

South Asia Disaster Report 2006 Maldives Country Paper

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Background

The Republic of Maldives is a small archipelagic country composed of 1,190 tiny islands dotting the Indian Ocean. The 20 atolls of the Maldives stretch 860 km from 7°6'35"N latitude, across the equator to 0°42'24"S latitude and lies between longitudes 72°32'19"E and 73°46'13"E. The population of the Maldives is scattered on 199 small islands, which are dispersed over an area of 820 kilometers in length and 130 kilometers in breadth at the widest point. This dispersed nature of the island settlements is a unique challenge to the Maldives' development process. It has placed a disproportionate emphasis on the importance of transport and communication to integrate the society, policy and the market. Out of the 199 inhabited islands in the Maldives, 66 have fewer than 1,000 inhabitants and nearly 76 islands have less than 500 inhabitants. The smallness and the dispersed nature of the settlements increase the per capita cost of development. Investments in physical and social infrastructure have to be replicated in each inhabited island or Atoll, contributing to diseconomies of scale in the provision of socio-economic services. Presently, the cost of providing and maintaining socioeconomic services in the Maldives is often 4-5 times higher than in continental developing countries and a number of island states. Significant progress has to be made to minimize diseconomies of scale, and vulnerability to natural and other disasters, through resettlement of small communities inhabiting small or remote islands, in larger islands that can be provided with an adequate cost-effective infrastructure for development and protection.

Factors that Contribute to the Vulnerability of the Maldives

Narrow Economic base

The narrow economic base of the Maldives, the small domestic market and insufficiently developed human resources have contributed to the growth of a narrowly diversified, highly dependent economy that is extremely delicate and vulnerable to external climate shocks. The weakness of the Maldivian economy is aggravated by the heavy dependence on just two main industries; tourism and fisheries, for the country's fiscal revenues, foreign exchange earnings, employment and growth. Both these industries face stiff international competition. External price fluctuations are also common for fisheries products, exposing the economy to periodic contractions in earnings, as in the year 2000. Tourism industry is also vulnerable to a number of natural and manmade threats. A negative media report, such as reference to a widespread coral bleaching event, can have a debilitating effect on the country's tourism industry. A decline in either the tourism or the fisheries industry could have a serious impact on the cost and the standard of living, development activities, provision of public services, the level of domestic economic activity and employment in the Maldives.

A weak entrepreneurial base compounds the problems with respect to economic development. This vacuum has been to some extent filled by the State, which continues to play a disproportionately large role in the economy. Although, the rapid growth of the tourism sector demonstrates the emergence of an entrepreneurial class, the economic base is still too weak to adequately support the diversification of economic activity. The strengthening of the entrepreneurial base is therefore essential for the sustainable development of the Maldives. In a competitive and uncertain global economy, the need to achieve the best possible returns from the limited resource base remains strong.

Limited skilled/ trained human resources

The appreciable advances being registered in the human resource base of the Maldives is not yet adequate to meet the needs of the country. The very pace of economic growth and development has opened up resource gaps in the areas of upper and middle management, medical and educational services, other professional services, intermediate skills and even unskilled labor. This niche has been readily filled by an influx of expatriate labor, largely from the countries of South Asia. At the end of the year 2000 there were over 27,000 expatriate workers in the country. This large expatriate community siphons out a significant portion of the limited foreign currency earned by the country and/or creates numerous social problems

Land resources

Land is one of the scarcest resources in the Maldives, comprising a mere 1 percent of the expansive 21,436 square kilometers of reef. The latest estimate of land area is only 235 square kilometers (Report 2006: Climate Change Vulnerability and Adaptation Assessment of the Maldives Land and Beaches). This scarcity constitutes one of the major challenges to the human and economic development of the Maldives, as the great demand for land results in conflicting uses for housing and commercial and industrial activity. Due to the increasing population, demand for land is on the increase. Consequently, clearing vegetation for housing is a continuously rising trend. Vegetation is also removed to meet the demand for coconut timber in the construction of houses and boats.

Beach Erosion

Beach erosion remains a serious problem throughout most of the Maldives. The severity of the problem differs from place to place and over time, but is evident in all but six of the inhabited islands (VPA II). The beach systems are highly dynamic and have directional shifts within the shoreline in accordance with the prevailing seasonal conditions. As such, the islands are extremely vulnerable to natural beach erosion, which is compounded by human activities such as removal of vegetation and coastal modification (MEC 2004). Coastal zone modifications, including hard structures such as seawalls, breakwaters, and jetties have become the norm in many inhabited islands

Freshwater

The Maldives has very little in terms of freshwater resources. Groundwater accumulates in aquifers, which lie at a depth of 1-1.5 meters below the surface. The parameters that determine the thickness of the aquifer vary from island to island and, as such, the quality of the groundwater varies. The proximity of the groundwater to the surface and the porous nature of the soil makes it highly susceptible to pollution and contamination from human activities as well as salt water intrusion.

