



Report to UNICEF

**Consultancy for
Document Review on Status of
Affected and Comparable Non-affected Population
Before and After the Tsunami in Sri Lanka**

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Submitted by

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Responsibilities and Acknowledgments

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Any opinions expressed, or recommendations made in this report, are those of the project team, and not necessarily those of Health Policy Research Associates Ltd. (HPRA) or its affiliated organizations.

Team

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Acronyms

AIDS	–	Acquired Immune Deficiency Syndrome
DHS	–	Demographic and Health Survey
DS	-	Divisional Secretary
FHB	-	Family Health Bureau
GDP	–	Gross Domestic Product
GN	-	Grama Niladhari
HIV	–	Human Immunodeficiency Virus
HPRA	–	Health Policy Research Associates
IMR	–	Infant Mortality Rate
MDG	–	Millennium Development Goals
MIS	-	Management Information System
MOH	–	Medical Officer of Health
MRI	–	Medical Research Institute

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Executive Summary

The Tsunami affected two thirds of the coast line of Sri Lanka, across 13 of the 25 districts in the country. This document review exercise examines, with available data, the pre and post Tsunami situation of the directly, indirectly and not affected areas. The report aims to provide a comprehensive document review of demographic and developmental indicators in the Tsunami affected provinces of Sri Lanka in the pre and post Tsunami periods. The review, as far as possible, attempts to capture the directly, indirectly and not affected areas of the provinces, with focus on women and children. Information is provided on demographic, economic, housing, maternal and child health and nutrition, education, water and sanitation, adolescent development and protection with key measurable indicators with a view to assess the evaluability of the UNICEF Tsunami programme in Sri Lanka

The main limitation encountered in the analysis of data is that there are no time series data for three points in time (pre-tsunami, post-tsunami and most recent) with comparable indicators. The only relevant and reliable data sets available are the Census of Population 2001 and the Post-Tsunami Survey of 2005, both conducted by the Department of Census and Statistics. The focus of the post-tsunami survey was on damaged housing and only limited data were collected on women and children and other variables, such as water and sanitation, education and economic activity. As a result, the relevant variables from the Census 2001 and those of the Post-Tsunami survey are not directly comparable. Moreover, the two data sets did not have comparable data for all geographic areas of interest. For example, demographic and socio-economic data for the Northern and Eastern districts, except for Amparai, are not available for the Pre-Tsunami period as the 2001 Census of Population was not conducted in these areas. There are no other data sources that give such information for small geographic areas affected by the Tsunami. Despite these limitations, the available data presented in this report brings out some interesting findings and points out the need to undertake an in-depth survey in selected directly and indirectly affected areas.

The analysis of data reveals a number of important findings which are summarized as follows:

(a) Demographic data in the pre Tsunami period indicate that the proportions of children to the total population in the directly, indirectly and the not affected areas do not show much variation. In terms of fertility, Western Province has the lowest level and Amparai district/Uva Province has the highest level in the directly affected areas. In the post Tsunami period, Western Province shows a slight increase. On the other hand, in the Southern Province there has been a significant decline in fertility by nearly 30 percent.

(b) Peoples' livelihoods were affected to a great extent by the Tsunami. The most affected were the fishermen and those connected with the tourist industry. It is estimated that about 200,000 people lost their employment, including about 100,000 in fisheries and 27,000 in tourism and tourist related activities. In addition, in the coir industry, which is a cottage industry in the Southern Province, 84 percent were unable to continue work. In the Southern and Eastern Provinces where large numbers are engaged in trade activities, more than 50 percent could not continue their activities.

(c) Of the physical infrastructure, housing was the most affected. Tsunami completely or partially damaged more than 90,000 houses. The completely damaged and partially damaged houses together constituted about 13 per cent of the housing stock.

(d) The number attending school, as a percentage of population aged 5-14 years, was relatively high in all provinces prior to the Tsunami. However, after the Tsunami, only less than half the number of those aged 3-34 years living in the Tsunami damaged housing units were able to continue their education.

(e) As regards the distribution of housing units by type of toilet, it is evident that except for Amparai district and Uva Province, in all other provinces, more than 80 percent of households were using either water seal or pour flush toilets in the directly affected areas. With regard to the source of drinking water supply, it is seen that a relatively high proportion of households in the Western and Southern Provinces had taps within premises in the directly affected areas. After the Tsunami, Eastern and Northern Provinces 85 percent and 72 percent, respectively, did not have drinking water facilities. With regard to toilet facilities, in all provinces more than one fourth of partially damaged housing units had their toilets damaged as well. Furthermore, in the Eastern and Northern Provinces 53 and 62 percent, respectively, of damaged housing units had no latrines.

(f) Some significant changes with regard to maternal and child health are noted between pre and post Tsunami periods. It is evident that in the North-Western, Western and Southern Provinces, there has been an improvement in the indicators, except with regard to growth faltering of children in the affected areas during the pre and post Tsunami time periods. In the Eastern Province, however, while there has been an improvement in the infant mortality rate in the not affected areas, there has been an increase in the affected areas. Nevertheless, there has been a greater improvement in the affected areas with regard to ante-natal care and growth faltering of children. In the Northern Province, the infant mortality rate has declined significantly in both the affected and not affected areas. The situation with regard to maternal and child health has been generally good in the post-Tsunami period, due to the fact that there was an effective system in place to take care of the health of mothers and children.

(g) The nutritional status of children under five years in the Tsunami affected areas shows that stunting and wasting of children has been relatively high in the Eastern Province. The Southern Province though, shows relatively low levels. In the Northern Province, the percentage of children wasted is lowest among the provinces. In terms of wasting and

stunting of children by sex, it is evident that in the affected areas, the nutritional situation has been relatively poor, compared to the not affected areas.

(h) The Tsunami orphaned more than 10,000 children, out of which nearly 700 lost both parents. The large majority of those orphaned have been in the age group 10-18 years, with the highest percentage being in the Western Province. In the age group 5-9 years, nearly one fifth has lost one of the parents in the Southern, Eastern and Western Provinces. The largest number of orphaned children was from the Eastern Province. As regards the numbers reported injured, sick and disabled, relatively high proportions are from the Southern, Eastern and Northern Provinces. Of the total number who disappeared, 66 percent was in the Southern Province and the highest proportion dead was in the Eastern Province.

(i) Among those who were directly affected, a considerable number was displaced from their usual place of residence, the largest number being in the Eastern Province with about 99,000 people. However, the Northern Province has the largest proportion of displaced persons, in comparison to the population resident in the affected housing units before the Tsunami.

Based on the study, the following recommendations are made.

1. The most affected areas as regards malnutrition of children are the northern and eastern districts that were hit by the Tsunami. Although data are available only with regard to the post-tsunami situation, it is very likely that malnutrition may have been prevalent in these districts even before the Tsunami. Therefore, special attention needs to be given to these geographic areas in future nutrition intervention programmes.
2. More than half the number of children in the Tsunami affected areas was unable to continue their education. Although considerable amount of work has been done to restore the damaged schools and send back children to school, more work needs to be done for the affected children by way of psycho-social therapy. Trauma management is particularly important because since the 2004 Tsunami, there have been several Tsunami warnings.
3. UNICEF should undertake a study to ascertain the impact of Tsunami on the lives of mothers and children in the directly and indirectly affected areas using both quantitative and qualitative methods of data collection.
4. Fertility rates are relatively high in Amparai district in the east and in Kilinochchi district in the north. While there has been a general decline in fertility in the country, these two districts have shown a significant increase during 2001 to 2006. It is, therefore, important to strengthen the reproductive health services in these areas, in particular.

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5. The Tsunami displaced a large number of people. It is seen that more than 50 percent of the displaced population was in the Eastern Province. The next highest proportion was in the Southern Province. It is important to study how many of these have returned and have been rehabilitated. Therefore, it is recommended that a study be undertaken on the displaced returnees with focus on women and children.

6. As regards economic activities, the coir industry, which employs a large number of women, was badly affected by the Tsunami in the Southern Province. About 84 percent employed in the industry were unable to continue work after the disaster. As women are employed in large numbers in the industry, they need support to continue their economic activities.

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Part I

Introduction

Background of Study

The Tsunami that devastated Sri Lanka is widely acknowledged as the most extensive and devastating natural catastrophe in the history of the country. Two hours after the first earthquake occurred in Indonesia, the Tsunami waves struck two thirds of the coastline of the country across 13 of the 25 districts. The waves entered inland areas up to 500 meters in many places, leaving behind only a few intact houses and buildings and killing and injuring thousands of people. The coastal infrastructure systems, water and sanitation facilities and fishing harbours were all badly damaged. The tourist sector was also affected due to physical damage and the drop in tourist arrivals.

The official figures indicate that more than 38,000 people died and about 22,000 were injured and 500,000 displaced. Of the displaced, about half moved in with friends and relatives. The total number of people directly affected was estimated between one to two million out of a population of 19.4 million people. The total number of homes damaged was over 100,000 (Asian Development Bank et. al., 2005).

The Tsunami affected a broad range of people rich and poor of different ethnic groups. The coastal communities being comparatively poor, the Tsunami disproportionately affected the poor. More women and children died as many men were away from their homes when the disaster occurred. The overall damage was estimated to be around US \$ 1 million or 4.5 percent of the GDP (Asian Development Bank et al., 2005). The largest share of output losses was in the fishing and tourist sectors, due to lost income and production.

The North and Eastern Provinces of the country which were badly affected by Tsunami are two provinces that have also been affected by the armed conflict between the government security forces and the terrorist organization known as Liberation Tigers of Tamil Elam (LTTE) for two decades prior to the Tsunami. As a result of the prolonged conflict, there has been considerable damage to property, buildings and loss of human life on both sides. It is estimated more than 60,000 people have lost their lives as a result of this conflict and many have been displaced. The Tsunami, that hit the coastal belt of these two provinces further added misery to the lives of people who were living in the coastal areas of the two provinces.

(a) Purpose of Study

- (a) to identify areas and population directly and indirectly affected by the Tsunami
- (b) To explain the demographic characteristics and some development characteristics of the pre-disaster period separately for defined directly, indirectly and not affected areas by the Tsunami
- (c) To explain the health status of children and mothers using selected variables at pre and post disaster periods separately for directly, indirectly and not affected areas by the Tsunami
- (d) Drawing on data from census/surveys, electronic or hard form published or unpublished compile key development indicators on women and children in the affected areas
- (e) Prepare an annotated bibliography
- (f) Prepare a panel indicator table
- (g) Prepare maps using DevInfo
- (h) Collect datasets to the extent possible

(b) Methods of Document Search

An internet search was utilized to identify all Tsunami related documents and reports relevant to sectors of the study on Sri Lanka. The internet search was done systematically through search engines Google and Medline and the websites of known organizations that were involved in post-Tsunami humanitarian efforts. The following key words were used for the electronic search: Sri Lanka Tsunami, Sri Lanka Tsunami population, Sri Lanka Tsunami women and children, Sri Lanka Tsunami adolescent health, Sri Lanka Tsunami water and sanitation, Sri Lanka Tsunami school children, Sri Lanka Tsunami nutrition, Sri Lanka Tsunami women and reproductive health, Sri Lanka Tsunami education, Sri Lanka Tsunami child protection, etc.

In addition, various NGOs, CBOs and government agencies involved in post-Tsunami reconstruction and rehabilitation work were also contacted to obtain information. In 2005 a total of 136 NGO's working in the health field had registered with the National Secretariat for NGO's of the Ministry of Social Services. Through means of mail and telephone, an attempt was made to contact these organisations. Only 21 could be traced as others had closed up their activities. Of these, four NGO's had some involvement with post-Tsunami maternal and child health work, who were subsequently contacted.

A complete list of relevant literature examined through the electronic search is in the annotated bibliography given in the Appendix 3. In addition, a list of organizations and the persons contacted in Sri Lanka are also presented in Appendix 1.

(c) Methodology

(i) Operational Definition of Directly, Indirectly and Not Affected Areas

The country is divided into 9 Provinces for administrative purposes. The nine Provinces are sub-divided into 25 Districts. Each district is again divided into Divisional Secretary (DS) Divisions depending on the population size and land area. Each DS Division consists of several Grama Niladhari (GN) Divisions, which are the lowest administrative areas. As at 2005, there were 324 DS Divisions and 14,009 GN Divisions.

Out of the 25 districts of the country, 13 were affected by the Tsunami. These affected coastal districts have 171 DS divisions out of which 55 were directly affected. The affected districts also have 6908 GN divisions, out of which 664 were directly affected. A complete census of buildings and persons was conducted in all directly affected GN divisions by the Department of Census and Statistics in 2005.

The information on the pre-Tsunami situation was obtained from the 2001 census of population conducted by the Department of Census and Statistics. In conducting the 2001 Census of Population, the GN divisions were sub divided into several Census Blocks (CB). Lists of units for each CB with sketch map were prepared and stored for the conduct of future surveys. The sketch map helps to identify the Housing Units and other buildings, because the serial numbers of the units are indicated in the map and units are numbered in a sequence. This list is called 'F1' form. A new list of units for areas affected by Tsunami was completed by the staff of the Department of Census and Statistics. The F1 forms were used as guides to identify the units. For the purpose of this exercise all GN divisions surveyed in a DS division in the Tsunami Census are taken as *Directly Affected* areas. The balance GN divisions of the respective DS divisions which are the adjoining areas to the directly affected areas are considered as *Indirectly Affected* areas. A considerable number of people who lived in the adjoining areas were also killed or injured on that fatal morning as they were visiting the Sunday Markets in the coastal towns. In addition, there was tremendous interaction with, and support to, the affected people from the adjoining areas. Therefore, the unaffected DS divisions of the district and other districts of a Province are taken as *Not Affected* areas. For instance, the Southern Province comprises of three districts: Galle, Matara and Hambantota, all of which have been affected by the Tsunami. The directly affected areas of the Province are those GN divisions surveyed in the Tsunami Census. The indirectly affected areas are the rest of the GN divisions of the affected DS divisions of the district. The not affected areas are all other DS divisions of the respective districts of the Province. In the Kalutara district, for example, Beruwala is one of the three affected DS divisions. Beruwala has 81 GN divisions

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and 22 were directly affected by the Tsunami. The balance 59 is taken as the indirectly affected areas.

The key demographic and developmental indicators as at Pre-Tsunami time period in the directly, indirectly and not affected areas were computed using the above criteria for the year 2001. The indicators were based on data of the 2001 Census of Population. The affected districts and the number of DS and GN divisions are presented in Table 1.

Table 1: Tsunami Affected Districts/Provinces by Divisional Secretary and Grama Niladhari Divisions

District/Province	Number of DS divisions	Number of Affected DS divisions	Number of GN divisions	Number of Affected GN divisions
Puttalam	16	1	548	4
North Western Province	16	1	548	4
Gampaha	13	2	1,177	14
Colombo	13	5	557	30
Kalutara	14	3	762	55
Western Province	40	10	1,476	99
Galle	18	6	895	132
Matara	16	4	650	72
Hambantota	11	4	576	32
Southern Province	45	14	2,121	236
Amparai	20	10	508	126
Batticaloa	14	8	348	88
Trincomalee	11	6	230	52
Eastern Province	45	24	1,086	266
Mullaitivu	5	1	127	18
Kilinochchi	4	3	95	9
Jaffna	16	2	435	32
Northern Province	25	6	657	59

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Total	171	55	6908	664
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As the impact of the Tsunami was felt in different magnitudes across the coastal belt of Sri Lanka, with North Western Province being the least affected and Eastern Province the most affected, the demographic, socio-economic, health and other developmental indicators are present by province in this report.

The North-Western Province comprises of two districts namely, Puttalam and Kurunegala. Only one DS division (in the Puttalam district) of the 45 divisions in the province was affected by the Tsunami. In this division there are 60 GN divisions and only 4 GN divisions were directly affected. The balance GN divisions were indirectly affected. As a result, the population that lived in the area that was directly affected in this province is relatively small. In the Western Province which comprises the districts of Gampaha, Colombo and Kalutara which has 40 DS divisions, 10 divisions were affected. In these 10 divisions there are 451 GN divisions, out of which 99 divisions were directly affected and the balance, indirectly affected. The Southern Province comprises the districts of Galle, Matara and Hambantota. These three districts together have 45 DS divisions out of which 14 were affected by the Tsunami. These 14 DS divisions have 752 GN divisions, out of which 235 divisions were directly affected while the balance was indirectly affected. The directly and indirectly affected population in this province is about 949,000. As only Amparai district was enumerated in the Northern and Eastern Provinces at the 2001 census, the bordering districts of Moneragala and Badulla of the Uva Province were considered as not affected areas. About 290,000 people in the Amparai district were directly or indirectly affected by the Tsunami.

The definition of affected and not affected areas for each administrative level is summarized in Table 2.

Table 2: Definition of Directly, Indirectly and Not Affected Areas for Each Administrative Level

Directly Affected	Indirectly Affected	Not Affected
The Grama Niladhari (GN) Divisions located in the sub-district level Divisional Secretariats (DS) divisions that were identified as affected areas at the Post-Tsunami Survey conducted by the Department of Census and Statistics in 2005.	The balance GN divisions in the affected sub-district DS divisions. These are identified as indirectly affected areas as a considerable number of families who lived in the adjoining areas were also affected. A large number of residents in these areas were killed or injured on that fatal morning as they	The not affected DS divisions of the districts in a province are identified as not affected areas as they are further away from the directly affected areas. However, they share some common cultural, demographic and socio-economic characteristics.

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	were visiting the Sunday Markets in the coastal towns. In addition, there were close interactions and support to the affected people from these adjoining GN areas.	
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(ii) Data Sources

The primary sources of data are the Census of Population 2001, the Post-Tsunami Survey conducted by the Department of Census and Statistics in 2005, the Management Information System (MIS) of the Ministry of Health and the Post-Tsunami Nutrition Survey on Children in the affected areas conducted by the Medical Research Institute of the Ministry of Health. The lowest level of data available by geographic area in the Census of Population is the Grama Niladhari division which corresponds to the areas surveyed in the Post-Tsunami Survey. The lowest level of data available in the MIS data base is the MOH area which corresponds to the DS divisions of the census of population. Thus, an affected MOH area includes both the directly and indirectly affected GN divisions. Therefore, most of the data presented in this report comprise of data from these four sources. It is to be noted that only relevant, valid and reliable data sources were employed in this study.

Complete data sets were requested from the above mentioned government agencies with a supporting letter from UNICEF, Colombo. However, only data released to the general public in print or electronic form were made available to the study team. Therefore, a request was made to UNICEF to obtain data on behalf of HPRA. However, due to the long procedure that is involved in requesting the data and the limited time available to complete the study, it was not possible to obtain complete data sets.

A list of data sources examined and reasons for their use and not use in the study is given in Appendix 2.

(iii) Data Limitations and Assumptions

The main limitation encountered in the analysis of data is that there are no time series data for three points in time (pre-tsunami, post-tsunami and most recent) with comparable indicators. The only relevant and reliable data sets available are the Census of Population 2001 and the Post-Tsunami Survey of 2005. The focus of the post-tsunami survey was on damaged housing and only limited data were collected on women and children and other variables such as water and sanitation, education and economic activity. As a result, the

relevant variables from the Census 2001 and those of the Post-Tsunami survey are not directly comparable. Moreover, the two data sets did not have comparable data for all geographic areas of interest. For example, demographic and socio-economic data for the Northern and Eastern districts, except for Amparai, are not available for the Pre-Tsunami period as the 2001 Census of Population was not conducted in these areas. There are no other data sources that give such information for small geographic areas affected by the Tsunami. In addition, for some variables on health, data for pre- and post- periods are available only for larger geographic areas comparable to DS divisions. The prevalence of HIV for small geographic areas cannot be computed for HIV/AIDS as the total number of cumulative cases reported from 1987 to 2005 is only 741. Similarly, data on Adolescents and Protection is very scanty as no specific surveys have been undertaken. Therefore, whatever relevant data collected from the post Tsunami survey of the Department of Census and Statistics have been included. As the post-Tsunami survey was undertaken carefully to capture the impact of Tsunami on those small geographic areas in the coastal belt of the North and East of the country, teasing out the impact on indicators of the ethnic conflict from that of Tsunami did not arise. However, in the absence of data, it is not possible to capture the demographic and developmental indicators of population that has migrated since Tsunami. Nevertheless, the data collected in the post-Tsunami census, which give information of populations before the Tsunami, after the Tsunami and those living outside; in the Tsunami affected areas are presented to give some estimate of the numbers who would have moved after the Tsunami. The Tsunami survey was conducted only in the areas that were directly affected by the Tsunami. Therefore, in the population count of people directly affected, the following have been not counted a) people resident outside the affected areas who were travelling in the affected coastal belt at the time of the disaster b) people who were staying in hotels and with friends and relatives at the time of the disaster and c) people from areas closer to the affected areas who happened to be in the affected area at that time. In the North and East, where enumeration of the population was possible only in the Amparai district, the two districts of the Uva Province (Badulla and Moneragala) have been added as they border the Amparai district.

The Department of Census and Statistics has made maps by GN and DS Divisions only for 18 Districts which were enumerated at the 2001 Census of Population. Therefore, maps for Northern and Eastern Provinces could not be made using DevInfo.

