Disaster-development linkages: Sri Lanka

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Abstract

This article gives an overview of disasters and disaster management framework in Sri Lanka and analyses ad-hoc development practices, poverty alleviation, development planning, governance and legal mandates in search of disaster-development linkages. Disaster management is integrally linked to land use and utilization of natural resources. Therefore the article focuses on the legal framework in place to ensure their sustainable use. An attempt has been made to highlight experiences and lessons learnt that point to safer approaches.

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Introduction

Sri Lanka's development has been determined by the natural and economic attributes of its physical features. Its location in the Indian Ocean, at the base of the Indian Sub-Continent straddling the sea routes between the east and the west has subjected it to cultural, political and economic influences governing the historic passage of its development.

The main island of Sri Lanka has a land area is 65,525 sq. km. and together with Internal Waters of 1,570 sq. km. the total area within the national boundary is 67,095 sq. km.

Topography

The landmass comprises of a highland massif situated in the south-centre surrounded by an intermediate zone of upland ridges and valleys. Lowlands and a coastal fringe of estuaries, peninsulas, beaches, sandbars and lagoons in turn surround this. From sea level, the relief ascends in three peneplains to a maximum of 2500 meters at Piduruthalagala.
From the highland massif originates all of the island's major rivers. Prior to the arrival of the British in the nineteenth century, this massif was covered with virgin forests, most of which were then cleared for plantation agriculture. Resulting upland soil erosion, reduced retention of rainfall and the unhindered surface flow of rainwater have links with hydrological disaster impacts downstream.

Running out of land!
The land-man ratio in 1871 with a population of 2.4 million people was about 2.7 hectares per person. In 1990 with about 17 million people it had sunk to 0.38 hectares. With increasing population the land-man ratio will decrease further leading to increased degradation of land, misuse and over exploitation. The current level of forest cover which is highly debated is put at 17 - 21% of the land area of the island and is considered too low by conservationists. Land degradation and deforestation have links to escalated impacts of floods, droughts and landslides.
A National Land Use Policy was approved only in 2007.

The south western lowlands today are the most densely populated areas. The north central lowlands hosted the ancient hydraulic civilization nearly 2000 years ago with its astounding network of irrigation tanks and canals. Although much of

the system has gone into disrepair due to siltation and neglect, it stands as testimony to the potential of intensive rainwater harvesting and drought prevention.
Parts of the north central, eastern and south eastern lowlands have been impacted by the civil disturbances since 1983 and this has seriously hindered development efforts in these areas.
The coastal fringe accounts for 24% of the land mass and supports 32% of the total population of the country, about 80% of the tourist infrastructure, 90% of the fisheries, major share of industries, agriculture and human settlements. The Tsunami of 26th December 2004 created havoc in nearly two-thirds of this area.

Climate

The climate is "tropical monsoonal' with seasonal rainfall. Two monsoon periods with two inter-monsoon periods control the rainfall rhythm. The South Westerly monsoon period is from May to September. The North Westerly monsoon is from December to February. The inter monsoon periods are characterised by lightning and thunderstorms. Unusually high rainfall intensities within a very short time period have been observed recently. The catastrophic flood of May 2003 and December 2006 have been caused by such an unusual precipitation.
The average temperature of the lowlands ranges between 25-30 degrees Celsius. It is modified by altitude, being lowered by 2^0 C for every 300 meters.

People

Sri Lanka is a multi-ethnic, multi-religious and multi lingual country Majority Singhalese and minority Tamil languages are both official languages. English is the link language.

Sri Lanka has a population of nearly nineteen million people. There is concern that it is an "ageing" population that may give rise to socio-cultural maladies. The projection is that it would reach the 25 million mark by 2046. This would have serious implications on land use and forest cover.

Economy

The GDP is estimated at $23.5 billion with agriculture contributing 17%, services 56% and industry 27%. Annual growth rate is around 6.0%. Natural resources of the country are limestone, graphite, mineral sands, gems, and phosphate. Major agricultural products are rice, tea, rubber, coconut, and spices. Tourism, transport, telecom, banking and finance are the major types of services. Garments, leather goods, food processing, chemicals, refined

petroleum, wood products, basic metal products, and paper products [2]are the major types of industry.
Past development activities have been centered on these revenue-earning sectors.

Government Structure and Development Planning

Development Planning in Sri Lanka today is influenced by the government structure and the attempt to devolve power from national to the provincial level. Therefore a brief explanation of the government structure follows in order to understand its implication on development and links to disasters.
In 1978, a new constitution based on the French model, created the Democratic Socialist Republic of Sri Lanka with a strong Executive Presidency. Under the Indo-Sri Lanka Accord of July 1987, brought about in search of a solution to the civil disturbances, resulted in the 13th amendment to the constitution, which devolved significant authority to the provinces. Sri Lanka is divided into nine provinces under the Provincial Councils Act No. 42 of 1987. This endeavor failed to bring about an end to the conflict that has been a major impediment for development of the country and development planning in the north and east of the country directly impacted by the conflict.
Provincial Council is an autonomous body and derives its authority from the constitutions and the Acts of Parliament. It undertakes activities, which were earlier done by the Central Government, Ministries, Departments and other statutory authorities. Council possesses legislative power.
Each province is divided into several districts. The total number of districts is 25. The northern and eastern provinces have been jointly administered since 1988, a decision declared as non-constitutional in October 2006 by the Supreme Court.
District administration comes under a District Secretary (DS), earlier referred to as the Government Agent (GA) who is appointed. He reports to Secretary of the Ministry of Public Administration & Home Affairs.
Based on geographical area and population each district is divided into Divisions Divisional administration is by a Divisional Secretary (Div.Sec) earlier referred to as Assistant Government Agent (AGA) who is appointed. He reports to the District Secretary as well as the Chief Minister.
Each districts has several local governance units, which are Municipal Councils (MC) headed by a Mayor, Urban Councils (UC) or Pradeshiya Sabha (PS) (local government authorities) headed by a Chairman. This categorization is based on the level of urbanization. There are 18 Municipal Councils, 42 Urban Councils and 270 Pradeshiya Sabhas (including the new local government authorities established by the government in January 2006.)

Each block of about 3000 families is demarcated as a Grama Niladhari (GN) division for administrative purpose. The GN reports to the Divisional Secretary.

[2] Source Central Bank of Sri Lanka

Three formal levels of state administration operate. First is the Central Government with the President, Prime Minister and Cabinet of Ministers. Second is the Provincial Councils and the third is the Urban Councils, Municipal Councils and the Pradeshiya Sabha (Village Councils).
District administration is an extension of the Central Government. The Provincial Councils and the district administration lack synergy. With the ongoing efforts to find a political solution to the ethnic conflict, it is likely that devolution of power to the provinces would be strengthened in the future. Government proposals for a peaceful solution to the ethnic conflict to be released in early 2008, is expected to center around the devolution pattern of the 13th amendment.
This will automatically erode the stature of the District Secretary. Current disaster management strategy revolves around the District Secretary. Therefore a re-thinking of strategy may be necessary.

Development Planning

There is no effective mechanism or national guideline in place to prevent ad-hoc development planning at different levels of the country's government structure.
The Department of National Planning under the Ministry of Finance & Planning takes a lead role in formulating, implementing and monitoring national development projects. Mainstreaming disaster management in development is far from reality yet. Government has taken note of holistic disaster management only after the Tsunami of December 2004. Its achievement is made more difficult due to the devolved nature of development planning that is currently in place.
At provincial level, by taking into consideration the annual grant by the Government, Donor inputs and the expected revenue of the Council for a year, an Annual Provincial Investment Plan is prepared. This plan restricts itself to a mere list of activities that can be achieved with available funding. The institutional arrangements for planning, monitoring and progress review of development projects vary from Province to Province but the arrangements in general are as follows. At Provincial Level, the Provincial Planning Office and Sector- Ministry Planning Cells are responsible. At Divisional Level, the Planning Cell under the Divisional Secretary is responsible.
With a National Policy on land use being approved only in 2007 and with multi-hazard mapping at its infancy, mainstreaming disaster management in development planning appears a daunting task.

