



Sri Lanka and Sea Level Rise

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In the first few decades of the 21st century, our island nation will face a number of major problems because of rising sea levels. It is now certain that sea levels will rise all over the globe. There will be a wide range of effects to the countries of the developed world as well as to countries of the developing world.

However, island states like Sri Lanka and the Maldiv Islands will have problems of major dimensions. Our ability to solve these problems alone and unassisted is non-existent. Even with all the help that can be got from the International Community the problems will still be formidable.

As yet, there is little realization in this country, amongst any section of our people, of the magnitude of the problems that lie before us, resulting from Global Warming and Sea Level Rise: Therefore, it is my intension in this article to sound the ALARM

in the severest terms possible. Reframing of Policy and Initiation of Monitoring and Action is urgent on many fronts if we are to escape disaster. **LET US MAKE A BEGINNING.**

Global Concern

Major changes in the global environment have been predicted by the International Panel on Climate Change (IPCC) set up by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO). IPCC has brought together top scientists from all parts of the world to discuss, the problem of Global Warming, predictable effects of increase in temperature and the necessary response strategies that have to be developed. A series of meetings of IPCC and of special Working Groups have taken place over the past two years or so addressing various aspects of the problem.

The Policy-makers' Summary of the Scientific Assessment of Climate Change, presented in May 1990, predicts as follows:

- * Global mean temperature will rise about 2 °C above pre-industrial level by 2030;
- * Global mean temperature will rise about 4 °C above pre-industrial level by 2090;
- * Sea level is expected to rise by about 18cm by 2030; and
- * Sea level is expected to rise by 58cm by 2090.

Though the figures mentioned above for temperature increase and rise in sea level may seem small to the eye of the layman and the law-maker, the fact is that these figures signal major changes that will take place in the early decades of the 21st century. These changes, though gradual, will have far-reaching effects which in many cases will be disastrous.

In order to alert Governments and peoples of the world, the UN System sponsored Seminars worldwide in 1989 on the

theme **GLOBAL WARMING: GLOBAL WARNING**. One such Seminar was held in Sri Lanka conducted by the Central Environmental Authority (CEA). The proceedings of the Seminar have been published and released by CEA. However, as with most Seminars, this too has been treated as a largely academic exercise. It has not generated the awareness and action it was intended to generate.

THE SERIOUSNESS OF THE PROBLEMS WHICH WILL BE CREATED BY GLOBAL WARMING AND SEA LEVEL RISE FOR US IN SRI LANKA HAVE NOT BEEN UNDERSTOOD AS YET BY POLICY-MAKERS AND THE PUBLIC.

In most parts of the World, Government have taken serious note of the looming problems and have been initiated necessary responses. The British Government, for instance, was briefed specially about the matter by top scientists, who addressed the Cabinet of Ministers at 10 Downing Street, Congressional Committees of US Congress have also had similar briefings. As has been indicated earlier, the UN System is studying the problem on a Global scale.

The Male Declaration

One major result of rise in Global temperature is the predicted rise in sea level. It is now known that Sea Level Rise is inevitable. While the major port cities of the world will be affected, small island states like the Maldives Islands and Sri Lanka are certain to face major problems. In fact, it is expected that some of the Islands of the Maldives will go under water.

Being conscious of their own vulnerability and of that of other small island nations, a Conference of such small states gathered in Male, Republic of Maldives in November 1989 and brought out **THE MALE DECLARATION ON GLOBAL WARMING AND SEA LEVEL RISE.**

Among other things, the Male Declaration.

- * decided to develop co-operation with small states from Carribean, South Pacific, Mediterranean and Indian Ocean region for exchange of information on policies and response strategies,
- * establish a monitoring network as a component within the global measuring systems,
- * mount a campaign in the international community underlining the particular vulnerability of the small staes to sea level rise,
- * recommend that small coastal and island states take adequate measures to maintain their aquifers and protect vulnerable ecosystems, and
- * appeal to all states to embark on intensive afforestation, including salt tolerant species for the protection of coastal areas.

The Island — Sri Lanka

The Island of Sri Lanka has a total and area of 64,000 sq km and a coastline of about 1,700 km. Before the advent of the Portugese in 1505, most of the populaton lived in inland areas. Today, over 70 per cent of the population is concentrated along the West

and South-west coastal belt. Five cities or towns with populations of over 100,000 are located along the South-west coastal belt. A number of other less densely-populated towns are also located in this region.

The major harbours of the island are Colombo, Galle and Trincomalee. During the last few decades a number of fishery harbours have ben developed to support fishery activities. A considerable percentage of the coastal population is dependant on coastal fishing. Much of this is at subsistance level supporting the livelihood of very poor communities.

Industrial developments too are associated with the coastal populatoins, especially in and around Colombo. The country is now moving into a rapid, intensive policy of indutralization.

Tourism has undergone rapid development in recent years. It is likely to expand futher, rapidly. The present coastline of the Island is one of the major attractions with its beautiful bays and extensive beaches, coral gorwths and reefs, mangrove stands and estuaries.