(iv) Time Periods

Two time points were identified, based on the availability of data. For demographic purposes and some key developmental indicators the data for 2001 and 2005 time periods are used. For maternal and child health data, the time periods are 2003 and 2005 and for nutrition information only post-Tsunami data are available for the year 2005.

(d) Identification of Key Demographic and Developmental Indicators

In order to best describe the demographic and development situation of the populations under study, the commonly used indicators were employed in the analysis. In addition, percentage distributions were used to assess the relative positions of the identified variables. The list of key output and outcome indicators used in this report and their definitions are presented in Table 3.

Table 3: List of Key Demographic and Developmental Indicators and their Definitions

Sector	Indicator	Definition	Level of Availability
1. Demography			
a) Age and Gender	1. % 0-4 Population	0-4 population/ total population	GN Level
	2. % 5-14 Population	5-14 population/total population	GN Level
	3. % 15-49 Female Population	15-49 female population/ total population	GN Level
b) Fertility	4. Child-Woman Ratio	$P0-4/FP15-49 \times 1000$ (Children aged 0-4 years per 1000 Women aged 15-49 years)	GN Level
2. Economic			
	5. Unemployment rate	Unemployed / labour force	GN Level
	6. % Full time students	Full time students/ inactive population	GN Level
	7. % in household work	Household workers/inactive population	GN Level
	8. % in Agriculture & forestry	Agricultural and forestry workers/total employed population	GN Level
	9. % in Fishing	Workers employed in fishing/ total employed population	GN Level
	10. % in Construction	Construction workers/ total employed population	GN Level
	11. % in Wholesale & retail trade	Wholesale and retail traders/ total employed population	GN Level
	12. % in Hotels and restaurants	Workers in hotels and restaurants/	GN Level

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		total employed population	
	13. % unable to continue in agriculture/farming activities	Percent of those currently engaged In that activity	GN Level
	14. % unable to continuing in fishing (for sale) activities	Percent of those currently engaged in that activity	GN Level
	15. % unable to continue in other fishery related activities	Percent of those currently engaged in that activity	GN Level
	16. % unable to continue in coir industry activities	Percent of those currently engaged in that activity	GN Level
	17. % unable to continue in limestone industrial activities	Percent of those currently engaged in that activity	GN Level
	18. % unable to continue trade activities	Percent of those currently engaged in that activity	GN Level
	19. % unable to continue in tourism related industrial activities	Percent of those currently engaged in that activity	GN Level
3. Housing	20. Number of housing units		GN Level
	21. Number of Occupants		GN Level
	22. Occupants per housing unit	Number of occupants/ Housing units	GN Level
	23. Number of damaged housing units		GN Level
	24. Number of occupants in damaged units		GN Level
	25. Occupants per damaged housing units	Number of occupants/ Damaged housing units	GN Level
		26 % of damaged housing units	Damaged housing units/ total stock

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		before Tsunami	
4. Health, Nutrition & HIV/AIDS			
a) Maternal and child health	27. Infant mortality rate	Infant deaths per 1000 live births	MOH/DS Level
	28. % of low birth weight babies	Low birth weight babies/ total live births	MOH/DS Level
	29. % of Pregnant mothers under care	Pregnant mothers under care/ total live births	MOH/DS Level
	30. % of Children aged 1-5 growth faltering	Children 1-5 years with growth faltering/ Population 1-5 years	MOH/DS Level
	31. % of Births to district births	Live births/ District births	MOH/DS Level
b) Nutrition	32. % of Children under 5 stunted	Height for Age	
	33. % of Children under 5 wasted	Weight for Height	
c) HIV/AIDS	34. Total HIV cases	Cumulative total of HIV cases	For the entire country
5. Education	35. % of Children attending Grade 1	Children attending Grade 1/ population aged 5 years	GN Level
	36. % of Children in primary school	Children in primary school/population aged 5-9 years	GN Level
	37. Number engaged in education before Tsunami		GN Level
	38. Number continuing education after Tsunami		GN Level
	39. % Continuing education after Tsunami	Number continuing education/Number engaged in education before Tsunami	GN Level
6. Water and Sanitation	40. % using toilet exclusively for household	Percent of all households in occupied housing units	GN Level
	41. % Sharing with other households	-do-	GN Level
	42. % Using public	-do-	GN Level

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	toilet		
	43. % Not using toilet	-do-	GN Level
	44. % Using water seal toilet	-do-	GN Level
	45. % Using pour flush toilet	-do-	GN Level
	46. % Using pit toilet	-do-	GN Level
	47. % Using protected well	-do-	GN Level
	48. % Using unprotected well	-do-	GN Level
	49. % using tube well	-do-	GN Level
	50. % using tap within premises	-do-	GN Level
	51. % using tap outside premises	-do-	GN Level
	52. % Using other (tank, river etc.)	-do-	GN Level
	53. % of housing units with damaged toilet facilities	Housing units with damaged toilet facilities/ partially damaged occupied housing units	GN Level
	54. % of housing units with no toilet facilities	Housing units with no toilet facilities/ partially damaged occupied housing units	GN Level
	55. % of housing units with no drinking water facilities	Housing units with no drinking water facilities/partially damaged occupied housing units	GN Level
7. Adolescent Development and protection			
a) Adolescents and young persons	56. % of Population aged 15-29 years	Population aged 15-29years/ total population	GN Level
b) Orphans	57. % of Children orphaned	Orphaned children as a percent of affected children	GN Level
c) Displaced population	58. % of Population displaced	Displaced population as a percent to the pre-Tsunami resident	GN Level

		population	
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(e) General Characteristics of the Affected Populations

The five affected provinces constitute about 65 per cent of the total population. Despite the devastation caused by the Tsunami all provinces have shown an increase in population. The highest percentage increase between 2005 and 2006 has occurred in the Eastern Province despite the loss of the largest number persons due to the Tsunami (Table 4). In terms of ethnic composition, the North-Western, Western and Southern Provinces have high proportion of Sinhalese. In the Eastern Province, the majority are Muslims and in the Northern Province the majority are Tamils. In the coastal areas of these provinces a high proportion of the population are engaged in fisheries or fishery related industries. In the Western and Southern Provinces a significant number are employed in the tourist industry.

Table 4: The Population of the Affected Provinces ('000)

Province	2001	2005	2006	% increase 2005-06
North-Western	2,170	2,235	2,256	0.9
Western	5,381	5,587	5,648	1.1
Southern	2,277	2,367	2,391	1.0
Eastern	1,419	1,555	1,578	1.4
Northern	1,041	1,133	1,146	1.1

Source: Department of Census and Statistics

(f) Administrative Structure at the Province

At the political level, a Province is headed by a Chief Minister who is the head of the Provincial Council comprising of elected representatives. At the sub-province level there are several Pradeshiya Sabas comprising of elected representatives. Administratively, each Province is headed by a Chief Secretary. A Province is divided into several Districts. A district is headed by a District Secretary who is the chief administrator of the District. At the sub-district level, the Divisional Secretary is the chief administrator, who is directly responsible to the District Secretary.

(g) Overview of Tsunami Impact

Tables 5 and 6 give an overview of the impact of the Tsunami in the affected provinces. The Eastern Province was the hardest hit with the largest number of dead, injured and disappeared persons. The next in terms of impact is the Northern Province. The highest number of disappeared persons is in the Southern Province. In terms of extent of damage to housing too, the Eastern Province was the most affected followed by the Southern Province.

Table 5: Tsunami Affected Provinces by Number of Deaths, Injured and Disappeared

Province	Affected Areas		Dead	Injured	Disappeared
	District	Sub-District			
North-Western	1	16	-	-	-
Western	3	40	110	1,272	10
Southern	3	45	3,250	5,062	531
Eastern	3	45	6,495	9,123	235
Northern	3	25	3,536	5,662	23
Total	13	171	13,391	21,119	799

Source: Post-Tsunami Survey, 2005

Table 6: The Extent of Damage to Housing due to the Tsunami

District	Completely Damaged	Partly Damaged (Unusable)	Partly Damaged (Usable)	Total
North Western Province	12	15	31	58
Southern Province	7,907	2,127	11,706	21,740
Western Province	5,989	1,245	7,467	14,701
Eastern Province	19,751	5,784	18,911	44,446
Northern Province	8,677	918	2,608	12,203
Total	42,336	10,089	40,723	93,148

Source: Post-Tsunami Survey, 2005

Part II

Pre Tsunami Situation

Pre Tsunami Situation

The pre-Tsunami situation was assessed by using the data of the 2001 Census of Population. The total population resident in the directly affected areas was 905,970 of which 50.3 percent were females. About 28 per cent of females were in the reproductive age group. Children under five years of age comprised 8.9 percent of the total population and those aged 5 to 14 years were 17.5 percent. However, these figures do not include the directly affected areas of the Eastern Province, except Amparai district and the Northern Province. The directly affected areas are the same GN areas identified by the Department of Census and Statistics in their Post-Tsunami Survey undertaken in 2005. In the following sections the pre-Tsunami situation is analysed by provinces that were affected by the Tsunami. This is done so because the impact of Tsunami was felt differently in the different provinces. As stated earlier each province is divided into directly affected, indirectly affected and not affected areas by the Tsunami.

(a) Demography

(i) Age and Gender

The North-Western Province comprises of two districts namely, Puttalam and Kurunegala. Only one DS division of the 45 divisions in the province was affected by the Tsunami. In this division there are 60 GN divisions and only 4 GN divisions were directly affected. The balance GN divisions were defined as indirectly affected. As a result, the population that lived in the area that was directly affected in this province is relatively small. The population distribution of children and women show a similar pattern among the directly, indirectly and not affected areas of the province. Children in the age category 5 to 14 years show slightly lower proportions, compared to those in the indirectly and not directly affected areas (Table 7).

In the Western Province which comprises the districts of Gampaha, Colombo and Kalutara has 40 DS divisions, out of which 10 divisions were affected. In these 10 divisions there are 451 GN divisions of which 99 divisions were directly affected and the balance indirectly affected. It is evident from Table 8 that the directly and indirectly affected population is about half the size of the not affected population in the province. In contrast to the North-Western Province, the proportion of population aged 5-14 years in the directly affected areas is higher than the indirectly and not directly areas in the Western Province.

The Southern Province comprises the districts of Galle, Matara and Hambantota. These three districts together have 45 DS divisions, out of which 14 were affected by the Tsunami. These 14 DS divisions contain 752 GN divisions, out of which 235 divisions were directly affected. The balance divisions were indirectly affected. The directly and indirectly affected population in this province is about 949,000. It is evident from Table 9

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that the proportion of children aged 5-14 years is lower in the directly affected areas, when compared with the other two areas.

As only the district of Amparai was enumerated in the Northern and Eastern Provinces at the 2001 census, the bordering districts of Moneragala and Badulla of the Uva Province were added to the not affected areas. About 290,000 people in the district of Amparai were directly or indirectly affected by the Tsunami. It is seen from Tables 10 that the proportions of children and women are slightly higher in the directly affected areas, when compared with the other two areas.

Table 7: Population Distribution North Western Province, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
Total	5,365	65,452	2,099,075
Male	2,714	31,546	1,041,374
Female	2,651	33,906	1,057,701
Percentage of Population			
<u>0-4</u>			
Total	8.4	8.2	8.7
Male	8.1	8.6	8.9
Female	8.6	7.9	8.5
<u>5-14</u>			
Total	17.2	17.6	18.2
Male	17.9	18.2	18.7
Female	16.5	17.1	17.7
<u>15-49</u>			
Female	26.9	28.4	27.6

Source: Census of Population 2001

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Table 8: Population Distribution Western Province, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
Total	410,596	1,379,068	3,591,533
Male	206,157	706,811	1,773,428
Female	204,439	672,257	1,818,105
Percentage of Population			
<u>0-4</u>			
Total	8.3	8.5	7.5
Male	8.9	7.6	8.0
Female	7.7	8.0	7.5
<u>5-14</u>			
Total	15.5	15.0	14.7
Male	15.9	15.0	15.3
Female	15.1	15.0	14.2
<u>15-49</u>			
Female	28.0	27.8	29.0

Source: Census of Population 2001

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Table 9: Population Distribution Southern Province, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
Total	330,825	617,996	1,329,450
Male	162,365	302,142	649,786
Female	168,460	315,854	679,664
Percentage of Population			
<u>0-4</u>			
Total	8.6	8.6	8.7
Male	8.8	9.1	9.1
Female	8.3	8.1	8.3
<u>5-14</u>			
Total	18.0	19.1	19.7
Male	18.8	19.9	20.5
Female	17.1	18.2	18.9
<u>15-49</u>			
Female	26.8	26.9	26.3

Source: Census of Population 2001

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Table 10: Population Distribution Amparai District / Uva Province, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
Total	159,184	130,774	1,480,397
Male	78,793	67,072	743,538
Female	80,391	63,702	736,859
Percentage of Population			
<u>0-4</u>			
Total	11.0	10.0	9.6
Male	11.4	10.0	9.7
Female	10.6	10.0	9.5
<u>5-14</u>			
Total	21.6	20.3	21.2
Male	22.5	20.2	21.4
Female	20.9	20.5	21.0
<u>15-49</u>			
Female	28.3	27.5	26.1

Source: Census of Population 2001

(ii) Fertility

Fertility cannot be measured for small geographic areas by using conventional measures, as data are not available. However, a close approximation to general fertility rate is the child/woman ratio, which is the number of children under five years per 1000 women aged 15-49 years. It is evident from Table 11 that, of the directly affected areas, the Western Province has the lowest fertility rate and Amparai district/Uva Province has the highest rate.

Table 11: Fertility Rate (Child/Woman Ratio) 2001

Category	Directly Affected	Indirectly Affected	Not Affected
North-Western Province	310	290	314
Western Province	296	307	258
Southern Province	320	320	331
Amparai District/Uva Province	388	365	367

Source: Census of Population 2001

The crude birth rate in the Tsunami affected districts for the years 2001 and 2006 shows that in four districts, the rate has increased despite the overall trend has been declining. The increases are particularly significant in the districts of Amparai and Hambantota where the impact of the Tsunami was severe (Table 12).

Table 12 : Crude Birth Rate of Tsunami Affected Districts

District	2001	2006	% Change 2001-06
Puttalam	17.5	16.6	-5.1
Gampha	13.3	13.3	0
Colombo	27.0	25.4	-5.9
Kalutara	15.7	15.0	-4.4
Galle	18.7	19.2	2.7
Matara	19.7	18.7	-5.1
Hambantota	12.5	15.7	25.6
Amparai	19.2	23.4	21.8
Batticaloa	23.0	20.0	-13.0
Trincomalee	24.9	19.5	-21.7
Jaffna	16.7	16.0	-4.2
Mullaitivu	38.1	18.2	-52.2
Kilinochchi	24.7	27.7	12.1
Sri Lanka	18.9	18.7	-1.1

Source: Registrar General's Department

(b) Economic Status

The coastal belt devastated by the Tsunami is largely inhabited by poor segments of the population in fishing villages and communities. Many of the affected were students and those who were engaged in household work. The level of unemployment would also give an idea of the relative level of poverty in the three different areas. It is evident from Table 13 that the unemployment rate in the directly affected areas is relatively high in the Southern and Eastern Provinces. Similarly, the proportion of full time students is also higher in these two provinces. In all provinces, nearly half the number of the economically inactive population is engaged in household work.

Table 13: Activity Status of Population 10 Years and Over, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
North-Western Province			
Unemployment Rate	6.5	7.1	7.6
% Fulltime Students	28.3	29.0	33.3
% Engaged in household work	50.7	48.0	46.2
Western Province			
Unemployment Rate	6.3	6.4	8.0
% Fulltime Students	28.7	28.1	29.9
% Engaged in household work	49.0	48.7	47.8
Southern Province			
Unemployment Rate	12.2	12.6	9.9
% Fulltime Students	32.6	34.1	37.9
% Engaged in household work	44.7	46.0	41.5
Amparai District/Uva Province			
Unemployment Rate	15.0	13.4	7.0
% Fulltime Students	33.9	35.2	41.4
% Engaged in household work	46.7	48.4	38.6

Source: Census of Population 2001

People's livelihoods were affected to a great extent by the Tsunami. Fishermen and those who were connected with the tourist industry were affected the most. It is estimated that about 200,000 people lost their employment including about 100,000 in fisheries and 27,000 in tourism and tourist related activities (Asian Development Bank et al, 2005). Therefore, the economic activities of those who lived in the three different areas prior to the Tsunami would give an idea of the pattern of economic activities of the people. It is evident from Tables 14 to 17 that the percentage of people employed in fishing and hotels and restaurants is relatively high in the directly affected areas in all the provinces.

Table 14: Employed Population 10 years and over by Industry North Western Province, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
Percentage employed in			
Agriculture & Forestry	4.7	3.4	29.3
Fishing	12.0	5.0	2.8
Construction	12.0	10.5	4.5
Wholesale and retail trade	7.0	12.3	11.4
Hotels and Restaurants	10.4	1.6	1.2

Source: Census of Population 2001

Table 15: Employed Population 10 years and over By Industry Western Province, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
Percentage employed in			
Agriculture & Forestry	0.8	1.3	7.3
Fishing	4.5	1.2	0.1
Construction	3.8	4.6	5.4
Wholesale and retail trade	17.8	18.7	13.4
Hotels and Restaurants	4.9	3.5	1.8

Source: Census of Population 2001

Table 16: Employed Population 10 years and over by Industry Southern Province, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
Percentage employed in			
Agriculture & Forestry	3.2	19.3	45.9
Fishing	11.0	1.8	0.1
Construction	3.7	5.1	4.2
Wholesale and retail trade	15.4	12.5	8.2
Hotels and Restaurants	4.6	2.3	0.9

Source: Census of Population 2001

Table 17: Employed Population 10 years and over, by Industry Amparai District/ Uva Province, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
Percentage employed in			
Agriculture & Forestry	15.9	28.9	56.7
Fishing	12.4	2.9	0.2
Construction	8.4	7.3	1.8
Wholesale and retail trade	16.4	11.5	7.2
Hotels and Restaurants	1.7	1.5	0.9

Source: Census of Population 2001

(c) Housing

Of the physical infrastructure, housing was the most affected. Tsunami completely damaged about 42,000 houses and partially damaged another 51,000 houses. The completely damaged and partially damaged houses together constitute about 13 percent of the housing stock (Asian Development Bank et al., 2005). It is evident from Tables 18 to 21 that the average number of occupants per housing unit in the provinces except for North Western Province is slightly higher in the directly affected areas prior to the Tsunami.

Table 18: Occupied Housing Units and Number of Occupants North Western Province, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
Number of housing units	1,363	16,676	533,050
Number of occupants	5,237	66,336	2,136,675
Average number of occupants per housing unit	3.8	4.0	4.0

Source: Census of Population 2001

Table 19: Occupied Housing Units and Number of Occupants Western Province, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
Number of housing units	85,795	276,073	832,808
Number of occupants	400,890	1,310,478	1,891,888
Average number of occupants per housing unit	4.7	4.7	2.3

Source: Census of Population, 2001

Table 20: Occupied Housing Units and Number of Occupants Southern Province, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
Number of housing units	66,754	143,275	320,566
Number of occupants	320,898	639,372	1,372,617
Average number of occupants per housing unit	4.8	4.5	4.3

Source: Census of Population 2001

Table 21: Occupied Housing Units and Number of Occupants Amparai District/ Uva Province, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
Number of housing units	33,865	27,337	352,403
Number of occupants	155,272	122,695	1,503,830
Average number of occupants per housing unit	4.6	4.5	4.3

Source: Census of Population 2001

(d) Education

The percentage attending school as a percentage of population aged 5-14 years is relatively high in all provinces. Interestingly, Amparai District/Uva Province has the highest proportion. The percentage attending Grade 1 is highest in the Southern Province and lowest in Amparai/Uva Province, which is economically backward. These proportions, however, have to be interpreted with caution as there are data errors with regard to both the numerator and the denominator. In terms of both these indicators, it is seen that the school entry and attendance is somewhat lower in the directly affected areas compared to the other two areas (Table 22).

Table 22: Educational Situation in the Affected Provinces, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
North Western Province			
Percentage attending School ^a	71.7	75.0	80.5
Percentage attending Grade 1 ^b	58.2	64.8	71.9
Western Province			
Percentage attending School ^a	71.0	69.8	73.3
Percentage attending Grade 1 ^b	65.2	73.7	76.6
Southern Province			
Percentage attending School ^a	77.3	88.4	85.2
Percentage attending Grade 1 ^b	73.8	81.6	67.4
Amparai District/ Uva province			
Percentage attending School ^a	79.4	79.3	83.4
Percentage attending Grade 1 ^b	52.7	54.8	69.7

Source: Census of Population 2001

^aProportion of population 5-19 years ; ^bProportion of population age 5

(e) Water and Sanitation

In the water and sanitation sector, the Tsunami's effect was seen mostly in the areas where dependency on wells was high. It is estimated that 12,000 wells were damaged and 50,000 abandoned mainly due to salt water intrusion (Asian Development Bank et al., 2005). Damage to sanitation facilities includes individual household latrines. In the directly affected areas, except for Amparai District and Uva Province, the percentage of households using toilet facilities exclusively for the household is about 75 percent. The percentage of households not using toilet facilities is relatively high in the directly affected areas of Amparai District/Uva Province with 26 percent (Tables 23 to 26).

