

# Sri Lanka

## COUNTRY REPORT

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### 1. INTRODUCTION

Sri Lanka is an Island with a land area of 65,610 square kilometers. It is situated between the 5.55' and 9.51' N, 79.41 and 81.54 E. The Island is 224 Km wide and 432 Km long at its furthest point. The mean temperature in most parts of the Island ranges from 26 to 28C. The relative humidity varies generally from about 70% during the day to about 90 - 95% night in the Southwest quadrant; in the dry zone parts of Northwest and Southwest, humidity does down to about 60%. Rainfall occurs in Sri Lanka during the

Southwest and Northeast monsoons. During the Southwest monsoon (mid may to September) rainfall is mainly confined to the Southwest of the Island , whereas during the Northeast monsoon (October to February) rainfall occurs in the North and East of the Island.

Sri Lanka' s economy is mainly agricultural, based on the production and export of tea, rubber, coconut, garments, gems and minor export crops. Paddy is the main domestic crop, and rice is the staple food of the people, Foreign employment and tourism play an important role in the economy of the country.

Sri Lanka' s population is 18.3 million in 1996; around 79% of the population live in rural areas. Buddhism is the main religion of Sri Lanka. Around 69% of the population are Buddhists and the rest belong to Christianity, Hinduism and Islam. Sri Lanka is a Socialist Democratic Republic headed by the Executive president. The country is divided into nine Provincial Councils, 25 Districts, and into 264 Divisions for the purpose of administration.

## **2. Major Natural Disasters of Sri Lanka.**

In Sri Lanka, floods, Landslides, Cyclones, Droughts, Wind storms and coastal erosion are the main causes for Natural Disasters. (Annexure I) These natural disasters have caused loss of life, and enormous damage and destruction to property. (Annexure II) In addition to these natural disasters, the country also incurs heavy toll on account of man made disasters such as deforestation, indiscriminate coral, sand and gem mining, and industrial hazards besides ethnic conflicts and occasional political violence in the recent past.

### **2.1. Floods**

Floods are more of a common occurrence in Sri Lanka than the other natural disasters (Annexure III, IV, V) .The water resources map of 1959 identified 103 river basins of which about 10 rivers are considered as major. Among these major rivers Kalani, Gin, Nilwala and Mahaweli are vulnerable to floods. The increase in population and subsequent need for land have forced more and more people to live and work in these vulnerable areas, thereby intensifying the risk to life and property in the event of major floods. Heavy rainfall and run off the large volume of water from the catchment areas of rivers, deforestation, improper land use and the absence of scientific soil conservation practices could be identified as the major factors for floods in Sri Lanka. Moreover with global heating due to the green house effect, topical countries are expected to get less annual rainfall, but increased rainfall intensities. The average annual rainfall ranges from 500 mm. to 800 mm. The highest rainfall of 805 mm. At Kanukken in 1897 and 508 mm. at Nedunkerni in .1911. Due to the Southwest and Northeast monsoon rains, floods occur in the Island. The districts of Kegalle, Ratnapura, Kalutara, Colombo, Gampaha and Gall are subject to floods on account of Southwest monsoon rains, while Ampara, Trincomalee, Badulla, Polonnaniwa, Batticaloa, Matale and Monaragala suffer from the Northeast rains.

### **2.2. Landslides**

Heavy rains and geological changes in the hill country, accentuated by the indiscriminate clearance of steep slopes in the mountainous areas, have increased the occurrences of frequent landslides especially during the last two decades in the mountain slopes of the Central and South Western regions of the Island. Landslides like any other natural disaster are a concern to us as they threaten the life and property of the people in the hill slopes. The landslides of January 1986 and again those of may and June 1989 surpassed all previous landslides in recent memory, on all counts of the extent of damage and personal tragedy. The 1986 January landslides were by far the most damaging one, claiming 51 lives, rendering nearly 100 families homeless and affecting more or less all the seven landslide-prone districts of the hill country. A little over three years later, that was in may and June 1989, the landslide events surpassed all the earlier events in severity and magnitude, claiming more than 300 lives, rendering a large number of poor families homeless over an extensive part of the hill country. Most recently, October 1993, the landslide at Helauda in Ratnapura district resulted in the loss of 29 lives and destruction of many houses. A staggering statistics for the total loss due to landslide in 1989 alone was estimated to be in the region of Rs. 142 million.

### **2.3. Droughts**

Recently that is in 1996, We have experienced one of the serious droughts which has resulted in even interruption to power supply causing much hardships to people and serious effects to the National Economy. Every year, somewhere in the country, some people are faced with droughts of short-duration which are only of local significance and they are seldom reported. Drought of regional significance do occur once in every 3 to 4 years. Severe droughts of national significance occur after a considerable period of time, within 10 years or so. After the severe drought of 1935-1937, the other severe droughts of national significance occurred during the periods 1947-1949, 1953-1956, 1965, 1974-1977, 1981-1983, 1985 and in 1995-1996. Of all these major droughts, those occurred during the periods 1953-1956, 1974-1977, 1981-

1983 and 1995-1996 had caused major set backs to the economy. Although droughts cannot be classified as sudden disasters, they do cause hardship and financial loss mostly to farmers. In the drought of 1996, 181,095 families in 17 districts were badly affected.