Disaster Situation

Droughts, floods, landslides, coastal erosion, cyclones and lightning are the major natural hazards apart from epidemics that prevail in the country. In terms of the number of people affected and the social cost incurred in relief and rehabilitation, floods and droughts are in the forefront of natural disasters.

Table 1
Average Annual Expenditure on Climatic Disaster Assistance 1986-1997

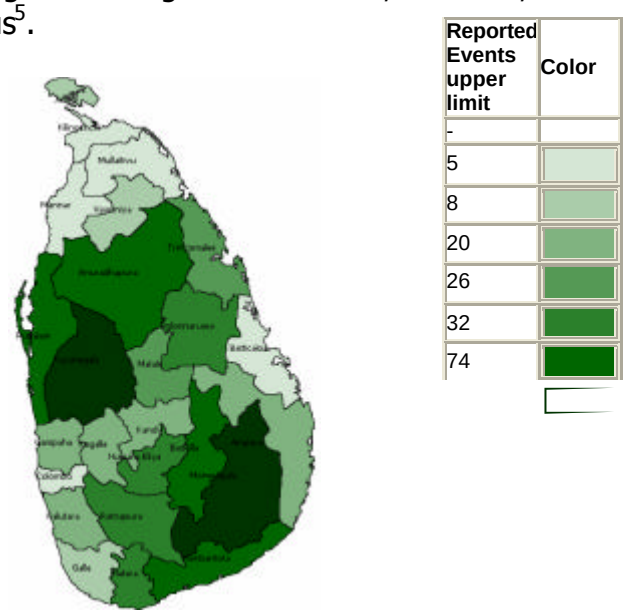
Period	Floods (Rs. Million)	Droughts (Rs. Million)
1986-90	104.90	132.60
1991-95	338.30	238.50
1996-97	198.70	301.11

Source: Department of Social Services & NBRO

Although, Sri Lanka is outside the global earthquake belts, minor impact of about 60 earthquakes has been reported since 1614[3]. Seismic activity has been discussed as a possible causative factor for landslides[4]. The Asian Tsunami of 26th December 2006 was an extremely rare event.

A database compiled by the Disaster Management Center with UNDP assistance, based on newspaper reports of disaster events for the past thirty years (1975-2005), using a software called "Desinventar" (which is of Latin American origin) provides disaster trends.

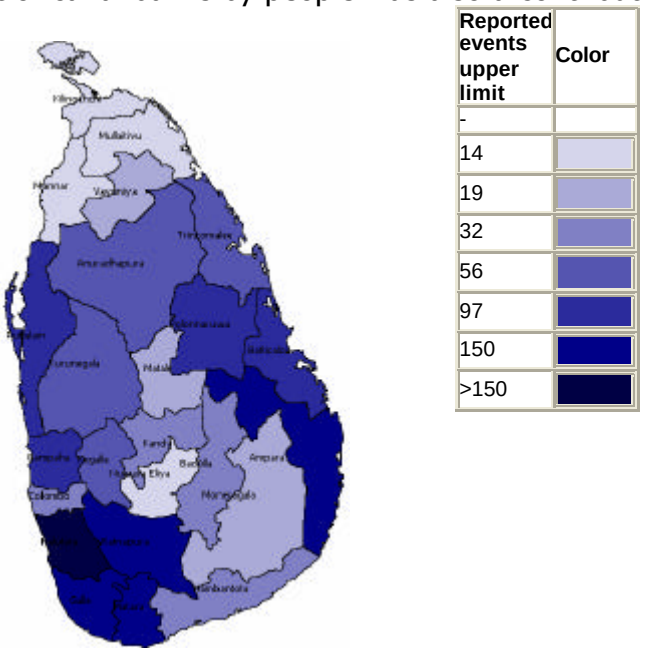
- Droughts occur every 3 to 4 years. Prolonged droughts of national significance are irregular. Droughts of 1953-56, 1975-76, 1981-83, 1995-96 proved disastrous[5].



Map 1. "Desinventar" Trend for Occurrence of Droughts (1975-2005)

[3] Tissera, C.H. de (1977) Natural Hazards in Arjuna's Atlas of Sri Lanka, pp.78.
[4] Vithanage, P.W. (1994) Seismicity- Neglected Aspect of Sri Lanka Landslide Studies, Proceedings of the National Symposium on Landslides, Sri Lanka, NBRO, pp31-40.
[5] Source: Department of Social Services

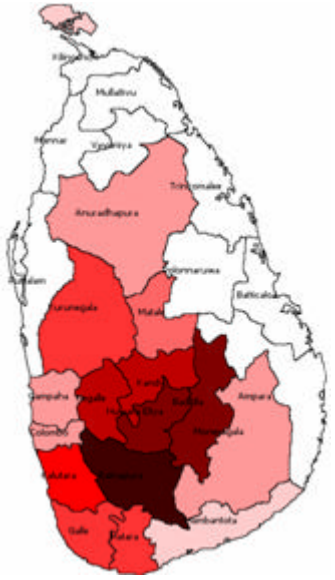
- Excessive rainfall during the monsoon periods, with bursts of intense rain within a short period of time is the main cause of floods. Accurate statistics are available with the Irrigation Department[6]. In May 2003, floods affected 5 districts causing severe devastation. A cloudburst resulted in high intensity rain. A large amount of landslides that followed temporarily dammed some waterways in Ratnapura district. Their breach resulted in unprecedented flash floods. Floods of 1947 and 2003 are rated as 50-year floods.
- In June 1992, the city of Colombo was inundated with floodwater. It received 493 mm of rain within 12 hours. This amount is equivalent to one eighth of the city's annual rainfall. The flood is attributed to the neglect of the city's underground drainage pipeline due to irregular maintenance, reclamation of natural marshland around the suburbs for development, and the siltation of the network of man made canals around the city. The encroachment of canal banks by people was also a contributory factor.



Map 2. "Desinventar" Trend for Occurrence of Floods

- Mass movement of earth and rock occur in the hill country triggered by continuous rain over a few days with spurts of intense rainfall. Topography, rock type, geology and farming practices play a complementary role. The National Building Research Organization (NBRO) has carried out detailed studies on landslide occurrence[7].

[6] Irrigation Department, Torrington Square, Colombo 7, Sri Lanka
[7] NBRO, 99/1,Jawatte Rd, Colombo 5, Sri Lanka



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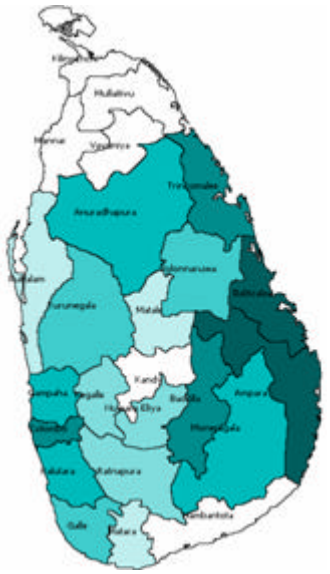
Map 3. "Desinventar" Trend for Occurrence of Landslide

- High wave action associated with the southwest monsoon erodes part of the coast every year. The effect is felt in the west, southwest and south coastal areas[8].
- Cyclonic storms that formed in the Bay of Bengal hit the east coast 13 times during the last century, 3 of them being severe. The one in November 1978 has been the most destructive with tidal waves encroaching the land about 2 km inland at Kalkudah in the east coast. About 80% of the cyclones hit during November to December. The most vulnerable is the land belt running from the east to the northwest[9].

[8] Coast Conservation Department, New Secretariat, Maligawatte, Colombo 10, Sri Lanka.
[9] Meteorology Department, 383, Bhauddaloka Mawatha, Colombo 7, Sri Lanka.