Table 23: Households in Occupied Housing Units by Availability of Toilet Facilities, North Western Province, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
Percentage Using Toilet			
Exclusively for household	75.9	80.8	76.5
Sharing with other households	10.2	13.6	13.1
Public toilet	7.1	2.7	0.8
Not using	5.6	1.7	8.4

Source: Census of Population 2001

Table 24: Households in Occupied Housing Units by Availability of Toilet Facilities, Western Province, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
Percentage using toilet			
Exclusively for household	74.7	72.5	81.1
Sharing with other households	13.5	13.5	15.8
Public toilet	7.9	11.4	0.9
Not using	0.8	0.7	0.8

Source: Census of Population 2001

Table 25: Households in Occupied Housing Units by Availability of Toilet Facilities, Southern Province, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
Percentage using toilet			
Exclusively for household	75.3	82.2	86.1
Sharing with other households	17	14.8	11.5
Public toilet	1.1	0.1	0.4
Not using	4.8	2.4	1.4

Source: Census of Population 2001

Table 26: Households in Occupied Housing Units by Availability of Toilet Facilities, Amparai District/Uva Province, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
Percentage using toilet			
Exclusively for household	56.4	65.2	79.8
Sharing with other households	14.2	12.3	11.1
Public toilet	0.2	0.2	0.7
Not using	26.5	19.7	7

Source: Census of Population 2001

With regard to the distribution of housing units by type of toilet, it is evident that except for Amparai district and Uva Province, in all other provinces, more than 80 percent of households were using either water seal or pour flush toilets in the directly affected areas. The highest proportion was in Western Province with 94 percent. The use of pit toilets is relatively low in the North-Western Province and Western Province. However, in the Southern Province and Amparai District/Uva Province, the proportions are relatively high with 15 and 22 percent, respectively, in the not directly affected areas. From the foregoing discussion it is clear that sanitary facilities in the directly affected areas have been relatively good as these are mostly urban or semi-urban areas (Table 27).

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Table 27: Households in Occupied Housing Units by Type of Toilet, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
North Western Province			
Water Seal	71.8	78.3	68.3
Pour Flush	15.5	14.9	11.1
Pit	1.2	1.1	8.7
Western province			
Water Seal			
Pour Flush	76.3	76.3	78.2
Pit	17.4	17.3	13.8
	1.4	1.5	4.6
Southern Province			
Water Seal			
Pour Flush	71.3	73.7	72.0
Pit	16.3	10.3	9.3
	3.2	11.1	15.2
Amparai District/Uva Province			
Water Seal	53.3	59.9	49.4
Pour Flush	10.3	9.4	17.7
Pit	3.4	4.7	22.0

Source: Census of Population 2001

As regards source of drinking water supply, it is seen that a relatively high proportion of households in the Western and Southern Provinces (55 % and 46% respectively) have taps within premises in the directly affected areas. The corresponding proportions for North-Western and Amparai District/Uva Province are 11 and 2 percent, respectively. However, these two provinces have high proportions of protected wells, 92 percent in Amparai District/Uva Province and 58 percent in North-Western Province. In the indirectly and not affected areas where the proportion of households with taps within the premises is low, it is seen that the proportion of protected wells is high. Thus overall, in the pre-Tsunami situation the supply of safe drinking water has been satisfactory (Tables 28 to 31).

Table 28: Households in Occupied Housing Units by Availability of Drinking Water, North Western Province, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
Percentage of Household Units			
Protected Well	58.1	56.5	74.2
Unprotected Well	2.7	3.3	10.3
Tube Well	10.1	26.6	6.1
Tap within premises	10.8	6.5	3
Tap outside premises	15.5	4.7	3
Other (tank, river etc)	1.2	0.7	0.7

Source: Census of Population 2001

Table 29: Households in Occupied Housing Units by Availability of Drinking Water, Western Province, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
Percentage of Household Units			
Protected Well	10.9	23.1	64.6
Unprotected Well	0.4	1.8	7.3
Tube Well	3.8	3.8	2.6
Tap within premises	55.3	43	14.8
Tap outside premises	26.2	25.3	7.8
Other (tank, river etc)	0.8	0.4	0.4

Source: Census of Population 2001

Table 30: Households in Occupied Housing Units by Availability of Drinking Water, Southern Province, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
Percentage of Household Units			
Protected Well	29.4	53.2	56.7
Unprotected Well	2.2	7.7	17.7
Tube Well	0.7	2.5	3.6
Tap within premises	45.7	23	5.7
Tap outside premises	19.3	11.5	6.9
Other (tank, river etc)	1.2	1.1	8.3

Source: Census of Population 2001

Table 31: Households in Occupied Housing Units by Availability of Drinking Water, Amparai District/Uva Province, 2001

Category	Directly Affected	Indirectly Affected	Not Affected
Percentage of Household Units			
Protected Well	92.4	84.9	38.8
Unprotected Well	1.5	2.2	14.3
Tube Well	0.4	0.9	4.5
Tap within premises	2	5.6	13.5
Tap outside premises	0.4	1.1	13.2
Other (tank, river etc)	1	3.2	14

Source: Census of Population 2001

(f) Adolescents and Young Persons

Adolescents and young people in the age group 15-29 years are believed to be disproportionately affected by the Tsunami as many were engaged in activities outside the home in the coastal areas. In all provinces under study, the young population constitute about 27 percent of the total population. In the Southern Province, however, it is to be noted that the proportion of young persons in the directly affected areas is slightly higher than the indirectly and not affected areas in the population count before the Tsunami (Table 32). It is also seen that in all provinces the proportion of young males is higher than that of females.

Table 32: Population Distribution of Young Persons (age 15-29 Yrs), 2001

Category	Directly Affected	Indirectly Affected	Not Affected
North-Western Province			
Total	27.8	28.9	26.6
Male	32.3	29.6	26.8
Female	27.1	27.8	26.3
Western Province			
Total	28.9	29.4	28.7
Male	29.8	30.5	28.9
Female	27.9	28.2	28.5
Southern Province			
Total	27.0	25.2	24.4
Male	27.4	25.5	24.5
Female	26.6	24.8	24.3
Amparai District/Uva Province			
Total	29.4	29.8	26.3
Male	29.5	30.1	25.8
Female	29.2	29.4	26.8

Source: Census of Population 2001

(g) Maternal and Child Health

In the North-Western Province, all health related indicators are relatively poor in the affected areas, in comparison with the not affected areas. In the Western Province, except for growth faltering of children, other indicators are relatively poor in the affected areas. In the Southern Province, the indicators in the affected areas are slightly better. However, more than one third of annual births occur in the affected areas. In the Amparai District/Uva Province, interestingly, the indicators, such as infant mortality rate and percentage of low birth weight babies, are better in the affected areas. However, the prenatal care and growth faltering of children are relatively poor in the affected areas. It is also to be noted that nearly half the number of annual district births occur in the affected areas (Tables 33 to 37).

Table 33: Maternal and Child Health Indicators North-Western Province, 2003

Indicator	Pre Tsunami	
	Affected ^a	Not Affected
Infant Mortality Rate	17.5	13.6
Percentage of Low Birth Weight Babies	14	11.4
Percentage of Pregnant Mothers Under Care	57.7	65.8
Percentage of Children aged 1-5 years with Growth Faltering	9.4	5.2
Percentage of Births to total District births	6.2	93.8

Source: Family Health Bureau, Ministry of Health

^a Includes both directly and indirectly affected areas

Table 34: Maternal and Child Health Indicators Western Province, 2003

Indicator	Pre Tsunami	
	Affected ^a	Not Affected
Infant Mortality Rate	12.4	10.1
Percentage of Low Birth Weight Babies	11.2	11.5
Percentage of Pregnant Mothers Under Care	61.2	66.4
Percentage of Children aged 1-5 years with Growth Faltering	2.6	5.6
Percentage of Births to total District births	28.8	71.2

Source: Family Health Bureau, Ministry of Health

^a Includes both directly and indirectly affected areas

Table 35: Maternal and Child Health Indicators, Southern Province, 2003

Indicator	Pre Tsunami	
	Affected ^a	Not Affected
Infant Mortality Rate	10	9
Percentage of Low Birth Weight Babies	11.3	12
Percentage of Pregnant Mothers Under Care	66.8	62.3
Percentage of Children aged 1-5 years with Growth Faltering	6.6	7.5
Percentage of Births to total District births	37.3	62.7

Source: Family Health Bureau, Ministry of Health

^a Includes both directly and indirectly affected areas

Table 36: Maternal and Child Health Indicators, Eastern Province, 2003

Indicator	Pre Tsunami	
	Affected ^a	Not Affected
Infant Mortality Rate	7.6	11.6
Percentage of Low Birth Weight Babies	11.2	12.7
Percentage of Pregnant Mothers Under Care	49.2	59.1
Percentage of Children aged 1-5 years with Growth Faltering	14.1	5.4
Percentage of Births to total District births	48.0	52.0

Source: Family Health Bureau, Ministry of Health

^a Includes both directly and indirectly affected areas

Table 37: Maternal and Child Health Indicators, Northern Province, 2003

Indicator	Pre Tsunami	
	Affected ^a	Not Affected
Infant Mortality Rate	18.1	20.5
Percentage of Low Birth Weight Babies	7.7	8.7
Percentage of Pregnant Mothers Under Care	71.5	47.3
Percentage of Children aged 1-5 years with Growth Faltering	30.3	2.9
Percentage of Births to total District births	32.4	67.6

Source: Family Health Bureau, Ministry of Health

^a Includes both directly and indirectly affected areas

It can be seen from Table 38 that the crude death rate of Tsunami affected districts in 2001 and 2006 shows that in five districts the rate has increased despite the general trend has been a decline in the rate. In the badly affected districts of Amparai and Hambantota the death rate has shown an increase as was the case with regard to the crude birth rate (see Table 12).

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Table 38 : Crude Death Rate of Tsunami Affected Districts

District	2001	2006	% Change 2001-06
Puttalam	4.8	6.1	27.1
Gampaha	5.2	4.9	-5.8
Colombo	9.2	8.2	-10.9
Kalutara	5.6	5.7	1.8
Galle	6.8	7.0	2.9
Matara	5.9	5.7	-3.4
Hambantota	4.2	4.5	7.1
Amparai	4.0	4.4	10.0
Batticaloa	5.2	4.4	-15.4
Trincomalee	4.4	3.9	-11.4
Jaffna	5.5	4.8	-12.7
Mullaitivu	6.9	3.8	-44.9
Kilinochchi	8.5	3.9	-54.1
Sri Lanka	5.9	5.8	-1.7

Source: Registrar General's Department

Part III

Post Tsunami Situation

Post Tsunami Situation

About 364,000 people were directly affected by the Tsunami. The Eastern Province, not only had the largest number of affected people but also a relatively larger number of children and women in comparison to the other affected provinces. In the Western Province too a larger proportion of children under age 5 and women in the reproductive age group have been affected. The data presented in this section come from the Post-Tsunami Survey conducted by the Department of Census and Statistics.

(a) Demography

(i) Age and Gender

The Western and Eastern Provinces show relatively high proportions of children under five years of age being affected by the Tsunami. Eastern and North Western Provinces show high proportions of children aged 5-9 and 10-14 years of age affected by the Tsunami. As regards women in the reproductive age group, the North Western Province show a relatively low proportion of 23.7 percent compared to nearly 29 percent in the Eastern and Northern Provinces (Table 39).

Table 39: Directly Affected Population, 2005

Province	Directly Affected Population	Aged 0-4 as % of Affected Population	Aged 5-9 as % of Affected Population	Aged 10-14 as % of Affected Population	Females Aged 15-49 as % of Affected Population
North-Western Province	228	7.4	9.6	15.8	23.7
Western Province	53,713	9.3	9	9.5	28.2
Southern Province	91,255	7.6	7.6	9.4	27.9
Eastern Province	174,315	9.4	10.4	12	28.8
Northern Province	44,751	7.8	9.1	11.5	28.9

Source: Post-Tsunami Survey, 2005

(ii) Fertility

The level of fertility is measured by child – woman ratio. It is seen that in the Southern and Northern Provinces the fertility levels are comparatively low, when compared with the pre-Tsunami period of 2001 in the directly affected areas (compare with Table 8), the Western Province shows a slight increase. However, in the Southern Province there has been a significant decline of nearly 30 percent. Part of this decline may be due to a disproportionate loss of children less than five years to women aged 15-49 years due to the Tsunami (Table 40).

Table 40: Fertility Rate (Child/Woman Ratio), 2005

Category	Children	Females	C/W
	0-4	15-49	Ratio
North-Western Province	17	54	315
Western Province	4,994	15,166	329
Southern Province	6,901	25,438	271
Eastern Province	16,358	50,216	326
Northern Province	3,488	12,927	270

Source: Post-Tsunami Survey, 2005

(b) Economic Status

In the Western, Southern, Eastern and Northern Provinces where large numbers in the coastal belt are engaged in fishing and fishery related activities, the percentage of people who were not able to continue their activities range from about 44 percent in the Western Province to nearly 70 percent in the Southern and Eastern Provinces. Tourism and related industries, which also employ a relatively large number of persons, have also been badly affected with more than 60 percent being unable to continue their activities in the Western and Southern Provinces. The corresponding proportions of the affected in the Eastern and Northern Provinces are 52 and 25 percent respectively. In addition, in the coir industry, which is a cottage industry in the Southern Province, 84 percent were unable to continue work. In the Southern and Eastern Provinces where large numbers are engaged in trade activities, more than 50 percent could continue their activities. Farming

is another activity where people in the Eastern, Western and Southern Provinces depend on their livelihoods. It is seen that 64 percent, 56 percent and 48 percent, respectively, in these provinces were unable to continue their activities (Tables 41 to 45).

Table 41: Distribution of Employed in the Affected DS Divisions by Economic Activity and Ability to continue the same Activity After the Tsunami, North-Western Province, 2005

Total Engaged	Total Engaged	Inability to Continue	% inability to continue
Agriculture/Farming	*	*	*
Fishing (for sale)	8	2	25
Other Fishery related	*	*	*
Coir industry	2	*	*
Lime stone industries	*	*	*
Trade	1	*	*
Tourism related industry	*	*	*

Source: Post-Tsunami Survey, 2005

Table 42: Distribution of Employed in the Affected DS Divisions by Economic Activity and Ability to Continue the Same Activity After the Tsunami, Western Province, 2005

Total Engaged	Total Engaged	Inability to Continue	% inability to continue
Agriculture/Farming	142	79	55.6
Fishing (for sale)	2,565	1,127	43.9
Other Fishery related	1,206	498	41.3
Coir industry	74	29	39.2
Lime stone industries	1	0	0
Trade	2,419	852	35.2
Tourism related industry	420	258	61.4

Source: Post-Tsunami Survey, 2005

Table 43: Distribution of Employed in the Affected DS Divisions by Economic Activity and Ability to Continue the Same Activity after the Tsunami, Southern Province, 2005

Total Engaged	Total Engaged	Inability to Continue	% inability to continue
Agriculture/Farming	533	254	47.7
Fishing (for sale)	4,831	3,492	72.3
Other Fishery related	1,418	958	67.6
Coir industry	2,357	1,979	84.0
Lime stone industries	257	179	69.6
Trade	4,060	2,268	55.9
Tourism related industry	1,157	739	63.9

Source: Post-Tsunami Survey, 2005

Table 44: Distribution of Employed in the Affected DS Divisions by Economic Activity and Ability to Continue the Same Activity After the Tsunami, Eastern Province, 2005

Total Engaged	Total Engaged	Inability to Continue	% inability to continue
Agriculture/Farming	4,080	2,620	64.2
Fishing (for sale)	9,993	7,350	73.5
Other Fishery related	2,615	1,661	63.5
Coir industry	75	40	53.3
Lime stone industries	39	11	28.2
Trade	4,839	2,438	50.4
Tourism related industry	42	22	52.4

Source: Post-Tsunami Survey, 2005

Table 45: Distribution of Employed in the Affected DS Divisions by Economic Activity and Ability to Continue the Same Activity after the Tsunami, Northern Province, 2005

Total Engaged	Total Engaged	Inability to Continue	% inability to continue
Agriculture/Farming	1,049	229	21.9
Fishing (for sale)	6,943	4,713	67.9
Other Fishery related	1,762	907	51.5
Coir industry	15	3	20.0
Lime stone industries	3	2	66.7
Trade	487	120	24.7
Tourism related industry	4	1	25.0

Source: Post-Tsunami Survey, 2005

(c) Housing

It is evident that in the Western and Southern Provinces, the average number of occupants per housing unit has considerably reduced in the post Tsunami period. The percentage of damaged housing units to the housing stock prevalent in the pre-Tsunami period is one third in the Southern Province and nearly two thirds in the Amparai district in the Eastern Province (Table 46).

Table 46: Post Tsunami Occupied Damaged Housing Units and Number of Occupants, 2005

Category	North-Western Province	Western Province	Southern Province	Eastern Province	Northern Province
Number of damaged housing Units	58	14,701	21,740	44,446	12,203
Number of Occupants	228	53,713	91,255	174,315	44,751
Average number of occupants per damaged housing unit	3.9	3.6	4.2	3.9	3.7
Percentage damaged housing units of stock before Tsunami	4.4	17.1	32.6	62.6*	NA

Source: Post-Tsunami Survey, 2005

*Refers to Amparai District only NA= Not Available

(d) Health, Nutrition and HIV / AIDS

(i) Maternal and Child Health

When one compares Tables 33 to 37 with Tables 47 to 51 some significant changes with regard to maternal and child health can be found. It is evident that in the North-Western, Western and Southern Provinces, there has been an improvement in the indicators, except with regard to growth faltering of children in the affected areas during the pre- and post-Tsunami time periods. In the Eastern Province, however, while there has been an improvement in the infant mortality rate in the not affected areas, there has been an increase in the affected areas. Nevertheless, there has been a greater improvement in the affected areas with regard to ante-natal care and growth faltering of children. It is also interesting to note that more than 50 percent of births in the Eastern Province occur in the affected areas. In the Northern Province, the infant mortality rate has declined significantly in both the affected and not affected areas. However, the percentage of low

birth weight babies has increased in both areas. As regards antenatal care, there has been an improvement in the affected areas while the proportion has declined in the not affected areas. Of the total number of births in the province, about one third occurs in the affected areas.

Table 47: Maternal and Child Health Indicators North Western Province, 2005

Indicator	Affected ^a	Not affected
Infant Mortality Rate	10.9	13.2
Percentage of Low Birth Weight Babies	9.9	11.2
Percentage of Pregnant Mothers Under Care	62.9	63.8
Percentage of Children aged 1-5 years with Growth Faltering	11.2	4.9
Percentage of Births to total District births	5.4	94.6

Source: Special Tabulation from MIS of the Family Health Bureau,
Ministry of Health

^a Includes both directly and indirectly affected areas

Table 48: Maternal and Child Health Indicators, Western Province

Indicator	Affected ^a	Not affected
Infant Mortality Rate	9.3	9.6
Percentage of Low Birth Weight Babies	10.5	10.5
Percentage of Pregnant Mothers Under Care	62.4	66.6
Percentage of Children aged 1-5 years with Growth Faltering	2.2	4.9
Percentage of Births to total District births	28.9	71.1

Source: Special Tabulation from MIS of the Family Health Bureau,
Ministry of Health

^a Includes both directly and indirectly affected areas

Table 49: Maternal and Child Health Indicators, Southern Province, 2005

Indicator	Affected ^a	Not affected
Infant Mortality Rate	10.4	8.2
Percentage of Low Birth Weight Babies	9.6	10.6
Percentage of Pregnant Mothers Under Care	72.6	69.6
Percentage of Children aged 1-5 years with Growth Faltering	6.8	6.4
Percentage of Births to total District births	37.9	62.1

Source: Special Tabulation from MIS of the Family Health Bureau,
Ministry of Health

^a Includes both directly and indirectly affected areas

Table 50: Maternal and Child Health Indicators, Eastern Province, 2005

Indicator	Affected^a	Not affected
Infant Mortality Rate	11.1	7.4
Percentage of Low Birth Weight Babies	11.0	12.3
Percentage of Pregnant Mothers Under Care	65.8	67.8
Percentage of Children aged 1-5 years with Growth Faltering	12.2	9.8
Percentage of Births to total District births	33.1	66.9

Source: Special Tabulation from MIS of the Family Health Bureau,
Ministry of Health

^a Includes both directly and indirectly affected areas

Table 51: Maternal and Child Health Indicators, Northern Province, 2005

Indicator	Affected	Not affected
Infant Mortality Rate	13.7	17.6
Percentage of Low Birth Weight Babies	8.5	8.6
Percentage of Pregnant Mothers Under Care	61.4	54.6
Percentage of Children aged 1-5 years with Growth Faltering	27.1	1.6
Percentage of Births to total District births	41.9	58.1

Source: Special Tabulation from MIS of the Family Health Bureau, Ministry
of Health

^a Includes both directly and indirectly affected areas

(ii) Nutrition

The nutritional status of children under five years in the Tsunami affected areas was assessed by the Medical Research Institute of the Ministry of Health. It can be seen from

Table 52 that stunting and wasting of children has been relatively high in the Eastern Province. However, the Southern Province shows relatively low levels. In the Northern Province, the percentage of children wasted is lowest among the provinces. In terms of wasting and stunting of children by sex, it is evident that in the affected areas, the nutritional situation has been relatively poor, compared to the not affected areas. In the affected areas, males show a higher percentage of stunting (Table 53).

