20**	**0.16**	**4**	**0.04**	**2900**	**0.174**	**29**	**2.9**	**7.52**

Table 11. Need assessment of Agro-based industries in Hambantota district

DS division	Coir machines		Coir bundles		Husk pits		Total (Rs.Mln)
	No.	Val (Rs. Min)	No.	Val (Rs. Min)	No.	Val (Rs. Min)	
Tissa	13	0.026	0	0.0005	113	1.13	**1.16**
Hambantota	0	0	1	0.0005	28	0.28	**0.28**
Ambalantota	0	0	176	0.88	0	0	**0.88**
Tangalle	120	0.24	40	0.02	40	0.4	**0.66**
Total	**133**	**0.266**	**217**	**0.901**	**181**	**1.81**	**2.98**

Table 19: Need assessment and value of paddy in Matara district

DS Divisions	Damaged area (ha)	Recoverry cost (Rs.Mln.)	Seed Requirement kg	Value (Rs.Mln.)	Fertilizer (Rs.Mln.)	Insecticides (Rs.Mln.)	Weedicides (Rs.Mln.)	Total (Rs.Mln.)
Dikwella	51.7	10.34	7756.05	0.19	0.41	0.129	0.129	**11.21**
Dewinuwara	7.4	1.48	1110	0.03	0.06	0.019	0.019	**1.60**
Matara	19.4	3.88	2906.25	0.07	0.16	0.048	0.048	**4.20**
Weligama	37.6	7.30	4267.5	0.14	0.30	0.094	0.094	**7.93**
Total	**116.1**	**23.00**	**16039.8**	**0.44**	**0.93**	**0.2902**	**0.290**	**24.94**

Table 20. Need assessment and value of Planting materials in Matara district

DS Divisions	Coconut		Banana		Ornamentals		Perennials		Vegetables		Cinnamon		Nurseries		Total value (Rs.Mln.)
	Plants (No)	losses (Rs.Mln.)	No. of clumps	losses (RsMln.)	Number	losses (Rs.Mln.)	No	losses (Rs.Mln.)	Area (ha)	losses (Rs.Mln.)	Area (ha)	losses (Rs.Mln.)	Number	losses (Rs.Mln.)	
Dikwella	970	0.15	2933	0.29	1680	0.47	574	0.02	3.9	0.23	0	0	6	1.2	**2.37**
Devinuwara	289	0.04	815	0.08	925	0.27	159	0.01	0.6	0.04	0	0	2	0.4	**0.84**
Matara	1688	0.25	6677	0.67	6659	1.96	1614	0.08	12.84	0.77	0.23	0.014	15	3	**6.74**
Weligama	2650	0.40	11961	1.20	8630	2.49	3818	0.15	14.75	0.89	1.58	0.095	21	4.1	**9.32**
Total	**5597**	**0.84**	**22386**	**2.24**	**17894**	**5.19**	**6165**	**0.26**	**32.09**	**1.93**	**1.81**	**0.11**	**44**	**8.7**	**19.27**

Table 21. Need assesment and value of farm implement and machinary in Matara district

DS Division	Water pumps		Tractors		Sprayers		Threshers		Mammoties		Crowbarse		Sickles		Rakes		Watering cans		Shovels		Total Value (Rs.Mln)
	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	
Dikwella	10	0.3	4	1.2	7	0.035	0	0	154	0.071	12	0.009	56	0.014	19	0.005	5	0.001	0	0.001	**1.64**
Devinuwara	10	0.3	1	0.3	3	0.015	0	0	35	0.016	20	0.015	0	0.000	13	0.003	0	0.000	0	0.000	**0.65**
Matara	22	0.66	5	1.5	8	0.04	1	0.2	198	0.089	62	0.046	13	0.003	25	0.006	6	0.001	0	0.001	**2.55**
Weligama	9	0.27	5	1.5	3	0.015	1	0.2	291	0.13	130	0.098	11	0.003	51	0.013	3	0.001	3	0.001	**2.23**
Total	**51**	**1.53**	**15**	**4.5**	**21**	**0.105**	**2**	**0.4**	**678**	**0.306**	**224**	**0.168**	**80**	**0.020**	**108**	**0.027**	**14**	**0.003**	**3**	**0.003**	**7.06**

