



Atlas on the Buildings Affected by the Tsunami - 2004

1. Introduction

Sri Lanka is one of the countries badly affected by the Tsunami - 2004 disaster. Out of the 14 districts along the coastal belt, 13 districts were affected by this disaster. According to the estimates of the Ministry of Women Empowerment and Social Welfare, about 31,000 people were killed while another 4,100 persons reported to be still missing. A large number of buildings were completely wiped away. Some damaged buildings are not useable. Extensive damage to the Infrastructure of these districts was badly affected disturbing the livelihood of the people. Tourism and fishing are among the mostly hit industries. Thousands of families: men, women, children got displaced. Many displaced families have been relocated in temporary camps set up in temples, schools and other religious places etc. while others have moved to the houses of their friends or relatives.

Various Governmental and non-governmental organizations worked round the clock to provide relief assistance to displaced persons, clearance of debris, removal of dead bodies etc. Many countries including both developed and developing, came forward to assist the country, devastated by the Tsunami, in many different ways: direct financial assistance, food, clothing, health care, equipment etc.

The biggest challenge that the government facing is bringing the lifestyle of the affected people to normalcy. This requires reconstruction of their damaged houses and providing them livelihood assets such as boats for affected fishing communities. Reconstruction of the damaged infrastructure facilities is another high priority need. For planning and decision making on the rebuilding the nation devastated by this disaster, it is essential to have reliable and accurate information on the impact on the lives and properties caused by the disaster.

The Department of Census and Statistics conducted a Census covering all affected districts to evaluate the damages to the lives and the buildings in the affected areas. This Census was conducted in two stages. All the buildings including those wiped out were listed during the Stage 1 by updating the list of buildings prepared for conducting the Census of Population and Housing - 2001. In addition to the listing of buildings, some information required to compile a set of key indicators on the damages to the buildings was also collected at this stage. Detail data collection was carried out during the stage 2. Preliminary reports presenting the information collected during the Stage 1 of the Census have been released for all the affected districts including those in the Northern and Eastern Provinces.

The data collected at the Stage 2 are being computerized. Since computerization of schedules take little time, arrangements have been made to release some indicators on the impact of the disaster on the lives and buildings by processing of some data collected at the second stage of the census manually.

This Atlas presents the findings of the analysis of data collected during the first stage of the Census by texts, tables, maps and graphs. Spatial variation of several indicators across different administrative levels is presented here by maps.

This Atlas has been organized into 8 sections. Section 1 gives an introduction to the Census. The methodology of the Census is described in the Section 2. Preliminary findings of the analysis of data collected in the first stage of the census are presented in the Section 3. Graphical illustrations on preliminary findings of the census are given in the Section 4. A set of maps showing the spatial variation of the impact is given in the section 5. A Table giving the findings of the analysis of data collected at the first stage of the census is given in the Section 6. Definitions of terms used in the census are given in the Annexure A. Details on the information collected in the second stage of the Census are given in the Annexure B.



2. Methodology

This Census was conducted in all affected districts namely, Puttlam, Gampaha, Colombo, Kalutara, Galle, Matara, Hambantota, Ampara, Batticaloa, Trincomalee, Mulativu, Kilinochchi and Jaffna districts. Enumeration was done only in the affected census blocks of the affected districts, and it was conducted in two stages. Sri Lanka is consisting of 9 provinces, 25 districts, 325 Divisional Secretary divisions and about 14,000 Grama Niladhari divisions (Map 1). For the purpose of Census of Population and Housing - 2001 conducted by the Department, each GN division was further subdivided into a few smaller areas called Census Blocks. The objective of this sub division was to ensure that the enumerator assigned for the Census Block completes his field work on the final count within a given short period of time (about 6 - 12 hours). For urban areas, a census block included about 80 housing units while in rural and estate areas a census block included about 60 housing units.

Generally, the first step in any census taking operation is to update the list of all buildings to be enumerated and this list is used as the sampling frame for subsequent surveys. A frame consisting of all buildings for Sri Lanka was compiled for the Census of Population and Housing - 2001. This frame pertaining to the affected census blocks were updated by the field staff. This frame was revised giving due consideration to the new buildings that have been constructed and demolished after the year 2001. To provide information immediately needed for planning purposes, some key information pertaining to the buildings and the occupants was collected during the listing stage. The information collected during the listing stage is given below.

- a. Postal address before the disaster
- b. Name of the head of the household before the disaster
- c. Type of building before the disaster: Housing Unit; Living Quarter, Institute; Non - Housing Unit
(See Annexre A for the definitions)
- d. Whether the building is still existing
- e. Present condition of the building
(Completely damaged; Partially damaged and cannot be used, Partially damaged and can be used, not damaged)
- f. Number of persons lived in the building before the disaster
- g. Number of persons currently living
- h. Where do the usual residents of the unit now living (Same unit, With friends/relatives; Camp etc)
- i. Address of the occupants if living outside the unit after the disaster
- j. Economic activity of the unit before the disaster
- k. Whether the economic activities are still carried out

Detail information on the damages to the lives and buildings caused by the disaster was collected at the second stage of the Census. Field staff of the Department enumerated the occupants of the damaged buildings. In the case of the completely damaged buildings attempts were made as far as possible to track where the occupants of such buildings were currently living and to collect the information by visiting them. Information collected during the Stage 2 is given in the Annexure B.

Data collection instruments (questionnaires) were so designed that some key indicators could be compiled before the commencement of computerization of completed questionnaires with the objective of releasing the required information soon after the data collection is over. Preliminary reports presenting the findings based on the quick manual processing of data collected at the first stage of the census have already been released. These reports have been published in the Department's website: www.statistics.gov.lk. Data collected at the second stage of the census are being computerized and final reports on the findings of the census will be released once processing of computerized data is complete.



3. Preliminary findings

The Census on the Buildings and Persons Affected by the Tsunami - 2004, was conducted in all the affected census blocks of the Tsunami affected districts. Several key indicators have been compiled at District, DS division and GN division levels, based on the data collected during the first stage of the census. These indicators include number of affected GN divisions, number of affected census blocks, number of buildings (housing and other) in the affected census blocks before the disaster, condition of building after the disaster (completely damaged, partially damaged and cannot be used, partially damaged and can be used). Indicators were compiled for housing units as well as for other types of buildings.

