

Workshop to Improve the Compilation of Reliable
data on Disaster occurrence and impact

2-4 April 2006

Bangkok

**NATIONAL/SUB-NATIONAL EXPERIENCES
WITH DISASTER LOSS DATA AND DATABASE
DEVELOPMENT: SRI LANKAN EXPERIENCE**

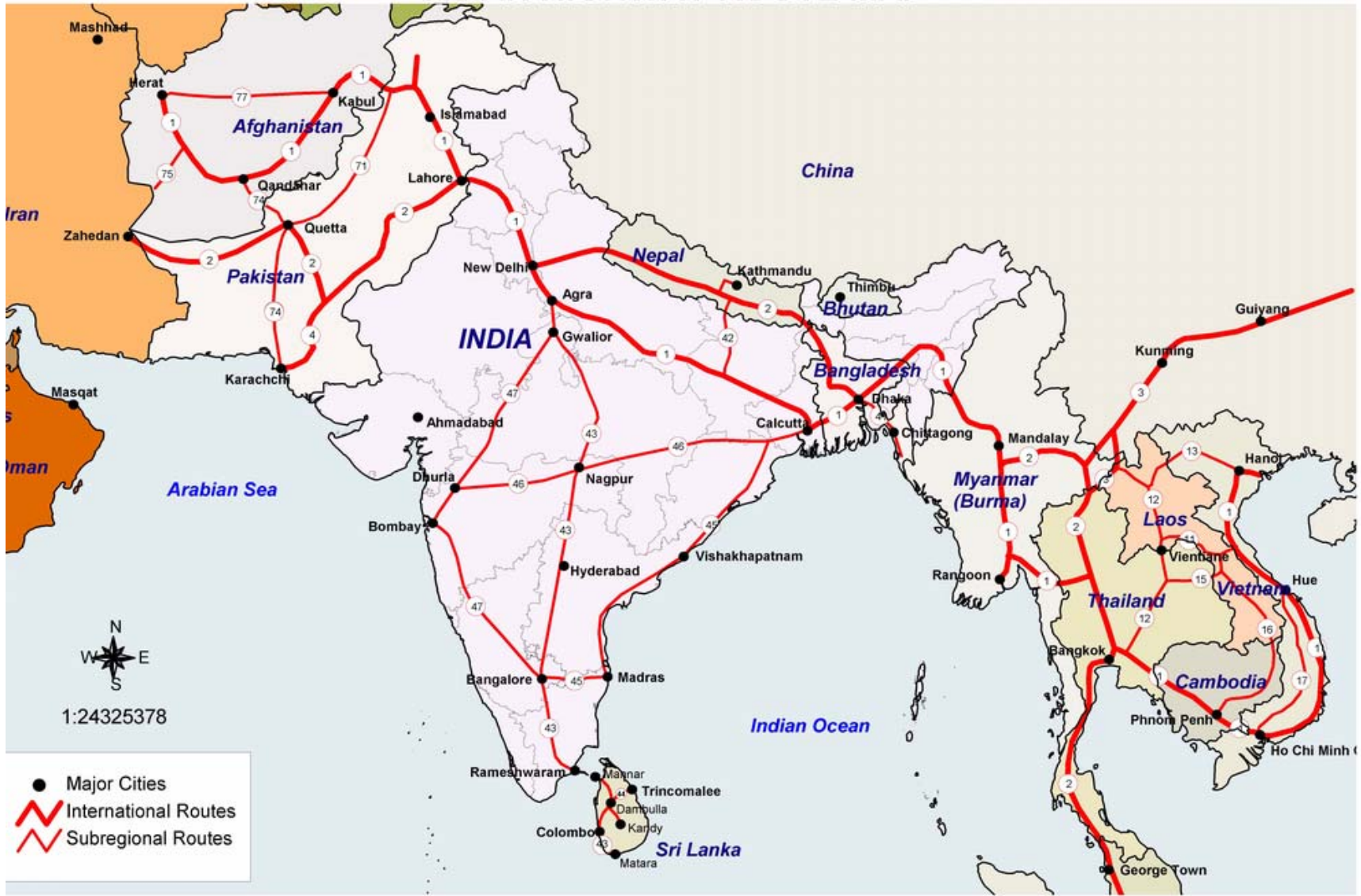
P.K.S. Mahanama (MITP)