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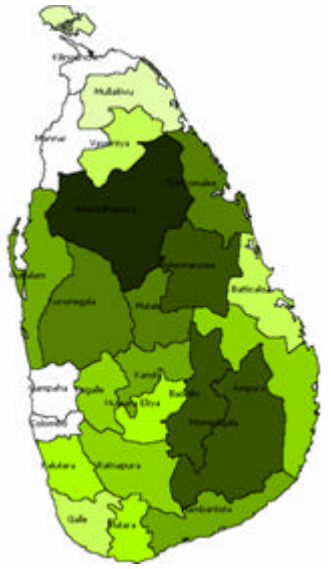
>18	

Map 4. "Desinventar" Trend for Occurrence of Cyclone & High Winds

- Lightning as a hazard appears to be on the increase. Incidents are frequent during inter monsoon periods in March to April and October to November periods[5] .
- The civil disturbances in the north and the east during the past 25 years have resulted in thousands of deaths and disappearances as well as the destruction of movable and immoveable property including communications, roads and transport systems. Most residents in the conflict affected areas feel that the highest priority is to provide relief and rehabilitation to those displaced by the conflict. Disaster Tracing has emerged as a priority area during this period of conflict. Estimates indicate that the conflict has cost the equivalent of the country's 1996 gross domestic product (GDP) and has lowered economic growth by 2–3% per year for the past two decades. Until recently, the central bank had estimated the total costs of the conflict at 2–3% of GDP annually.
- The Accelerated Mahaweli River Diversion Project of 1977, the largest development project of the country, established large resettlement schemes in the dry zone. The resulting deforestation has cleared elephant habitats and their migratory corridors creating a human-elephant conflict, cause for largest number of attacks that is now a serious concern for all concerned.



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Map 5. "Desinventar" Trend for Occurrence of Animal Attacks

Haste makes waste!
Case of the Mahaweli River Development Program

The Mahaweli Development Program is the most extensive development program implemented in Sri Lanka. Master plan for the development of the Mahaweli river basin for both hydropower generation and irrigated agriculture in the dry zone of Sri Lanka, was prepared during the 1950's and 1960's with the help of UNDP and FAO. The project was to be implemented over 30-year period, starting from 1970.

The first phase of the Mahaweli development project was started in 1970 to provide irrigation water to 53,500 ha of land already under cultivation and to 2400 hectares of new lands and also to generate hydropower of 40 MW.

In 1977, accelerated Mahaweli development project was conceptualized. The Mahaweli Authority Act No 23 of 1979 formed the Mahaweli Authority of Sri Lanka. The Accelerated program completed the dams of Victoria, Kotmale, Randenigala and Rantembe and four principle trans-basin diversions within a short period of five years. Accelerated Mahaweli Development Project was to provide irrigation to 128,000 hectares of land and to generate 470 MW of hydro-power.

As a consequence, around 1840 ha of paddy land and 2400 ha highland was inundated. Much of the forest cover was removed for development of infrastructure apparently providing rich timber money for many. About 11200 families were displaced and there are tales of woe about the irregularities in calculating compensation and its disbursement. Several villages of historical significance were lost to the reservoirs. No environmental laws were in existence to necessitate impact assessments during the implementation.

The settlers relate stories about busloads of new settlers being brought and dumped in the middle of nowhere without any facilities or infrastructure. They were provided food rations and many say they were inadequate. The spread of Malaria and animal attacks were a serious threat.
A total number of 128,557 families were settled[10] in undeveloped areas. 86,254 families were farmer families. Others were totally alien to farming as a livelihood. Both categories suffered in the process of taming the wilderness, with the non-farmers receiving a larger share of suffering.

Building social harmony between people from different geographical parts with their own cultural nuances, caste differences and values has had its own share of woe.

Despite the initial setbacks however, today the Mahaweli farmers produce about 20% of the total rice production of the country. It is in the forefront in the production of subsidiary crops such as chilies, big anions and red anions. Some farmers formed cooperatives and exported their crops[11].
Crop diversity is a conspicuous factor in Mahaweli farming.
Interest in livestock and animal husbandry is also on the increase.

Thirty years later, the second-generation families have subdivided the 1 ha irrigated and 0.5 ha home garden land their parents originally received and in turn each plot is too small now to support a growing family.
Farmer families resettled on slopes near reservoirs have contributed too much soil erosion. Tobacco cultivation has been the leading contributor. In the haste to complete the accelerated plan no soil conservation efforts were made mandatory.
1988, it was reported by researchers of the Peradeniya University that 44% of total capacity of the Polgolla reservoir built in the early 1970s under the phase 1

[10] Source: Mahaweli PMU 1999/ RBP&M Division 2001 [1]

[11] An overview of Mahaweli Project, Proceedings of Consultative Workshop on Policy Review of Water Management Sector, Ministry of Irrigation &Water Management, 2002 February.

was filled with silt. All other reservoirs have extensive siltation with the exact loss of capacity unknown.

Much of the resettlements and Mahaweli infrastructure are in the path of elephant corridors. Human-elephant conflict has today blown beyond proportion and is a serious malady inflicted on the farmer community due to lack of foresight in planners. The attempted solution was to confine the elephants within nature reserves surrounded by solar powered electric fences. Elephants as well as community members have found ways to break it down. Elephants in seek of freedom to wander. Community members to enter reserves to feed cattle and collect dry wood. The latest strategy formulated by the Department of Wild Life is to erect these fences circling vulnerable villages.

In recent years, much concern has been raised on possibilities of dam breach and the consequences. The Mahaweli Authority maintains that there is no threat. Currently, the need for early warning systems for such an eventuality and awareness of downstream communities are being explored. None exist as of now.

- On December 26, 2004, northeastern, eastern, southeastern, southern, southwestern and western costal belts of Sri Lanka were affected by a Tsunami caused by an earthquake off the west coast of north Sumatra Islands. Sri Lanka has very little experience of Tsunamis. The most well known is the historical legend of princess Viharamaha Devi sacrificed to the sea to prevent inundation of the land by sea probably due to a tsunami event in 200 BC[12].

  The reach of the waves in 2004 had been a stretch of land varying from 500m to 2 km from the beach. There was complete disarray in the affected areas. The Sri Lanka Government machinery was not prepared to handle a disaster of this magnitude. Difficulty of access to affected areas compounded the situation. The unprecedented devastation highlighted the lack of preparedness and the dire need for disaster warning capability in the region.

[12] Mahavamsa & Rajawaliya – *monographs on the history of Sri Lanka*

Table 2
National statistics for tsunami impact
Source: Ministry of Women Empowerment and Social Welfare (2005)

Number of Deaths	30,957
Number Injured	15,196
Number of Missing People	5,644
Number of Affected Families	202,742
Number of Displaced Families	79,791
Number of Completely Damaged Houses	78,407
Number of Partially Damaged Houses	41,097
Number of Displaced persons	503,356

Post-tsunami Relief

There was no coordination mechanism for reception of relief goods or their distribution in the aftermath of the tsunami. Chaos ruled for over 48 hours. Well -wishers came in and distributed items on their own free will adding to the chaos. This seemed to hinder on a par distribution. The Human Disaster Management Council under the President and the National Disaster Management Center under the Ministry of Social Services (see below) attempted to cope up with relief work. The magnitude of the task was beyond them.

The Center for National Operations (CNO) was established on the 29th of December2004 under a directive of Her Excellency the President to coordinate the rescue and relief operations in a cohesive & an efficient manner. The mandate of CNO was to monitor and coordinate all initiatives taken by government ministries, agencies and other institutions relating to post-tsunami relief efforts. The priority of CNO was to ensure that relief measures were directed to the affected people by identifying their needs and matching them with the available resources, thereby maximizing the utilization of relief measures. CNO was an organization that merely filled a void until the state machinery increased its capacity to meet this unexpected challenge

Sri Lankan President Chandrika Kumaratunga appointed three apex task forces to spearhead the revival of the tsunami-hit nation on 03 Jan 2005. A key development was the selection of business leaders to articulate the way forward regarding the rebuilding of Sri Lanka.