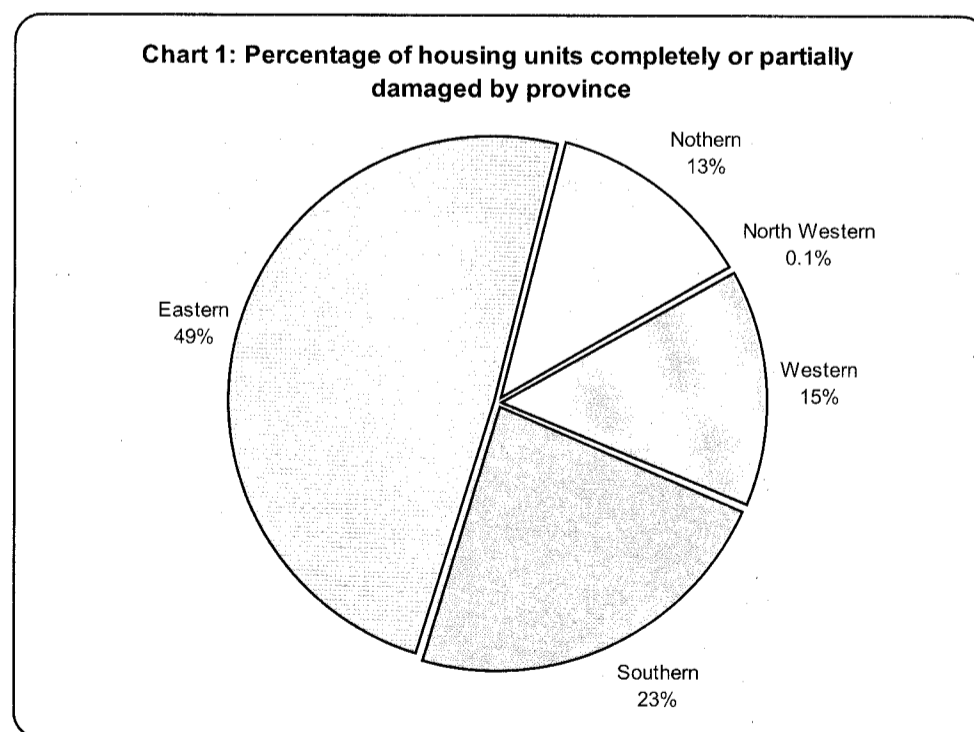
3.1: GN divisions affected by the disaster

In the affected DS divisions, there are 2,070 GN divisions. Out of these GN divisions, 32 percent has been reported to be affected (Table 1). Total number of census blocks in the affected GN divisions is 4,887. Of these census block, 2,614 i.e. 53 percent has been affected by the disaster. Complete lists of affected GN divisions are given in the Table 26.

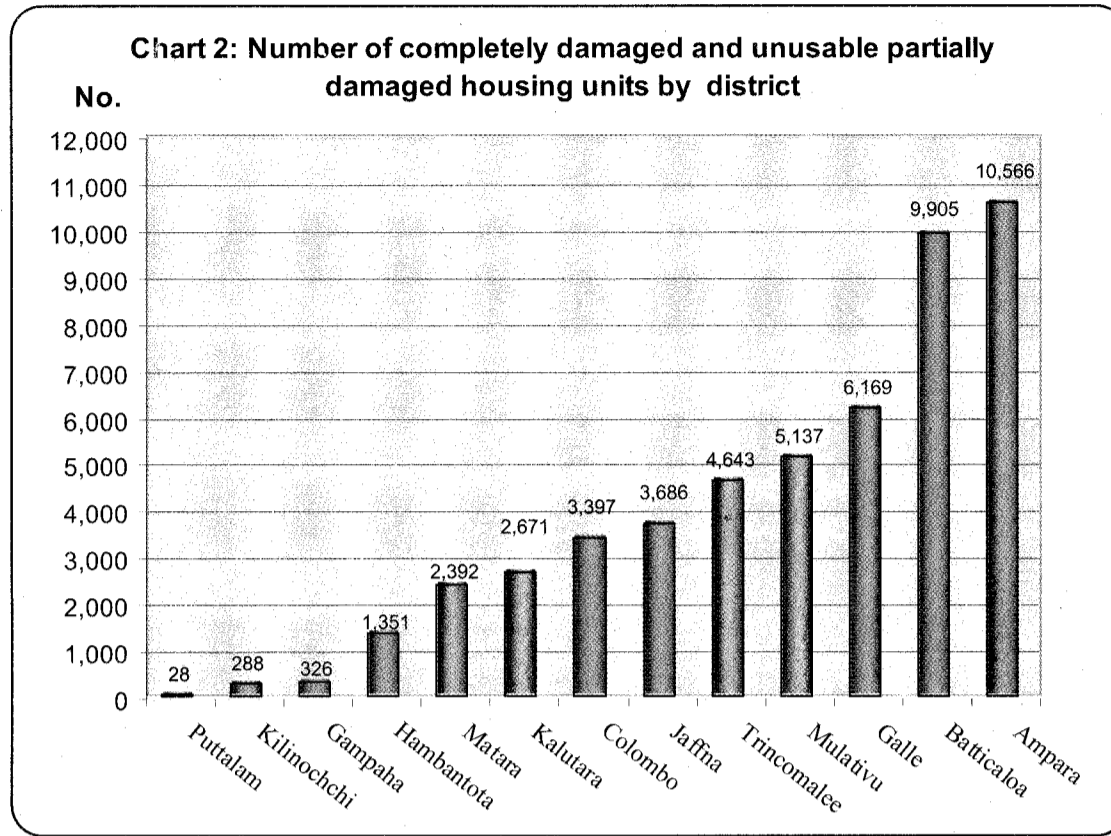
3.2: Damages to the housing units

There had been 158,771 buildings used as housing units in the affected census blocks of Sri Lanka before the disaster. Of these buildings 25 percent have been completely damaged. Another 7 percent have been partially damaged and not usable. That is, little over 30 percent of the housing units have been either completely wiped out or damaged to the extent that those cannot be used any longer. Percentage of buildings damaged but usable is 24 percent. The balance 44 percent of the buildings have not been affected.

Composition of housing units either completely or partially damaged by province is shown in the Chart 1. The highest share of 49 percent, of the completely or partially damaged housing units is reported from the Eastern Province. The next highest share of 23 percent was reported from the Southern Province (Chart 1). Western province and Northern provinces accounted for 15 percent and 13 percent of the completely or partially damaged housing units, respectively. In the North Western province, only Puttlam district was affected and number of housing units affected was only 55.