Table 52: Nutrition Status of Children Under Five Years in Tsunami Affected Areas (living in camps), 2005

Province	% Stunted	% Wasted
Western	20.1	18.1
Southern	10.4	12.8
Eastern	28.7	19.8
Northern	21.8	12.7

Source: Nutrition Surveillance Survey, 2005

Table 53: Nutrition Status of Children Under Five Years by Sex in Tsunami Affected and Not Affected Areas, 2005

Category	% Affected	% Not Affected
Wasted		
Male	18.0	13.2
Female	15.4	14.5
Stunted		
Male	20.5	11.7
Female	20.8	12.4

Source: Nutrition Surveillance Survey, 2005

(iii) HIV/AIDS

The prevalence of HIV for small geographic areas cannot be computed, as the total number of cases reported is very small for the country as a whole. It is, however, to be noted that the cumulative number of HIV cases for the entire country has increased from 523 just before Tsunami in 2003 to 743 in 2005 (Table 54).

Table 54: Number of HIV Cases Reported, 1990-2005

Year	Male	Female	Total	Cumulative Total
1990	6	1	7	23
1991	10	3	13	36
1992	19	8	27	63
1993	26	11	37	100
1994	15	8	23	123
1995	12	10	22	145
1996	20	10	30	175
1997	16	16	32	207
1998	29	26	55	262
1999	24	18	42	304
2000	34	20	54	358
2001	28	19	47	405
2002	26	24	50	455
2003	31	37	68	523
2004	54	37	91	614
2005	69	60	129	743
Total	432	311	743	

Source: STD/HIV AIDS Control Programme, Ministry of Health

(e) Education

It is seen from Table 55 that less than half the number of those aged 3-34 years living in the Tsunami damaged housing units were able continue their education after the Tsunami. Western Province show relatively low proportion of those who were able to continue their education. Interestingly, the Northern Province shows the highest proportion of those who were able to continue their education.

**Table 55: Population aged 3-34 years Engaged in Educational Activities
Before and after Tsunami in the Affected Housing Units, 2005**

Province	Number engaged in educational activities before Tsunami	Number Continuing Education after Tsunami	Proportion Continuing Education after Tsunami
North-Western Province	128	62	48.4
Western Province	30,236	12,890	42.6
Southern Province	47,050	22,598	48
Eastern Province	108,996	50,315	46.2
Northern Province	28,621	14,438	50.4

Source: Post-Tsunami Survey, 2005

The decline in the enrolment in primary school has occurred in many Tsunami affected districts as in the case for the county as a whole. This is partly due to the declining fertility rates in most districts. However, a relatively higher percentage decline is seen in districts such as Hambantota and Matara, where the impact of Tsunami was severe (Table 56).

**Table 56: Primary School Enrolments in 2003 and 2005 of Tsunami
Affected Districts ('000)**

District	2003	2005	% Change 2003-05
Puttalam	70	71	1.4
Gampaha	139	141	1.4
Colombo	144	141	-2.1
Kalutara	80	83	3.8
Galle	89	88	-1.1
Matara	66	64	-3.0
Hambantota	51	48	-5.9
Amparai	67	66	-1.4
Batticaloa	60	59	-1.7
Trincomalee	42	43	2.4
Jaffna	56	53	-5.4
Mullaitivu	11	12	9.1
Kilinochchi	12	14	16.7
Sri Lanka	1,663	1,611	-3.1

Source: School Censuses, Ministry of Education

(f) Water and Sanitation

It is evident from Table 57 that in the Eastern and Northern Provinces the Tsunami affected areas 85 percent and 72 percent, respectively, have not had drinking water facilities. As regards toilet facilities, in all provinces more than one fourth of partially damaged housing units had their toilets damaged as well. It is to be noted that in the Eastern and Northern Provinces 53 and 62 percent of damaged housing units had no latrines (Table 58).

Table 57: Percentage Distribution of Partially Damaged Housing Units (usable) by Availability of Drinking Water Facilities, 2005

Province	Available	Not Available	Not Stated	Total Number of Housing Units
North Western Province	**	**	**	**
Western Province	87.7	12.1	0.2	7,467
Southern Province	74.4	25.4	0.2	11,706
Eastern Province	14.4	85	0.6	19,009
Northern Province	27.5	72.4	0.1	2,902

Source: Post-Tsunami Survey, 2005

** all damaged housing units in the north-western province have drinking water facility

Table 58: Percentage Distribution of Partially Damaged Housing Units (usable) by Condition of Toilet Facilities, 2005

Province	Damaged	Not Damaged	No Latrine	Not Stated	Total No.
North Western Prov.	27.6	41.4	0	0	31
Western Province	24.7	56.1	19	0.2	7,467
Southern Province	37	55.9	6.8	0.3	11,706
Eastern Province	28.3	49.4	53.3	0.3	19,009
Northern Province	22	15.1	62.2	0.1	2,902

Source: Post-Tsunami Survey, 2005

(g) Adolescent Development and Protection

(i) Adolescents and Young Persons

Adolescents and young people in the age group 15-29 years are believed to be disproportionately affected by the Tsunami as many were engaged in activities outside the home in the coastal areas. In all provinces except the North-Western Province, the young population constitute about 28 percent of the total population (Table 59). Adolescents and young persons were also psychologically affected by the Tsunami. A study using survey data from 325 Tsunami-exposed adolescents and mothers from two southern villages showed that disaster exposure (for example, experiences of property destruction and death of close relatives) contributes to depressive and post-traumatic stress disorder symptoms in adolescents (Wickrama and Kaspar, 2007).

Table 59: Population Distribution of Young Persons (age 15-29 Yrs.) in Directly Affected Areas, 2005

Province	Affected Number	Percentage of Total Affected
North-Western Province	58	23.7
Western Province	15,585	28.2
Southern Province	21,316	27.9
Eastern Province	54,308	28.8
Northern Province	15,639	28.9

Source: Post-Tsunami Survey, 2005

(ii) Protection

The Tsunami orphaned more than 10,000 children. Out of which nearly 700 lost both parents. It is evident from Table 60 that the large majority of those orphaned have been in the age group 10-18 years, with the highest percentage being in the Western Province. In the age group 5-9 years, nearly one fifth has lost one of the parents in the Southern, Eastern and Western Provinces. It is seen from Table 61 that the largest number of orphaned children is from the Eastern Province with 54 percent males and 55 percent females. As regards the numbers reported injured, sick and disabled, relatively high proportions are from the Southern, Eastern and Northern Provinces. Of the total number who disappeared, 66 percent were in the Southern Province and the highest proportion dead were in the Eastern Province (Table 62).

Table 60: Percentage Distribution of Children Orphaned by Tsunami Living in Damaged Housing Units, 2005

Province	0-4 years		5-9 years		10-18 years	
	One	Both	One	Both	One	Both
North-Western Province	*	*	*	*	*	*
Western Province	5.2	*	14.8	*	76.9	3
Southern Province	8.3	0.6	17.9	1.5	65.1	6.6
Eastern Province	7.2	*	17.7	1	68.3	5.7
Northern Province	9.5	*	18.5	0.1	66.5	5.3

Source: Post-Tsunami Survey, 2005

*No Orphans

Table 61: Percentage Distribution of Children Orphaned by Tsunami Living in Damaged Housing Units, 2005

Province	Male	Female
North-Western Province	*	*
Western Province	7.6	7.3
Southern Province	20.4	17.6
Eastern Province	53.5	54.9
Northern Province	18.5	20.2
Total Number	5,411	4,898

Source: Post-Tsunami Survey, 2005

Table 62: Proportion of People Injured, Sick and Disabled, Dead and Disappeared in the Affected Geographic Areas, 2005

Province	Injured	Sick and disabled	Dead	Disappeared
North-Western Province	0.1	*	*	*
Western Province	18.4	7.3	0.8	1.2
Southern Province	28.3	38.8	24.4	66.5
Eastern Province	38.3	20.3	48.2	29.4
Northern Province	14.9	33.6	26.6	2.9
Percent Total	100.0	100.0	100.0	100.0
Total Number	294,404	16,291	13,299	799

Source: Post-Tsunami Survey, 2005

(iii) Displaced Population

Among those who were directly affected, a considerable number were displaced from their usual place of residence, the largest number being in the Eastern Province with about 99,000 people. However, the Northern Province has the largest proportion of displaced persons when compared with the population resident in the affected housing units before the Tsunami (Table 63).

Table 63: Displaced Population from their Usual Residence after the Tsunami

Province	Population before the Disaster	Population after the Tsunami	Population Displaced	Displaced as % of population before Tsunami
North Western Province	1,571	1,214	104	6.6
Western Province	131,565	107,031	25,222	19.1
Southern Province	211,334	166,501	42,276	20.0
Eastern Province	279,848	178,118	99,209	35.4
Northern Province	35,632	17,770	17,216	48.3

Source: Post-Tsunami Survey, 2005

Part IV

Analysis of Trends

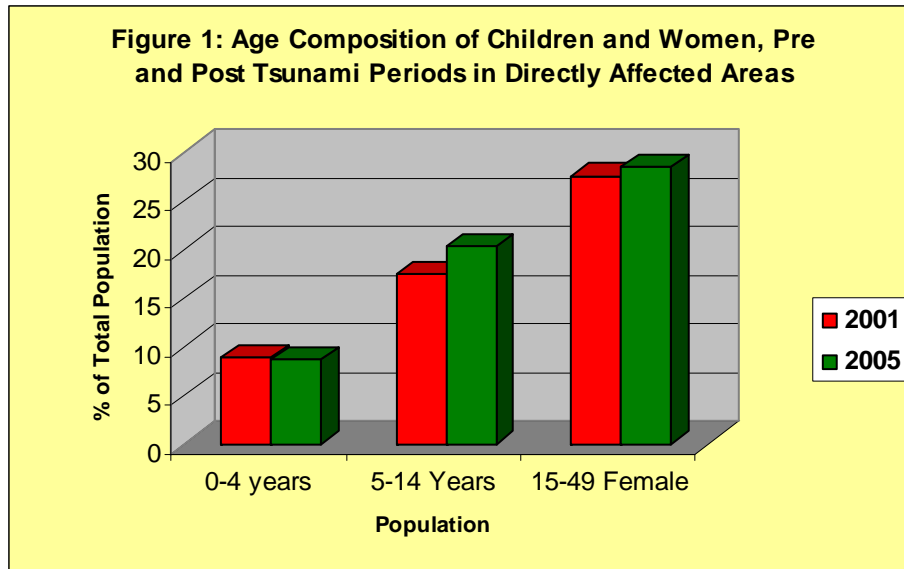
Main Findings

Analysis of trends in demographic and some selected development indicators is constrained by the fact that comparable data for Tsunami affected areas are limited only to two data points. In addition, the post Tsunami survey was confined to the directly affected areas. In addition, the development variables collected in the post-Tsunami survey are not strictly comparable with those of the census conducted in 2001. Nevertheless, an attempt is made in this section to ascertain the main findings from this study.

(a) Demography

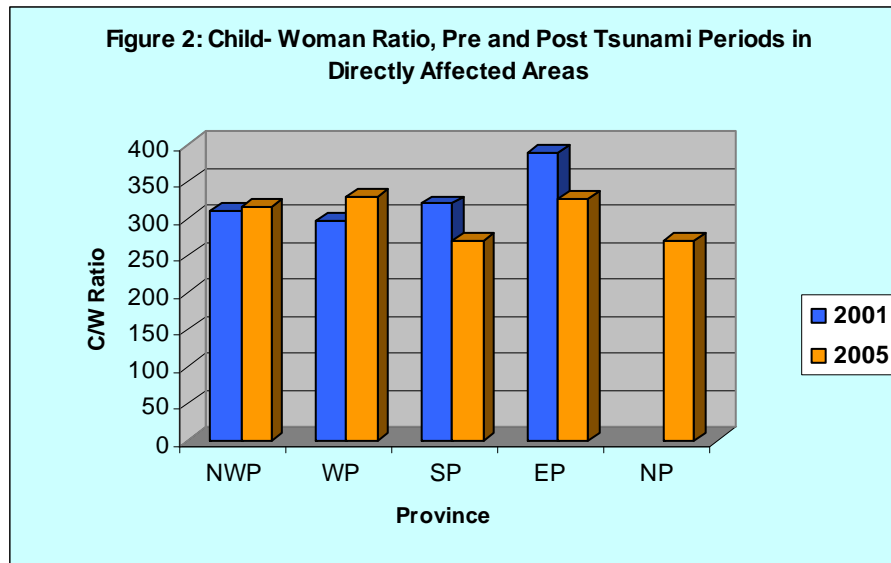
The population age structure of children and women at pre- and post-Tsunami time periods can be assessed only for the directly affected areas as the post Tsunami survey was conducted only in the directly affected areas. It can be seen from Figure 1 that the proportion of children under five years of age has declined slightly, while that of those in the age category 5 to 14 years has increased. The proportion of females in the reproductive age group has also increased. It may be possible that some of the poorer families from the adjoining areas moved to the affected areas to obtain relief goods, such as food and clothing provided by the government, NGOs and the civil society.

Figure 1: Age Composition of Children and Women, Pre- and Post-Tsunami Periods in Directly Affected Areas



Fertility measured by child/woman ratio shows that in the North Western and Western Provinces fertility has increased in the post Tsunami period, while in the Southern and Eastern Provinces it has declined. The Northern Province, although information is not available for 2001, shows the lowest fertility level in 2005, indicating that the fertility level in the province too may have declined (Figure 2). The decline may be partly due the decline in fertility that took place in the provinces during 2001 and 2005 and partly due to the loss of children due to death and displacement, as a result of the Tsunami. The increase in fertility in the Western Province, however, may be due to the loss or displacement of women in the province. The number of children displaced due to the Tsunami was more than 10,000.

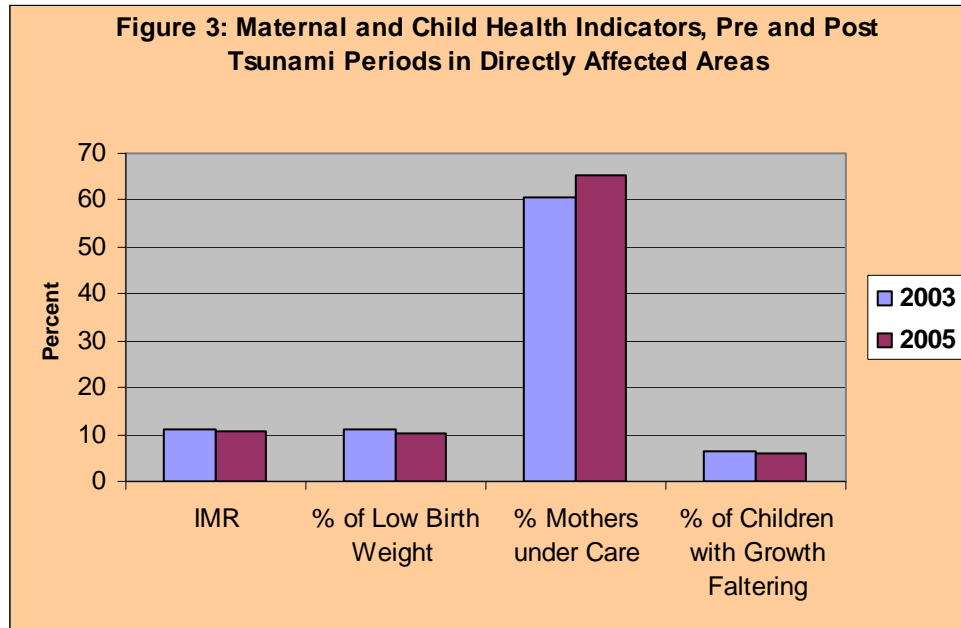
Figure 2: Child-Woman Ratio, Pre- and Post-Tsunami Period in Directly Affected Areas



(b) Maternal and Child Health

The maternal and child indicators show a general improvement during the pre- and post-Tsunami time periods 2003 and 2005 (Figure 3). It shows that the Tsunami has not halted the general improvements in maternal and child health indicators. This is mainly because there was already in place a well developed primary health care system in the affected areas and the Tsunami made the system to function efficiently to restore normalcy quickly and make efficient use of resources related to MCH care that poured into the affected areas.

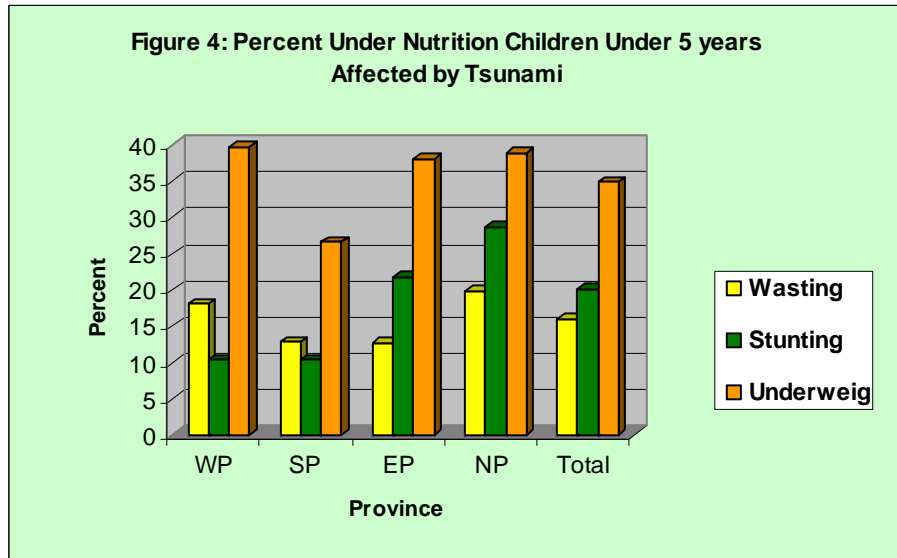
Figure 3: Maternal and Child Health Indicators, Pre- and Post-Tsunami Period in Directly Affected Areas



(c) Child Nutrition

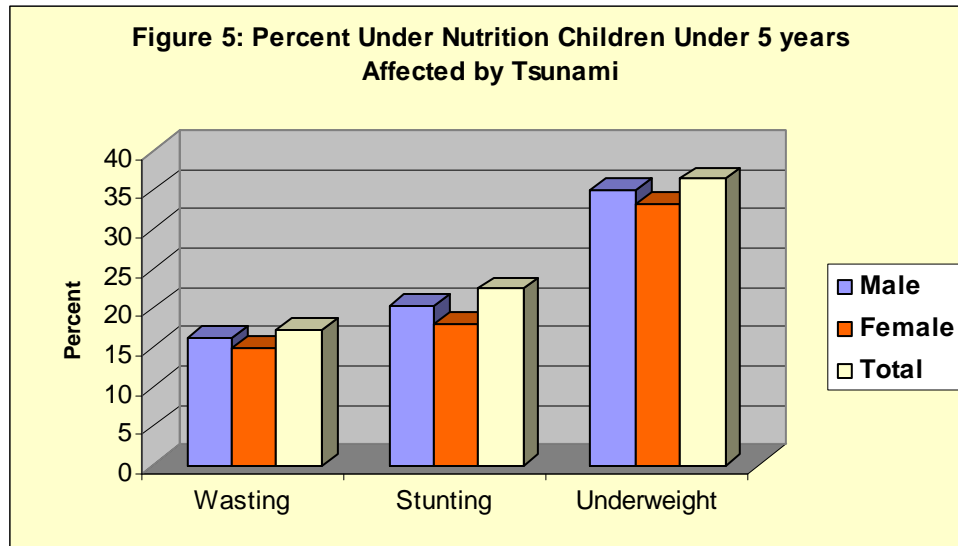
Under-nutrition among children was a developmental challenge even before the Tsunami. Although Sri Lanka has made impressive achievements in child survival, under nutrition among children remained an important public health issue. According to the Demographic and Health Survey of 2000 the prevalence of wasting, stunting and underweight among children under five years of age was 14 percent, 13 percent and 29 percent respectively. It can be seen from Figure 4 that wasting in the Tsunami affected areas was highest in the Northern Province. The Southern and Eastern Provinces show lower estimates than the average for all Tsunami affected areas. With regard to stunting, the Northern Province again shows the highest level. The Western and Southern Provinces show relatively low percentages compared to the general average. The percentage of underweight children is relatively low in the Southern Province in comparison to other provinces.