## **2.4. Cyclones**

Sri Lanka has been affected mostly by cyclone activity occurring in the Bay of Bengal. The Eastern, Northern and North Central regions are the cyclone prone areas of Sri Lanka. Although cyclones do not occur frequently in Sri Lanka, these are not totally outside the range of disasters. The records show that cyclones have affected the Eastern, Northern and North Central Provinces. Sri Lanka has been hit by cyclones during the past 70 years causing severe damages to the economy. The 1978 cyclone alone affected more than one million people, killed nearly a thousand persons, partially and completely damaged nearly 250,000 houses, destroyed 90% of the coconut plantation in the Batticaloa district and resulted in the government having to spend over Rs. 600 million to bring immediate relief to those affected. Also cyclones of severe intensity struck Sri Lanka in 1922, 1931 and 1964. (Annexure VI)

## **2.5. Sea Erosion**

Sri Lanka has a coastline of 1585 km. More than half of her 18.3 million population live in village, town and cities of the coastal district. The economic importance of the coastal areas has increased further with the rapid urbanization, the development of commercial harbours (Colombo, Galle and Trincomalee). Fishing harbours and anchorage, main lines of communication (road and rail), recreational facilities and tourism.

It has been estimated that over 50-55 percent of the shoreline is subjected to or threatened by coast erosion. The most critically affected areas are those between Kalpitiya in the Northwest and Matara in the South. (Annexure VII) shows the erosion trends in selected reaches of the coastline. One of the worst affected reaches is the coastal sector from Maha oya to Lansigama, where erosion rates of 3.5-4.5 m/m/year have been recorded.

Shoreline retreat due to sea erosion has been a severe problem in Sri Lanka resulting in damage to and loss of property and infrastructure facilities, and development efforts.

## **2.6. Earthquakes**

Earthquakes in living memory have not caused disasters in Sri Lanka. There is a record of some several hundreds of people killed in the Seventeenth century, when sea encroached inland western coastal areas near Colombo. We do not have evidence how this sea level rise took place more than 2000 years ago. It could well be due to Tsunamis or a tidal wave resulting from an offshore earthquake that engulfed and flooded the western coast of Sri Lanka. We know that at least during the last few decades Sri Lanka has been affected by more than half a dozen earthquakes offshore the very last being 1953 (5.6 on Richter Scale) 100 Km west of Colombo. We are not living in an area categorized as seismically very active like the Pacific Ocean where such tsunamis are common. But recent (1993) later occurred in a region categorized as safe in India and killed more than 10,000 people. Earthquakes can occur any time any where in the world without sufficient notice.

# **3. DISASTER MITIGATION IN SRI LANKA**

## **3.1. Flood Mitigation**

Sri Lanka is rich in ancient culture. The hydraulic civilization found in the Dry Zone by ancient Sinhalese Kings display evidence of remarkable human effort taken to mitigate the drought hazard. The major features of this civilization were the construction of an intricate systems of reservoirs for storing water for agriculture. There is no doubt that the rural population in the dry zone whose survival there today as a result of the timely and proper disaster plans initiated by the ancient monarchs. In the past community lived on the riverbank in perfect harmony with the nature. The challenges faced by local communities led them to develop their own mechanisms to reduce the impact of the flood. There are two approaches to flood mitigation. One is to take water away from the people and the other is to take people away from water. The first method is also known as the structural approach; this is adopted along the basins of Kelani, Gin and Nilwala rivers as a measure to control inundation and the consequent damages. The other approach is the non-structural approach where timely flood warning is given to the people to move out of the area before the breach of floods. This method is practiced to some extent in the lower Kelani Ganga, and in the suburbs of Colombo.

Flooding of Kelani Ganga has serious consequences as the outfall being near the capital city of Colombo. When the flood level of Kelani Ganga is between 5 and 7 ft, the flood is defined as a major flood and when it exceeds 9 ft, the flood is considered to be dangerous. The heaviest storm probably occurred in 1832 with maximum recorded height of 13.5 ft, at Nagalagam and thereafter the occurrences had been in October 1913,

May 1927, May 1928, October 1930, May 1933, May 1936, May 1939, August 1947, October 1966, October 1967, and July 1989.

During the period of 1930 to 1935 both banks of the Kelani Ganga near the city of Colombo were provided with flood protection bunds. These bunds are capable of providing safety to the Colombo city for a 25 year period. However, due to encroachment and poor maintenance, a complete rehabilitation of this flood protection scheme has now become absolutely necessary.

The Gin Ganga flood protection scheme was launched in 1975 with the financial support from the People's Republic of China. Protection is provided against a flood of 10 years return period, and an extent of 5000 ha. of paddy has been protected from frequent flooding. Ten electrically driven pumping units were installed to cater to the local drainage on the protected side.

The Nilwala Ganga flood protection scheme was completed in 1993 and it provides protection to 5600 ha. of paddy lands with three diesel driven pumping units. Of the three stages of project implementation, only two stages were completed leaving out the last stage unattended. Even though the scheme was originally designed for flood protection, the project was launched to provide drainage facilities for low lying lands and therefore the pumps have to be run everyday. Due to the non-completion of the third stage of the project and due to several other reasons, the scheme has not been very successful. The non-completion of the stage 3 of the project has also increased the flood threat to Matara town. In addition, about 2000 ha. of developed lands are located in the unprotected area as the location of the newly constructed flood bunds are away from the river banks.

Among the non-structural flood mitigation methods, a flood forecasting system has been introduced only in the case of Kelani Ganga. Forecasting of water levels in the river is done by means of four upstream gauges and the data transmission is done with radio equipment. An organizational setup and the necessary standing orders are available to facilitate coordination among several institutions during a flood. This scheme prepared in 1968 was updated by the Irrigation Department in 1993 which can be considered as a comprehensive study to provide a detailed mitigation plan for the city of Colombo. Ratnapura is a town in the upper basin of Kalu Ganga which is subjected to frequent flooding. However due to limited travel time of the flood wave, it is not possible to warn the people. At present, there is no structural plan to mitigate flood in Kalu Ganga.