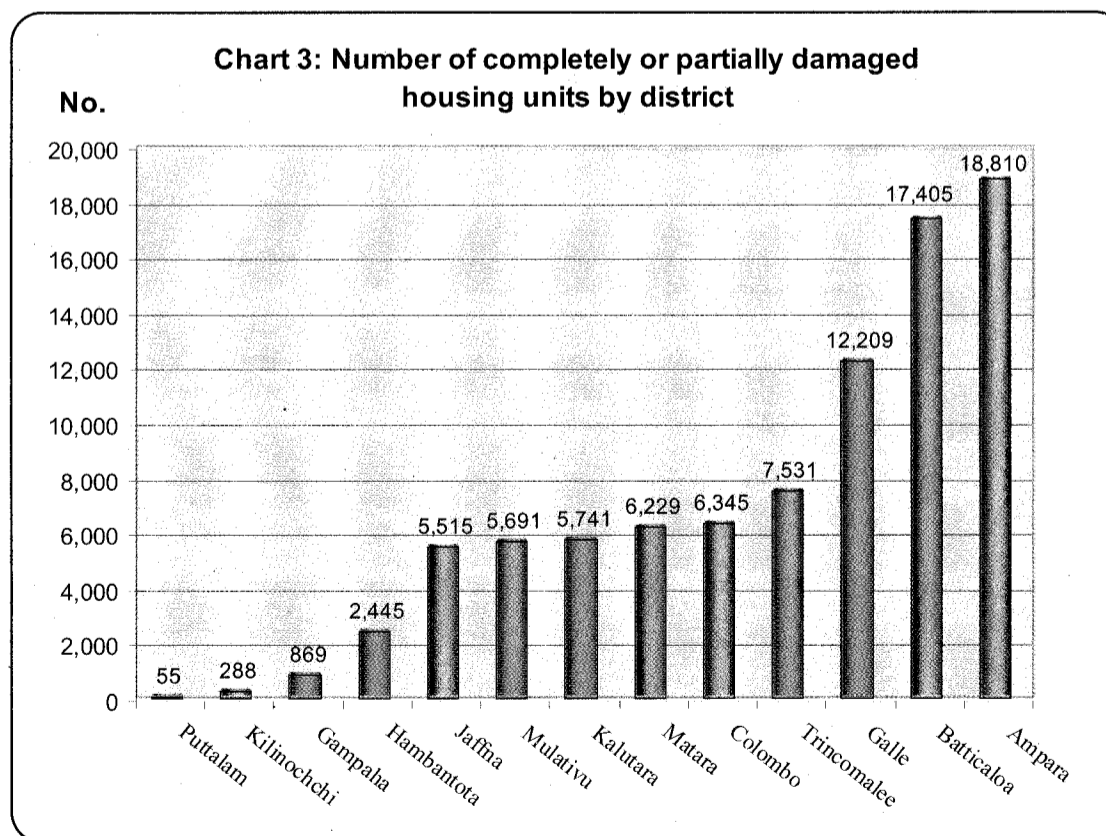


When compared across districts, highest number of housing units, damaged either completely or partially and unusable, was reported from the Ampara district. Total number of such buildings reported for Ampara district was 10,566. This is followed by the Batticalo and Galle districts and the corresponding numbers were 9,905 and 6,169 units.



The highest number (8,139) of completely damaged housing units was reported from the Ampara district and it accounts for 20% of the total number of completely damaged housing units in the country. This is followed by 7,445 housing units (19%) completely damaged in the Batticaloa district. Number of housing units completely damaged in the Galle (4,482), Mulativu (4,428) and Trincomalee (3,893) are also considerably large. The reported number of houses damaged completely in Kalutara, Matara and Hambantota districts are 2,056, 1,658 and 1,076 respectively. The lowest number (12) of completely damaged houses was reported from the Puttalam district. This is followed by the Gampaha district (227 units).

One of the requirements for settling displaced families back in their own homes is to reconstruct/repair their damaged houses. Altogether, 89,133 houses have been completely or partially (usable and not usable) damaged by the disaster. Over 12,000 housing units have been damaged in each of the Galle, Batticaloa and Ampara districts (Chart 3). Between 5,000 - 8,000 housing units are reported to be damaged by the disaster in the Trincomalee, Colombo, Matara, Kalutara, Mulativu and Jaffna districts.