Chartered Town Planner

Head, Department of Town & Country Planning

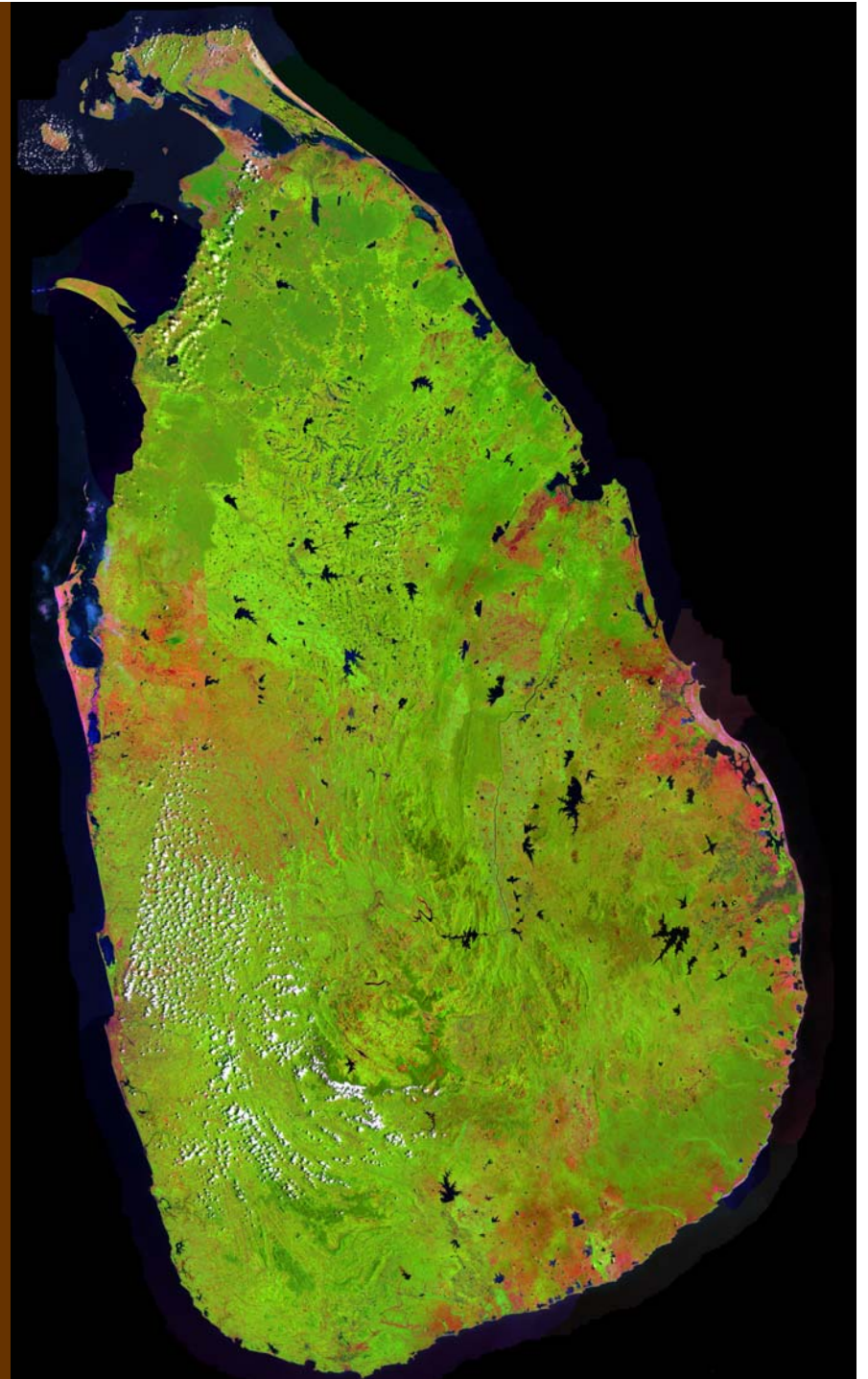
University of Moratuwa

Sri Lanka



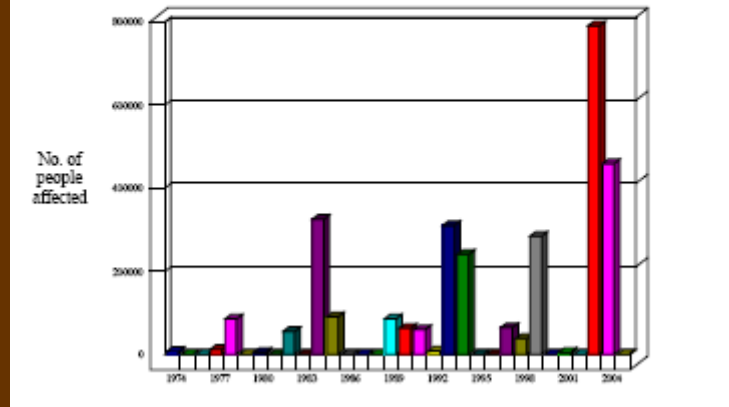
Typology of Disasters in Sri Lanka

- Floods (every year)
- Landslides (every year)
- Cyclones (not regular)
- Drought (every year)
- Tsunami (only once)
- Epidemics (every year)
- Forest fire (not regular)
- Civil War