Among the structural measures taken during the recent past by the Government to control floods, both Gin Ganga and Nilwala Ganga flood protection scheme can be highlighted. These two projects are provided with safety measures against a flood of 10 year return period.

A flood protection study for Kelani Ganga was done in 1990 under DANIDA aid and this project provided the necessary computer facilities and software to model Kalani Ganga. Action is being taken by the Department of Irrigation to prepare a proposal for funding by the world meteorological organization to install a real time flood forecasting system for Kelani Ganga. This will serve as a pilot project.

It may not be possible to prevent the occurrence of droughts altogether. Nevertheless, there are possibilities to make adjustments for droughts and mitigate the likely losses. In this regard, first and foremost, efforts must be made jointly by the state and the people to abstain from interfering recklessly with the natural environment that accentuates the hazard and its ill effects. People also have to be prepared to cope with droughts as and when they occur. In addition to these pre-disaster preparation activities, there has to be an effective mechanism to undertake post-disaster activities such as.

- a. assessment of damage to property
- b. assessment of damage to gainful activities
- c. immediate action to provide relief to the droughts victims and rehabilitate them

### 3.2. Erosion control strategies

The coast Conservation Department is statutorily responsible for taking mitigatory measures to combat sea erosion. The strategy adopted is two fold. Where vital infrastructure is threatened, coast protection measures such as revetments and groynes are constructed. Depending on the urgency, either a planned/designed revetment or protection is installed or an emergency revetment consisting of mix material is dumped from tipper trucks or in areas of limited access, gabion boxes filled with rubble (150mm - 225mm) would be used. The work is carried out by the Department.

Such protection measures are classified as short - to - medium term solutions and require annual maintenance. However these measures specialty revetment may hinder or obstruct the continuance of beach user activities such as beach since fishing, boat beaching, and even recreation (tourism).

Long-term measures are based on the Coast Erosion Management Plan (CEMP) and the Coastal Zone Management Plan. Both these plans are now being implemented. The CEMP considers that in the reaches of erosion prone critical areas termed as key areas (vide Annexure VIII), impacts on the people would be minimized if a solution is adopted. Storm surges, though not a frequent phenomenon, do occasionally cause large scale inundation of areas and damage to infrastructure and housing specially in the East. The strategy adopted in this area is to delineate setback zones and improve the coastal vegetation.

The Coastal Zone Management Plan (Coastal Erosion Management Plan) seeks to regulate development, by legally enforcing 'No-Build-Zone' (Setback); these setbacks vary with location and the type of development. With the enforcement of the 'No-Build-Zone' , through the Coast Conservation Act and its amendments, the pressure on the beach is reduced. In addition, the Department also undertakes Public Awareness Programmes (PAP) whereby coastal communities are educated on the basics of coastal resource management, and the need to adapt appropriate action to minimize the adverse effects of erosion.

## 4. The National Disaster Reduction and Management Policy and Programme

The Disaster Management in Sri Lanka took a new turn in 1993 when an Action Plan and the Disaster Counter Measures Bill were prepared. The basic objectives of the Action Plan can be drawn from\_ the Act itself. These are as follows:

- a. Prevention and Mitigation of Disaster,
- b. Protection of life and property from the effects of Disaster,
  - c. Maintenance and restoration of order in areas effected by disasters,
  - c. Provision of facilities for emergency response, relief, rehabilitation and reconstruction in the event of a disaster,

The plan classified the activities under the following groups:

- a. Preparedness action,
- b. Relief operation,
  - c. Recovery, rehabilitation and reconstruction,
  - d. Awareness and public education,

The policy framework under which the plan would operate has been spelt out in the plan as follows:

- a. Introduction of improved professional practices in the areas of agriculture, land use planning, construction and maintenance;
- b. Encouragement of participation of non-governmental organization, private institutions and individuals, and soliciting and directing private donations to recipients in affected areas;
- c. Fostering scientific and engineering studies (e.g. landslide hazard mapping) as tools for sustainable development;
- d. Shifting of emphasis to pre-disaster planning and preparedness, while sustaining and further improving post - disaster relief, recovery and rehabilitation capabilities; and

- e. Integration of disaster prevention and preparedness in the national as well as sub-national planning process.

In order to Co-Ordinate the Disaster Management work at hamlet, divisional, district and provincial levels, the plan suggests formation of committees at the respective levels. These committees consist of personnel drawn from the public and private sectors. The plan also spells out the functions of the National Centre for Disaster Management. (Annexure IX) The centre was inaugurated in July 1996. This centre functions as the servicing secretariat of the National Disaster Management Council. (annexure X) The Disaster Management Centre has been set up under the Sri Lanka Disaster Counter Measures Bill (Annexure XI) The Disaster Management Co-ordinating Committee is the apex body today for disaster prevention. This committee looks into the prevention, mitigation and recovery from disasters. (Annexure XII)

The Department of Social Services under the Ministry of Social Services plays a key role in disaster management. The subject of disaster Management has now come under the purview of the Ministry of Social Services. Emergency relief assistance for the victims of disasters is now being rendered and managed by the department of Social Services. The rehabilitation and reconstruction functions too are coming under the purview of the department.