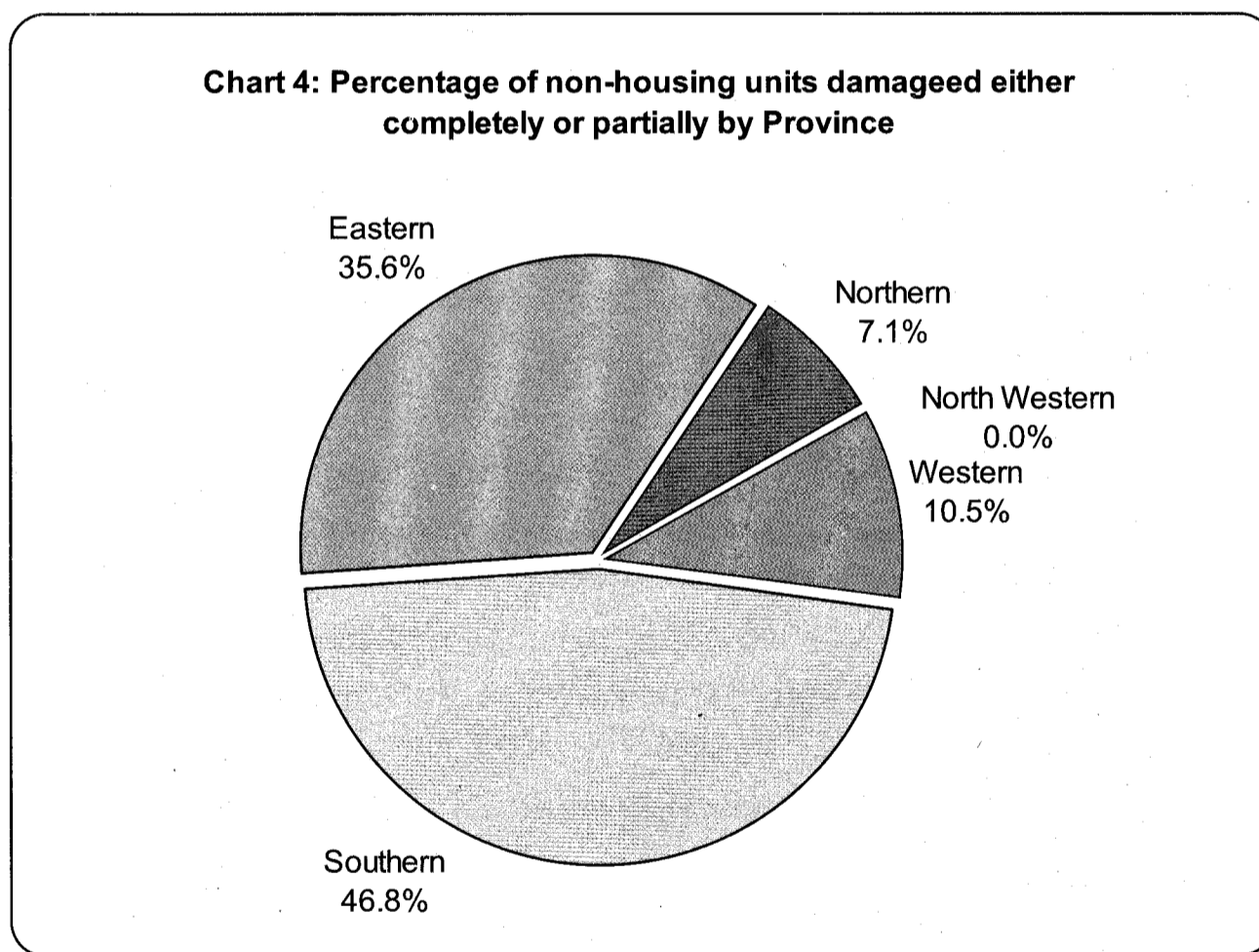




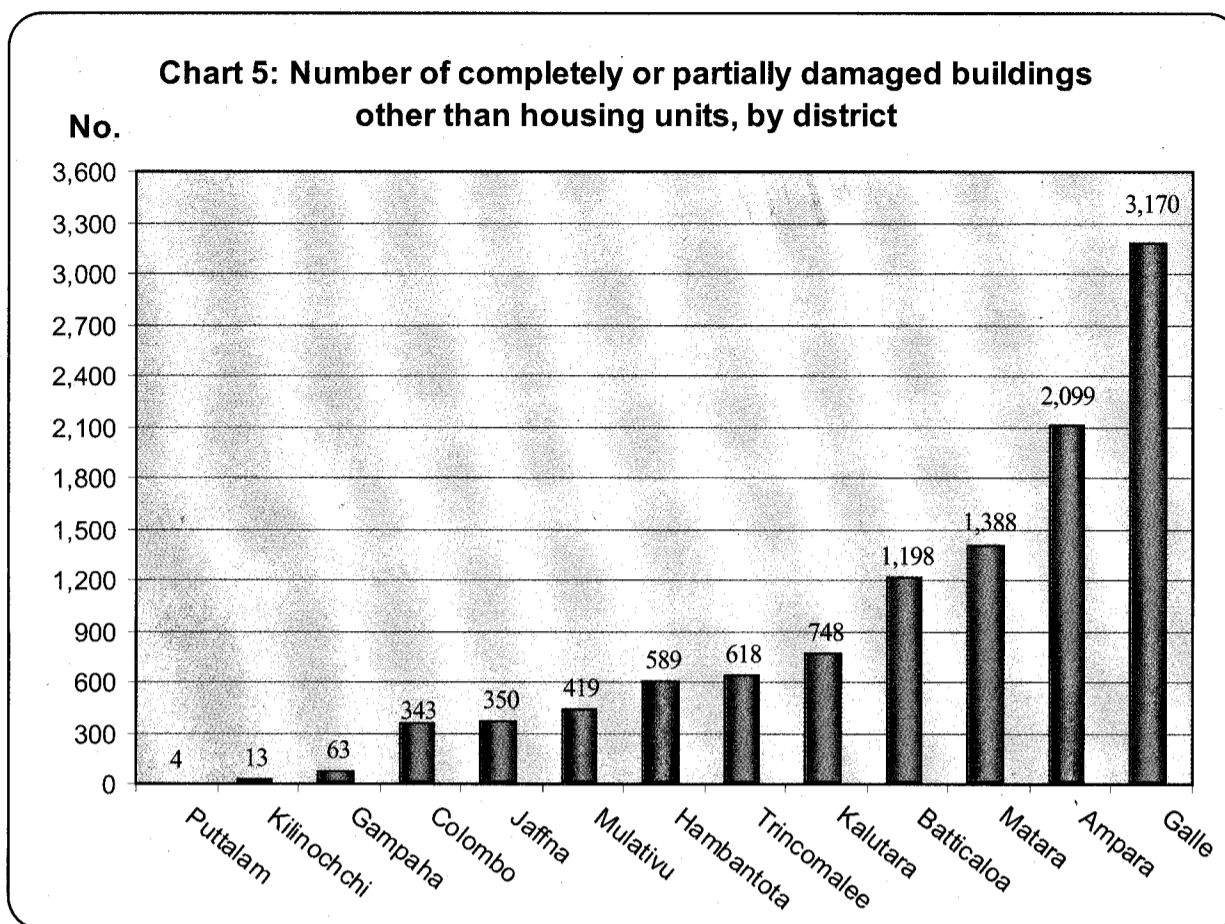
3.3: Damages to buildings other than housing units

Damages caused by the Tsunami disaster to the buildings other than housing units are presented by district in the Table 2. There had been 23,582 buildings other than housing units in the affected census blocks of the Tsunami affected 13 districts. Total number of buildings either damaged completely or partially is 11,002 and it account for 47 percent of the buildings existed before the disaster. Out of these 23,582 buildings, 20 percent has been damaged completely. Another 5 percent has been partially damaged and unusable. The percentage of partially damaged usable building is 22 percent.

Southern province is the most affected province with respect to the share of completely and partially damaged buildings other than the housing units, is concerned. The share of this indicator for the Southern province is 46.8 percent (Chart 4). The next highest share of 35.6 percent is reported for Eastern province. The Western province accounted for 10.5 percent of the total number of completely and partially damaged buildings other than the housing units and this share for the Northern province is 7.1 percent.