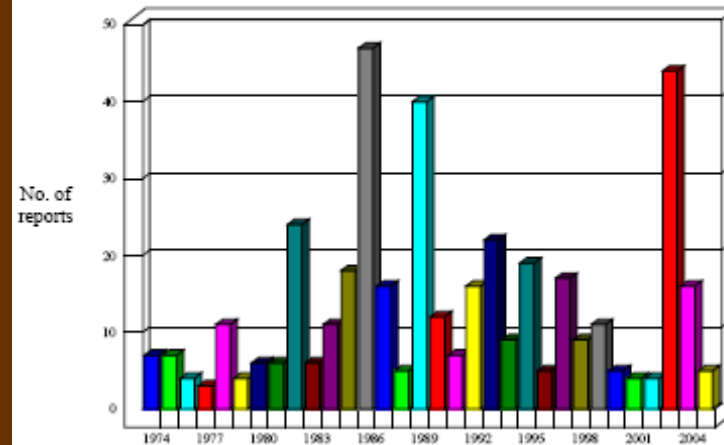


Major Disasters From 1974 to 2004

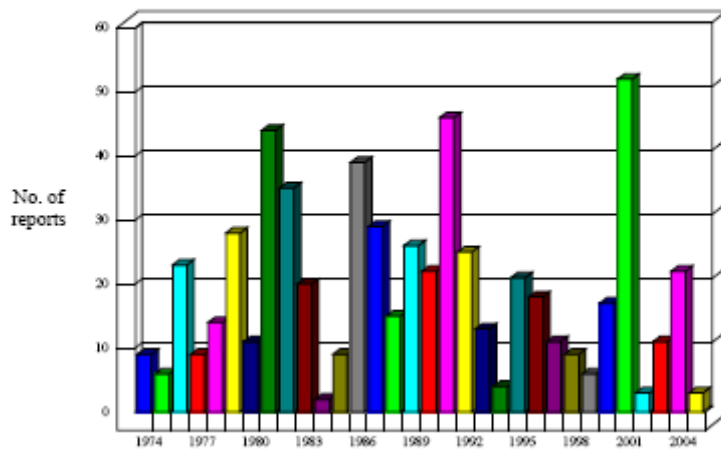
Floods



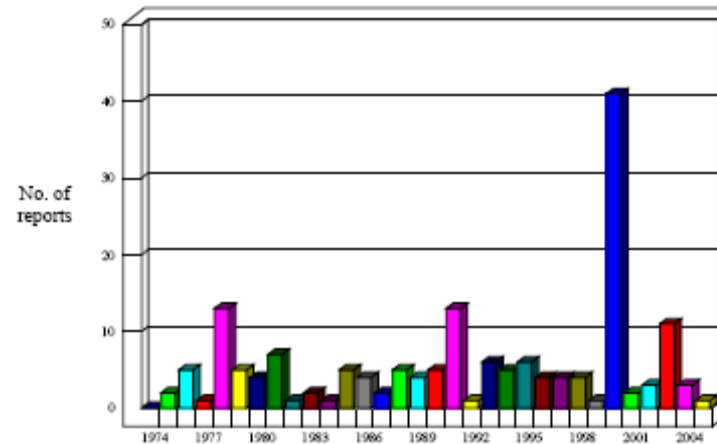
Land slides



Droughts



Strong wind



Sources of Information at the Time of disaster

Media

- **Public**
- **Private**

Government institutions

- **Presidential Data Centre**
- **Ministry of Disaster Relief Services**
- **Ministry of Defense**
- **National Disaster Management Centre (NDMC)**
- **Meteorological Department**
- **National Building Research Organization (NBRO)**
- **Irrigation Department**
- **National Geological and Mines Bureau**
- **Centre Housing, Planning and Building (CHPB)**
- **National Physical Planning Department (NPPD)**
- **Urban Development Authority (UDA)**

Sources of Information - Post disaster

Media (Both Electronic and Print)

- **Public**
- **Private**

Government institutions

- **Ministry of Disaster Relief Services**
- **Ministry of Public Administration**
- **National Disaster Management Centre (NDMC)**
- **National Building Research Organization (NBRO)**
- **Irrigation Department**
- **National Geological and Mines Bureau**
- **Centre Housing, Planning and Building (CHPB)**
- **Department of Census and Statistics**
- **Department of Social Services**
- **National Physical Planning Department (NPPD)**
- **Urban Development Authority (UDA)**