The country also has vital institutions such as Provincial Councils, District Secretariats and Divisional Secretariats at the various levels to prepare and direct recovery activities. The District and Divisional level Disaster Management Co-ordinating Committees have been established to monitor disaster management activities at the district and divisional levels as mentioned in para 4.4 above. The department implements all prevention, relief and rehabilitation activities through the Divisional Secretariats. The Department and the Divisional Secretariats have middle officers, called the Social Service officers, to assist the Divisional Secretariats to carry out the prevention and relief work at the Divisional level. These Secretariats also have another grade of officers viz: Grama Niladaries, Administrative officers at the Village level, to implement the activities relating to disasters in their areas of jurisdiction. The grassroot level Disaster Management Committees have also been established to co-ordinate all activities pertaining to disasters at the village level.

#### **4.1. Civil Defence Organizations and Their Activities**

In Sri Lanka, Civil Defence organization play a major role in the event of disasters to protect the lives and property from such calamities as floods, landslides and cyclones. At the grassroot level, we have the Grama Niladaries to provide basic assistance with the help of civil Defence organizations. Thereafter, as mentioned above, we have Divisional level institutions called the Divisional Secretariats headed by the Divisional Secretary, who coordinates all operational activities and the provision of emergency relief in the event of a Disaster. At the Divisional level, he coordinates all disaster functions coming under the Civil Defence organizations. At the provincial level, we have provincial level Civil Defence Committee which is chaired and coordinated by the chief Minister. On top of these arrangements, under the proposed Disaster Counter Measures Bill. We have the Committee under the chairmanship of the Prime Minister, to coordinate all activities regarding a disaster at the national level. The activities of the Civil Defence organizations at various levels can be summarized as follows.

- a. Immediately after a disaster, officers are despatched to identify and assist people as quickly as possible.
- b. Identify the seriously injured people and assist the community in organizing emergency evacuation for health treatment centres.
- c. Ensure that the police station functions immediately. The department of Social Services recently established an information centre to collect and disseminate data on natural and man made disasters.

We have already done substantial work in Sri Lanka in the area of mitigation. To reduce the impact of disasters, we have structural and nonstructural measures, such as legislation and incentives for people in landslide areas. (Anexure XIII) However, people are reluctant to move out of their traditional habitats though their area is prone to landslide. The department provides financial assistance to the people living in the low lying areas in the Kalutara district to build flood resistance houses. But the programme did not succeed due to the reluctance of the people to put their own resources also to implement this type of programmes. Therefore, it has become necessary to create awareness among the people living in areas prone to disaster like floods, landslides, and severe droughts to adopt themselves to disaster conditions by accepting the programme which will enable them to live without becoming disaster victims.

## 4.2. The Role of Volunteers and Non-Governmental Organizations for Disaster Preparedness and Relief

The dependence on volunteer organizations has become inevitable in disaster preparedness and relief programmes in Sri Lanka. They can respond at short notice to an emergency situation since they don't have to work through bureaucratic channels. They can bring in expertise from outside whenever necessary at very short notice. Their budgets are fairly flexible. On the other hand, they are at a disadvantage in that they do not have the necessary authority and at times the official contacts to get things done. The major advantages of the volunteers and NGOO for disaster preparedness are as follows:

- a. NGOO can participate with their expertise at the stage of formulation of policy and National Plans.
- b. NGOO could be useful in providing necessary material in disaster management such as the provision of food, drugs and clothes.
- c. NGOO can provide experts for training of local officials.
- d. They can help in the designing and production of information material to the public regarding disaster preparedness and relief.
- e. They can be assigned with specific roles in advance, e.g. Supply of emergency kits and first-aid kits.
- f. NGOO can render help in the running of refugee camps.

## 5. Assessment of Capacities and Need Identification : Obstacles to counter Measures, Disasters, Disaster Emergency Management, Relief and Recovery

**Inadequate Disaster Management Information System:** The present system of information flows through the lowest officer of administration, Grama Niladari, to the Divisional Secretariat, and from there to the department of Social Services. With the occurrence of a disaster, the Grama Niladari collects the information on the damage to property and life, and furnishes that to the Divisional Secretariat which in turn transmits it to the department.

The Divisional Secretary has to prepare a complete report including the required funds to cover all relief assistance, rehabilitation and reconstruction work according to the data submitted by the Social Services officers, and has to submit the report to the department of Social Services. The present information system on disasters is rather weak and ineffective due to several shortcomings and bottle necks such as using obsolete data collecting methods, lack of modern communication facilities and instruments, inadequate training of the grassroot level officers and divisional level officers. (Annexure XII)

### 5.1. Lack of Training and Education in the Disaster Management field

Lack of training to the relief and rehabilitation workers has been identified as a major challenge. Technical training required for emergency relief activities, training and education for emergency managers and planners at different levels and awareness for the general public have yet not received adequate attention at the policy making level, in the preparation of personnel for disaster management. There are no institutional facilities in Sri Lanka to train emergency managers, create awareness among the general public and volunteers. As a result, relief and recovery activities cannot be conducted effectively.

### 5.2. Lack of Funds

As the funds voted annually to the department of Social Services is limited, the operation of adequately funded relief and rehabilitation programmes for the victims of disasters is not possible. For example in 1996, the Department was allocated with Rs. 110 million to meet relief, recovery and the other requirements of disaster victims; but this amount was not at all sufficient to meet the needs of the victims. Due to financial constraints faced by the Sri Lanka government, provision of sufficient relief to cope with emergency situations is not possible, unless Donor Assistance is forthcoming. The victims are unable to obtain necessary compensation for their damage to property and lives. For instance, the 1993 flood had caused Rs. 554 million damages to private and public property, but the government released only Rs. 184 million to meet the requirements of the flood victims.