When compared across districts, the highest number (3,170) of partially or completely damaged buildings other than housing units is reported from the Galle district (Chart 5). This accounts for nearly 29 percent of the completely or partially damaged buildings other than housing units of the affected census blocks of the Tsunami affected districts. This was followed by the Ampara district. Reported number of damaged buildings in the Ampara district, was 2099 and as a percentage it was 19 percent. Between 500 to 1,400 such buildings have been damaged in the Matara (1,388), Batticaloa (1,198), Kalutara (748), Trincomalee (618) and Hambantota (589) districts. This damage for Kilinochchi (13), Gampaha (63), Jaffna (350) and Colombo (343) is reported to be less than 500 units. There had been only 4 such building damaged in the Puttalam district.

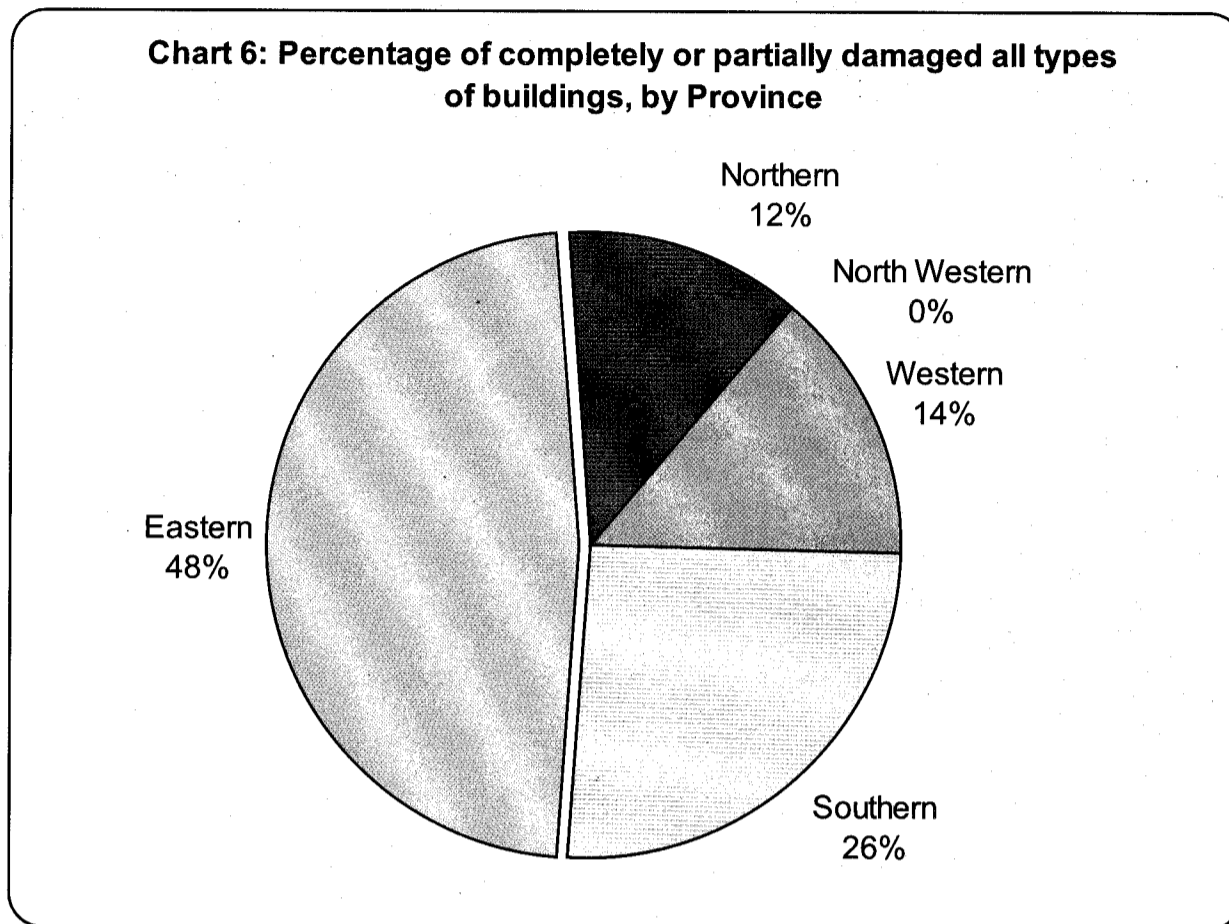


Total number of buildings other than housing units completely damaged is 4,650. Over 500 completely damaged buildings are reported from the Ampara (1173), Galle (992) and Batticaloa (525) districts. For all other district, number of buildings completely damaged has been 400 or less.

3.4: Damages to all types of buildings (Housing and other types of buildings)