Figure 4: Percent of Under Nutrition Children Under 5 years Affected by Tsunami



Under-nutrition by sex show that in the Tsunami affected areas, female children are affected more than male children with regard to wasting, stunting and underweight (Figure 5).

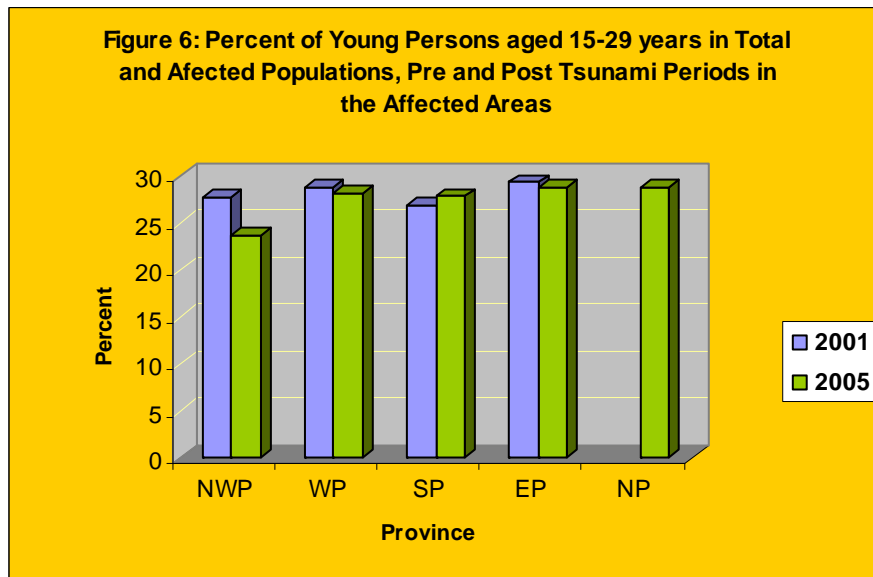
Figure 5: Percent of Under Nutrition Children Under 5 years Affected by Tsunami



(d) Adolescents and Young Persons

It is seen that the proportion of young people aged 15 to 29 years to the total population is lower in 2005, except in the Southern Province. The lower proportion is perhaps due to the fact that young persons have migrated to other areas in search of employment (Figure 6).

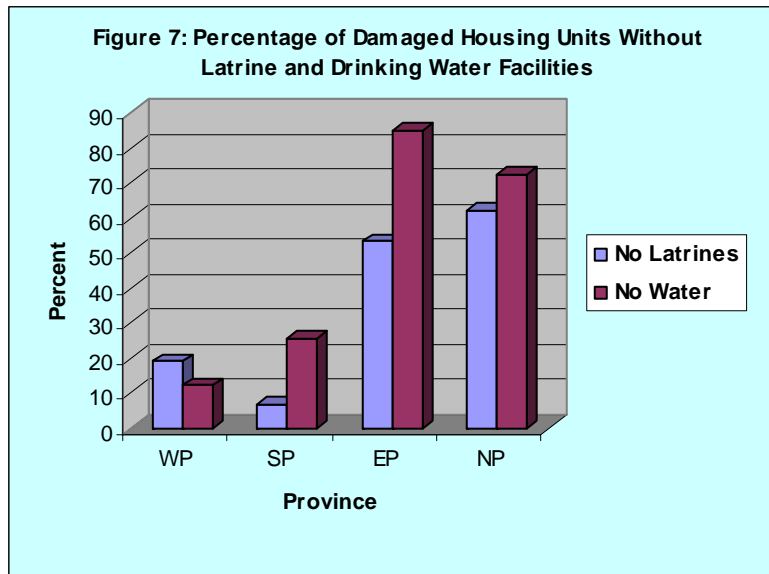
Figure 6: Percent of Young Persons aged 15-29 years in Total and Affected Populations, Pre and Post Tsunami Period in the Affected Areas



(e) Water and Sanitation

Most of the Tsunami affected areas being located in the coastal belt of Sri Lanka which are, to a large extent, either urban or of close proximity to urban areas, water and sanitation facilities have been relatively good prior to the Tsunami. However, the Tsunami affected a relatively high proportion of households in the Eastern and Northern Provinces who were left with no drinking water and toilet facilities (Figure 7).

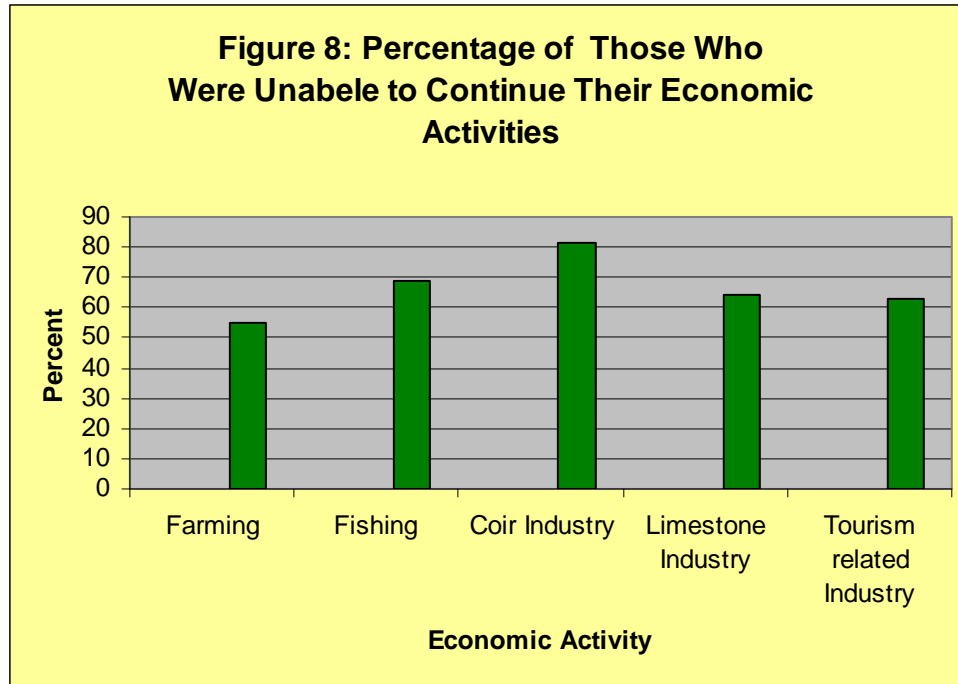
Figure 7: Percentage of Damaged Housing Units Without Latrine and Drinking Water Facilities



(e) Livelihoods

The Tsunami also affected livelihoods of many living along the coastal belt. The most affected were those engaged in coir, fishing, limestone and tourist industries. The people engaged in these activities have considerable experience and skill, and thus could not move into other occupations that were available inland and, therefore, remained out of work for a long period before they could resume their normal activities. As a result, some were reduced to absolute poverty. The percentage of people who were unable to continue the economic activities that they were engaged in before the Tsunami is given in Figure 8. It is seen that more than 50 percent of people engaged in selected activities were unable to continue their work. The highest proportion were in the coir industry, which is largely cottage based.

Figure 8: Percentage of Those Who Were Unable to Continue Their Economic Activities



(f) Orphaned Children and Displace Populations

The Tsunami orphaned about 10,000 children. The highest proportion of those orphaned was children from the Eastern Province, with about equal proportions from both sexes (Figure 9). The Tsunami also displaced thousands of people, the largest number again were from the Eastern Province (Figure 10).

Figure 9: Percentage of Children Orphaned by the Tsunami

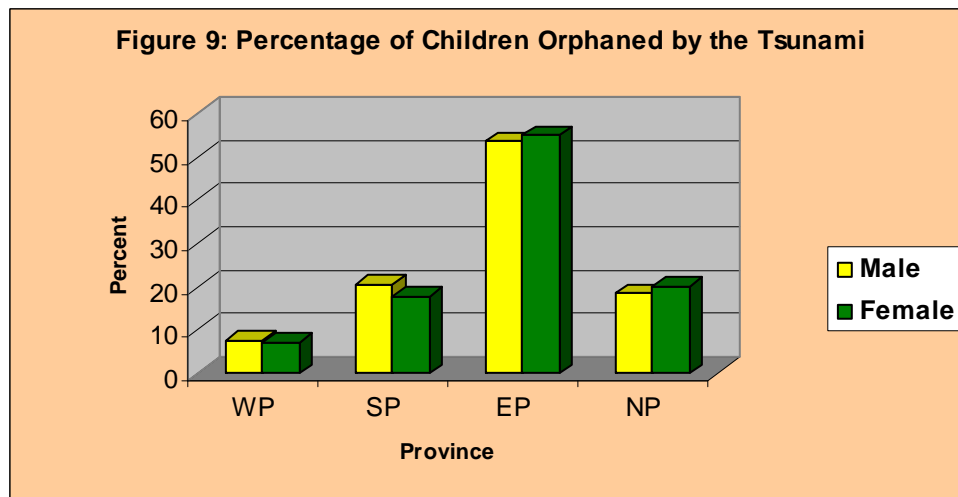
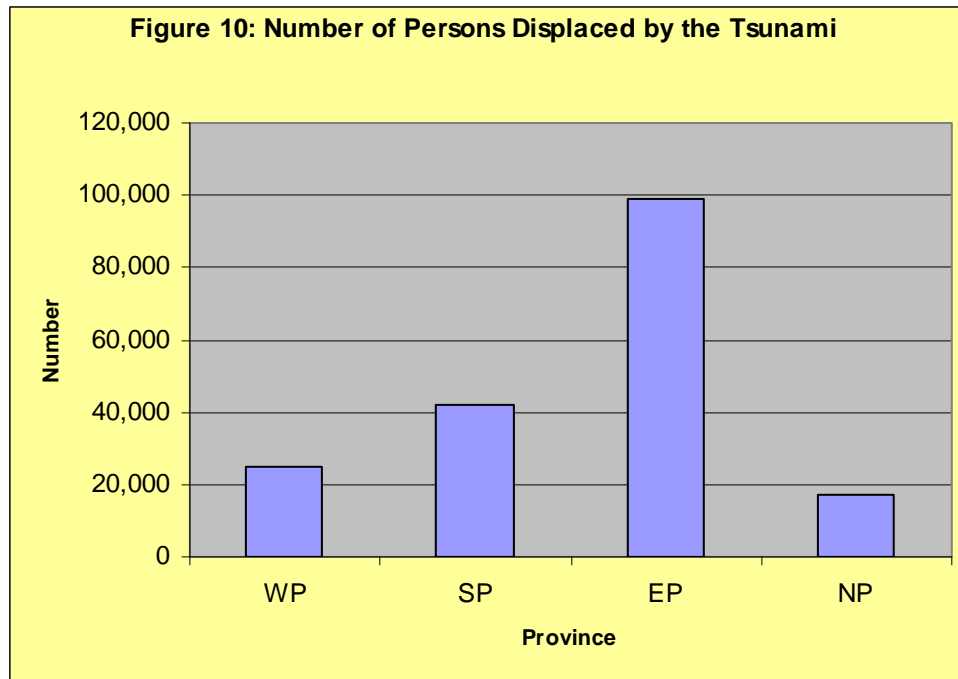


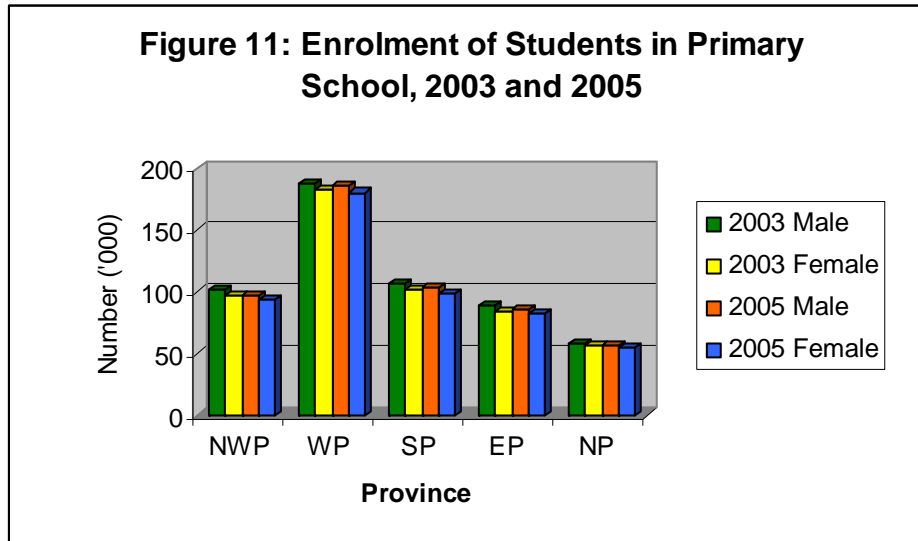
Figure 10: Number of Persons Displaced by the Tsunami



(g) Education

The student enrolments in primary school (grades 1-5) in the Tsunami affected provinces show that there has been a decrease in enrolments between 2003 and 2005 (Figure 11). This decrease however, cannot be entirely attributed to the Tsunami as the absolute number of births in the Tsunami affected districts have also decreased during the period 2000 to 2005. However, displaced populations to other provinces as a result of damaged to housing, as well as to school buildings, may have also contributed to the decline in the absolute number enrolled in the primary school grades.

Figure 11: Enrolment of Students in Primary School, 2003 and 2005



Conclusion

The document review on the status of affected and comparable non affected populations before and after the Tsunami in sectors of UNICEF's work was, to some extent, limited due to lack of relevant and reliable data. However, considerable amount of data is available before the Tsunami from the 2001 Census of Population and the post-Tsunami census conducted in the Tsunami affected areas by the Department of Census and Statistics in 2005, the Nutrition Survey conducted among children of the affected populations in 2005 by the Medical Research Institute of the Ministry of Health. The MIS data before and after Tsunami on maternal and child health by the Family Health Bureau of the Ministry of Health provide sufficient information to make meaningful interpretations of the effect of Tsunami on women and children and other developmental sectors relevant to the UNICEF.

The data reveal that apart from the loss of human lives, totalling about 38,000, the Tsunami injured another 22,000 and displaced more than 500,000 people. In addition, it damaged over 90,000 houses and the coastal infrastructure systems, water and sanitation facilities and destroyed the livelihood of thousands of people. More women and children died as men were away from home when the disaster occurred.

The demographic data show that the age composition of children and women has not changed significantly in the affected areas after the Tsunami. However, fertility measured by the child-woman ratio indicates that, in the Southern Province, it has significantly

declined in the post-Tsunami period indicating that disproportionately a larger number of children have died or moved away from the affected areas.

As regards the livelihoods of people, it is evident that in the Western, Southern, Eastern and Northern provinces where large numbers on the coastal belt are engaged in fishing and fishery related activities, the percentage of people who were not able to continue their activities range from 45 to 75 percent. Tourism, another important industry in the coastal areas, was also badly affected with more than 60 percent being unable to continue their activities in the Western and Southern Provinces.

In terms of damage to economic infrastructure, it is evident that the percentage of damaged housing units to housing stock during the Tsunami period is considerable in the Southern and Eastern Provinces. With regard to malnutrition of children, the most affected areas are the Eastern and Northern Provinces. This situation was perhaps prevalent in the pre-Tsunami period as well, as these two provinces have also been affected by the ethnic conflict. The situation with regard to maternal and child health has been generally good in the post-Tsunami period, due to the fact that there was an effective system in place to take care of the health of mothers and children.

Another group that was badly affected is the school children. More than half the number of children living in damaged housing units could not continue their schooling after the Tsunami. As regards safe drinking water, Eastern and Northern Provinces were affected to a larger extent. In all Provinces, more than one fourth of partially damaged housing units had their toilets damaged. Tsunami also orphaned more than 10,000 children. The largest number was in the age group 10-18 years. The Eastern Province was the most affected in this regard.

The analysis thus provides a useful picture of the impact of Tsunami on women and children, on other developmental areas of interest. It also shows that further research in a more systematic manner is needed by analyzing data obtained from those who were directly affected and those not directly affected on variables that are of direct interest to Government programmes and UNICEF activities.

Recommendations

1. The most affected areas with regard to malnutrition of children are the northern and eastern districts that were hit by the Tsunami. Although data are available only with regard to the post-tsunami situation, it is very likely that malnutrition may have been prevalent in these districts even before the Tsunami. Therefore, special attention needs to be given to these geographic areas in future nutrition intervention programmes.
2. More than half the number of children in the Tsunami affected areas were unable to continue their education. Although considerable amount of work has been done to restore the damaged schools and send back children to school, more work

- needs to be done for the affected children by way of psycho-social therapy. Trauma management is particularly important, as since the 2004 Tsunami there have been several Tsunami warnings and the children may have relived the traumatic experience.
3. UNICEF should undertake a study to ascertain the impact of Tsunami on the lives of mothers and children in the directly affected and not affected areas using both quantitative and qualitative methods of data collection. This can be done through a household survey by randomly selecting DS Divisions in the most affected districts, such as Amparai and Galle and supplemented by data of the MIS of the Family Health Bureau. Samples need to be drawn from selected directly affected and not directly affected areas. The sample units selected from not directly affected areas will be the control group. The survey instrument should be designed to capture psycho-social aspects and physical wellbeing of the subjects particularly with regard to variables such as education, maternal and child health, water and sanitation. As baseline data for the control group was not collected in the 2005 post-tsunami survey, retrospective data need to be collected for MCH variables from the Family Health Bureau MIS for the year 2005. Other data on schooling, water and sanitation will also have to be collected retrospectively from the household survey. The baseline data for the directly affected areas are available from the 2005 Tsunami survey. The impact of the post Tsunami interventions in the directly affected areas may be assessed by employing the difference-in-difference approach which allows to control for confounding factors by comparing data in 2005 and the data collected from the household survey in the selected directly affected areas and the not affected areas (control group).
 4. Fertility rates are relatively high in Amparai district in the east and in Kilinochchi district in the north. While there has been a general decline in fertility in the country, these two districts have shown an increase during 2001 to 2006. It is, therefore, important to strengthen the reproductive health services in these areas in particular.
 5. The Tsunami displaced a large number of people. It is seen that more than 50 percent of the displaced population was in the Eastern Province. The next highest proportion was in the Southern Province. It is important study how many of these have returned and have been rehabilitated. Therefore, it is recommended that a study be undertaken on the displaced returnees with focus on women and children. Here again the districts of Galle and Amparai can be selected for the study of displaced persons who have returned to their usual habitat. Many of the returnees have moved to newly constructed housing. The study should assess as to what extent the returned displaced persons are satisfied with the new living conditions particularly with respect to educational, maternal and child health and water and sanitation facilities.
 6. As regards economic activities, the coir industry which employs a large number of women was badly affected by the Tsunami in the Southern Province. About 84

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percent employed in the industry were unable to continue work after the disaster. As women are employed in large numbers in the industry, they need support to continue their economic activities.

7.

Appendix 1

Persons and Institutions Contacted

Persons Contacted

In 2005 a total of 136 NGO's working in the health field had registered with the National Secretariat for NGO's of the Ministry of Social Services. Through means of mail and telephone, an attempt was made to contact these organisations. Only 21 could be traced, of these four NGO's had some involvement with post Tsunami activities related to UNICEF work, who were subsequently contacted.

(a) Government Agencies

Dr, Vinetha Karunaratne, Director, Family Health Bureau, Ministry of Health.
Dr. C. Bandutilleke, Consultant Medical Officer (Evaluation) Family Health Bureau.
Dr. S. Samarage, Acting Deputy Director General (Planning) Ministry of Health.
Ms. Shanthi, Statistician, Ministry of Education.
Dr. Ms. Indrani Piyasena, Head, Nutrition Division, Medical Research Institute.
Mr. H.R. Gunasekara, Director (Census), Department of Census and Statistics.
Mrs. Susantha Ranadeera, Head, Statistics Division, Registrar General's Department.
Mr. Jagath Wellawatte, Director General National Child Protection Authority.
Dr. Sujatha Samarakoon, Consultant Virologist, National STD/HIV-AIDS Control Programme, Ministry of Health.
Dr Kanthi Ariyaratne, Deputy Director, Health Education Bureau. Ministry of Health.

(b) NGOs

Dr. Prakash Nallepalli, Medical Coordinator, Medical Relief International (Merlin).
Mr. Gamini Wanasekara, Executive Director, Family Planning Association of Sri Lanka.
Dr. Vinya Ariyaratne, Executive Director, Sarvodaya.

(c) International Agencies

Dr. Indra Tudawe, Senior Programme Officer, UNICEF, Colombo.
Ms. M. Weerasuriya, Asst. Representative, UNFPA Colombo.