Sources of Information - Post disaster

Other Institutions

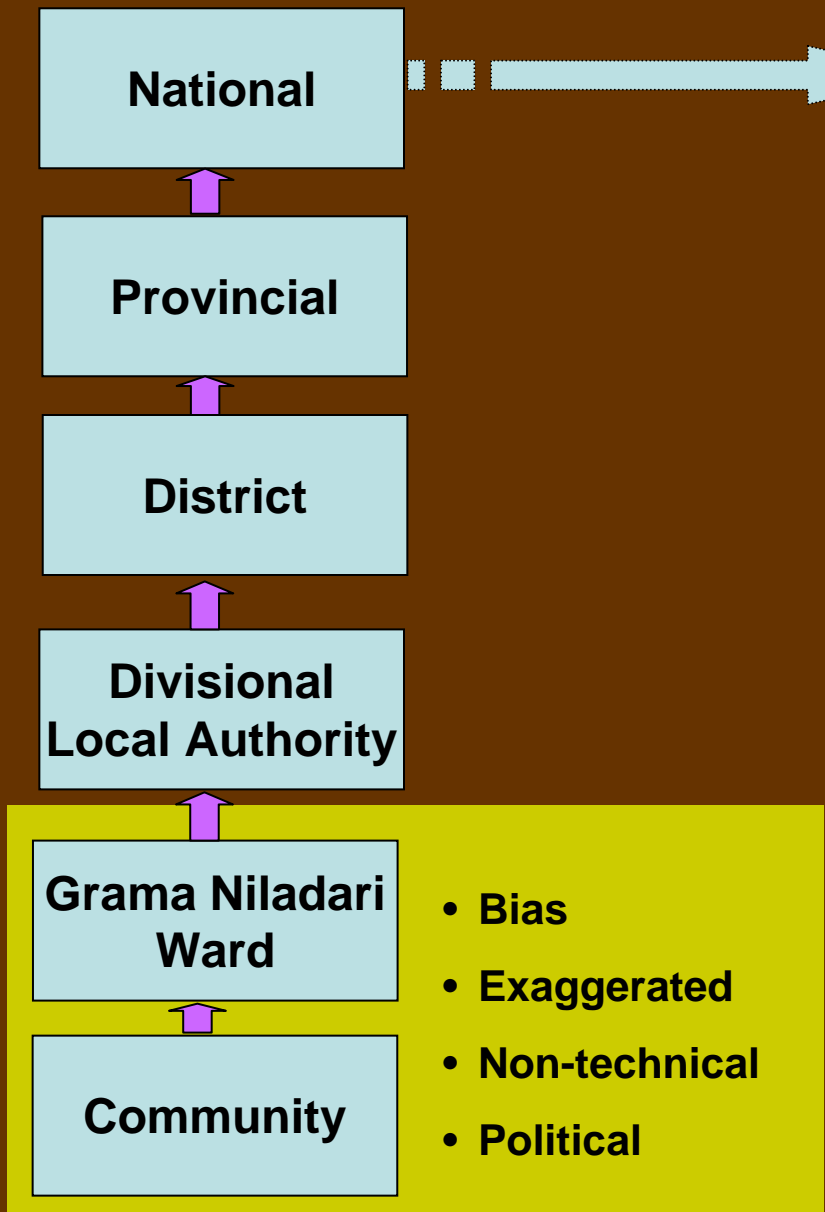
- **International Water Management Institute (IWMI)**
- **International Union for Conservation (IUCN)**
- **United Nations Development Programme (UNDP)**
- **Red Cross Society of Sri Lanka**
- **All NGOs (National and International)**
- **Universities**