The three appointed task forces were

Rescue and Relief (TAFRER),
Task Force to Rebuild the Nation (TAFREN) and
Task Force for Logistics, Law and Order (TAFLOL).

All functions of CNO pertaining to relief operations were transferred to TAFRER after its establishment with responsibility of action to line ministries.

The government also requested people to register with the local authorities to qualify for relief assistance bringing some order into the process of relief

operations. Relief package includes a payment of 5000 Rupees per family, 2500 Rupees per family to purchase cooking utensils and Rupees 375 worth of food stamps per person per week (200 Rupees in cash and dry rations for the balance). Each death in a family received a compensation of Rupeess.15, 000.00.

There is much criticism about the handling of post-tsunami operations by the Task Forces. In November 2005,the three apex bodies were dismantled with the establishment of the Reconstruction and Development Authority (RADA) under the Ministry of Nation Building.

The dilemma of a coastal buffer zone

Escalated coastal erosion compelled th enactment of the Coast Conservation Act No. 57 of 1981, which established a Coastal Protection Zone - a 2 km wide band of the ocean and the adjoining ribbon of land extending 300 m inland except where a water body connected to the sea occurred. In such cases the zone was to extend 2 km inward from the mouth of the water body. Its implementation was not successful.

Consequently, The Coastal Zone Management Plan of 1997 stipulated a list of reservation areas (set back/buffer zone) based on geo-morphological characteristics. For instance, areas with a high rate of coastal erosion had a wider buffer zone. If the coastal eco-system of a particular location included coral reefs that could act as barriers, the setback in those areas was narrower. The same applied to areas of high ground. The setbacks varied from segment to segment along the coast ranging between 35 – 55 - 125 meters.

In the aftermath of the Tsunami of 26th December 2004, for the purpose of reconstruction, the Government declared a 100m buffer zone (no built zone) for the Western and Southern Coasts and a 200m for the Northern and Eastern coasts. Without bathymetric data or inundation modeling, the basis of this declaration still remains unclear.

Due to the scarcity of lands outside the buffer zone areas for implementing different housing reconstruction strategies labeled as Donor Driven Housing Projects, the Secretary Ministry of Urban Development and TAFREN requested Coast Conservation Advisory Council for reducing the set back areas (buffer zone). The Advisory committee decided to revert back to the stipulated set back areas in the Coastal Zone Management Plan of 1997.

Although the decision to slash the 100-200m buffer zones was first announced in October 2005, the government did not provide detailed information to the public about how the new regulations would be applied. This created much confusion. In January 2006, the Coast Conservation Department (CCD) sent out a comprehensive advisory to district secretaries and other officials detailing how far the buffer zone would extend in their respective areas.

The reversion came after much heartburn for affected fisher families who did not wish to move away from the shoreline. The uncertainty about funding the rebuilding process within the slashed 100m - 200m buffer zone added to the hardship and confusion. Families who lived along the beach but did not hold deeds to the land were not permitted to go back but had to apply for the donor programme, which was building houses outside the so-called buffer zone. To date, there are families waiting for housing, three years after being made homeless.
The dilemma also raised much rhetoric from political parties in support and against the buffer zone policy.
Finally however, it was the affected people who had to bear the brunt of such trial and error!

A Subjective Ranking of Hazards in Sri Lanka

Table 3 below presents a subjective ranking of hazards based on historical records. The period of return or probability, exposed elements at risk and potential loss based on available historical data have been used to rank hazards subjectively. It must be noted that the same yardstick cannot be used for different hazards as the nature and magnitude of loss varies with the hazard type, impact on people, its spread, impact on livelihoods and duration. Subjective ranking has also looked at people perceptions that has emerged during community-based disaster management activities over the last two years. The database 'Desinventar' has provided much assistance to develop the table[13].

[13] 'Desinventar' can be accessed from www.dmc.gov.lk website

Table 3

Subjective Ranking of hazards and impact based on historical records

Hazard	Frequency	Spread	Loss	Impact on Population
Civil or internal strife	Very high	North & East	Extremely high	Extremely high
Drought	Very High	Very high	Very high	Very high
Flood	High	Very high	Very high	Very high
Landslide	Very high	Localized	High	High
Cyclone	Low	High	Very high	Very high
Epidemic	Very High	High	Moderate	High
Explosion	High	Localized	High	High
Tornado/High winds	High	Localized	Moderate	Moderate
Industrial hazard	Moderate	Localized	High	Moderate
Fire	Very High	Localized	High	Low
Coastal erosion	Very High	Moderate	Low	Low
Lightning strikes	Very high	Localized	Low	Low
Forest fire	Low	Localized	High	Low
Tsunami	Rare	Very High	Extremely high	Extremely high
Marine oil spills	Rare	High	High	Low
Chemical accident	Rare	Localized	Unknown	Unknown
Radiological event	Rare	Localized	Unknown	Unknown
Earthquake	Rare	Unknown	Unknown	Unknown
Nuclear disaster	Rare	Unknown	Unknown	Unknown

Very high frequency indicates a return period of 1-3 years. High would indicate 3-5 years. Moderate indicates occurrence between 5-10 years. Low indicates over 10years.

8. Disaster Management Framework

Pre Tsunami Era

In July 1996, a National Disaster Management Center (NDMC) was established under the then Ministry of Health, Highways and Social Services. A Draft Bill was formulated by the NDMC for the Enactment of Sri Lanka Disaster Counter Measures Act remained stagnant. Initial response after a disaster came from the Government Agents (District Secretaries) of the affected districts and the Social Services Department. Disaster management was restricted to humanitarian assistance. The Ministry of Defense was responsible for relief operations. After the 2003 floods that affected five districts of the country, Human Disaster Management Council was established under the President to better manage disaster relief. In the aftermath of the tsunami, a Parliamentary Select Committee on disaster management was also appointed which gave directions to developments outlined below.

The Post-tsunami Framework

The tsunami catalyzed the Government to take policy decisions to prepare the country for such eventualities in the future. The Parliament enacted the Sri Lanka Disaster Management Act, No. 13 of 2005 on 13th May 2005.

The implementing authority for disaster management activities under the Act is the Disaster Management Centre (DMC).

The Ministry of Resettlement and Disaster Relief Services with its implementing agency the National Disaster Relief Services Center (formerly known as National Disaster Management Center, NDMC) is responsible for relief work immediately after a disaster impact and resettlement thereafter. In February 2006, the Presidential Secretariat by Gazette notification renamed NDMC as the National Disaster Relief Center (NDRC).

The Ministry of Nation Building and State Infrastructure with the Reconstruction and Development Agency (RADA) are responsible for reconstruction work after a disaster impact.

The central government budget allocates money based on estimates submitted by each Ministry for intended activities.

In November 2005, the Ministry of Disaster Management (MoDM) was established and in January 2006 the portfolio of Human Rights has been added to the ministry. The National Council for Disaster Management (NCDM) has been established in accordance with the provisions of the Act. The Ministry unveiled a ten-year Road Map for disaster management on 30th November 2005. A National Disaster Management Policy and a National Disaster Management Plan is pending Cabinet approval.

The NCDM is a high-level body chaired by H.E. the President, vice-chaired by the Hon. Prime Minister with Participation of the leader of Opposition, Cabinet Ministers of 13 subjects which has direct relevance to disaster risk management, Chief Ministers of all 08 Provincial Councils and five members of the Opposition. It provides direction for DRM activities in the country.

The MDM&HR and NCDM have the authority to mobilize and deploy necessary government resources and to direct disaster operations through all Ministries, line agencies, sub-national government levels and civil administration structure of the country. They also have the authority to request for mobilization of resources through International donor agencies, International and national NGOs, private sector etc. The Act also requires the formulation of National, Provincial, District, Divisional, GN Level and institutional Response & Preparedness Plans.

Disaster Management Centre (DMC)

In July 2005, the government established the Disaster Management Center (DMC) as the lead agency for disaster risk management in the country www.dmc.gov.lk . The Center functions as an institution under the Ministry of Disaster Management & Human Rights (MDM&HR) and will facilitate implementation of the policy directives of the Ministry. The Human Disaster Management Council became defunct thereafter.