Institutions Contacted

Government Agencies

Management Planning Unit, Ministry of Health
Family Health Bureau, Ministry of Health
Health Education Bureau, Ministry of Health
STD and HIV/ AIDS Control Programme, Ministry of Health
Department of Census and Statistics
Medical Research Institute, Ministry of Health
Child Protection Authority
Statistics Division, Registrar General's Department
Statistics Division, Ministry of Education

NGOs Contacted

Medical Relief International (Merlin)
Family Planning Association of Sri Lanka
Sarvodaya
St. Johns Ambulance Centre
A Helping Hand USA
AMDA (Sri Lanka Chapter)
Foster parents Plan International
Health Action International Asia-Pacific
HOF- Health Quality Foundation
International Medical Corps
Alcohol and Drug Information Centre
Appeal for Children committee of Ceylon
Association of Psycho Counsellors of Sri Lanka
BRAC Sri Lanka
Danish Demining Group (DDG)
Diakonie- Katestrophennif
GOAL
Help from Germany
Norwegian Refuge Council
Relief International
Family Rehabilitation Centre

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International Agencies

UNICEF, Colombo
UNFPA, Colombo

Appendix 2

Data Sets Examined

Those found useful for the study

The following data sets were examined and selected due to their relevance, and their validity and reliability to the study.

1 The Post-Tsunami Survey, 2005 conducted by the Department of Census and Statistics.

The survey was scientifically conducted in all GN areas that were affected by the Tsunami. It surveyed all households in 93,148 damaged housing units. The data that was collected included information on the status of housing units, the number of persons currently living and the number who previously lived there, their economic activities before and after, age and sex, whether in school or educational institution, people displaced, status of water and sanitation, children orphaned etc.

2. Census of Population and Housing, 2001 conducted by the Department of Census and Statistics

A complete census was undertaken in 18 of the 25 Districts of the country. The total enumerated population was 16,929,689 persons. The census data in respect of demographic and other developmental data of interest to the UNICEF could be obtained from small administrative geographic areas, such as Grama Niladhari divisions. The data collection has been scientifically done and, therefore, there is no doubt about their validity and reliability.

3. Assessment of Nutritional Status of Children and Women Affected with Tsunami conducted in 2005 by the Medical Research Institute in collaboration with the UNICEF and the WFP.

Twelve districts affected by the Tsunami were included in the sample study. A cross sectional 30-cluster rapid assessment method was used in the survey. The number of camps in each district was determined by considering the proportion of the population affected in proportion to the total population affected by the Tsunami. The locality of the camps was selected using population proportion to the size sampling technique by considering the total number of population in the

camps. A total of 905 children were assessed of whom 49.1 percent were boys. The data were collected by trained personnel who have collected data on nutrition in previous surveys. They were supervised by medical officers of the Department of Nutrition of the Medical Research Institute. Thus, the data collected in the study can be considered as valid and reliable.

4. Data from the Management Information System (MIS) of the Family Health Bureau.

The data collected by the Family Health Bureau are from the routine data collected from the field through the Medical Officer of Health (MOH) areas. These MOH areas, which are spread throughout the country, amount to 280. It includes both field data as well from the clinics. Validity and reliability of data are ensured through supervision by Medical Officers on site, as well as by Medical Officers of the Family Health Bureau through periodic supervision.

(b) Not useful

The following data sets, although have some relevance to the indicators used in the study, relate only to larger geographic areas such as provinces and districts. Given the sample sizes employed in these studies, reliable estimates cannot be made even for DS Divisions, with respect to variables of interest in the Tsunami Study.

1. Survey of Child Health and Welfare in Selected Northern and Eastern Districts in Sri Lanka, 2004 conducted by the Department of Census and Statistics with assistance from the UNICEF.

The survey collected data from 4,528 households from the districts of Jaffna, Vavuniya, Mannar, Trincomalee, Amparai and Batticaloa. The data collection period was from May to November 2004. Hence, the data was collected before the Tsunami. Moreover, for each district, the number of households was about 750 and hence, data are not available for comparable directly affected and indirectly affected areas. Thus, the information from the survey could not be used for the present review.

2. Survey of Child Health and Welfare in Kilinochchi and Mullaitivu districts in Sri Lanka, 2005/06 conducted by the Department of Census and Statistics with assistance from the UNICEF.

The survey collected information from 1,327 households in Mullaitivu and Kilinochchi Districts of the Northern Province. The field work of the survey commenced in February 2005 and was completed in April 2006. However, the

survey data provides only district level estimates. No separate data have been collected in respect of the Tsunami affected areas, despite the fact that it was conducted during the period immediately after the Tsunami.

3. The Consumer Finances and Socio Economic Survey 2003/2004 by the Central Bank of Sri Lanka.

The survey collected information from all nine provinces of the country. However, in the Northern Province, the districts of Killinochchi, Mannar and Mullaitivu were excluded from the survey. The field work was conducted from October 2003 to October 2004. Hence, before the Tsunami the sample size of the survey was 12,000 households. Although the sample size was quite large to include the Northern and Eastern Provinces, reliable estimates with regard to demographic, health and education, employment, water and sanitation could be made only for the provinces and urban and rural sectors. No reliable estimates could be made for Tsunami affected areas.

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Summary of Data Sets Examined

Data Source	Sample Size	Lowest level of aggregated data	Reference Period	Usefulness of data source
Post Tsunami Survey	93,148 damaged housing units	GN Level	2005	Useful
Census of Population	Census excluding north and east districts (except Amparai)	GN Level	2001	Useful
Assessment of Nutritional Status of Children and Women	Sample survey of tsunami affected population in 32 Camps of 12 Districts	District Level estimates of tsunami affected children	2005	Useful
MIS of Family Health Bureau	Routine data collection	DS or MOH Level	2003 and 2005	Useful
Survey of Child Health and Welfare	4,538 households in 7 Districts of North and East	District Level	November 2004	Not useful
Survey of Child Health and Welfare	1,327 households in Mullaitivu and Kilinochchi Districts of Northern Province	District Level	February 2005 to April 2006	Not useful
Consumer Finances and Socio-Economic Survey	12,000 households in all the provinces but excluded 3 northern districts	Province Level	2003/2004	Not useful

Appendix 3

Annotated Bibliography

UN Humanitarian Information Centre, Assessment of Needs Synthesized District Reports, 3 Jan 2005

UN collated the various rapid assessment reports carried out by different agencies soon after the tsunami, on a district basis. This consolidated report of assessments, compiled on a district basis follows a common format, which is primarily narrative and qualitative in form. However, the report also provides some quantitative information. Some Key Findings:

- There are significant gaps in the Needs Assessments, both district-wise and sectorally. Some sectors and some districts are better covered than others.
- A unanimous and overriding finding of the aforesaid assessment reports is the urgent need to strengthen capacity of GAs for effective coordination in relief operations at district level.
- The need for appropriate shelter programs, tailored to meet specific needs of affected communities.

Validity and reliability of data

All reports had been results of rapid assessments done over few days and consolidated within one week of post tsunami. The data may be valid as data gathering would have been done scientifically but its reliability may be questionable as more information became available with time.

SIDA DFID GTZ, Hambantota District Verification Mission, Feb 2005

A critical review of rehabilitation and reconstruction activities in the District up to mid February 2005, some key findings:

Health: The MoH infrastructure was only minimally affected by the tsunami and has been able to respond well to the increase in immediate medical needs. There were no reports of outbreaks that were not contained. The morbidity and mortality rates were not considered to be above normal.

Water and sanitation: there were outstanding current needs for gully suckers and piped water supply to the temporary shelter locations in Tangalle and Kirinda. They noted that the quality and quantity of latrines in some locations was dubious and were working with national Red Cross and public health inspectors to address the problem.

Education: Schools reopened on 10 Jan with 5% of pupils returning. This figure has increased to 90% in unaffected schools and approx. 60% in affected schools. Many pupils have now left affected schools to join local rural schools considered to be in a safer area. UNICEF estimates that up to 90% of the total school population is attending school.

Protection: Government probation and child care services, with support from UNICEF have assessed that 140 children are orphaned however only 5 children require state care, 3 from one family. The remainder is living with extended families. 250 children had lost one parent. There were no reported cases of abuses towards children.

Recommendations:

The bilateral donor group is recommended to push for and support:

- enhanced UN (or other) coordination at both district and divisional levels
- Government's initiative to collect and manage information about NGO activities
- Urgent project management and supervision of the housing and fisheries programmes

Validity and reliability of data

The mission seems to have invested fair amount of resources to derive critical inferences and hence the data appears valid and reliable.

Planning and Development Secretariat Liberation Tigers of Tamil Eelam, 2005, Needs Assessment for North East by LTTE;

Key needs and means to enable the affected community become self reliant and optimize economic potential were assessed. Some salient findings:

Health infrastructures have suffered heavily in the tsunami affected areas. Loss of buildings and equipment, as well as health personnel, presents a crisis, both in terms of human resources and infrastructure losses. Significant losses have occurred to dispensaries, hospitals and primary healthcare centres. Hospitals on the coast in Karaitheevu and Nanthavur have been totally damaged. Such destroyed hospitals were ill equipped due to the 20 year old war. The tsunami has brought about a crisis in health care, both in terms of challenges to the health system and to the long term health of a significant proportion of the population of the Northeast.

Education: The tsunami has damaged 358 buildings in 122 schools in the Northeast coast. The damage is not confined to buildings but also to furniture, fittings and laboratories.

Water: The tsunami had further damaged the water sources, salinising the wells and soil in the coastal regions of the Northeast.

Validity and reliability of data

The data has been gathered by the LTTE and not by independent organizations. Hence it casts doubt on validity and reliability. All reports by the organization have been viewed by the government as political exercises aimed mainly at gaining sympathy for the cause and a tendency to over-estimate requirements has been noticed.

Green Movement, Portrait of a disaster, 2005

Rapid assessment report of the effects of tsunami in Sri Lanka, key findings:

Health Facilities

The Balapitiya base hospital and government medical centres are closed down. The Karapitiya hospital is accessible, but the staffs are overwhelmed with dead bodies and injured people, and require further relief support. Medical services lack medicine and medical equipment to support and control the chaos. There is fear among the communities and the local authorities of outbreaks of water borne diseases, dermatological diseases and tetanus.

Water Sanitation

Affected communities are totally dependant on outside assistance for drinking water. Water supply systems are completely destroyed and interior water sources are over utilized. Rushed relief to the area has brought bottled water and also the surrounding towns are supporting the communities with water needs. But the long term effects indicate the relief centres may lack durable solutions to water and relevant sanitation facilities. Though drinking water is supplied there is hardly any or no water to support basis sanitation requirements of the affected communities.

Food/ Nutrition

The team observed that there are major issues pertaining to food and nutrition. There are no proper storage facilities among the communities for food items including infant food. According to the affected community, there is a greater need for suitable food for pregnant and lactating mothers. It is predicted by local authorities that the communities need food donations for another three months.

Validity and reliability of data

This is a rapid assessment. Data is mostly qualitative but is a valid indication of the situation in the immediate aftermath.

Swiss Humanitarian Aid, 2005, Rapid Assessment of Matara District

Rapid Assessment of Matara District

Validity and reliability of data

Data seems valid and reliable.

Medical Research Institute, Ministry of Health, Nutrition & Uva Welessa Development, UNICEF & World Food Programme, Assessment of nutritional status of children & women affected by Tsunami (Jan 2005)

First round of surveillance which included affected living in camps, affected living in houses and non affected, Thirty cluster surveys were carried out.

Conclusions:

- The children who were affected by the Tsunami are chronically undernourished.
- Acute under nutrition is 16% indicating an emergency situation.
- The prevalence of wasting in the Eastern and Western provinces were higher compared to the Northern and Southern province.
- More than one fourth of the children between the ages of 1-2

Medical Research Institute, Ministry of Health Care & Nutrition, Nutrition surveillance in tsunami affected areas of Sri Lanka, 2005

Following the first round of nutrition survey conducted one month after tsunami, a second round survey was conducted in May 2005 to track changes in the nutritional status of children living in 12 tsunami affected districts. Thirty cluster surveys were carried out.

The following represent the key findings of the study:

- 16.8% and 37.6% of children living in the camps suffered from wasting and underweight compared to the baseline figure of 16.1 % and 34.7 respectively.
- The highest prevalence of wasting among children in the camps was the age group between 12 and 23.9 months.
- Children of tsunami affected households living with host families and children of non-affected families demonstrated better nutritional status in all indices.
- Analysis of data by Province showed that nearly 27% of children living in the camps in the Western Province suffered from wasting compared to 12.1 %, 17.6% and 15.3% in the Southern, Northern and Eastern Provinces, respectively.
- The survey identified children in the camps as the most vulnerable group in comparison to children living with host families and children of non-affected families.
- The prevalence of underweight among lactating women in camps was 17.1% compared to the baseline figure of 48.9%.

Medical Research Institute, Ministry of Health Care & Nutrition 2006, Nutrition surveillance in tsunami affected areas of Sri Lanka

Third round February 2006, included affected living in camps, affected living in houses and non affected, the following represent the key findings of the study:

There was an overall reduction in the prevalence of wasting among children of tsunami affected families living in the camps, living in their own houses and children of non-affected families living in the adjacent communities. There was significant reduction in the prevalence of acute under nutrition (wasting) among children of displaced families living in the camps where wasting reduced from 16.8 per cent in May 2005 to 10.8 per cent in February / 2006. The reduction in the rates of wasting was noted for all provinces and age groups except for the age group between 36 and 48 month among non affected children. There was no significant change in the rates of chronic under nutrition (under weight and stunting) in all three groups;

Validity and reliability of data

All three reports are results of scientifically carried out assessments using trained field staff and well supervised by experienced researchers in the MRI. There are no reservations regarding validity and reliability of data.

United Nations University Institute for Environmental and Human Security, 2005, Rapid Assessment of Damages and Coping Capacities within the City of Galle, Sri Lanka

This report presents a rapid assessment of the impacts of the tsunami and current situation regarding various sectors of the city of Galle, located on the South-western coast of Sri Lanka. The assessment covers a range of sectors and issues and includes comments how the different sectors within the city have coped with the disaster provoked by the tsunami.

Education:

Regarding damages to schools within Galle, the Director of the Department states that several buildings were damaged or destroyed: Fully Destroyed 10, Damaged 47, considering that there are 252 schools of all types, it can be concluded that 4% of the schools were fully destroyed while 18% were damaged.

Water and Sewage:

The tsunami affected and damaged main distribution lines in affected areas near the coast on Galle road and there were many leaks which had to be repaired. Regarding sewage systems, there is no central system. All houses and establishments are required to use septic tanks. While there are damages in houses and facilities located near the shore, there are no statistics on damaged septic tanks at this time.

Validity and reliability of data

Although a rapid assessment, the exercise is focused on one district in fair detail. Data appear reliable and valid.

WHO, Rapid assessment by WHO, 2005

Initial needs assessment Galle, Hambantota, Matara, Amparai and Batticaloa Districts
Assessed Health status and trends:

Administrative Issues:

The coordination mechanisms between provincial and MoH / institutions in charge are not fully functional and this causes considerable delays in getting the relevant information shared as well as in the distribution of resources. Lack of human resources in the district health authorities offices and of means for transportation are main constraints.

Communicable Diseases:

Based on the rapid assessment teams of WHO and other agencies, returning from the field no outbreaks of disease were reported during the assessment visits from the 2 district health authorities. However, diarrhoeal disease cases were reported by field level workers but could not be confirmed at the time. This remains a real concern. To prevent dengue outbreak, rapid action has been undertaken to remove debris and small pools of water.

Non-Communicable Diseases:

It has been reported that a significant number of IDPs that are on long-term treatment for chronic disease such as Diabetes, Hypertension, Asthma, TB, etc. are not continuing treatment due to a variety of reasons such as non availability of drugs and inability to afford.

Environmental Health (access to safe water and hygiene, sanitation situation):

So far safe water is being provided through the municipal piped water supply system in the camps located in temples and schools in those places where medical teams visited. Sanitation and garbage disposals are the important public health issues which need to be addressed in planned manner. Due to the heavy monsoonal rains in some areas, the installation of temporary latrines has been made substantially more difficult because of very high water levels around the IDP shelters.

Other health issues (Mother and child health, mental health etc):

On the request of WHO, the health sector inter-un agency is planned to be held on 3 January 05 with UNICEF, UNFPA and the other developmental partners to work out a coordinated approach by the UN agencies to address the health related issues. The deteriorated psychological status of the IDPs and other affected persons pose a significant burden on the delivery of mental health services. Symptoms of post Traumatic Stress Disorders have been already noticed among several IDPs.

Validity and reliability of data

This is a comprehensive report put together after careful rapid assessments done, tried and tested formats developed and tested in previous disasters by the WHO. Validity and reliability of data are not a concern.

Asian Development Bank, Japanese Bank for International Cooperation, World Bank, Government of Sri Lanka, 2005, Rebuilding Sri Lanka

It was intended that this assessment serve as a technical support to the preparation of the national recovery plan for the tsunami disaster zone. The drafting of the assessment report involved numerous consultations with all major stakeholders in the recovery plan, including agencies and representatives of the government, the LTTE, civil society organizations and, of course, the disaster victims themselves.

Education: In some districts, there is confusion over the treatment of national versus provincial schools. The urgency of getting children who are now coping with temporary and often inadequate educational facilities into adequately equipped ones is growing. As with other types of needs, it will be important to ensure that all children, including girls and the disabled, have sufficient access to the new facilities. Teams have also reported potential tensions between tsunami affected communities, who will receive a well-equipped school and nearby communities who function with poorly equipped facilities.

Health: The reconstruction issues in this sector are much the same as those in education: delegation of authority for rebuilding down to the appropriate levels, urgency of constructing or expanding existing facilities, identification of the required land and integration with the target communities, as well as the need for sensitivity in the support being offered to tsunami-affected communities versus those affected by conflict or simply by endemic poverty. To these points, one can add the heightened risk of HIV/AIDS infections associated with social and economic dislocations and, therefore, the need to plan awareness-raising activities for tsunami-affected communities, the need to ensure that reproductive health issues are adequately addressed in the recovery phase, the need to provide adequate rehabilitation facilities for the disabled, the need to revise health facility requirements in the light of current needs, as well as the need to set up a psychosocial counselling service that is accessible, respectful of cultural norms and operational in the shortest possible time.

Social protection: Vulnerable groups are in special need of attention to ensure that their basic rights are protected. These include children, the disabled and the elderly, as well as ethnic minorities in any area. According to the district teams, these needs are particularly acute in the temporary camps, where security, sanitation and access to counselling are priority concerns. Teams have thus highlighted the need to reinforce existing social welfare services to allow them to deal with the sudden increase in clients.

Water and sanitation: One of the more urgent facets of this sector is improving the conditions in the camps and locations where there will be transitional shelters. For the medium and longer-term reconstruction needs, the National Water Supply & Drainage Board appears to have a reasonable base from which to respond to these needs, although

all teams concur that they will require more staff and equipment. Given the importance of water and sanitation to habitations and businesses, it will be key to ensure that these services are closely integrated with the planning of any resettlement and are a part of the same inclusive consultative processes being recommended in other sectors.

Validity and reliability of data

Report is based on numerous consultations with all major stakeholders in the recovery plan, including agencies and representatives of the government, the LTTE, civil society organizations and, the disaster victims themselves. The data are reliable and valid as indicated by the fact that they served as a technical support to the preparation of the national recovery plan for the tsunami disaster zone.

Jeanne Samuel: DANID, A Sheila Richards: SIDA, Report of fact finding mission Batticaloa, 2005

Batticaloa district was one of the worst affected coastal regions following the Tsunami. As the district is located close to the coast and the lagoon, it suffered considerably. 14 Divisions were severely affected. 2,840 people died, 2,375 were injured 1,033 are missing and 62,846 are displaced.

Health:

No epidemics were reported. There were cases of diarrhoea which was controlled. Foreign teams of Doctors are at hand in the hospitals and clinics.

Water and Sanitation:

Clean drinking water is available. However, sanitation facilities are poor. Some camps are serviced better than others.

Validity and reliability of data

This report of a fact finding mission by staff of INGOs appear to be based on reliable and valid data.

USAID and the Norwegian Embassy, Joint Donor Fact Finding Mission 2005

The tsunami created more displacement in Galle District than in any other in Sri Lanka. Nearly 5,000 people died, thousands were injured and about 128 000 were affected. In total, 13,500 houses were either completely or partially damaged. About 162 children (84 boys and 76 girls) have either lost their mother or father or both, 33 have lost both parents. In Matara District, approximately 2,000 people died and about 6000 injured and in total about 79 000 were affected. Over 7500 houses were either completely or partially damaged. About 257 children (142 boys and 115 girls) have either lost their mother or father or both, 21 have lost both parents.

Water/Sanitation:

Most organizations appear willing to facilitate the provision of water and sanitation in the locations where they plan to construct transitional shelters.

Food:

The government is providing some dry-food rations and is distributing WFP contributed food. Some NGOs are also providing food assistance. In general, communities, NGOs, and government authorities feel the current food distribution assistance is adequate.

Health/Protection:

Emergency health needs appear to be under control and does not seem to be a major concern. Many agencies are carrying out psychosocial activities. Christian Children's Fund and Save the Children/UK are UNICEF's main partners in the region for psychosocial activities. The regional child protection authorities have exact numbers of children who lost both parents, as well as the number of children who lost one parent. Of these children, less than 20 were taken to government children's homes. Through UNICEF, each orphaned child receives 500 rupees per month. The child protection authorities sent a psychologist to hospitals immediately after the disaster to counsel affected youth.

Validity and reliability of data

Another report put together by staff of donors, focused on one district. Data appear to be reliable and valid.