### 5.3. No Special Package of Assistance to the Disaster Victims

In Sri Lanka, there is no special package of assistance designed to suit the requirements of severe disaster victims except the assistance given by the department of Social Services which is common to victims of all type of disasters. It is not always possible to relocate all the persons and property from the vulnerable areas to the safer areas. The soft loan schemes and special package of assistance for recommencing economic activities if made available will quicken the process of recovery. It is worthwhile to create a safety net in the form of insurance cover for people and property in the disaster prone areas. This will help the victims and the government.

#### **5.4. Delay of the Relief Distribution Channels**

Public sector assistance for victims of disaster, as seen in the previous paragraphs, are provided through the government institutions such as the department of Social Services, District Secretaries, Divisional Secretaries, and Grama Niladalis. The Divisional Secretary who obtains the allocation of funds from the department of Social Services provides relief like cooked food, dry rations and other requirements through the co-operative outlets at the village level. NGOO and voluntary organizations also distribute relief assistance which are generally coordinated by the department of Social Services. The distribution of relief is sometimes delayed due to transport difficulties and damages to roads arising out of a disaster.

#### **5.5. Inadequate Search and Rescue Operations**

The search and rescue operations are vital aspects of emergency response in the event of a disaster that affects the people and property. Taking the landslides into consideration, there is no institutional framework which supports the search and rescue teams at the field level. Normally it is the police and the armed forces who undertake the search and rescue operations in the events of landslides, floods, and cyclones, although they have no systematic training in order to ensure that no additional damage is done to life and property on account of search and rescue operations. The necessary skills should be imparted to the armed forces, police, voluntary groups and people in each of the disaster prone areas; and the necessary equipment must also be made available to them so that men and machinery could be mobilized at the local level immediately to undertake the search and rescue operations successfully.

### **6. Conclusion**

It may appear that the severity and frequency of the natural disasters in Sri Lanka may not be on the same high scales as one finds in some countries. Nevertheless, the damages, hardship and the relocation arising from natural disasters taken together with the man made disasters including civil conflicts and political violence are indeed very grave for a small country such as Sri Lanka.

The government of Sri Lanka is therefore deeply committed to turn the tide towards preparedness, to meet any natural disasters, that will eventually ensure high degree of safety and minimum losses. The policy initiatives and measures taken during the last three years, as already discussed in the preceding paragraphs, is indicative of the long agenda for the years ahead.

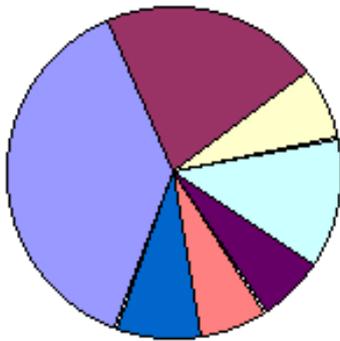
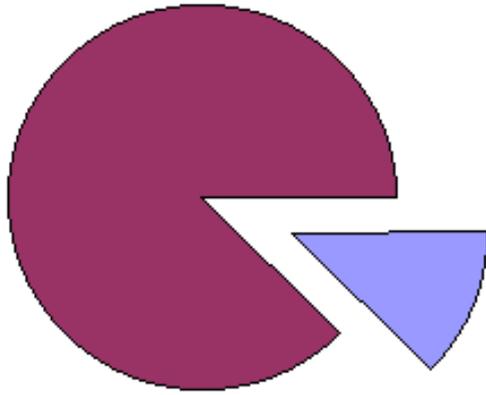
It is useful to note that no amount of legislation and institutionalization will provide all the answers to disasters. What is needed is a plan that will note signals and quickly set in motion a state of preparedness, to face disasters and set of action to provide speedy relief to the affected persons and property. This is a responsibility of the entire country where the government is naturally expected to act as a prime mover action.

Disaster will occur whether we like it or not. Therefore it is better to let nature take its course, then use all available means of assistance to build a better tomorrow.

### **7. Annexures**

Proportion of Number of Affected Families by disaster - 1995

*Total number of Families 91,386*



Annexure II(A)

**OCCURRANCE OF NATURAL DISASTER AND ALLOCATED  
FUNDS FOR RELIEF AND REHABILITATION ACTIVITIES  
FOR 1981 - 1997**

Year	Type of Disaster	No. of Death	No. of Affected Families	Expenditure for Relief(Rs.)
1981	Flood & Landslides	2	15,318	2,291,930
	Drought		204,211	42,654,647
	Elephant Damages		26	3,065
	Casual Relief		3,514	570,193
	Total	2	223,069	45,519,835
1982				
	Flood & Landslides	42	129,513	14,621,023
	Drought		372,436	118,920,957
	Casual Relief		4,990	787,998

	Casual relief		4,229	101,020
	Total	42	506,178	134,329,808
1983				
	Flood & Landslides		204	58,077
	Drought		435,926	87,929,636
	Elephant Damages		175	35,821
	Casual Relief		4,967	877,946
	Total		441,272	88,901,480
1984				
	Flood & Landslides	44	248,356	4,658,558
	Drought		3,008	209,842
	Elephant Damages		429	84,135
	Casual Relief		8,783	1,296,527
	Total	44	260,576	6,249,062
1985				
	Flood & Landslides	19	18,869	2,780,699
	Drought		20,488	4,889,513
	Elephant Damages		6,317	1,226,640
	Total	19	45,674	8,896,852