Marine resources

Being a nation of atolls, the dominating environment is the marine environment, with coral reefs forming the major ecosystem. With a total area of 8,920 square kilometers, the coral reefs of the Maldives are the seventh large in the world and represent as much as 5 percent of the world's reef area (Spalding, et al., 2001). Coral reef systems provide natural protection for the islands while serving the needs of the two major economic driving forces of the country – tourism and fisheries. However, this natural resource is under threat from the effects of global warming as well as localized human activities.

This enhances the vulnerability of what is an inherently fragile ecosystem in the Maldives. The preservation of this ecosystem will require incessant governmental management of the development process. The Government will have to regulate the exploitation of the country's resource base to ensure the protection of the environment and the sustainability of development. There is very little that domestic policies can do to protect the Maldives' environment from threats such as global warming and sea level rise that are mainly caused by activities elsewhere. In the short run, global warming and associated sea level rise would subject Maldives to frequent natural disasters and erode the special natural advantages currently enjoyed by the country in the long run. The very existence of the Maldives will be at stake with the predicted global warming and associated sea level rise continue at the present pace. This exposure to exogenous threats requires negotiation of special economic concessions, both at bilateral and multilateral levels, which take cognizance of the country's environmental vulnerability.

Government response to Climate Change issues

Climate change, and its direct and indirect effects, is among the key environmental and development issues that the Government of Maldives (GoM) is now addressing seriously. The GoM is thus very much aware and concerned about environmental degradation and global warming and their detrimental effects, particularly on the small island nations like the Maldives. As a result of the findings of the vulnerability and adaptation assessments that have been conducted, the Maldives is now committed to undertaking anticipatory measures that will prevent or at least lessen the impacts of climate change. Sea-level rise, which is one of the real threats of climate change, is among the country's immediate concerns. The very existence of the country is threatened, as over 80% of the land area of its islands is less than 1 meter above mean sea level. In addressing this issue, the country has endeavored to plan its development (as specifically stated in the 6th & 7th National Development Plan) in a sustainable manner, by minimizing dangers to the natural resource base and environment due to economic development and the rapid population

growth, by contributing to the international efforts to find solutions to global environmental threats, especially those pertaining to the vulnerable Small Island Developing Nations, and by promoting integrated planning and administrative practices based on meaningful principles and procedures for sustainable resource use and environmental protection.

As part of its efforts to address climate change and related issues, the country has implemented and completed a number of activities, and has become party to many multilateral environmental agreements (MEAs). Among these is the UNFCCC, which represented one of the country's first steps forward in terms of commitment to addressing climate change and related issues. The Maldives is also a Party to many other UN conventions, including: (1) United Nations Convention to Combat Desertification; (2) Cartagena Protocol on Biosafety; (3) Kyoto Protocol to the Framework Convention; and, (4) Stockholm Convention on Persistent Organic Pollutants. In addition, a number of national environmental and related policies have been prepared and adopted by the Government, to guide the implementation of initiatives that address environmental issues, including climate variability and change.

Vulnerability to natural disasters - Economic and social implications

The vulnerability of the Maldives was made dramatically clear when the tsunami swept across the Indian Ocean. Waves ranging from 1.2 to 4.2 meters were reported from all the atolls. Nearly 80% of the inhabited islands were affected and 35 inhabited islands were badly damaged; 29,580 residents were displaced; and some 12,000 people were made homeless (draft 7th NDP). According to the Maldives' joint needs assessment undertaken by the UN, World Bank, and ADB, total damages from the tsunami are estimated at US\$ 470 million – 62 percent of GDP. This figure does not include the cost of recovery of the tourism sector pegged at US\$ 1 million, neither does it reflect the environmental damage and substantial soil erosion on many islands that, to a great extent, rely for their livelihoods on agriculture and home-based market gardening. Severe damage was caused to houses, tourist resorts, boats and other fishing equipment, schools, health facilities, transport and communication equipment, water and sanitation, and electricity infrastructure. There has been substantial damage to agricultural crops and perennial trees. Farms, homestead plots, and aquifers have been contaminated by saltwater. The physical damage has led to severe human suffering inasmuch as large segments of the population have lost their dwellings, lifetime assets, cash savings, and sources of livelihood.

The tsunami might have been the most dramatic and crippling of disasters, but it is by no means the only natural disaster to have affected the Maldives. Over the past six years, 142 islands (70 percent of inhabited islands) have experienced severe weather events, including strong winds, rainfall related flooding, storm surges, tidal flooding, and rough seas—all causing damage to coastal infrastructure.

Finally, it is worth mentioning here that a prevailing social vulnerability in Maldives is the increasing proportion of female-headed households. Nearly half of all households are

headed by women. A significant number of these female-headed households revealed that they face problems of lack of income and the difficulty in providing for their children. In disaster situations it is the women and children who are most affected. In the context of disaster management, increasing number of female-headed households is a major human security issue.