Table 23. Need assessment and value of Agro-based industry in Matara district

DS Division	Coir machines		Coir Bundles		Coir mills		Husk pits		oil mills		Total
	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	Value (Rs.Mln.)
Dikwella	29	0.01	0	0	1	0.1	105	1.05	1	0.4	**1.56**
Dewinuwara	22	0.04	0	0	1	0.1	60	0.6	0	0	**0.74**
Matara	77	0.15	400	0.3	0	0	120	1.2	0	0	**1.65**
Weligama	88	0.18	5	0.0025	0	0	185	1.85	0	0	**2.03**
Total	**216**	**0.38**	**405**	**0.3025**	**2**	**0.2**	**470**	**4.7**	**1**	**0.4**	**5.98**

Table: Need assessment and value of Livestock in Matara district

DS division	Cattle		Goat				Poultry				Total (Rs. Mln)
	Number	Value (Rs.Mln.)	Number	Value (Rs.Mln.)	No. of sheds	Value (Rs.Mln.)	Number	Value (Rs.Mln.)	No. of sheds	Value (Rs.Mln.)	
Dikwella	30	0.3	60	0.18	10	0.1	15600	0.94	16	1.6	**3.12**
Devinuwara	5	0.05	0	0	0	0	6	0.0004	0	0	**0.05**
Matara	28	0.28	52	0.16	10	0.1	4100	0.25	4	0.4	**1.19**
Weligama	62	0.62	112	0.34	20	0.2	2600	0.16	3	0.3	**1.62**
Total	**125**	**1.25**	**224**	**0.68**	**40**	**0.4**	**22306**	**1.35**	**23**	**2.3**	**5.98**

Table 31. Need assesment and value of inputs of paddy in Galle district

DS division	Damaged area (ha)	Recovery cost (Rs. Mln)	Seeds (kg)	Seeds (Rs. Mln)	Fertilizer (Rs. Mln)	Insecticides ((Rs. Mln)	Weedicides(Rs. Mln)	Total (Rs. Mln)
Hikkaduwa	83.55	16.71	12532.5	0.3	0.67	0.21	0.21	**18.1**
Ambalangoda	33.58	6.72	5037	0.13	0.27	0.082	0.084	**7.282**
Galukadawathsathara	17.2	3.44	2580	0.06	0.14	0.04	0.04	**3.72**
Habaraduwa	18.6	3.72	2790	0.07	0.15	0.046	0.05	**4.036**
Benthota	6.1	1.22	915	0.02	0.05	0.015	0.015	**1.32**
Balapitiya	7.6	1.52	1140	0.03	0.06	0.019	0.02	**1.649**
Total	**166.63**	**33.33**	**24994.5**	**0.61**	**1.34**	**0.412**	**0.419**	**36.107**

Table 33. Need assesment and value of farm implement and machinery in Galle district

DS division	Water pump		Tractor		Sprayers		Thresher		Mammoty		Crowbar		Sickle		Rakes		Cans		Shovels		Total (Rs.Mln)
	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	
Hikkaduwa	78	2.34	2	0.60	28	0.14	0	0.000	1453	0.65	293.00	0.22	132.00	0.033	507.00	0.13	43	0.0086	9	0.004	**4.13**
Ambalangoda	24	0.72	2	0.60	2	0.01	2	0.060	133	0.06	16.00	0.01	33.00	0.008	47.00	0.01	1	0.0002	0	0	**1.48**
Galukadawathsathara	6	0.18	1	0.30	2	0.01	0	0.000	62	0.03	9.00	0.01	16.00	0.004	24.00	0.01	6	0.0012	0	0	**0.55**
Habaraduwa	14	0.42	2	0.60	3	0.02	3	0.090	183	0.08	63.00	0.05	24.00	0.006	84.00	0.02	4	0.0008	3	0.001	**1.28**
Benthota	0	0	0	0	0	0	0	0	28	0.01	0	0	2	0.001	10	0	0	0	0	0	**0.01**
Balapitiya	9	0.27	1	0.3	7	0.035	0	0	113	0.05	85	0.06	12	0.003	84	0.02	23	0.0046	2	0.001	**0.74**
Total	**131**	**3.93**	**8**	**2.4**	**42**	**0.21**	**5**	**0.15**	**1972**	**0.88**	**466**	**0.35**	**219**	**0.055**	**756**	**0.19**	**77**	**0.0154**	**14**	**0.006**	**8.186**