Level of Sources of Information - Post disaster

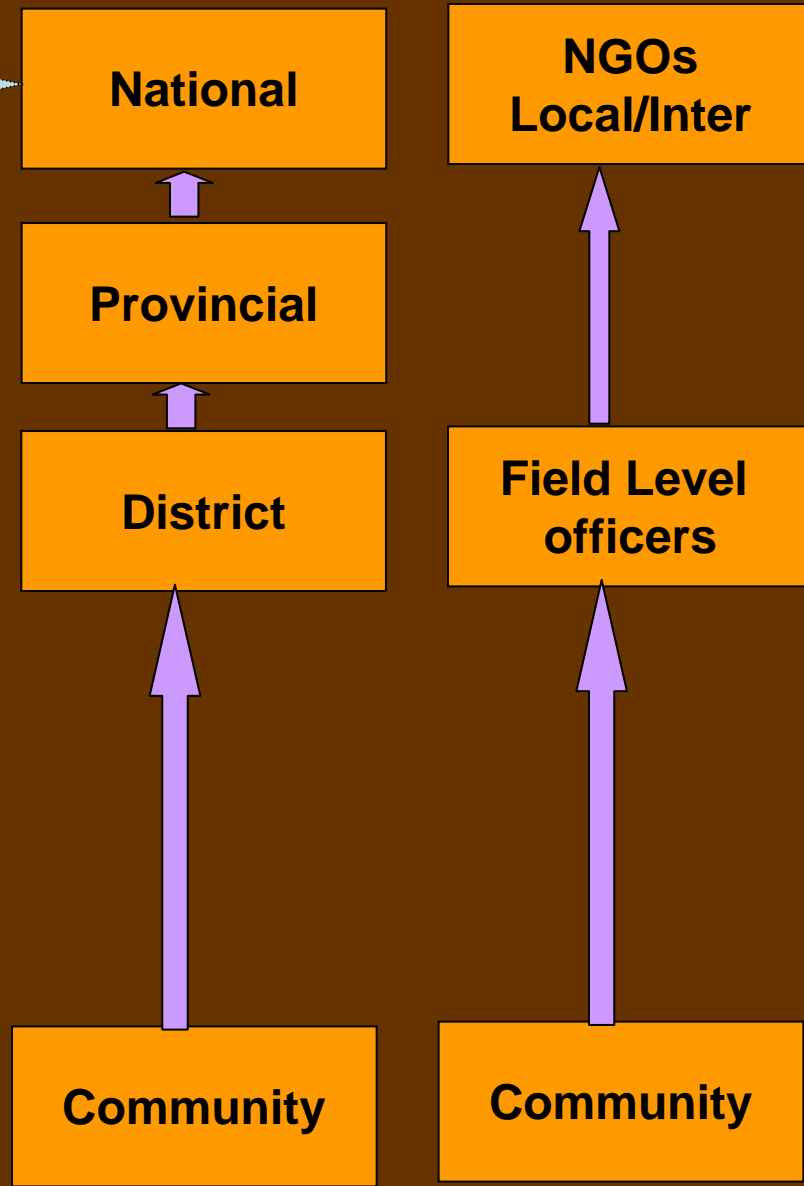
	Coverage	Resolution	Accuracy	Viability
National Disaster Management Centre (NDMC)	National All types Of Disasters	High	High	Govt. funds
Department of Census and Statistics	National Only Tsunami	High	High	Govt. funds
National Building Research Organization (NBRO)	National Flood Landslides	High	High	Govt. funds
Department of Social Services	National All types Of Disasters	Moderate	Moderate	Govt. funds
National Physical Planning Department (NPPD)	National All types Of Disasters	High	High	Govt. funds
Urban Development Authority (UDA)	National All types Of Disasters	High	High	Govt. funds

Scale of Data collection

GOVERNMENT SETUP - PUBLIC ADMIN



OTHER INSTITUTION - GOVERNMENT



Tsunami related databases

- Task Force for Rebuilding the Nation (TFRAN)
- Centre for National Operation (CNO)
- Tsunami Housing Reconstruction Unit (THRU)

**Reconstruction
and Development
Agency (RADA)**

- International Water Management Institute (IWMI)
- Map Action Team

- United Nations Development Programme (UNDP)

- International Union for Conservation (IUCN)

- National Building Research Organization (Landslides and Floods)

- Urban Development Authority (UDA)

- National Disaster Management Centre (NDMC)

- Department of Census and Statistics

- Centre for Policy Analysis (CEPA) (Information Matrix for Surveys)

- Universities (Technical and Socio-economic databases)

Post Tsunami Database

Department of Census and Statistics

Summary of the Number of Housing Units Damaged due to Tsunami Waves by Affected Districts

Affected District	No. of DS Divisions		Total no. of GN Divisions			No. of Housing Units Damaged				
	Total	Affected	Total	Affected	Affected % ⁺	Total	Completely and partially (cannot be used)		Partially can be used	
							Total	Completely		Partially cannot be used
Galle	18	6	895	132	14.7	11,626	5,586	4,479	1,107	6,040
Matara	16	4	650	72	11.1	6,238	2,401	1,667	734	3,837
Hambantota	12	4	576	32	5.6	2,445	1,351	1,076	275	1,094
Southern Province	46	14	2121	236	11.1	20,308	8,338	7,222	2,116	10,871
Colombo	13	5	557	30	5.4	6,345	3,397	2,824	573	2,948
Gampaha	13	2	1177	14	1.2	854	324	227	97	530
Kalutara	14	3	762	55	7.2	5,741	2,671	2,056	615	3,070
Western Province	40	10	2,488	88	4.0	12,840	8,392	6,107	1,285	8,648
Puttalam	16	1	548	4	0.7	55	28	12	16	27
North Western Province	16	1	648	4	0.7	66	28	12	16	27
Ampara	19	11	504	126	25.0	18,810	10,566	8,139	2,427	8,244
Batticaloa	14	8	345	88	25.5	17,405	9,905	7,446	2,460	7,500
Trincomalee	10	6	230	52	22.6	7,531	4,643	3,893	750	2,888
Eastern province	43	25	1,078	288	24.7	43,748	25,114	19,477	6,837	18,832
Jaffna	15	2	435	32	7.4	5,515	3,686	3,369	317	1,829
Mullativu	4	1	127	18	14.2	5,681	5,137	4,428	709	554
Kilinochchi	4	3	53	9	17.0	288	288	288	0	0
Northern Province	23	8	815	68	8.8	11,484	8,111	8,086	1,028	2,988
Total in affected Districts	168	56	6,859	664	9.7	88,544	49,983	39,903	10,080	38,561
Total in the country	322	-	14,008	-						

Note: ⁺ As a percentage of the total number of GN Divisions in each District.