On the other hand, many sections of the coastline are erosion-prone and some of these coincide with areas of high population density. In order of erosion risk, the coastline



has been divided into six sectors, as follows:

- 1 South Coast
- 2 West Coast
- 3 South-West Coast
- 4 North Coast
- 5 East Coast
- 6 North-East Coast

It should be noted that the high risk areas for erosion are also some of the most densely populated areas.

Another factor of the Sri Lanka scene that will play a major role in the changing picture due to Sea Level Rise and Global Warming, is the Monsoon system. Our climate is dominated by two monsoons — the South-west Monsoon operates from May to September, with South-westerly winds of average speeds of 19 km/hr. The North-east Monsoon operates from December to January, with North-easterly winds of speeds around 12 km/hr. The coastal marine current systems and littoral sand drift patterns are influenced by the two systems and show regular reversals of direction.

Possible Effects of Sea Level Rise in Sri Lanka

It is necessary to assume, for planning, protection and mitigation purposes, that by 2030 there will be a one foot rise in sea level around our island. Monsoonal winds which themselves may change in unpredictable ways, will enhance the effect of this rise. A number of consequences will follow. The following list is not comprehensive. Major effects are highlighted:

- * The part of the coastal areas that lie within the one foot above Mean Sea Level contour of the Island will go under water;
- * Main roads and railway lines already under threat of erosion will be destroyed;

- * The city of Colombo and its harbour as well as other harbours and fishery harbours will be affected in as yet unpredicted manner;
- * Many communities now living in close proximity to the coastline will lose their lands and will have to be re-located;
- * In fact, the Government should be planning for identification, re-location and re-employment of large numbers of people likely to be displaced as sea level rises gradually;
- * Any considerable rise in sea level will result in backing up of the river discharge, causing changes in patterns of flow and flooding in areas far removed from the coastline;
- * Flooding caused as above will result in loss of livelihood, displacement of persons and will necessitate changes in land use patterns;
- * Apart from backing up of river discharge, increased salt water intrusion will change the quality of irrigation waters and soils leading to loss of arable land and agricultural production.

It is important to remember that Sea Level Rise is only one of the consequences of Global Warming. There are many others, which may be as serious or more. In Sri Lanka, we may expect to see, for instance:

- * Changes in monsoonal patterns and intensity;
- * Changes in distribution of agro-climatic boundaries;
- * Changes in soil moisture conditions, with attendant changes in plant growth patterns and vegetable cover.

Considering the foregoing remarks, there should be no doubt in the minds of planners, policy-makers, politicians and people that the much discussed problems of Global Warming and of Sea Level Rise are not remote, academic possibilities which only other nations need worry about. Instead, they are

problems, which will gradually begin to flood us literally and metaphorically, in the near future.

What is the CEA doing About Sea Level Rise?

In response to the Global Alert sounded by the UN System the CEA conducted a very successful Seminar on Global Warming: Proceedings have been published by CEA. However, in the public mind, this Seminar too seems to have been passed by as *just another Seminar*.

Subsequently, the speakers at the Seminar were brought together by CEA for discussions on actions to be taken at National Level. However, the sense of urgency has not prevailed.

On an ad hoc basis, Sri Lanka has been represented at International Meetings, including the Perth Workshop on Sea Level Rise, which was a Workshop on response Strategies and at the IPCC meetings in Geneva as well.

The CEA intends, with concurrence of the Ministry of Environment and Parliamentary Affairs, to set up shortly, a Core-Group of persons from CEA, Meteorology Department, Department of Coast Conservation, Department of Agriculture (Agroclimatology) and Forest Department with a mandate —

- * to make comprehensive assessments from the point of view of impacts on Sri Lanka.
- * to develop the outlines of possible response strategies to meet expected changes,
- * to liaise with Small States and Regional States for co-ordinated approaches,
- * to liaise with Small States and Regional States for co-ordinated approaches,
- * to ensure that all relevant information from Research, Working Groups and UN Bodies is received and processed in relation to our own problems,
- * to alert the Government and its Agencies

about the magnitude of the problem and help co-ordinate Response Strategies,

- * on the basis of considered Response Strategies to seek the necessary assistance from the International Community to help Sri Lanka meet the emerging challenges.

Conclusion

During the past decade, Sri Lanka has begun to pay attention to the environment and to the need for its preservation and protection. A National Conservation Strategy and an Action Plan for its implementations have been developed. Environmental Impact Assessments in respect of Development Projects have become mandatory and a Licensing Procedure for Polluting Industries and other ventures that pollute is now in force.

However, none of these actions have paid attention to the consequences of Global Warming and Sea Level Rise that lie ahead of us. There are plans to build new roads, railways and industrial complexes. There are plans to develop tourism in a big way. Many of these major plans may founder and fail if we do not take note of the unknown dangers ahead.

Let there be no doubt in our minds. Much of what I have written about will take place. When the full force of these changes strike in 3 to 4 decades, I who write these words and many of you who read them will be no more.

Let us so act now, that the generations of men, women and children who must make major adjustments in their patterns of life and behaviour will not curse us for inaction and lack of initiative at this point in time.

I wish to record my gratitude to the Hon Minister of Environment and Parliamentary Affairs, Mr. Vincent Perera, who by creating the magazine SOBA and inviting me to contribute an article has given me this opportunity of giving voice to the deep-seated fears about the future of our beloved motherland that have wracked my heart these past few years.