Table 34. Need assesment and value of livestock in Galle district

DS division	Cattle		Buffaloes		Goats				Pigs				Poultry				Total (Rs.Mln)
	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	Sheds No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	Sheds No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	Sheds No.	Val (Rs. Mln)	
Hikkaduwa	448	4.48	20	0.3	75	0.23	15	0.15	50	0.04	10	0.1	12000	0.72	12	1.2	**7.22**
Ambalangoda	0	0	0	0	0	0	0	0	0	0	0	0	4000	0.24	4	0.4	**0.64**
Galukadawathsathara	10	0.1	12	0.18	0	0	0	0	0	0	0	0	0	0	0	0	**0.28**
Habaraduwa	20	0.2	0	0	10	0.03	2	0.02	0	0	0	0	1100	0.06	1	0.1	**0.41**
Balapitiya	13	0.13	0	0	15	0.05	3	0.03	0	0	0	0	6200	0.37	6	0.6	**1.175**
Total	**491**	**4.91**	**32**	**0.48**	**100**	**0.31**	**20**	**0.2**	**50**	**0.04**	**10**	**0.1**	**23300**	**1.39**	**23**	**2.3**	**9.725**

Table 35. Need assessment and value of agro-based industry in Galle district

DS division	Coir machines		Coir husk pits		Total (Rs.Mln)
	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	
Hikkaduwa	222	0.04	60	0.6	**0.64**
Ambalangoda	7	0.01	0	0	**0.01**
Habaraduwa	15	0.03	20	0.2	**0.23**
Balapitiya	50	0.10	0	0	**0.10**
Total	**294**	**0.19**	**80**	**0.8**	**0.99**

Table 46. Need assesment and value of livestock in Kalutara district

DS Division	Cattle		Buffalo		Goat				Pig				Poultry				Total Value (Rs. Mln)
	No	Value (Rs. Mln)	No	Value (Rs. Mln)	No	Value (Rs. Mln)	Shed No	Value (Rs. Mln)	No	Value (Rs. Mln)	Shed No	Value (Rs. Mln)	No	Value (Rs. Mln)	Shed No	Value (Rs. Mln)	
Panadura	35	0.35	0	0	65	0.2	13	0.13	452	3.62	90	0.9	4125	0.25	4	0.4	**5.85**
Kalutara	12	0.12	5	0.075	82	0.25	16	0.16	712	5.7	142	1.42	13200	0.79	13	1.3	**9.815**
Beruwala	17	0.17	45	0.68	94	0.75	19	0.19	345	2.8	69	0.69	7238	0.43	7	0.7	**6.41**
Total	**64**	**0.64**	**50**	**0.755**	**241**	**1.2**	**48**	**0.48**	**1509**	**12.12**	**301**	**3.01**	**24563**	**1.47**	**24**	**2.4**	**22.075**

Table 45. Need assessment of machinery and farm implements in Kalutara District

DS Division	Water pumps		Tractors		Sprayers		Thresher		Mammoties		Crowbars		Sickles		Rakes		Watering cans		Shovels		Total Value (Rs.Mln)
	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	No.	Value (Rs.Mln.)	
Panadura	17	0.51	3	0.9	23	0.12	13	0.39	247	0.11	36	0.03	69	0.02	179	0.04	22	0.004	73	0.029	**2.15**
Kalutara	15	0.45	2	0.6	36	0.18	0	0	368	0.17	58	0.04	95	0.02	232	0.06	23	0.005	111	0.044	**1.57**
Beruwala	42	1.26	2	0.6	15	0.08	1	0.03	393	0.18	56	0.04	71	0.02	270	0.07	21	0.004	133	0.053	**2.33**
Total	**74**	**2.22**	**7**	**2.1**	**74**	**0.37**	**14**	**0.42**	**1008**	**0.45**	**150**	**0.11**	**235**	**0.06**	**681**	**0.17**	**66**	**0.013**	**317**	**0.127**	**6.05**