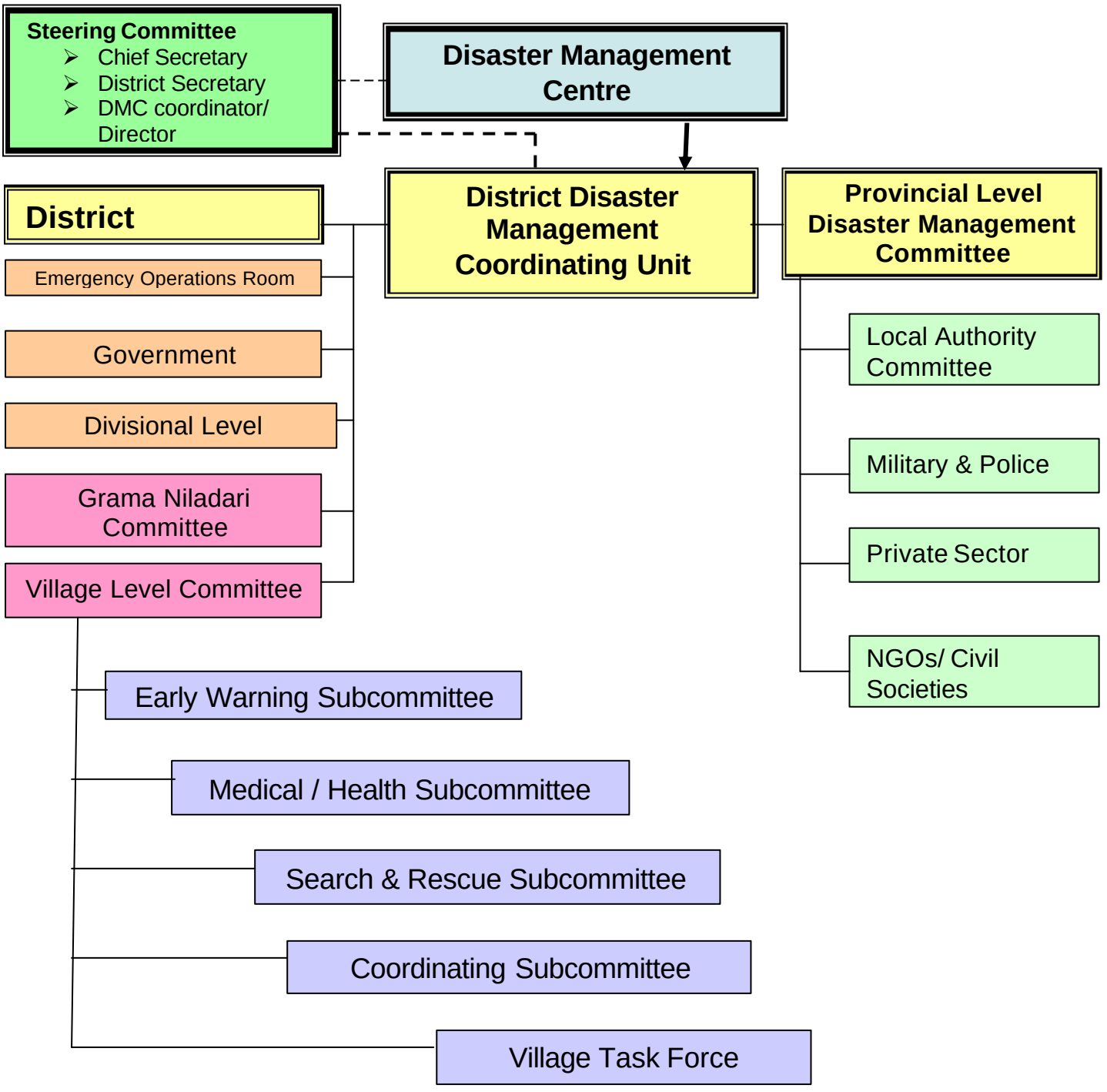
The DMC will coordinate with ministries, line agencies and other stakeholders. It will provide technical assistance to Provincial Councils, District Secretaries, Divisional Secretaries, Local Authorities, and Grama Niladari committees to develop and implement disaster management plans at the respective levels.

Devolution of Disaster Management to District and Divisional Levels

The District Secretary is responsible for managing all disaster management activities within the geographic boundaries of the district. A District Disaster Management coordination Unit (DDMCU) headed by a Coordinator will be attached to the District Secretariat. The DDMCU is the district level appendage of the DMC. The tsunami-affected districts have officers and staff of the Armed Forces and Police serving in DDMCUs. Newly recruited civilian staff has been assigned to other districts. During a disaster the District Secretary will function as the head of the Emergency Operations Center. During non-disaster times, the District Secretary will chair the Disaster Management Committee and ensure the implementation of mechanisms to facilitate mitigation and preparedness activities at the District level.

Divisional Secretaries are responsible for overseeing the divisional responses with assistance from Chairman of Pradeshiya Shabas. The Divisional Secretary will be the co-chair of the Divisional Disaster Management Committee during disaster events. If the disaster is beyond the capability of the Division to mange, the Division will request the assistance from the District Disaster Operations Center. The Divisional Secretary is responsible for implementing mechanisms to establish a mitigation and preparedness program at the Division level. The Disaster Management Committee with village level sub committees will over see the program and help prepare the Division Disaster Management Plan. Figure 1 below presents this devolution graphically.

Fig. 1 Mechanism for Disaster Management at District, Divisional and Village level



With funding negotiated by the Ministry of Disaster Management and Human Rights in collaboration with the UNDP, Sri Lanka, the DMC has carried out extensive awareness creation and training for all its stakeholders (indicated in Figure 1) for disaster management.

Declaration of a State of Disaster

H.E. the President may declare a state of disaster by Proclamation according to Article 11 of the Disaster Management Act, if the extent or severity of a disaster or impending disaster is great.

Some links to Disasters and their Management in Sri Lanka

During the period between 1981-1994, nearly 50% of all urban settlements had grown with an annual growth rate of 2%[14]. The concentration of population is highest in the western and southwestern coastal belt and the hill country. Accompanied development planning has been per se de-linked with adequate land use patterns, natural resource management or perspectives of disaster management.

Sustainable development revolves around land use and natural resource management. Both these require legal enactments with authority vested in appropriate institutions. A committee for review of Environmental Law has compiled a document called 'Review of Environmental Legislation in Sri Lanka' (1994). The existing laws relating to environmental protection and planning has been reviewed with special focus on reduction of natural hazards in 1999[15]. Sri Lanka has had no focus on natural disaster management until recently and therefore existing legal framework has no disaster management perspective integrated therein. Yet, legal provisions that ensure conservation indirectly help to reduce human impact in disaster prone areas. It appears that the legislative framework is adequate in several areas but implementation is constrained due to overlap of jurisdiction amongst many stakeholders. The available Acts, Ordinances and Laws that relate to disaster management may be categorized as follows:

- Flood Control
- Land Use to include Forestry, Agriculture, and Urban Development
- Infrastructure for Relief Work
- Soil Conservation
- Coastal Conservation

[14] Wanasinghe, Y.A.D.S. (1997), Settlements in Arjuna's Atlas of Sri Lanka

[15] Weerasinghe B. (1999) Review of Existing Ordinances, Acts and Laws Related to Environmental Protection and Planning with Special Reference to Reduction of Natural Hazards, Consultancy Report to the Sri Lanka Urban Multi-hazard Disaster Mitigation Project under ADPC, Bangkok.

The legal framework for disaster management is weak as Sri Lanka lacked a national land use policy until 2007. Added to this, the lack of hazard zonation and implementation of development restrictions on vulnerable areas leaves room for ad-hoc development and land use with disastrous consequences. A good situation audit of legal provisions and institutional infrastructure for control of land use has been conducted in 1991[16]. In Sri Lanka, State land ownership has remained at about 80% since independence. This is a 'high' in comparison to other Asian Countries.
If properly managed, such ownership is an opportunity to manage development in potentially vulnerable areas.
Land Development Ordinance Nos. 19 of 1935, 3 of 1946, Acts Nos. 49 of 1953, 22 0f 1955, 16 of 1969, 21 of 1971 and Law No. 43 of 1973 provides for systematic development and alienation of state land. The Report of the Land Commission (1990) expresses concern about land resource policy. The following observations have been made.