HIC Post Tsunami Recovery Program 2005

Gives details of the post tsunami recovery program 2005, based on valid data.

UN-DFID rapid assessment Galle Matara 2005 UN led Arial and Ground Rapid Assessment of West and South West Coasts. 29 December 2004 1500-1900

Following a request to the President from the UN Resident Coordinator, the Resident Coordinator and heads of UNICEF, UNHCR, one member of the UNDAC team and a DFID team member were able to do a rapid air assessment following the coast from Colombo to Matara. In general the destruction is patchy, not continuous along the coast. It ranges from reaching to roughly made shacks on the beach to, in some places, almost 500 metres inland. The worst affected areas are Hikkaduwa, Galle and Matara – all built up and heavily populated areas.

Validity and reliability of data

This is a rapid assessment done by air reconnaissance and hence not in detail and of little validity and reliability.

Department of Census & Statistics, Tsunami affected, injured, sick and disabled, 2005

Census of Tsunami affected, injured, sick and disabled in the affected Districts.

Validity and reliability of data

The census has been carried out by the Department of Census and Statistics which has a track record of producing reliable and valid data. They are dedicated to data gathering through scientific methods undertake decennial censuses and socio-economic surveys. The organization is in possession of data on “census blocks” meant for exercises of this nature.

United Nations Statistics, Millennium Development Goal indicators Sri Lanka, 2006

MDG indicators Sri Lanka for 1990 to 2005.

Validity and reliability of data

The report is based on data published by government organizations and hence are reliable and valid.

Arjuna Parakrama, Elisabeth Scheper and Sudarshana Gunawardena, Tsunami valuation Coalition, Sri Lanka Country Report, 2006

Impact of the tsunami response on local and national capacities Tsunami Evaluation Coalition, April 2006.

Validity and reliability of data

This is an input to the tsunami evaluation coalition (TEC) exercise and the data seems valid and reliable.

Department for International Development, United States Association for International Development, Report on the joint donor fact finding mission to Jaffna, 2005 Report on the joint donor fact finding mission to Jaffna 2-4 February 2005

Jaffna, the northernmost district of Sri Lanka, was not hit as badly by the tsunami as other districts. 2,640 people died, 1,647 were injured, and some 40,000 were initially displaced. Approximately 20 of the district’s 400 *Grama Sevaka* (GS) were affected by the tsunami, with the humanitarian impact strongest in the north-eastern tip (Point Pedro), as it is more densely populated than areas further south on the eastern coast. The tsunami also reached islands off the north-western coast, mainly causing damage to livelihoods and infrastructure. More serious human impact was mitigated by the fact that a large amount of coastline is inaccessible to civilians, having been declared off limits “high security

zones.” It should be noted that some of the hardest hit divisions of Jaffna are in LTTE-controlled territory.

Water/Sanitation:

Some coordination issues arose with regard to the location of latrines in one IRC (close to a temple). Drinking water is supplied by tanker, as is the situation in most of Jaffna district due to lack of piped water. Well water is used for washing, and well cleaning was underway with both NGOs and the army carrying out these activities; some 700 wells are affected.

Education:

Three schools were severely damaged in government-controlled areas. In addition, some schools are still being used as TACs. However, space-sharing arrangements, re-enrolment of students in nearby schools and construction of temporary classrooms have permitted all children to return to school in government-controlled areas, according to UNICEF.

Health:

There are no reports of specific health problems or disease outbreaks in the aftermath of the tsunami. WHO is opening an office with five international staff members due to run for the course of one year. UNICEF plans to propose that WHO take the lead in this sector. WHO states that epidemiology is a priority, though this does not seem to be mirrored by comments from other actors. WHO states that there are no data gathering systems at the local level to allow a response from central government. This is a reflection of the chronic understaffing of the MOH in the district, not a result of the tsunami.

Validity and reliability of data

This report of donor is based on a fact finding mission and is comprehensive with valid data.

Ueli Salzmann & Christoph Schwager, Swiss Humanitarian Aid, Rapid assessment Matara district, 2005

Rapid assessment Matara district done during 27 - 30 December 2004.

Water supply:

The main water and purification plants are working. The main waterline to the villages is ok. However, the distribution lines for the different zones in the towns are cut off. The distribution to the population is done by tanks and bottles.

Food:

The food situation is ok, the basic supply of food is covered by some local NGOs as well as from private people. The food brought in is pre-cooked and ready to eat. The distribution is carried out by the suppliers themselves, as well as throughout the local authorities.

Medical:

The medical health care is covered by the local hospitals. There is no urgent need of additional staff other than doctors or nurses. However, there is a big need of drugs in almost all the medical centers and hospitals.

Validity and reliability of data

This rapid assessment is focused on the Matara district. The reliability and validity have weaknesses inherent in such an exercise.

Manouri P Senanayake & Aswini Fernando, Departments of Paediatrics, Faculties of Medicine, Colombo & Kelaniya, Text book on Life circumstances, medical & psychological conditions, resource allocation & crisis interventions, Sri Lanka Medical Association 2006

This book was written in the aftermath of the tsunami, amidst mass scale death, destruction and devastation. Life circumstances, medical and psychological conditions, resource allocation and crisis interventions are described and discussed with special emphasis on children - their nutrition, education, protection etc. The scale of the problem of reuniting children with their families proved to be unprecedented. Recent literature on mass trauma is referred to. Family support, kinship groups and community linked interventions are highlighted as protective factors against psychological trauma.

Validity and reliability of data

This is meant to be a textbook for workers in the relevant fields. The extensive references are from valid and reliable sources.

Department of Census & Statistics & UNICEF Sri Lanka, Survey of Child Health and Welfare in Seven Districts in Sri Lanka 2006

Survey provides information on indicators related to the well being of children and their mothers in seven Districts.

Validity and reliability of data

The survey has been carried out by the Department of Census and Statistics which has a track record of producing reliable and valid data. They are dedicated to data gathering through scientific methods and undertake decennial census and socio-economic surveys. The organization is in possession of data on “census blocks” meant for exercises of this nature.

Department of Census and Statistics and UNICEF Sri Lanka, Survey of Child Health and Welfare in Killinochchi and Mulaitivu Districts in Sri Lanka, 2006

Survey provides information on indicators related to the well being of children and their mothers in selected Districts.

Validity and reliability of data

The survey has been carried out by the Department of Census and Statistics which has a track record of producing reliable and valid data. They are dedicated to data gathering through scientific methods and undertake decennial census and socio-economic surveys. The organization is in possession of data on “census blocks” meant for exercises of this nature.

Medical Emergency Relief International, Situational Analysis of North East after tsunami, 2005

Report provides information on health system, Maternal & Child Health, Reproductive Health, infectious diseases, nutrition status, water & sanitation in the North East. Personal communication from Dr Prakash Nallepalli, Country Health Director, Merlin, Sri Lanka.

This assessment has identified the following deficiencies in providing adequate dental health:

- inadequate population knowledge and practice of dental hygiene measures
- unknown status of fluoride intake by population
- insufficient number of dentists and dental therapists
- insufficient equipment and supplies for dentists
- some mismatch between dentists and dental equipment

Validity and reliability of data

The report is based on field surveys undertaken following accepted methodology and data are reliable and valid.

World Health Organization, Sri Lanka, Health Systems in the Tsunami affected areas of Sri Lanka, 2005

The report details the depth, the scale of WHO response, support and assistance in the immediate post Tsunami context. Data are valid and reliable.

World Health Organization, Sri Lanka, Sri Lanka Tsunami response: six months and beyond, 2006

This is a description of the depth and the scale of WHO response to Tsunami, support and assistance given to the country during the period six months after tsunami and later.

Validity and reliability of data

The description is based on records available at the office of the WHO Representative. Data are reliable.

Wickrama KA, Kaspar V, Family context of mental health risk in Tsunami-exposed adolescents: findings from a pilot study in Sri Lanka, Iowa State University Ames, IA, USA, 2006

This pilot study investigated influences of Tsunami exposure and subsequent psychosocial losses on adolescent depressive and post-traumatic stress disorder (PTSD) symptoms.

Validity and reliability of data

The study, done scientifically, has been published by a prestigious University and the data are valid and reliable.

Nikapota A, After the tsunami: a story from Sri Lanka, International Review Psychiatry. 2006 Jun; 18(3):275-9.

In this paper, lessons from observation of the aftermath of the disaster are described. The publication is in a leading peer reviewed journal.

Validity and reliability of data

Data are valid and reliable.

Briët OJ, Galappaththy GN, Amerasinghe PH, Konradsen F, Malaria in Sri Lanka: one year post-tsunami, Malaria Journal 2006 May 15;5:42.

Malaria incidence has decreased in 2005 in comparison to 2004 in most districts, including the ones that were hit hardest by the tsunami.

Validity and reliability of data

The article is based inter alia on official statistics of the anti malaria campaign of the Ministry of Health and appears in a leading journal dedicated to malaria. Data are valid and reliable.

Nishikiori N, Abe T, Costa DG, Dharmaratne SD, Kunii O, Moji K, Who died as a result of the tsunami? 2006: BMC Public Health. 2006 Mar 20; 6:73

Risk factors of mortality among internally displaced persons in Sri Lanka: a retrospective cohort analysis, Research Center for Tropical Infectious Diseases, Institute of Tropical Medicine, Nagasaki University, Nagasaki, Japan. A higher mortality was observed

among females (17.5% vs. 8.2% for males, $p < 0.001$), children and the elderly (31.8%, 23.7% and 15.3% for children aged less than 5 years, children aged 5 to 9 years and adults over 50 years, respectively,

Validity and reliability of data

The article appears in a leading journal dedicated to malaria. Data are valid and reliable.

UNFPA Sri Lanka, Response to the Tsunami July 2005 Mid-Year Report, UNFPA Sri Lanka

Several major hospitals and a large number of peripheral hospitals and health units were partially or completely damaged, thereby affecting the delivery of reproductive health (RH) services within the affected communities. In addition, a large number of RH service facilities, such as clinic centres and Gramodaya Health Centres were destroyed to varying degrees.

Validity and reliability of data

Data based on official statistics of the Ministry of Health and, therefore, are valid and reliable.

United Nations Children's Fund, Government of Sri Lanka and United Nations Development Programme / Office of Consortium of Humanitarian Agencies, Rapid situation and initial needs assessment in tsunami affected Amparai district, 2005

Purpose was to provide a rapid assessment of the disaster impact and humanitarian assistance needs in Amparai District and the affected Divisional Secretary Divisions (total number 11) and indirectly affected Divisions (total number 6).

General Situation:

Effect was devastating but localized disaster along the narrow coastal strip affecting all District coastal Divisions. Total population of Amparai District is approximately 590,000. It comprises 20 DS Divisions. The total population directly affected are 120,000.

Health Services:

Health services have been significantly disrupted with 6 Hospitals and associated infrastructure, including ambulances reported destroyed. The central drug store for the coastal region was destroyed. Drugs have arrived from other regions but remain in short supply. District medical staff is in short supply with only 20% personnel reporting to work from affected areas. The health services are not likely to be able to meet the short, medium or long-term primary health care needs of those displaced to collective centres.

Water Supply Services:

Water supplies to the directly affected areas are generally disrupted. Reticulation systems are damaged and wells are polluted by sea water. Wells require to be pumped out until sea water is replaced with non saline ground water.

Validity and reliability of data

Data are valid and reliable.

UNICEF Sri Lanka, Report on the Assessment of the Water Supply, Sanitation and Hygiene Status, Education Needs and Social Protection Services In Transitional Shelters, Camps and Settlements Tsunami Affected Areas in Sri Lanka December 2005

The survey covered 323 Transitional Shelter Sites in the Southern, Eastern and Northern provinces. On average, in a Temporary Shelter Site there is per 20 people a latrine for use, which is within the set standard. The most commonly used latrines are septic tanks. On average, on a daily basis a person living in the Shelter Sites consumes 63 litres of water – above the minimum quantity required. Almost half (49%) of the Sites surveyed have no proper drainage systems for the waste water. Although 78% of the Sites dispose waste by proper means, there are 35% Sites that pollute the environment and water by disposing them openly and throwing them inappropriately. Although a majority (86%) of the Sites have residents who use latrines for defecation, there are still 14% of Sites left with residents who do not use latrines, because of the inadequacy of the number of latrines available (75%), and the habit of using outside (43%). Personal hygiene, in terms of cleanliness of hands, needs more improvement as only 78% of the Sites reported to be having some residents who wash their hands before meals and after defecation.

A 30% of the total population residing in the surveyed Sites are children between 5-18 years (school-going age), which is an equal split between male and female children. A majority 73% of these children attend school regularly. Of the total number of children who are below 5 years of age 50% attend pre-school. 42% of the children who do not attend school have lost interest in studying. 23% of the school-going children out of the total number of the children schooling in the sample have inadequate school material. 74% of the Sites have neither space for children to study nor library facilities. 72% of the Sites have no space for children to play. Shoes, uniforms, stationary, text books are among the main items children lack for schooling. 16% of the total population living in the Sites are children below 5 years of age and 4% of the total population are pregnant/lactating mother. Organized health camps and health sector personnel visit a majority of the Sites that were surveyed except the 29% Sites that claim of not having the presence of any health services. However, 63% of the Sites do not have adequate health facilities, among them there are 60% Sites that have infrequent services, and 42% with inadequate health personnel.

75% of the families living in the Sites receive food rations from the Government, and only 13% of the total number of families is reported to be not having all 3 meals a day.

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55% of the target group receives Thripasha from the Government distribution, and 71% of them receive the same once a month. The quantity received per person is 0.42 Kg.

61% of the Sites have identified vulnerable groups residing in the Sites and the most vulnerable are identified to be women (82%), 66% elderly people, 53% children, 28% men and 25% youth. More than half, 54%, of the Sites claimed that there are children living in the Sites who have lost either one or both parents, and only 47% of the Sites claimed that these children are visited by the Probation and Child Care Authorities. 16% of the Sites have Child and Women Police Desks available in the Site. The main problems faced by children are lack of educational material/ facilities and services (72%), lack of clothes (54%), and lack of health facilities (52%). The main problems faced by women are lack of space (70%), lack of income (69%), lack of employment opportunities (61%), lack of health facilities (59%), lack of clothes (53%), and lack of water (52%).

Validity and reliability of data

Data are valid are reliable.

Appendix 4

Panel Indicator Table (submitted separately)

Bibliography

Asian Development Bank, Japanese Bank for International Cooperation, World Bank and Government of Sri Lanka (2005) *Rebuilding Sri Lanka*

Briet O.J., G.N. Galappaththy, P.H. Amarasingh and F. Konradsen (May 2006) Malaria in Sri Lanka: One Year Post-Tsunami. *Malaria Journal*, 15; 5:42.

Department for International Development and United States Association for International Development (February 2005) *Report on the joint donor fact finding mission to Jaffna*.

Department of Census and Statistics (2001) *Census of Population*. Department of Census and Statistics. Colombo, Sri Lanka

Department of Census and Statistics (2005) *Census of Persons and Buildings Affected by the Tsunami (Post Tsunami Survey)*. Department of Census and Statistics. Colombo, Sri Lanka, www.statistics.gov.lk

Department of Census and Statistics and UNICEF Sri Lanka (2006a) Survey of Child Health & Welfare in Killinochchi & Mulaitivu Districts in Sri Lanka.

Department of Census and Statistics and UNICEF Sri Lanka (2006b) *Survey of Child Health & Welfare in Seven Districts in Sri Lanka*.

Green Movement (2005) *Portrait of a disaster*.

Humanitarian Information Centre (2005) *Post Tsunami Recovery Program*.

International Organization for Migration (2005) IOM Sri Lanka: Tsunami Response Programme, Situation Report # 36.

Medical Emergency Relief International (2005) *Situational Analysis of North East after Tsunami*.

Medical Research Institute (2005) *Nutrition Surveillance in Tsunami Affected Areas of Sri Lanka*, Ministry of Healthcare and Nutrition, Sri Lanka

Medical Research Institute, UNICEF and World Food Programme (January 2005) *Assessment of nutritional status of children & women affected by Tsunami*

Ministry of Healthcare and Nutrition (2005) *Assessment of nutritional status of children & women affected*. Colombo, Sri Lanka

- Nikapota, A. (June 2006) After the Tsunami: A story from Sri Lanka. *International Review Psychiatry*, 18(3), 275-9.
- Nishikiorin, T., D.G. COSTA, S.D.Dharmaratne, O. Kunio and K Moji (March 2006) Who died as a result of the Tsunami? *BMC Public Health*, 6:73.
- Parakrama, Arjuna, Elisabeth Scheper and Cheper and Sudarshana Gunawardena (2006) *Tsunami valuation Coalition, Sri Lanka Country Report*.
- Planning and Development Secretariat Liberation Tigers of Tamil Eelam (2005) *Needs Assessment for North East*. Liberation Tigers of Tamil Eelam.
- Samuel, Jeanne, Danid, A. Sheila Richards and SIDA (2005) *Report of fact finding mission, Batticaloa*.
- Swedish International Development Cooperation Agency, Department for International Development & GTZ (February 2005) *Hambantota District Verification Mission*.
- Swiss Humanitarian AID (2005) *Rapid Assessment of Matara District*.
- Senanayake, Manouri P. and Aswini Fernando (2006) *Text Book on Life Circumstances, Medical & Psychological Conditions, Resource Allocation & Crisis Interventions*. Sri Lanka Medical Association.
- UNICEF (December 2005) *Report on the Assessment of the Water Supply, Sanitation and Hygiene Status, Education Needs and Social Protection Services in Transitional Shelters, Camps and Settlements Tsunami Affected Areas in Sri Lanka* UNICEF Sri Lanka
- Ueliszalzmann, Christoph Schwager and Swiss Humanitarian AID (2005) *Rapid assessment, Matara district*.
- UNICEF, Government of Sri Lanka, United nations Development Programme and Consortium of Humanitarian Agencies (2005) *Rapid situation and initial needs assessment in Tsunami affected Amparai district*.
- United Nations Humanitarian Information Centre (3rd January, 2005) *Assessment of Needs Synthesized District Reports*.
- United Nations Population Fund (July 2005 Mid-Year Report) *Response to the Tsunami*. UNFPA Sri Lanka
- United Nations Statistics (2006) Millennium Development Goal Indicators Sri Lanka.
- United Nations University Institute for Environmental and Human Security (2005) *Rapid Assessment of Damages and Coping Capacities within the City of Galle* Sri Lanka.

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Affected and Comparable Non-affected Population
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US Agency for International Development and Norwegian Embassy (2005) *Joint Donor Fact Finding Mission*.

Wickrama, K.A.S. and Violet Kaspar (2007) "*Family context of mental health risk in Tsunami-exposed adolescents: findings from a pilot study in Sri Lanka*" *Social Science and Medicine*. 64.

World Health Organization (2005a) *Health Systems in the Tsunami affected areas of Sri Lanka*. Sri Lanka

World Health Organization (2005b) *Rapid Assessment*. World Health Organization.

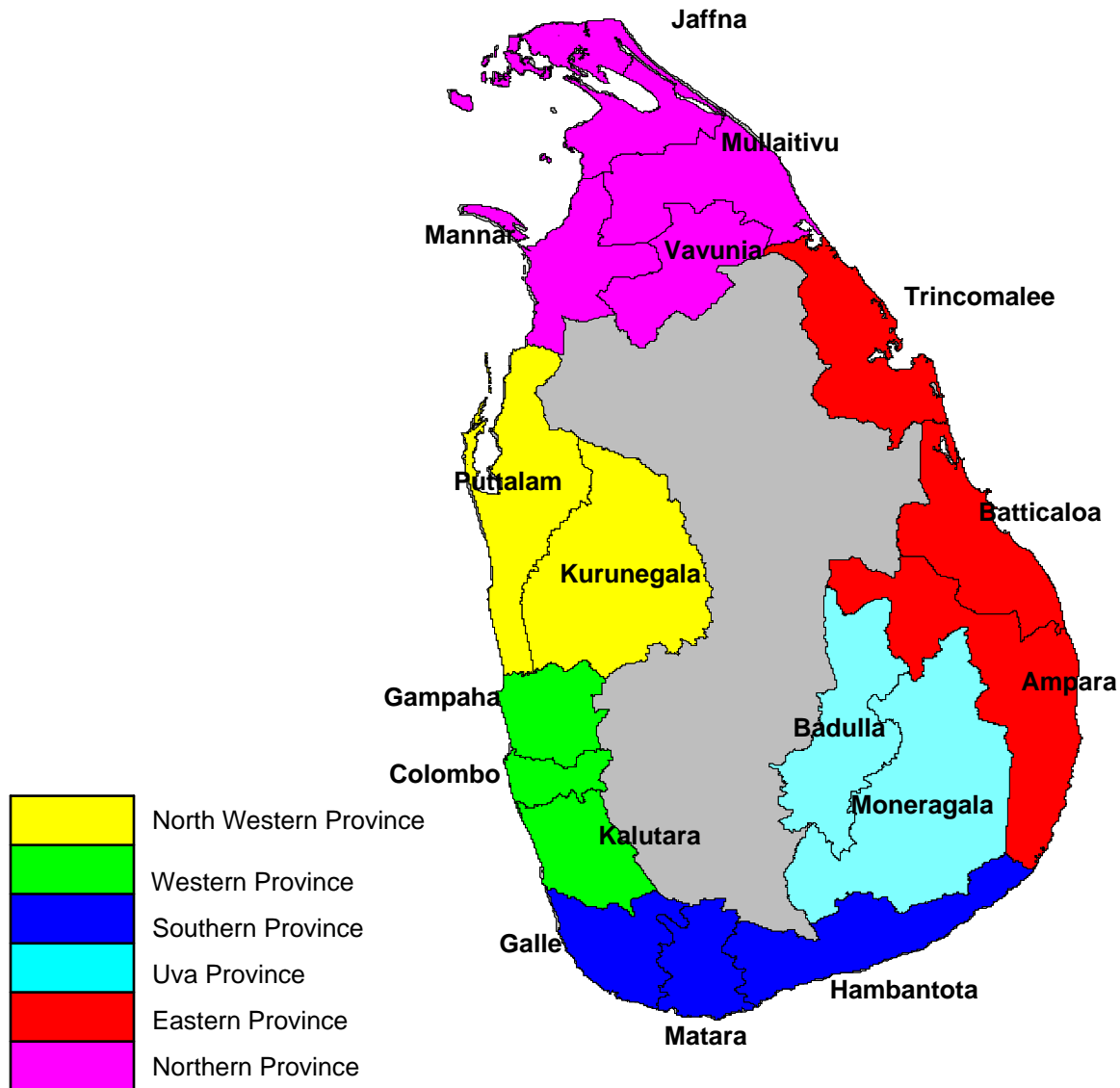
World Health Organization (2006) *Sri Lanka Tsunami Response: Six Months & Beyond*. Sri Lanka

World Health Organization (2005) *Emergency Preparedness and Response, Tsunami Response- External Progress, SEARO Report*.