Source: Department of Census and Statistics

Table	Title
	Type of Damage (Housing and non-housing units) and distance to the sea
1.1	Number of Damaged Housing and Non Housing Building Units Due to Tsunami 2004
1.2	Percentage distribution of housing units surveyed and total housing units listed by type of damage in affected DS divisions
1.3	Distribution of damaged housing units in the affected DS divisions by type of the damage and distance to the sea
1.4	Distribution of damaged housing units in the affected GN divisions by type of the damage and distance to the sea - for each DS Division
	Submerged heights
2.1a	Percentage distribution of completely damaged housing units in affected DS divisions by highest height submerged by the sea water
2.1b	Percentage distribution of partially damaged housing units (unusable) in affected DS divisions by highest height submerged by sea water
2.1c	Percentage distribution of partially damaged housing units (usable) in affected DS divisions by highest height submerged by sea water

Table	Title
	Housing characteristics
2.2a	Percentage distribution of completely damaged housing units in affected DS divisions by condition of the toilet facilities
2.2b	Percentage distribution of partially damaged housing units (unusable) in affected DS divisions by condition of the toilet facilities
2.2c	Percentage distribution of partially damaged housing units (usable) in affected DS divisions by condition of the toilet facilities
2.3a	Percentage distribution of completely damaged housing units in affected DS divisions by availability of drinking water facilities after Tsunami
2.3b	Percentage distribution of partially damaged housing units (unusable) in affected DS divisions by availability of drinking water facilities after Tsunami
2.3c	Percentage distribution of partially damaged housing units (usable) in affected DS divisions by availability of drinking water facilities after Tsunami
2.4a	Percentage distribution of completely damaged housing units which does not have drinking water facilities after Tsunami in affected DS divisions by reason for not having drinking water
2.4b	Percentage distribution of partially damaged housing units (unusable) which did not have drinking water facilities after Tsunami by reason for not having drinking water by affected DS divisions
2.4c	Percentage distribution of partially damaged housing units (usable) which did not have drinking water facilities after Tsunami by reason for not having drinking water by affected DS divisions
2.5	Percentage distribution of damaged housing units in affected DS divisions by material used for construction
2.6	Percentage distribution of all damaged housing units in the affected DS divisions by number of rooms in the unit
2.7	Percentage distribution of damaged housing units in the affected DS divisions by floor area of the housing unit
2.8	Percentage distribution of damaged housing units in the affected DS divisions by ownership of the land
2.9a	Percentage distribution of completely damaged housing units in affected DS divisions by reported monthly income of the housing unit
2.9b	Percentage distribution of partially damaged housing units (unusable) in affected DS divisions by reported monthly income of the housing unit
2.9c	Percentage distribution of partially damaged housing units (usable) in affected DS divisions by reported monthly income of the housing unit

Economic activity (Within the housing unit)	
3.1	Percentage distribution of damaged housing units in affected DS divisions which operated an economic activity within the unit according to the functionality of the activity
3.2	Percentage distribution of value of the loss incurred to economic activity which had household based economic activity within the damaged housing units in affected DS divisions
3.3	Percentage distribution of number of employees worked in which had household based economic activity within the



Table	Title
Demographic Information	
4.1	Percentage distribution of all persons who are living in the damaged housing units of affected DS divisions by sex
4.2	Percentage distribution of children under 5 years of age who are living in the damaged housing units of affected DS divisions by sex
4.3	Percentage distribution of children under 10 years of age who are living in the damaged housing units of affected DS divisions by sex
4.4	Percentage distribution of the people who are living in the damaged housing units of affected DS divisions by age and sex
4.5	Women in the reproductive age group (15-49 yrs) who are living in damaged housing units of affected DS divisions
4.6	Distribution of employed persons in the damaged housing units of the affected DS divisions by economic activity and ability to continue the same at the time of Tsunami Census

Engagement in Educational Activities (Before and after Tsunami)	
5.1	Engagement in educational activities of the persons (3-34) years who are living in the damaged housing units of affected DS divisions before Tsunami and whether they are continuing educational activities after Tsunami

aged housing units in affected DS divisions according to whether their parents

Injuries	
6.1	Percentage distribution of persons injured due to Tsunami who are living in the damaged housing units of affected DS divisions by age and sex
6.2	Percentage distribution of persons injured due to Tsunami who are living in the damaged housing units of affected DS divisions by type of injury and sex