- "Increasing political interference in the selection of allottees" has eroded the long-standing authority of the Land Commissioner in administering and allocating state land. The sole authority that rested with the Land Commissioner has been diffused among a large number of state agencies.

- The 13th amendment to the Constitution has devolved land and land settlement matters to the Provinces. There is an urgent need for development of a comprehensive land administration system for the Provinces.

- A survey of local officials for responses on the existing management system of state lands revealed that it was thought to be not satisfactory. Reasons given were, lack of trained personnel, inability to control encroachment and functional overlap among different agencies.

Land use for development activities and use of natural resources have links to floods, droughts, landslides, coastal erosion and tsunami impact.

Land use links to Floods
Deforestation, land use for agriculture and human settlements in the upper catchment areas of rivers has increased the runoff/rainfall ratio[17] increasing the potential for flash floods. Rainwater that would have been absorbed by the humus rich soil under forests undergo surface run off instead. This has accompanied increased soil erosion and siltation of riverbeds and reservoirs

[16] Natural Resources of Sri Lanka: Conditions and Trends (1991) A Report prepared for the Natural Resources, Energy and Science Authority, (now the National Science Foundation.)
[17] Natural Resources of Sri Lanka (1991) a Report prepared for Natural Resources, Energy and Science Authority of Sri Lanka.

reducing their carrying capacity. Estimates suggest that nearly 30 cms of topsoil may have been lost from land under tea over the last century. This is equivalent to a loss of 40 tons/ha/year. Soil under tobacco may be loosing nearly 70-200 tons/ha/year depending on slope and soil type[11].

Land use in the flood plains by reclamation of low lying areas for housing and industry have reduced water retention capacity and obstructed flood discharge. Riverbank encroachment for building and gem mining on riverbeds lead to degradation of banks, which contribute to rapid overflow of rivers. However conclusive research studies are not available to substantiate these observations.

An ADB Project (Loan No. 1545 – SRI (SF)) implemented by the Ministry of Forestry and Environment in 1999 focused on Upper Watershed Management. It attempted watershed conservation and sustainable farming in thirteen Divisions through people participation. The Forestry Master Plan of 1995 is currently being implemented, but will need time to reveal how effectively it addresses these problems.

An issue of sustainability

The Greater Colombo Flood Control and Environment Improvement Project (GCFC & EIP) implemented in 1993 by the Sri Lanka Land Reclamation and Development Corporation (SLLR&DC) attempted to

- Rehabilitate the canal system,
- Acquire and maintain 400 ha of marshland as flood retention areas,
- Resettle communities encroached on canal banks and
- Improve the environment.

The project cost was four billion Sri Lanka Rupees. The Japanese Overseas Economic Cooperation Fund (OECF) provided part of this cost as a soft loan. The deluge in April 1999 and October 2006 saw Greater Colombo areas go under floods again questioning the sustainability of gains from such projects.

The Irrigation Department uses a flood simulation model for Kelani River flood warning using manual water level gauges. Probabilistic forecasting is based on historical data. DMC in collaboration with JICA has commenced a project to install automatic rain gauges and develop flood-forecasting capacity for five major river basins. The project has the Department of Meteorology and the Department of Irrigation as its collaborators.

Land use links to Drought

Droughts occur due to the failure of the monsoons or inter monsoon rain. Since ancient times the dry zone has depended on man-made tanks and reservoirs to collect rainwater. However, deforestation has apparently reduced the water retention of the catchment areas for these tanks. Siltation of the tank beds due to collection of eroded soil has reduced their carrying capacity. The National

Irrigation Rehabilitation Project (NIRP) funded by the European Economic Commission (EEC), which commenced in the early 90s has rehabilitated selected tanks spread over the dry zone in an attempt to reduce drought impact.

Small is beautiful

A large development project in the Hambantota District created a large reservoir at Lunugamvehera in the 1970s at the expense of about thirty smaller tanks spread over its beneficiary land area. It now appears to be a folly. People in the area face increased drought impact after its completion and they regret the loss of the smaller tanks.

The preparedness for early warning of droughts and appropriate response action is not very satisfactory. At present International Water Management Institute (IWMI) initiative with funding support from a private sector company, Unilever Sri Lanka Limited is attempting to develop a Knowledge Based System (KBS) for drought forecasting. It is a near real-time system, which expected to have a prototype on national scale by end of 2007.

Land use links to Landslides

The National Building Research Organization (NBRO) has collated available records on landslides and they suggest an increase in the frequency and magnitude of landslides in Sri Lanka. This has been attributed to the increased impact of human activities in landslide prone areas[18,19]. Of the factors that are imposed by humans, the following are deemed critical.

- Destruction of watershed forests
- Obstruction/alteration of natural waterways and drainage lines
- Construction of roads[20] buildings and reservoirs in vulnerable locations
- Cultivation practices and unplanned construction practices on slopes
- Using dynamite on rocks in vulnerable areas creating shock waves

The possibility of increased levels of seismic activity in large reservoirs as a contributory factor for landslides is drawing attention[3].

[18] Madduma Bandara, C.M. (1994) Adverse Impact of Land use and Improper Land Management Practices on Slope Stability and Landslides, Proceedings of the National Symposium on Landslides in Sri Lanka, NBRO, Ministry of Housing, Construction and Urban Development, pp.199-206

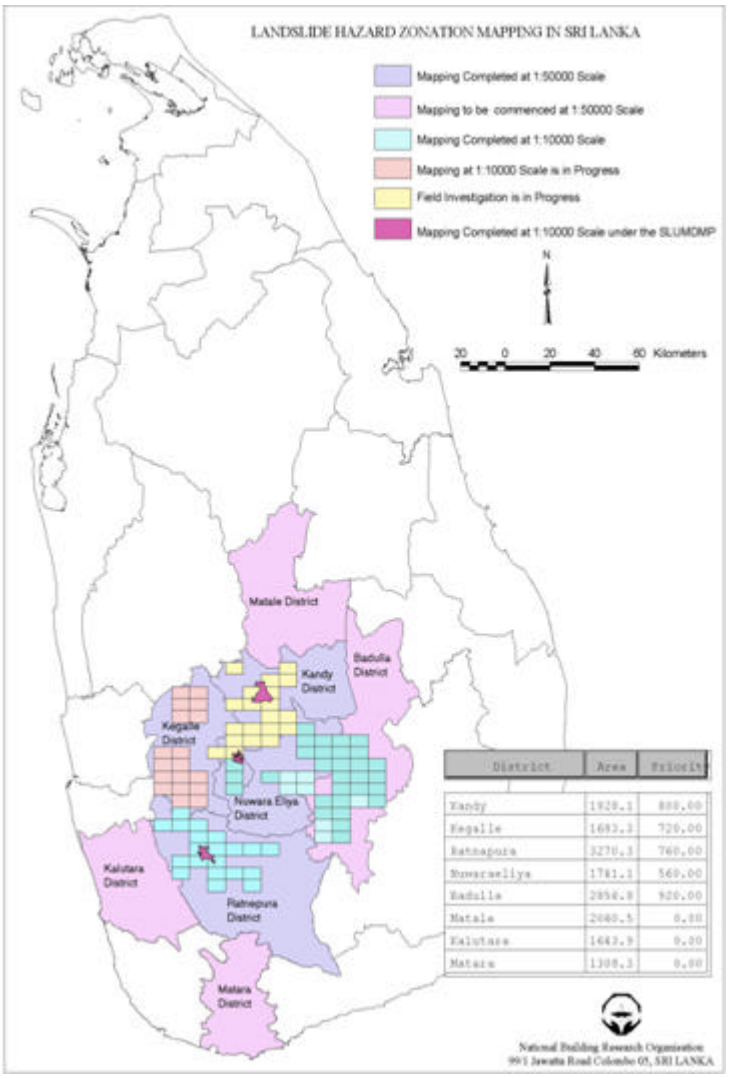
[19] Baminiwatte, A.N.S. (1994) Changing Patterns of the Forest Cover and its Impact on Slope Stability and Landslide Phenomena, Proceedings of the National Symposium on Landslides in Sri Lanka, NBRO, Ministry of Housing, Construction and Urban Development, pp.195-198.