Annexure 11(B)

1986	Flood & Landslides	40	118,494	13,676,252
	Drought		5,303	2,400
	Elephant Damages		91	27,000
	Casual Relief		3,969	780,080
	Total	40	127,857	14,485,732
1987				
	Flood & Landslides		5,053	568,820
	Drought		484,925	72,969,136
	Elephant Damages		140	89,950

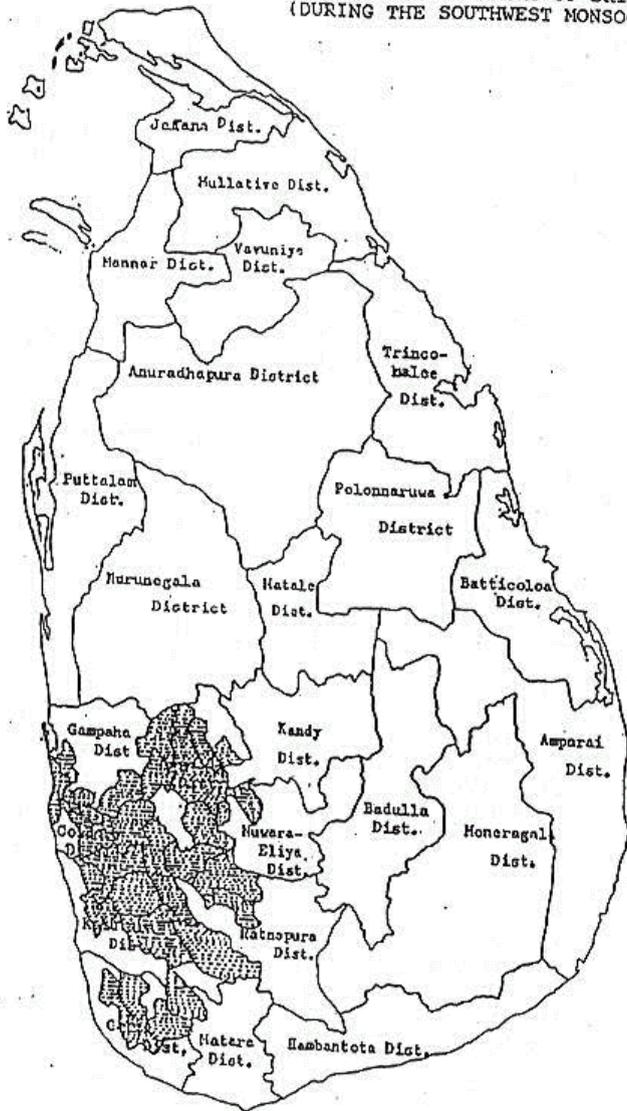
	Casual Relief		4,617	585,500
	Breach of Kantale Tank	68	2,035	4,200,000
	Total	68	496,770	78,413,406
1988				
	Flood & Landslides	3	26,373	2,867,089
	Drought		652,363	28,553,911
	Casual Relief		3,683	648,632
	Total	3	682,419	32,069,632
1989				
	Flood & Landslides	325	86,176	49,077,863
	Drought		238,426	24,335,145
	Total	325	324,602	73,413,008
1990				
	Flood & Landslides	37	157,427	38,694,275
	Drought		203,794	6,721,942
	Casual Relief			311,000
	Total	37	361,221	45,727,217
1991				
	Flood & Landslides	34	55,491	78,876,485
	Drought		203,794	230,202,076
	Casual Relief			625,000
	Total	34	259,285	309,703,561

Annexure II(C)

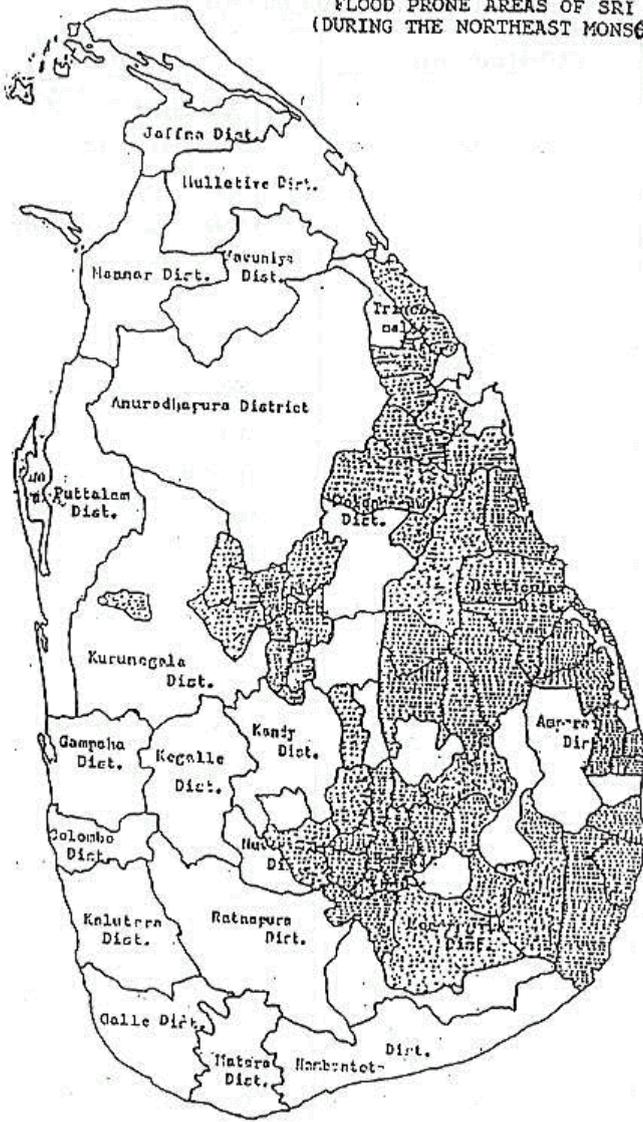
1992	Flood & Landslides	25	71,080	154,572,300
	Casual Relief			27,403,000
	Total	25	71,080	181,975,300
1993				