Deaths/missing people	
7.1	Number of dead/disappeared persons lived in the damaged housing units of affected DS divisions
7.2	Distribution of dead/disappeared persons due to Tsunami who lived in the damaged housing units of affected DS divisions by age and sex
7.3	Distribution of dead/disappeared persons due to Tsunami who lived in the damaged housing units of affected DS divisions by the employment which they have engaged before Tsunami
7.4	Distribution of dead /disappeared persons who lived in the damaged housing units of affected DS divisions by type of disability, sex and age

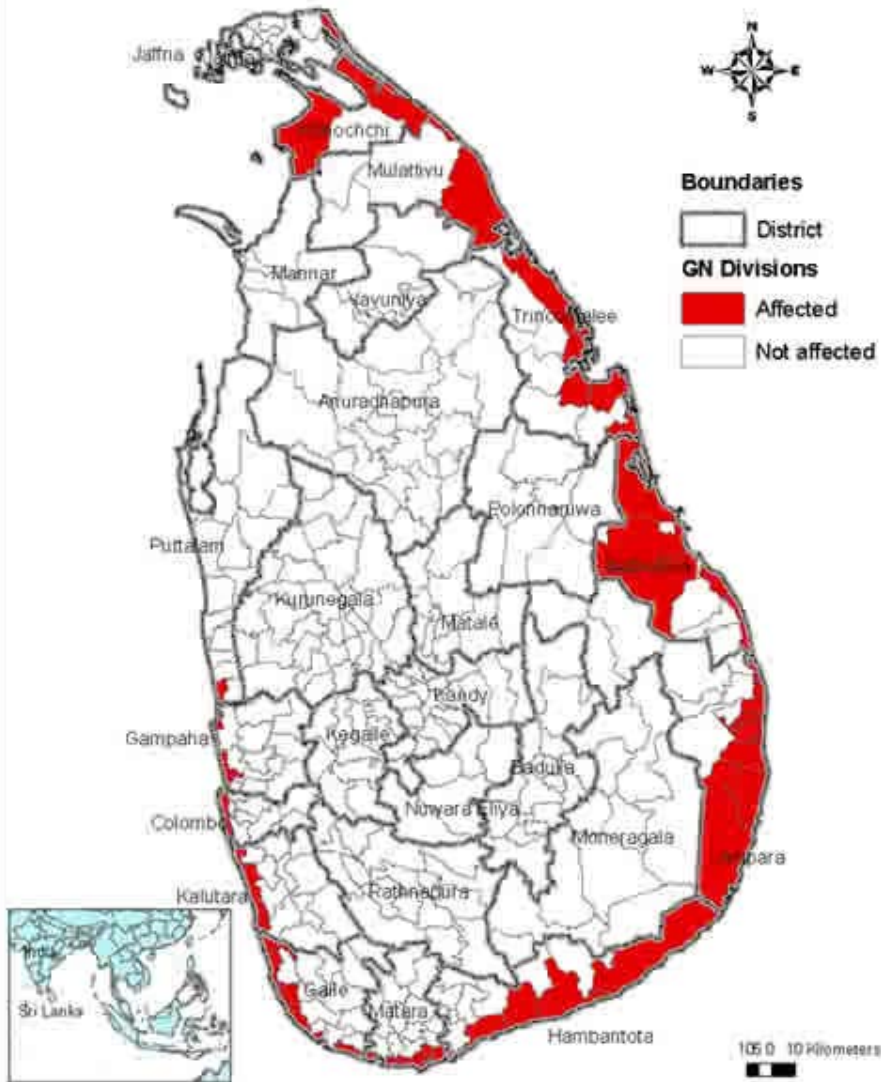


Table	Title
Non-Housing Units	
8.1	Percentage distribution of buildings other than housing units damaged in affected DS divisions by type of damage
8.2	Percentage distribution of buildings other than housing units damaged in affected DS divisions by distance from the beach to the building units
8.3	Percentage distribution of buildings other than housing units damaged in affected DS divisions by type of the unit
8.4	Percentage distribution of buildings other than housing units damaged in affected DS divisions by economic activity carried out prior to Tsunami
8.5	Percentage distribution of buildings other than housing units damaged in affected DS divisions by number of employees
8.6	Percentage distribution of buildings other than housing units damaged in affected DS divisions by material used for construction of the building units
8.7	Percentage distribution of buildings other than housing units damaged in affected DS divisions by total floor area of the unit
8.8	Percentage distribution of buildings other than housing units damaged in affected DS divisions by ownership of the land
8.9	Percentage distribution of buildings other than housing units damaged in affected DS divisions by estimated value of the damage