[20] Mallawaratchchi, D.P. (1994), Landslides Affecting National Highways in Sri Lanka, Proceedings of the National Symposium on Landslides in Sri Lanka, NBRO, Ministry of Housing, Construction and Urban Development, pp.181-194.

The existing legal enactments that relate to mitigation of landslides deal with two aspects:

- Identification of landslide prone areas
- Control of human activity that lead to increased susceptibility

In 1990, NBRO under with assistance from United Nations Development Programme (UNDP) and the United Nations Center for Human Rights (UNCHS) initiated the Landslide Hazard Mapping Project (SLR/089/001). This project is focused on building institutional capacity of NBRO for landslide hazard zonation. The progress of landslide hazard zoation is given in Map 6 below.



Source: NBRO

Map 6 Progress of Landslide Hazard Zonation

Land use links to Coastal Erosion
Escalation of erosion has been attributed to human activities such as:

- The mining of coral reefs, which act as wave breakers
- Sand mining on riverbeds and beaches that deprive sand for natural beach re-building
- Clearing mangroves and other coastal vegetation for human settlement and development
- Improper location of maritime structures

Although coral mining has been banned, illegal mining is rampant. The destruction of coral reefs and mangrove vegetation has been suggested as a reason for high impact of tsunami waves in some areas during 26th December 2004.

Laws are not enough!

Community inclusiveness a must!

The Coast Conservation Act No. 57 of 1981 controls Planning and management of development within the narrow coastal zone. The coastal resources management initiatives in Sri Lanka, initially failed to achieve the desired result despite well thought out policies and adequate legal provisions. The main reason for the failure has been the inability to mobilize the support and commitment of local communities[21]. The Special Area Management (SAM) project strengthened the community-government linkage by including the Divisional Secretaries and enabling them to perceive activities undertaken at the sites as their responsibility. Stakeholder groups were allowed representation in the management process. The coastal conservation effort, achieved much through these initiatives, although the current status quo after the Tsunami is not available.
This lesson learnt should be applied in other disaster management initiatives.
People participation as stakeholders is an essential ingredient for success.

Sand - a commodity above the law!

Sand is defined as a mineral in the Mines and Minerals Act No. 33 of (1992), and is the property of the state. The estimated annual national demand for sand for the construction industry is approximately 7 million cubic meters. Almost all of this is manually or mechanically harvested from riverbeds, carved from riversides, or mined from sand deposits on previous riverbeds. Unrestricted harvesting of sand is resulting in heavy rates of soil erosion, land degradation,

[21] Wickramaratne, H.J.M.and White, A.T. (1992) Concept Paper on Special Area Management for Sri Lanka Coasts, Coastal Resources Management Project Working Paper No. 10-92, Colombo.

increased river-water turbidity, lowered water tables and salinity intrusion in the lower reaches of rivers. Mechanized sand mining has caused irreparable damage to the ecology of the affected areas.
License for sand mining can be obtained with prior approval from the Geological Survey and Mines Bureau [GSMB] with the concurrence of the Central Environmental Authority (CEA), without which mining and transport unauthorized and/or illegal and hence punishable, under and in terms of the provisions, particularly of section 63(1)(a) read with section 28(1) of the said Mines and Minerals Act and of section 31 of the said National Environmental Act.

Yet illegal sand mining is rampant. Community members impacted by such activity complaint that such activities are done with the blessing of power-wielders. Recent Newspaper reports reveal assaults on journalists who try to cover such illegal activities.

With no alternative replacement available in the market, policies and laws will not prevail.

Land use links to Cyclones

Tropical cyclones can be tracked from their development and early warning issued. However, accurate landfall forecasts are possible only within a few hours of a strike. The reason is unpredictable changes in course. Possible risk reduction measures suggested are listed below.

- Hazard mapping and risk assessment
- Early warning
- Land use control and flood plain management
- Reduction of structural vulnerability
- Improvement of vegetation cover

Guidelines are available for design and construction of buildings in cyclone prone areas[22,23,24]. There is no legal mandate to ensure their implementation. There appears to be no legal enactment directly related to cyclone impact mitigation.

[22] Sessional Paper No.111 (1980) Report of the Committee on Design, Construction and Regulation for Buildings in the Cyclone-prone Areas.
[23] Guide Book for Cyclone-prone Areas, Department of Buildings.
[24] Design of Buildings for High Winds in Sri Lanka (1980) Ministry of Local Government, Housing and Construction.

10. Links to Poverty Alleviation

It has been said that 25% of the population in Sri Lanka live below the poverty line. Poverty alleviation is considered mandatory for sustainable development and disaster management.
In 1989, the Janasaviya Program (JSP) was launched by the national government to promote self-employment in the rural areas and, in the process, alleviate poverty through the use of the people's own strength. The JSP provided a grant of Rs.2, 500 per family per month. The priority in selecting family recipients was based on needs.
In 1995, the launching of the Samurdhi scheme based on participatory approach and a threefold scheme, namely; supplement, social and economic and credit and savings, replaced the JSP. In 1999, 1.7 million families were serviced with varying amounts of grants, i.e., Rs.1, 000 per month, Rs.500 a month and between Rs.100 and Rs.200 a month, depending on the size of families. The total cost of the program amounted to Rs.32 billion.
In an effort of the government to generate savings on the part of the grant recipients, each family was required to save part of their income supplement – also, in varying amounts. By 1998, this requirement had saved a total of
Rupees 3, 722 million, in 352 bank societies in the country.

A Special Program for Vulnerable Groups caters to the needs of the disadvantaged groups in the society, namely, the sick and the aged who have no sources of income. By 2002, about 200,000 received a total of Rs.600 million a year or an average of Rs.3, 600 per person.
The vulnerable groups also include victims of vagaries of nature such as floods, droughts, and landslides. Assistance was made in the form of meals, financial support or materials for rehabilitation of damaged houses. The Samurdhi Authority and the Department of the Samurdhi Commissioner General has a network of staff spread out at village level.
The DMC has negotiated a MoU with them to collaborate in disaster management work at village level. The signing of the MoU will take place before the end of the first quarter in 2007.

11. Links to Safer Development Approaches

EIA

The importance of the Environmental Impact Assessment (EIA) as an effective tool for the purpose of integrating environmental considerations with development planning is highly recognized in Sri Lanka. The application of this technique is considered as a means of ensuring that the likely effects of new development projects on the environment are fully understood and taken into account before development is allowed to proceed. The importance of this

management tool is that it enables to foresee potential environmental impacts and problems caused by proposed projects and its use as a mean to make project more suitable to the environment.

A law to incorporate and cover all aspects of environment was made for the first time in 1980. This is the national Environmental Act (NEA) No. 47 of 1980, the basic national decree for protection and management of the environment. The NEA established the Central Environmental Authority (CEA) as a policy making and coordinating body. Act No. 56, to transform CEA into enforcement and implementing agency, was enacted in 1988.

On November 1982, EIA was made mandatory for "all" state and private sector "development projects" with effect from 1st January 1984.

However, the legal provision for EIA in Sri Lanka was first included in the Coast Conservation Act No. 57 of 1981. These provisions were restricted to the Coastal Zone as defined by this Act, which leaves the identification of projects for EIA to the discretion of the Director, Coast Conservation. Another early EIA prepared under this Act, was that of the Trincomalee Coal Power Plant.