	Flood	6	210,874	30,001,904
	Landslides	29	870	4,419,500
	Sea Erosion		160	497,000
	Cyclone	1	450	700,000
	Drought		16,383	7,633,200
	Drinking Water			475,000
	Elephant Damages		420	3,005,000
	Total	36	229157	46731604
1994				
	Flood		353,409	37,401,904
	Landslides	8	284	628,520
	Sea Erosion		384	880,183
	Cyclone	10	456	627,600
	Drought			618,700
	Drinking Water			205,500
	Elephant Damages			199,800
	Total	18	354533	40562207
1995				
	Flood		353,409	37,401,904
	Landslides		484	2,970,686
	Sea Erosion		517	366,800
	Cyclone		1,403	958,807
	Drinking Water		260	481,300
	Total		356073	42179497
1996				
	Flood	3	8,238	12,224,897
	Landslides		75	52,400
	Cyclone	10	8,360	14,870,185
	Drought		199,535	424,856,387
	Drinking Water		22,807	568,000
	Accidents/Bomb Blast	84	84	1,165,130
	Total	97	239099	453736999
1997				
	Flood	4	29,948	16,746,908
	Landslides	15	626	1,576,942
	Drought		434,775	296,863,722
	Drinking Water			1,778,200
	Cyclone		650	2,537,735
	Accident	69	69	
	Sea Erosion		154	363,980
	Total	88	466222	320847552

FLOOD PRONE AREAS OF SRI LANKA  
(DURING THE SOUTHWEST MONSOON RAINS)



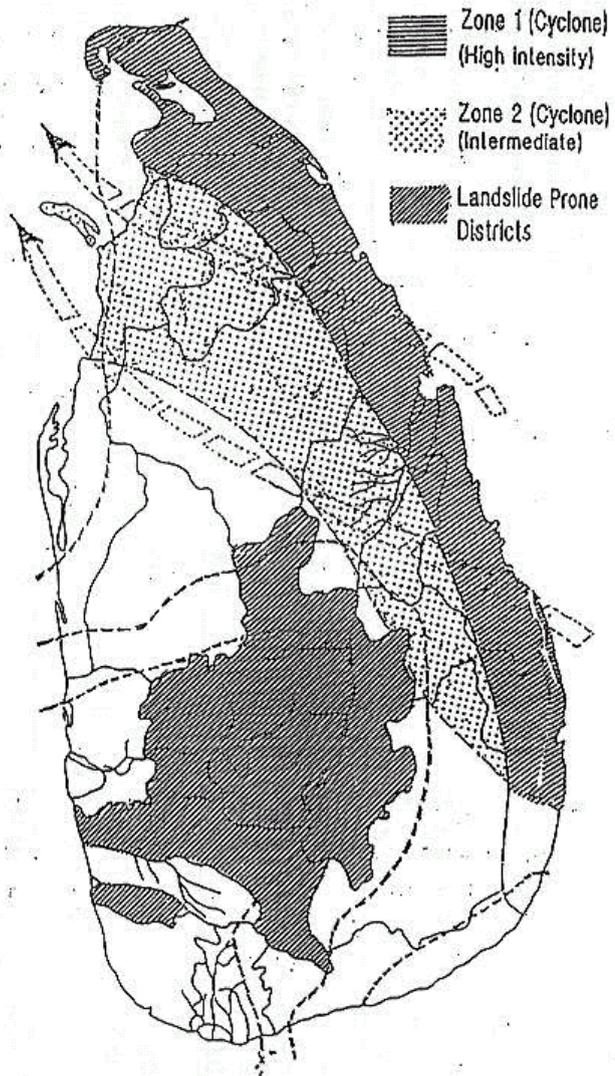
FLOOD PRONE AREAS OF SRI LANKA  
(DURING THE NORTHEAST MONSOON RAINS)



Annexure V

MAJOR FLOODS IN COLOMBO		
YEAR	WATER LEVEL IN FEET	MONTH
1837	13.50	
1872	11.9	
1891	9.80	
1904	9.90	
1906	10.80	
1913	11.00	-
1922	12.60	-
1925	11.50	JULY

1928	9.08	MAY
1930	10.91	OCTOBER
1933	9.95	MAY
1936	9.43	MAY
1937	10.33	MAY
1939	9.35	MAY
1940	11.00	MAY
1942	8.17	JULY
1943	6.58	MAY
1944	6.00	MAY
1947	12.85	AUGUST
1947	6.00	OCTOBER
1952	8.25	MAY
1952	6.00	OCTOBER
1955	8.00	OCTOBER
1957	6.25	DECEMBER
1963	6.42	OCTOBER
1966	8.67	SEPTEMBER
1966	9.00	OCTOBER
1967	9.17	OCTOBER
1971	7.33	SEPTEMBER
1975	6.58	MAY
1989	9.20	JUNE