Table 43. Need assesment and recovery value of paddy fields in Kalutara district

DS division	Damaged area (ha)	Recovery cost (Rs. Mln)	Seeds (kg)	Seeds (Rs. Mln)	Fertilizer (Rs. Mln)	Insecticides (Rs.Mln)	Weedicides (Rs. Mln)	Total (Rs. Mln)
Beruwala	0.85	0.17	127.5	0.0032	0.0068	0.0021	0.0021	**0.184**
Total	**0.85**	**0.17**	**127.5**	**0.0032**	**0.0068**	**0.0021**	**0.0021**	**0.184**

Table 44. Need assessment and value of planting materials in Kalutara district

DS division	Coconut		Banana		Ornamentals		Peranials		Vegetables		Cinnamon		Nurseries		Total (Rs.Mln)
	No.	Val (Rs. Mln)	No.of clumps	Val (Rs. Mln)	No.	Val (Rs. Mln)	No.	Val (Rs. Mln)	Area (ha)	Val (Rs. Mln)	Area (ha)	Val (Rs. Mln)	No.	Val (Rs. Mln)	
Panadura	1243	0.09	1908	0.19	1562	0.45	791	0.04	3.781	0.23	0	0	0	0.000	**0.99**
kalutara	2411	0.18	2756	0.28	1939	0.55	1775	0.09	38.738	2.32	5.01	0.25	5	0.457	**4.12**
Beruwala	1508	0.11	5826	0.58	7952	1.29	1784	0.09	58.753	3.53	13.00	0.65	10	1.492	**7.75**
Total	**5162**	**0.39**	**1049**	**1.05**	**11453**	**2.29**	**4350**	**0.21**	**101.272**	**6.08**	**18.01**	**0.90**	**15**	**1.949**	**12.86**

RECOMMENDATION

1. Rice being the major crop in many districts immediate steps should be taken to reclaim the damaged, paddy fields to commence cultivation with the onset of rains in "Yala" 2005 (April/May)

2. Supply of seed, planting material and other inputs as the first step and also farm equipment and tools for land preparation as an immediate measure

3. Rehabilitation of damaged irrigation/ drainage canals, agro-wells.

4. Replanting with high yielding coconut varieties in the coastal belt and issue 5 seedlings to each family.

5. Promote planting of improved fruit crops and timber tree in home gardens, to generate extra income and as a source of nutrient need of the family.

6. Livestock generates a quick and steady income to the farmers throughout the year and act as a safety net against vulnerabilities of crop failures. Therefore, livestock should be promoted among affected people in all the districts.

7. Poultry which is easy to manage and need small space, should be further promoted and provide poultry sheds.

8. Issue a stud goat and four female goats to each affected livestock farmer to strengthen the herd and provide housing for animals

9. Issue improved breeds of neat cattle to affected livestock farmers to improve milk production and encourage them manufacture value-added products such as yoghurt.

10. Due to increasing demand for planting material (fruit and timber) and ornamental plants, (orchids, anthuriams) affected people must be encouraged to raise planting material and ornamental plants/cut flowers foliage in plant nurseries.

11. Revitalize the collapsed coir industry by introducing modern machines, which are more cost effective, efficient and produce coir yarn of good quality.

Community Needs

12. More village fairs should be reconstructed with improved designs and facilities for marketing of agricultural produce harvested from home gardens and small plots

13. Increase number of agro-wells to provide supplementary irrigation during dry periods.

Environment

14. Buffer zone (100m wide) should be planted with coastal vegetation (eg. Coconut, casuarina, calophylum, pandanus) and develop in to a green belt as a protective biological barrier against surging sea water and rise in sea levels.

15. Prevent destruction of sand dunes.

16. Rehabilitate mangrove vegetation near lagoons and estuaries.

General comments

17. The services of provincial agriculture/livestock extension arm must be utilized in identifying affected farmers with previous experience and implementing the recovery programme.

18. A participatory approach should be a adopted in planning and implementing the recovery programme involving farmers, relevant departments, NGOs and other stakeholders.

19. As most of the affected farmers are in a state of mental trauma due to the loss of loved ones and property, counselling programme should be organized at the initial stage of the recovery programme.