EIA was mandated island wide by the 1988 amendments to the National Environmental Act and CEA was assigned regulatory functions. Part IV C of the Amendment Act of 1988 mandated that CEA require "prescribed" development project proposals to be subjected to Environmental Impact Assessment, where adverse and beneficial impacts of the proposed projects on the environment would be identified together with measures to minimize such adverse impacts.

However, disaster management perspectives have not been integrated adequately. Attention has been drawn to this fact and the CEA is reportedly addressing this issue now.

Ban on Polythene

The CEA by Gazette Notification 1466/5 of 10-10-2006 banned the use of polythene of a lesser thickness than 20 microns from January 2007. This would probably help to avoid clogging of urban drainage systems which is the main reason for urban floods.

Capacity Building helps but its sustainability is an n issue

1997 to 2005 saw the implementation of the Sri Lanka Urban Multi-hazard Disaster Mitigation Project (SLUMDMP) under the Asian Urban Disaster Mitigation Project (AUDMP) of the Asian Disaster Preparedness Center (ADPC), Bangkok. The implementation was carried out through a tripartite partnership between Center for Housing, Planning and Building (CHPB), National Building Research Organization (NBRO) and the Urban Development Authority (UDA). Community based initiatives were done in collaboration with Intermediate Technology Development Group (ITDG, now Practical Action). The project developed a pilot for disaster mitigation within the Ratnapura Municipality and two replication

projects in the Kandy Municipality and the Nawalapitiya Urban Council. Several outcomes have relevance in the context of this article.

Capacity building of technical and administrative staff of municipalities and urban councils was considered a first step. Awareness creation brought about tremendous support from the Mayors and the Urban Council Chairman. In 1999, the Ratnapura Municipal Council incorporated a budget line for the first time in history for disaster work in its annual budget. Consequently the Nawalapitiya UC adopted this measure. In 2001, the then Chairman of the UDA issued a directive to all Provincial Directors to consider hazard prone areas and guidelines developed by the SLUMDMP during approval of urban development projects within areas under the jurisdiction of the UDA.
In 2003-2004, the then Mayor of Ratnapura was elected as Chief Minister for the Province and he drafted a legislation to establish a Provincial Environmental Authority empowered to integrate disaster management in development work[25]. However a change of Government changed agendas and the localized but emerging priority for institutionalization of disaster management was lost.
The lesson learnt is that, awareness building in political leadership and capacity building at Local Authority Level can be effective to bring about the integration of disaster management in development planning.
The positive outcomes of the project could not be spiraled out and sustained due to the lack of a policy or a national focal point for disaster management at that time.

Conclusion

Disaster management cannot be an isolated endeavour. There is now international acknowledgement that efforts to reduce disaster risks must be systematically integrated into policies, plans and programmes for sustainable development and poverty reduction[26]. To achieve this, appropriate institutional mechanisms backed by policy for plan formulation must be in place. The ability to implement policy and plans comes from legal mandates to the identified institutions. Sri Lanka has taken the first few steps of this long and arduous process. In parallel, it is vital that the ambience of good governance materializes. If not these efforts would become futile.
Development activities impact the natural and physical environment and can intensify vulnerability to disasters in some areas. These impacts are more critical where unplanned human activity and urban sprawling are taking place.
In Sri Lanka, environmental protection and planning comes under the purview of the National Environment Act Nos. 47 of 1980 and 56 of 1988. Regretfully, the

[25] Safer Cities Case Studies , AUDMP, ADPC, Bangkok, <www.adpc.net>
[26] Extract from the final report of the World Conference on Disaster Reduction (A/CONF.206/6), ISDR.

Act falls short of addressing disaster risk reduction perspective in planning and development. National, Provincial, District or Divisional development planning have no national policy mandates for addressing disaster risk issues.
Sri Lanka has a long history of natural resource legislation. However these are focused on administration and management rather than on disaster mitigation. The positive side is that most such legislation has integrated aspects of conservation, which to some extent addresses reduction of disaster risk through prevention of excessive human impact. The negative side is that there are a large number of institutions with overlapping jurisdiction for natural resources management and land use which inhibits effective implementation of plans. The composition of the National Council of Disaster Management includes twenty Ministers taking care of stakeholder Ministries. However this facilitating mechanism for inter-agency coordination should be strengthened through relevant amendments to existing legislation to avoid overlap of jurisdiction.

Sri Lanka has only in 2007 approved a National Land Use Policy. A large number of institutions have overlapping jurisdiction for land use. Therefore, even when existing laws are adequate, there are constraints of effective implementation.

The Sri Lanka Disaster Management Act, No. 13 of 2005 enacted on 13th May 2005 has placed a disaster management framework within the country but needs more amendments to fulfill gaps and provide more authority to the DMC as the national implementing authority. Parallel amendments to existing Legislation to mainstream disaster management in development seem an urgent necessity. This must invariably be framed in the context of devolution of power to Provinces that may be strengthened in the search of a political solution to the ongoing ethnic conflict in the country.

Best practices that have emerged through localized disaster management initiatives must be adopted and lessons learnt from successful community participatory approaches integrated in future disaster management planning.

Recommendations

1. Implement the national land use policy with integrated hazard zonation and ensure there is unified action at national, provincial, district and divisional levels.

2. Amend Acts, Ordinances and laws to better provide for disaster management initiatives and to prevent overlapping jurisdiction in highly vulnerable areas based on the hazard zonation and land use policy. A case in point is the Coast Conservation Act No. 57 of 1981 (Which makes provisions for a survey of the Coastal Zone and the preparation of a Coastal Zone Management Plan, to regulate and control development activities within the Coastal Zone, to make provisions for the formulation and execution of schemes of work for Coast

Conservation within the Coastal Zone, to make consequential amendments to certain written laws and provide for matter connected therewith or incidental thereby) and the accompanying amendments that were made in legislation related to identified sensitive land areas, which were brought under the jurisdiction of the Coastal Conservation Department. Two examples are given here for better understanding.

Amendment made to Section 29 of the Town and Country Planning Ordinance No.57 of 1981 (which authorizes the making of schemes with respect for planning and development of land and to provide for the protection of natural amenities and the preservation of building and objects of interest or beauty, to facilitate the acquisition of land for the purpose of giving effect to such schemes) by the addition of a new sub section as follows:

"(3) The Minister shall not under Section 25 or Section 28 provisionally approve or sanction any draft scheme which contains any provision relating to any area of land which is situated within the Coastal Zone, except after consultation with the Minister in charge of the subject of Coastal Conservation."

Amendment to the Soil Conservation Act No. 23 of 1953 (which provides for the conservation of soil resources, for the prevention or mitigation of soil erosion and for the protection of land against damage by flood or drought) by the insertion of a new Section II A to Section 2 as follows:

"II A.(1) Nothing in Section 3 shall be read or construed as empowering the Minister to make any Order under the Section in relation to any area of land situated within the Coastal Zone.

(2) Every Order under Section 3 relating to any area of land situated within the Coastal Zone and which and which is in operation on the 1st day of October 1983 shall be deemed revoked.

(3) Nothing in Section 6 shall be read or construed as empowering the Minister to make regulations under that section to, or in relation to, any land situated within the Coastal Zone.

(4) Every regulation made under Section 6 and which is in operation on the first day of October 1983, shall be deemed not to apply to, or in relation to, any land situated within the Coastal Zone.

Similar amendments related to highly vulnerable areas should be instituted in selected Acts and Ordinances to strengthen disaster risk management activities.

3. Lessons learnt from coastal area management through Special Area Management (SAM) mentioned above, which strengthens the community-government linkage by including the Divisional Secretaries and enabling community participation be adopted wherever possible for risk management in vulnerable areas. Laws by themselves without empowering the people would become futile.

4. The current mechanism for disaster management activities gives a prominent role to the District Secretary. However, further devolution of powers to the Provincial Councils remains a strong possibility in search for a solution to the ethnic conflict. As said before, this will give more powers to the Chief Minister and erode the status of the District Secretary. It is therefore recommended that the Chief Minister be given more responsibility in devolved disaster management.

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