Dept. of
Census and
Statistics

DS Divisions of Sri Lanka, affected by the Tsunami: 9.0/2004



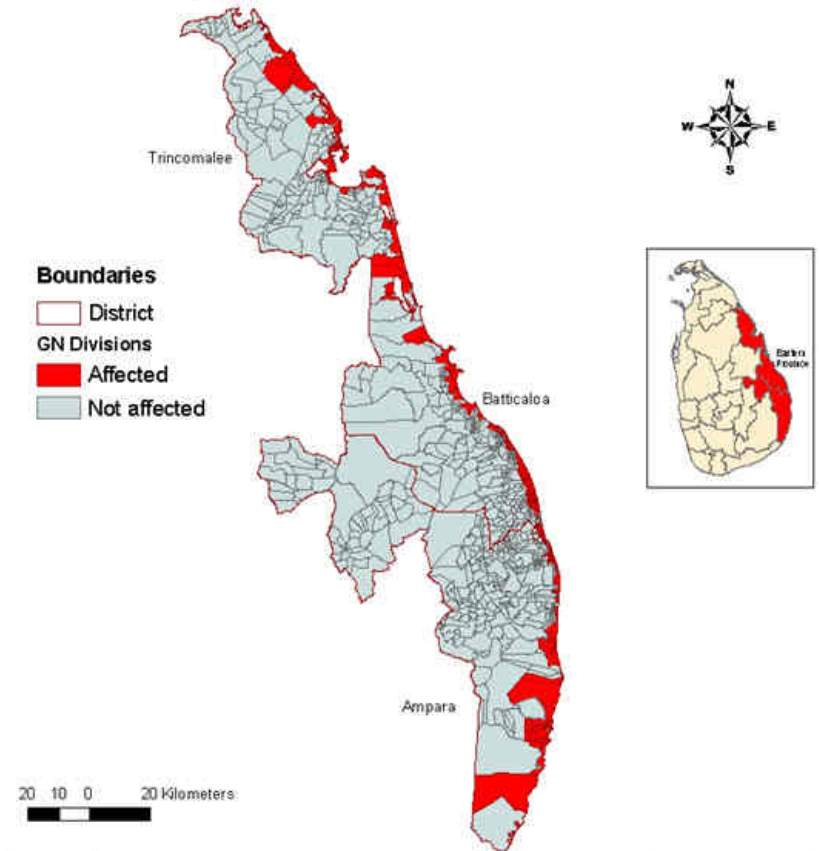
Produced by Cartography Division
 Department of Census and Statistics - Sri Lanka
 Date of release: 31st Jan. 2005

NOTE: This map shows the DS divisions affected by the Tsunami 2004, and within DS divisions, it takes no information on the size of the area affected.



Dept. of
Census and
Statistics

GN Divisions along the coastal boundaries, of the Eastern Province affected by Tsunami: 9.0/2004



District	Impact on lives						Impact on properties				
	No. of affected families	No. of Displaced families	Displaced persons			No. of Deaths	No. of injured people	No. of missing people	No. of fully damaged houses	No. of partially damaged houses	No. of camps
			In welfare centers	With Relatives and friends	Total						
Trincomalee		27,746	24,993	60,193	85,186	1,078	307	5,974	10,394	46	
Batticaloa	63,717	12,494	37,670	31,509	69,179	2,836	2,375	15,939	5,665	47	
Ampara	38,624		73,305		73,305	10,436	120	29,077		83	
Total	102,341	40,240	115,968	91,702	227,670	14,350	2,495	50,990	16,059	176	

Note: This table contains information reported till 19th Jan. 2005 only

Data Source: Emergency Operation Room of the Disaster Management Center, Ministry of Woman Empowerment and Social Welfare

Produced by Cartography Division
 Dept. of Census and Statistics - Sri Lanka
 Date of release: 20th Jan. 2005

GN divisions for which any damages such as deaths, displacements, injuries or property losses had been reported due to Tsunami - 2004, have been defined as Affected. GN divisions

Some Issues Related to Disaster Data bases

Sri Lankan Context

- **Lack of Coordination (no sharing)**
- **Duplication of data**
- **Political interference on data**
- **Bias and exaggerated data for seeking more funds**
- **Lack of Transparency on data**
- **Poor policy directions (100 m and 200 m)**
- **No common scale and criterion**

Concepts of the Risk Management

The Risk Triangle:



Risk is a combination of the interaction of hazard, exposure, and vulnerability, which can be represented by the three sides of a triangle.

If any one of these sides increases, the area of the triangle increases, hence the amount of risk also increases.

If any one of the sides reduces, the risk reduces.

If we can eliminate one side there is no risk.

Thank You