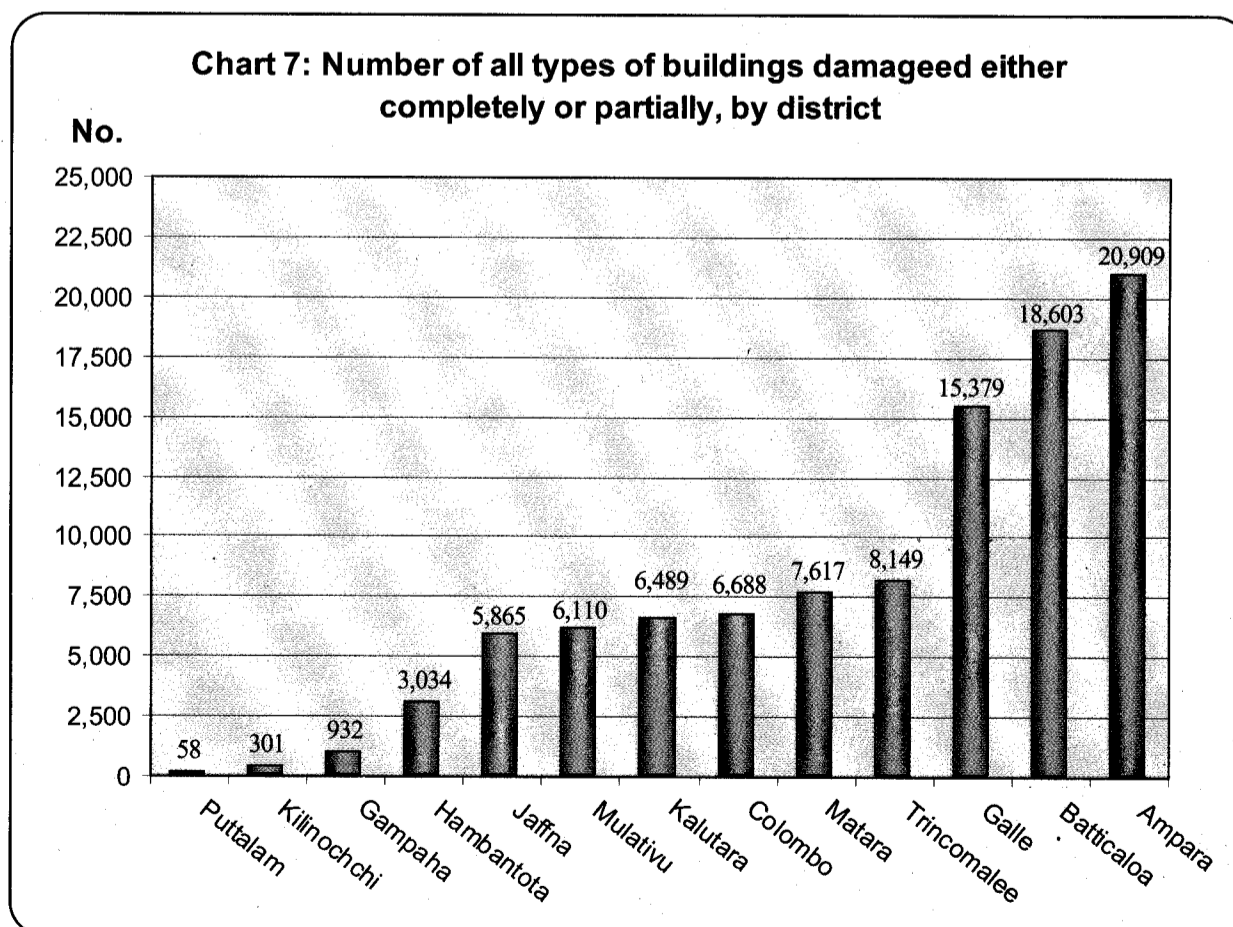
The total number of all types of damaged buildings (completely or partially) is 100,134. Out of this, 89,133 (89%) had been used as housing units before the Tsunami. The balance 11% had been used as other types of buildings. Number of all types of buildings in the affected census blocks of the Tsunami affected districts and condition of the buildings are shown in the Table 3.

There had been 182,353 buildings (all types) in the affected census blocks of the Tsunami affected districts. Out of the 182,353 buildings, 100,134 buildings, that is 55 percent had been either partially or completely damaged. Number of completely damaged buildings is 44,554 and this corresponds 24 percent of the total number of buildings in the affected census blocks. Percentage of building damaged but usable is 24 percent.



The composition of the completely or partially damaged all types of the buildings in the affected census blocks are shown by province in the Chart 6. The highest share of 48 per cent of completely or partially damaged buildings is reported from the Eastern province. The Southern province reported the next highest share of 26 percent. The percentage of completely or partially damaged all types of buildings in the Western and Northern provinces are 14 per cent and 12 per cent respectively.

When compared across districts, from the Chart 7, it could be clearly seen that highest number (20,909) of all types of damaged buildings irrespective of whether usable or not, are reported from the Ampara district and this account for 21 per cent of the all damaged buildings. This is followed by the Batticaloa and Galle districts and corresponding percentages are 19 percent and 15 percent respectively.





3.5: Summary

The Census of Buildings and Persons Affected by the Tsunami - 2004 was conducted to provide much needed information on the damage of the lives and buildings caused by the Tsunami disaster. This Census was conducted only in the affected census blocks of the Tsunami affected districts. This Atlas presents findings of the analysis of data collected at the first stage of the Census. This analysis is largely limited to the affected buildings. Detail data on the other characteristics about the all types of buildings, occupants and their economic activities and dead and missing persons have been collected and are being computerized. Findings of the analysis of these data will be released once the processing of computerized data is complete.

In terms of the number of damaged housing units the most affected three districts are Ampara, Batticaloa and Galle districts. The number of houses damaged in these districts is 18,810, 17,405 and 12,209 respectively. The least affected three affected districts are Puttalam (55), Kilinochchi (288) and Gampaha (869). When the total number buildings other than housing units are considered the worst affected three districts are Galle, Ampara and Matara districts. Number such buildings damaged in these districts were 3,170, 2,099 and 1,388 respectively. Puttalam, Kilinochchi and Gampaha districts were the least affected three districts with respect to this indicator. The number of buildings other than housing units damaged in these districts was 4, 13 and 63 respectively.

The buildings in the affected areas were largely housing units. It was found that there had been 158,771 housing units in the affected areas while the number of buildings other than housing units had been 23,582. Possibly due to this even when the all types of affected buildings are considered the worst affected three districts are still the same as those identified with respect to the indicator: number of damaged housing units. Number of damaged all types of buildings corresponding to the worst affected districts are 20,909, 18,603 and 15,379 respectively. The least affected three districts with respect to the same indicator are Puttalam, Kilinochchi and Gampaha and the corresponding numbers are 58, 301 and 932 respectively.



Table 1: Number of housing units of affected census blocks, before and after the Tsunami, by District

District	No of GN Divisions		Number of census blocks in the affected GN Divisions		Number of housing units in affected census blocks		
	Total	Affected	Total	Affected	Completely damaged	Partially damaged and cannot be used	Partially damaged and can be used
Ampara	260	126	719	471	8,139	2,427	8,244
Batticaloa	223	88	604	422	7,445	2,460	7,500
Colombo	125	30	770	198	2,824	573	2,948
Galle	363	132	792	488	4,482	1,687	6,040
Gampaha	85	14	190	47	235	91	543
Hambantota	201	33	286	115	1,076	275	1,094
Jaffna	53	32	168	141	3,369	317	1,829
Kalutara	241	55	449	201	2,056	615	3,070
Kilinochchi	53	9	na	na	288	0	0
Matara	203	70	431	296	1658	734	3837
Mulativu	46	18	na	na	4,428	709	554
Puttalam	52	4	25	7	12	16	27
Trincomalee	165	52	453	228	3,893	750	2,888
All districts	2,070	663	4,887	2,614	39,905	10,654	38,574

na: not available

Chart 8: Condition of damaged housing units in the affected census blocks of all affected districts