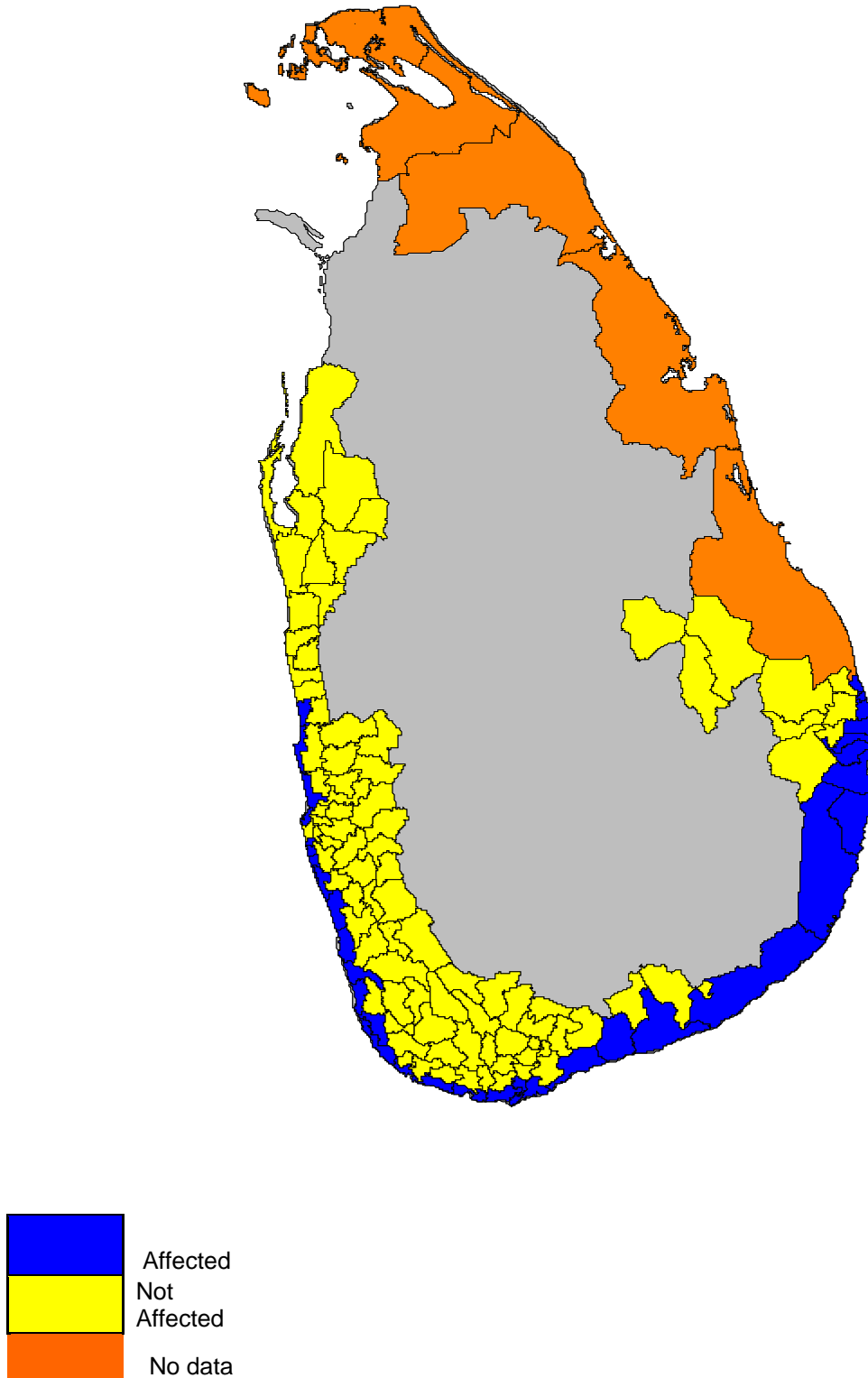
Appendix 5

Maps Showing Tsunami Affected Areas

Map 1: Tsunami Affected Provinces in Sri Lanka

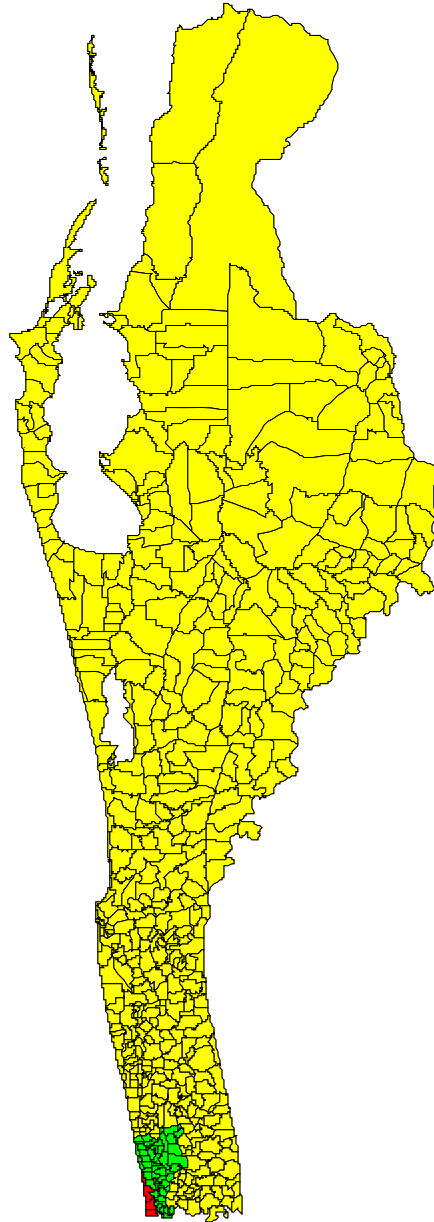


**Map 2: Tsunami Affected and Not Affected Areas by MOH/ Divisional Secretaries
Division**

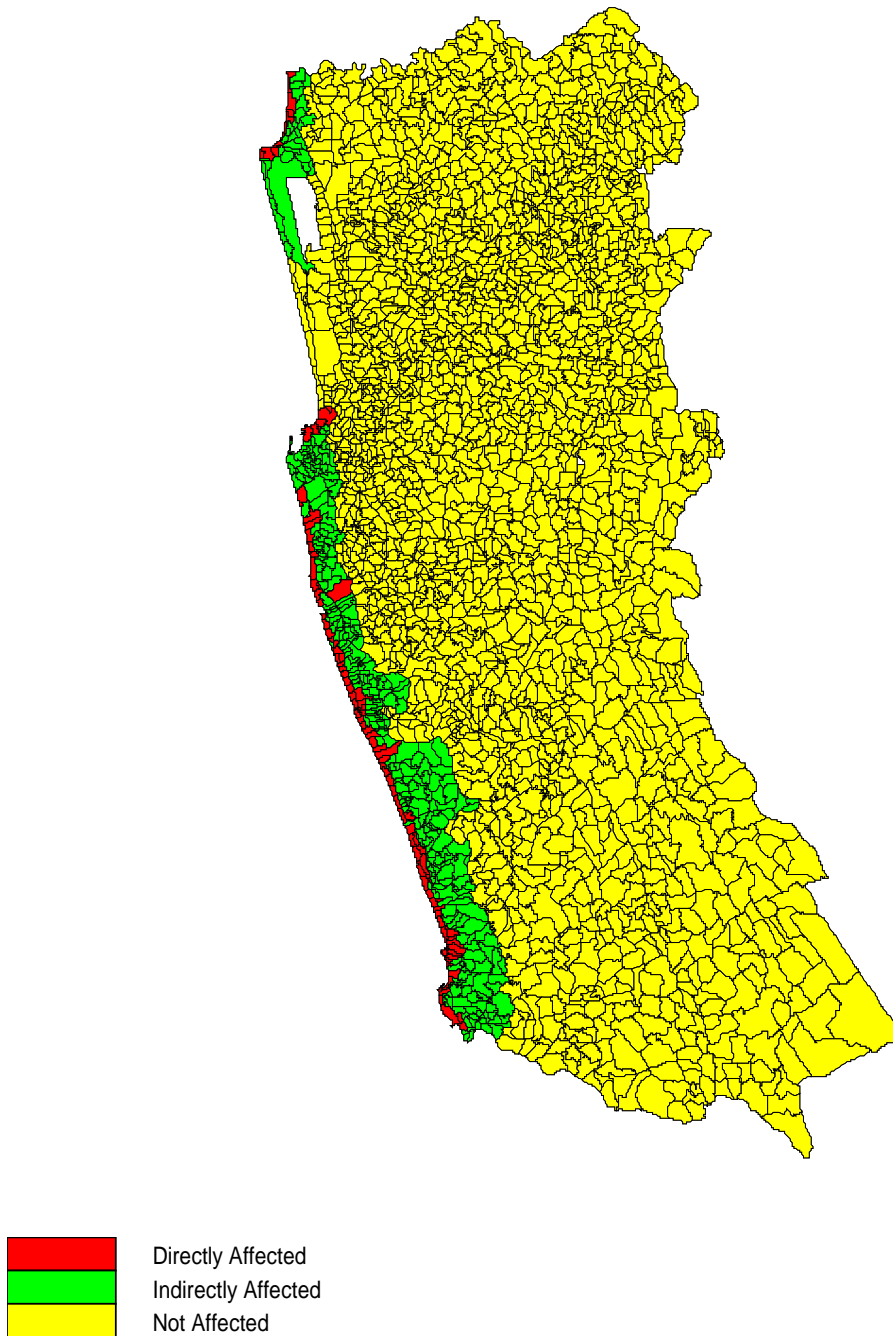


Document Review on Status of
Affected and Comparable Non-affected Population
Before and After the Tsunami in Sri Lanka

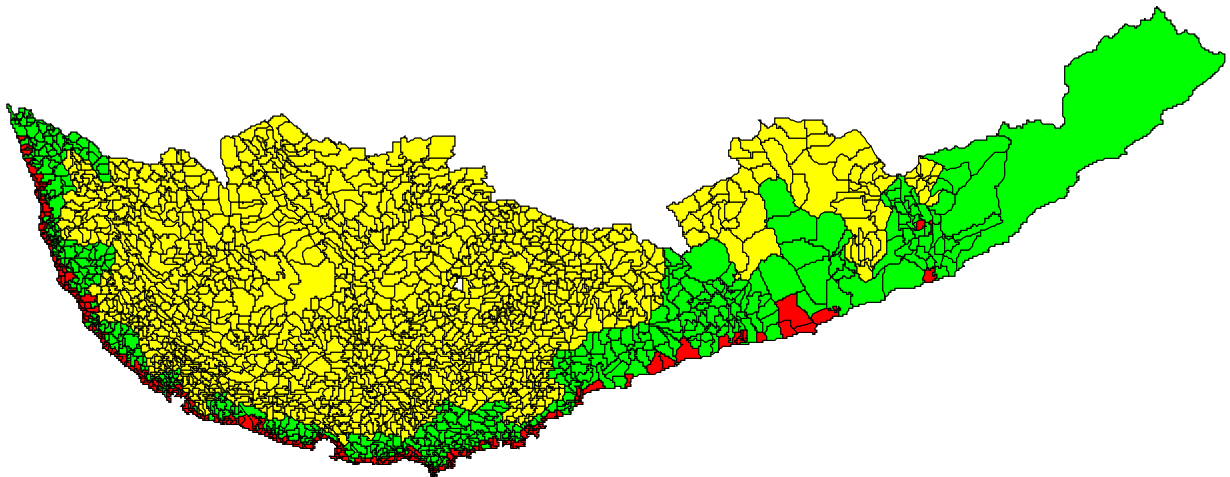
Map 3: Directly, Indirectly and Not Affected GN Areas in Puttalam District



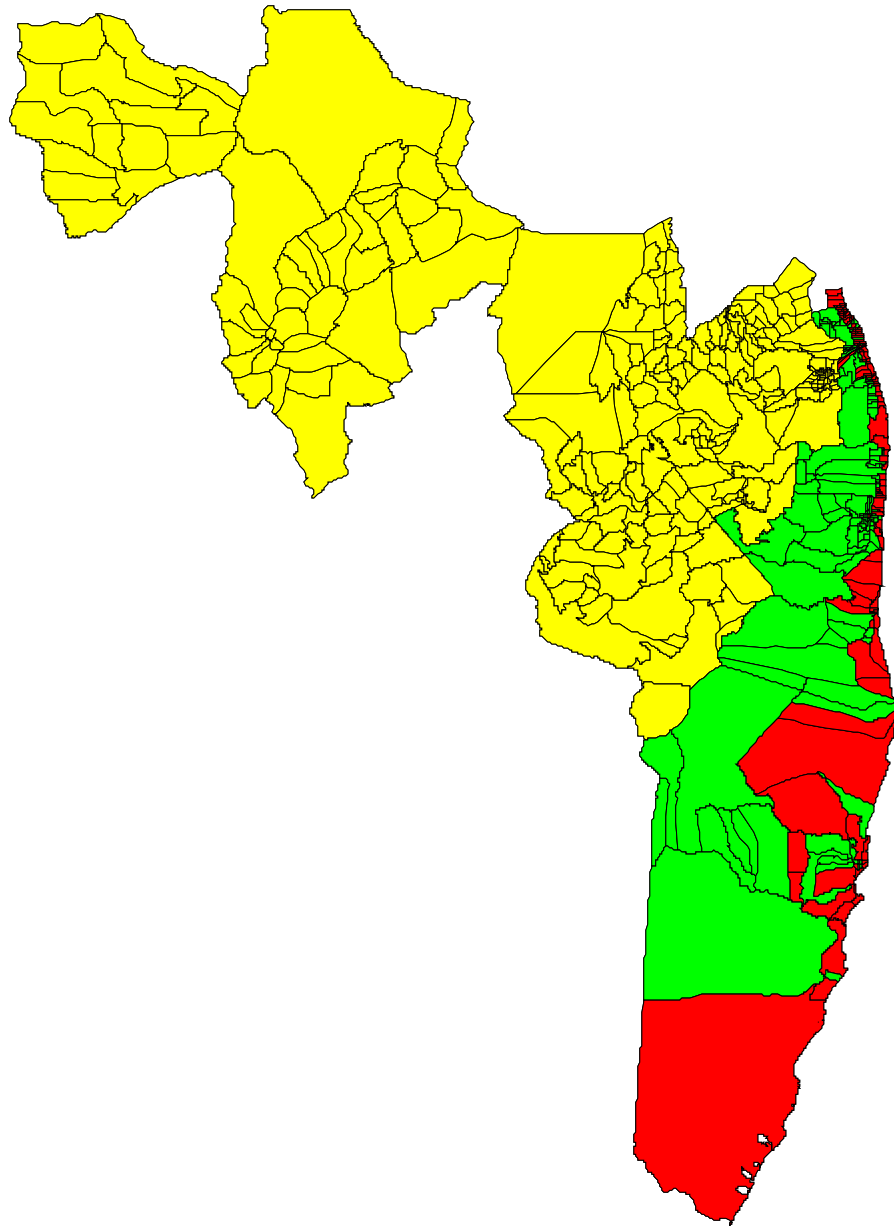
Map 4: Directly, Indirectly and Not Affected GN areas Western Province



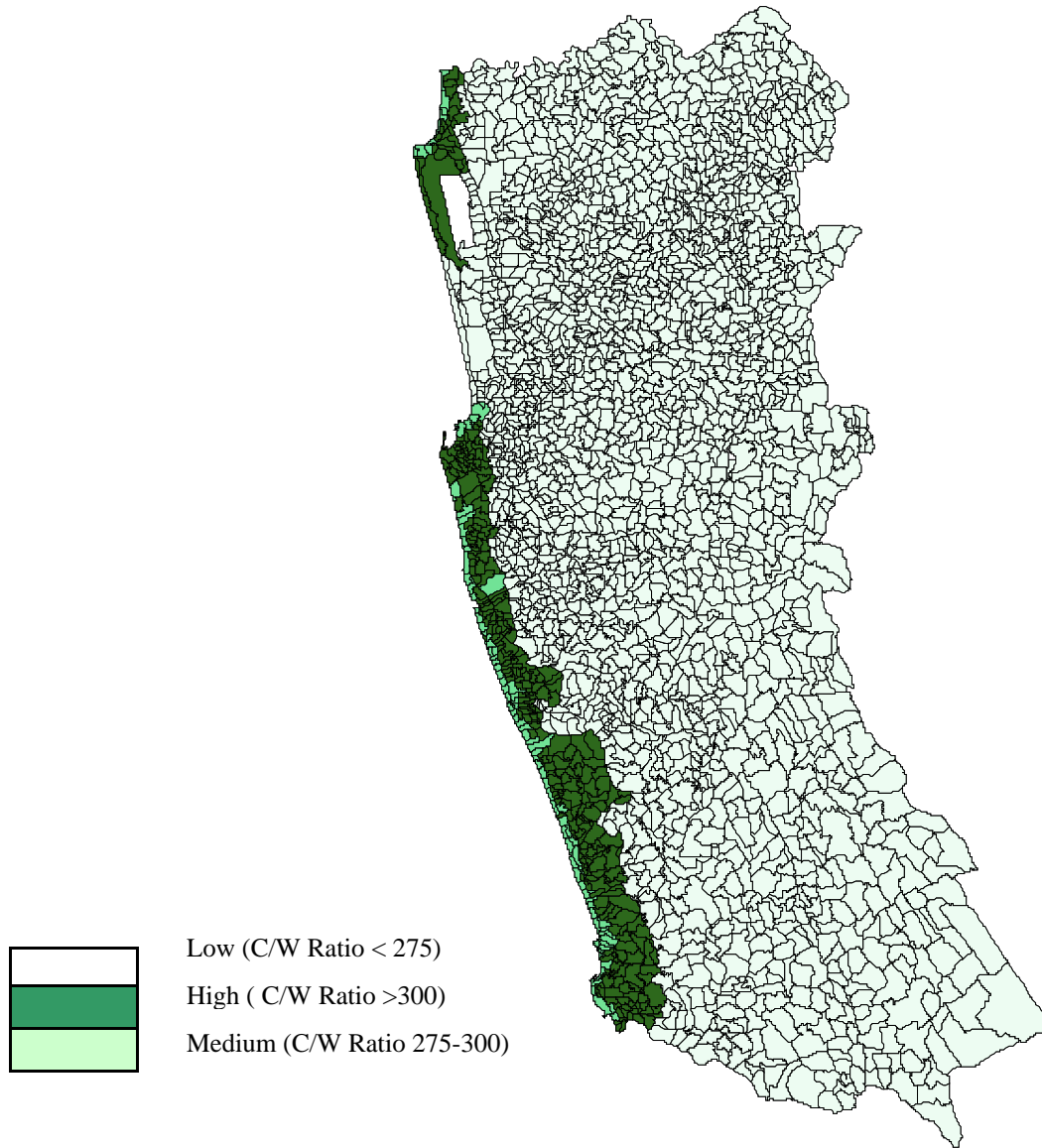
Map 5: Directly, Indirect and Not Affected GN areas Southern Province



Map 6: Directly, Indirectly and Not Affected GN areas Amparai District



Map 7: Demographic Characteristic (Child/Woman ratio) Western Province (Pre-Tsunami)



Map 8: Demographic Characteristic (Child/Woman ratio) Southern Province (Pre-Tsunami)