Annexure VII

**EROSION TRENDS IN THE SELECTED REACHES OF THE  
COAST LINE OF SRI LANKA.**

	Location / Reach	Length of Reach (km)	Erosion Rate (m/m/yr.)	% Reach Subject to erosion
1				
	Maha Oya to Lansigama	7.0	3.5 - 4.5	80
	Wellarnankara to Maha Oya	4.8	3.0	80
	Maha Oya to Poratota	3.2	3.0	80

2	Colombo north	11.5	1.0 - 2.5	70
	Usetekeyyawa to Palliyawatte	6.5	2.5	75
	Palliyawatte to Crow Island	2.0	1.1	70
	Crow Island to Muttuwal F / H	3.0	0.5	20
3	Kalutara	11.0	0.5 - 2.0	60
	Kalutara North to Kalu R / I	6.0	1.5	40
	KaIu Ganga to Maggona	5.0	2.0	70
4	Beruwala / Bentota	11.0	1.5 - 2.0	42
	Beruwala to Bentota R	8.0	1.5	60
	Bentota R to Robolgoda	3.2	1.0	75
5	Hikkaduwa	10.0	1.0 - 2.0	60
	Seenigama to Coral Garden	6.0	1.0	45
	Coral Garden H / I Dodandu	4.0	1.0	60



B. MONITOR THE IMPLEMENTATION OF DISASTER MANAGEMENT PLANS PREPARED BY MINISTRIES, DEPARTMENTS, CORPORATIONS AND ORGANISATIONS

(C) PREPARATION OF A NATIONAL EMERGENCY OPERATION PLAN

D. ESTABLISHMENT OF DATABANK AND A DISASTER MANAGEMENT INFORMATION SYSTEM AT NATIONAL, PROVINCIAL, DISTRICT, DIVISIONAL AND GRAMA NILADHARI LEVEL.

E. PROVIDE ASSISTANCE TO AND FUNCTION AS THE SECRETARIAT TO THE NATIONAL COUNCIL FOR DISASTER MANAGEMENT ON MATTERS RELATED TO NATURAL DISASTER MANAGEMENT.

## RESPONSIBILITIES

### 1. SECRETARIAT ROLE

To provide secretariat support and assistance to the council in achieving National leadership on all relevant matters for the implementation of legislation, policies and programmes developed and authorized by the National Council for Disaster Management.

To provide assistance to the National Council for Disaster Management regarding the enforcement of the existing Disaster Management Acts and regulations.

### 2. INTERNATIONAL HUMANITARIAN ASSISTANCE

To establish a system for identifying International Humanitarian Assistance, specific National project needs and direct liaison with Donor Agencies.

### 3. PROJECT MANAGEMENT AND) COORDINATION

To manage, coordinate and monitor where appropriate Disaster Management projects operating in Sri Lanka and ensure effective input from external agencies such as ADPC, UNDP etc.

### 4. RELATIONSHIPS WITH RESPONSE AND SUPPORT AGENCIES

To maintain constant positive communications and information exchange with all response agencies and support agencies and local government in relation to their preparedness for Disaster response.

### 5. RELATIONSHIPS WITH RELEVANT COMMITTEES

To leadership and assistance for committees that relate to Disaster prevention, preparedness, coordination and recovery.

### 6. FACILITATION OF DISASTER MANAGEMENT PROFESSIONAL DEVELOPMENT

To initiate and facilitate Disaster Management professional development to ensure an understanding of Disaster Management principles, roles and responsibilities and preparedness planning for Government and Non Government Organizations.

### 7. PUBLIC EDUCATION AND COMMUNITY AWARENESS

To assist the Council in promoting public awareness in the areas of Preparedness, Prevention, Mitigation and Risk Reduction related to Disaster Management leading to enhanced community self-reliance.

To assist the Council in ensuring that adequate publicity is given to the policies and programmes formulated relating to Disaster Preparedness, Prevention, Mitigation and Risk Reduction through a variety of sources including the media.

## 8. POLICY, PLANNING AND COORDINATION

To prepare, coordinate and update a National Disaster Management Plan based on the policies and programmes issued by the National Council for Disaster Management.

To provide advice and monitor the relevance and appropriateness of the various Disaster Management Plans prepared by respective Ministries, Departments, Corporations and organizations to enhance a speedy implementation where necessary.

To prepare, coordinate and update a National Emergency Operation Plan based on the policies and programmes issued by the National Council for Disaster Management To assist the Natal Council for Disaster Management in the determination and allocation of Disaster Management funding.

To provide assistance to the Council in monitoring the effective and efficient use of resources available for Disaster Management by all responsible agencies.

To assist the Council in initiating programmes related to prevention and mitigation of disaster and provision of relief, rehabilitation and reconstruction.

## 9. INFORMATION AND RESEARCH.

To establish a National Data Bank of expertise, contacts, information and resources related to Disaster Management at national, provincial, district, divisional and grama niladhari levels.

To promote, facilitate and coordinate research and development opportunities in the areas of hazards, vulnerability, social impacts and risk reduction by various means such as staffing attachments, utilization of tertiary institutions or utilization of International Funding.

To establish an agreed and coordinated Disaster Management Information System and Process for receiving and distributing timely and accurate information regarding impending disasters that would impact on the community of Sri Lanka at national, provincial, district, divisional and grama niladhari level.

To assist the Council in reviewing all Post Disaster reports and submit recommendation for enhancement as appropriate.

*Proposed Institutional Framework for*

*National Disaster Management*

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Legend: A-Very good M-Moderate

B-Good S-Severe

C-Satisfactory VS-Very severe

C-Poor