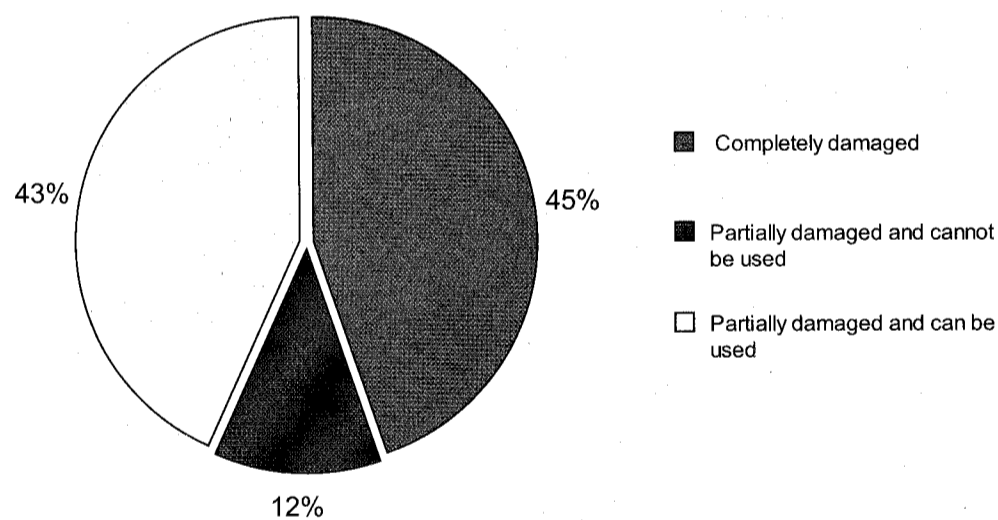


Chart 9: Number of damaged housing units in the affected census blocks by the condition of housing units and district

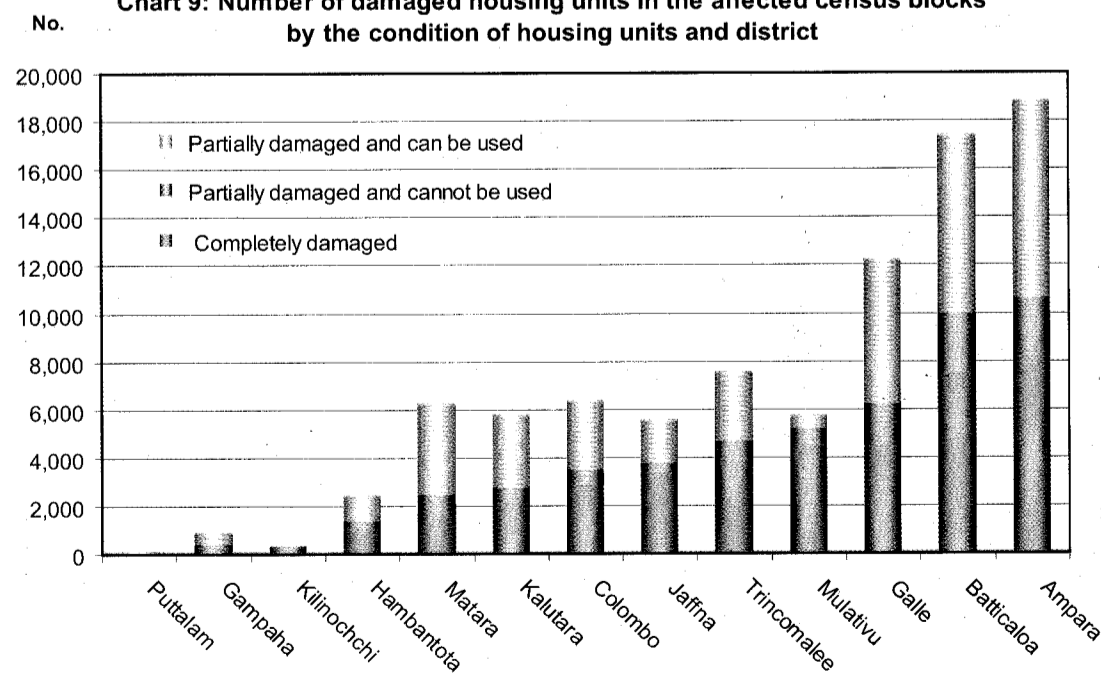




Table 2: Number of buildings other than housing units of affected census blocks, before and after the Tsunami, by district

District	No of GN Divisions		Number of census blocks in the affected GN Divisions		Number of non-housing units in affected census blocks		
	Total	Affected	Total	Affected	Completely damaged	Partially damaged and cannot be used	Partially damaged and can be used
Ampara	260	126	719	471	1,173	243	683
Batticaloa	223	88	604	422	525	167	506
Colombo	125	30	770	198	103	42	198
Galle	363	132	792	488	992	321	1,857
Gampaha	85	14	190	47	19	2	42
Hambantota	201	33	286	115	289	57	243
Jaffna	53	32	168	141	181	23	146
Kalutara	241	55	449	201	371	97	280
Kilinochchi	53	9	na	na	0	13	0
Matara	203	70	431	296	366	152	870
Mulativu	46	18	na	na	302	52	65
Puttalam	52	4	25	7	1	0	3
Trincomalee	165	52	453	228	328	58	232
All districts	2,070	663	4,887	2,614	4,650	1,227	5,125

na: not available

Chart 10: Condition of buildings other than housing units in the affected census blocks of all affected districts

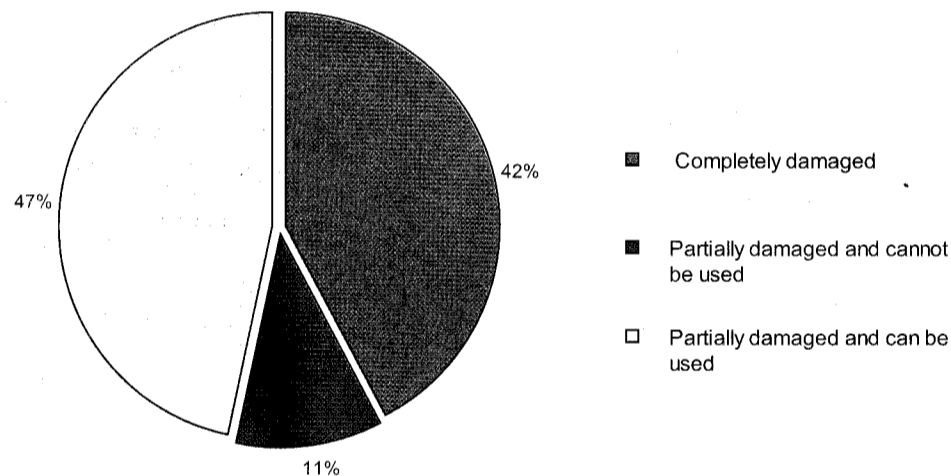


Chart 11: Number of damaged buildings other than housing units in the affected census blocks by the condition of buildings and district

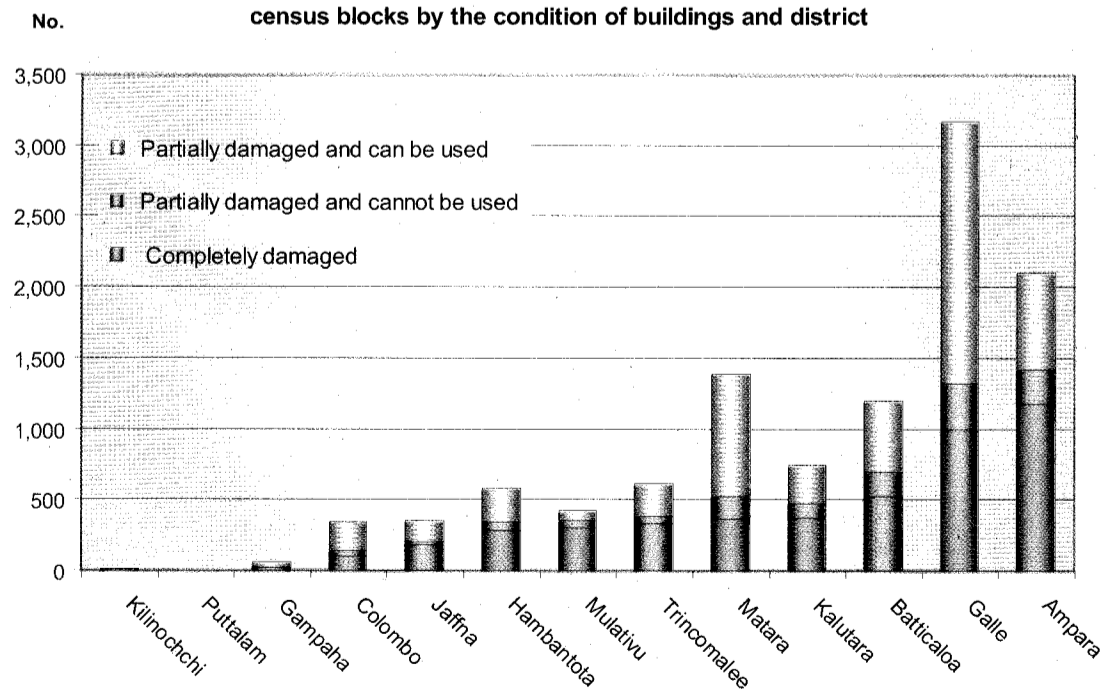




Table 3: Number of all types of buildings in the affected census blocks, before and after the Tsunami, by district

District	No of GN Divisions		Number of census blocks in the affected GN Divisions		Number of non-housing units in the affected census blocks		
	Total	Affected	Total	Affected	Completely damaged	Partially damaged and cannot be used	Partially damaged and can be used
Ampara	260	126	719	471	9,312	2,670	8,927
Batticaloa	223	88	604	422	7,970	2,627	8,006
Colombo	125	30	770	198	2,927	615	3,146
Galle	363	132	792	488	5,474	2,008	7,897
Gampaha	85	14	190	47	254	93	585
Hambantota	201	33	286	115	1,365	332	1,337
Jaffna	53	32	168	141	3,550	340	1,975
Kalutara	241	55	449	201	2,427	712	3,350
Kilinochchi	53	9	na	na	288	13	0
Matara	203	74	431	297	2,024	886	4,707
Mulativu	46	18	na	na	4,730	761	619
Puttalam	52	4	25	7	12	16	30
Trincomalee	165	52	453	228	4,221	808	3,120
All districts	2,070	667	4,887	2,615	44,554	11,881	43,699

na: not available

Chart 12: Condition of all types of damaged buildings in the affected census blocks of all Tsunami affected districts

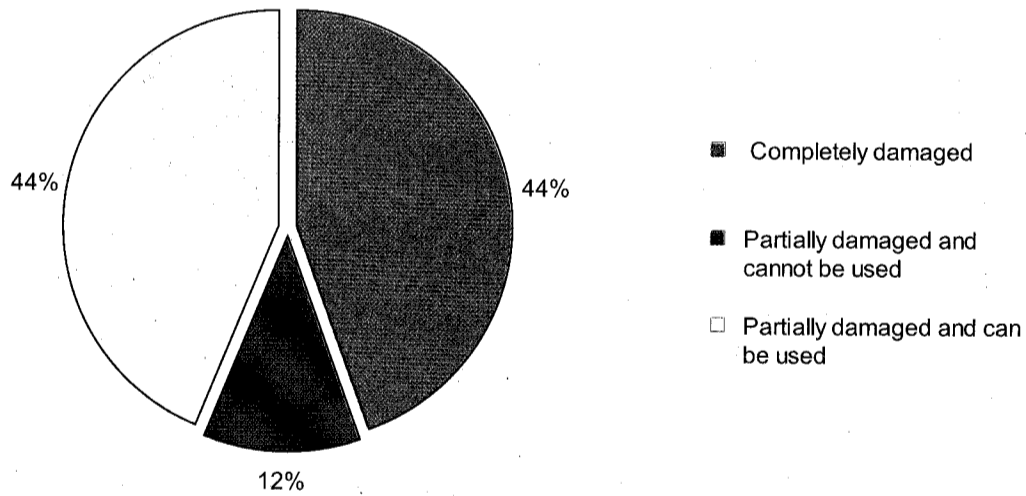


Chart 13: Number of all types of damaged buildings in the affected census blocks by the condition of buildings and district