Institutional Mechanism for Disaster management in the country

Currently, there are *Ad Hoc* institutionalized disaster risk management systems and mechanisms in Maldives. Soon after the tsunami, the government set up a Ministerial Task Force¹. This then established a National Disaster Management Centre (NDMC), under the Ministry of Defense and National Security (MDNS) and led by the Minister, MDNS. Government staff from various Ministries were drafted in to ensure tsunami co-ordination for relief and recovery operations. The NDMC currently has three functioning units, the Housing and Reconstruction Unit, (HIRU), the Maldives Internally Displaced Persons Unit (MIDP) and a Secretariat. It was only in the aftermath of the December 2004 Tsunami that serious attention to setting up an institutional and legal framework for disaster management gained momentum. The proposed structure for the institutional set up as presented in the draft Maldives Disaster Management Act, has suggested changes to reflect long term disaster risk reduction concerns. The apex body for decision making will be that National Disaster Management Council with the President as the Chairman and the Minister of Defence and National Security as the Vice Chairman. This Ministerial body will have representation from 19 Ministries and President of the Supreme Islamic Council and representatives of the opposition. The National Disaster Management Council will be the Legislative body. The more operational and executive body is the proposed National Disaster Management Authority with the MDNS as its a Disaster Management Specialist as its Vice Chairman. The functions of the proposed National Disaster Management Authority include the following:

- To act as the implementing body for disaster management and make available manpower or material resources for purposes of emergency response, rescue and relief.
- To prepare the National Disaster Management Plan and the National Emergency Operations Plan and implement it in the event of a disaster.
- To establish an Emergency Operations Centre that shall operate and maintain a multi hazard early warning system responsible for gathering and disseminating information related to disaster on a 24x7 basis.
- To coordinate rescue, relief, and recovery activities during national emergencies and disasters.
- To undertake measures to improve the Disaster response capabilities of first responders.
- To prepare and implement a Communication Plan to promote public awareness, knowledge and acceptance of the people's role in mitigating risks of disasters.
- To establish, operate and maintain a communication systems that has sufficient redundancy to allow it to be operational even during disasters.

- To undertake continuous assessment of the effects of a disaster for the purpose of allocating resources
- To facilitate research on matters related to disaster management
- To establish and update an inventory of human resources, transportation, construction, communication and other equipment vital for emergency response.
- To initiate programs for disaster management; mitigation, preparedness, response, relief and recovery, post disaster assessment, research and policy and governance.
- To facilitate preparation of Disaster Management plans by all Ministries, various departments, public and private corporation in conformity with the National Disaster Management Plan.
- To assist the Atoll and Island administrators in formulating their disaster management plans and programs by providing the necessary technical assistance as needed.
- To evaluate the state of preparedness at all government levels for the purpose of responding to any threatening disaster situation or disaster and give directions, where necessary, for enhancing such preparedness.
- To plan and coordinate specialized training programmes for disaster management for different levels of officers, employees and voluntary rescue workers.
- To establish mechanisms that render operational, regional cooperation for disaster risk reduction and management in South Asia.

The NDMA will be supported in its functions by a National Disaster Response Force and Technical Advisory bodies. At the Atoll and island level, a similar structure will be established.

The current draft has been circulated to the various ministries for feedback and will be presented for Parliamentary approval by early next year.

Processes for declaring state of disaster and compensation mechanism

The draft Disaster Management Act states that the President as the head of the National Disaster Management Council can declare a state of emergency on advice of the NDMA for a period not exceeding two months. No information on the trigger for it to be declared as state of a national or atoll or island level disasters have been specified on the draft Disaster Management Act. These details are likely to be developed further when the National Disaster Management Authority becomes operational.

With regard to compensation and concessions, the only reference point is the draft Disaster Management Act which states all the owner of all resources (transport, use of premises, etc.) that are appropriated by the NDMA for purpose of use during the emergency phase shall be compensated “in cash or tax credits or a combination thereof”. The Draft Act contains no information on the compensation schemes for disaster affected and possible source for this fund. Funds for contingency and compensation mechanisms are yet to be established in the country. There are no earmarked funds for meeting emergencies. During the tsunami, funds from the national budget was utilised creating a large budget deficit.

Disaster Management linkage with mainstream development policy and planning at the National level

Disaster management is a long-term Government programme under the draft 7th National Development Plan (2006 -2010) and has clearly mapped out projects and programs that would lead to mainstream disaster management in the development processes of the Maldives. A chapter within the National Development Plan titled “Natural Disaster Preparedness and Mitigation” has clearly spelt out policies and strategies for Disaster Preparedness and Mitigation

The 7th National Development Plan has among its eight goals, one stated on protection of the environment and making people and property safer. It aims at making Maldivian safe and secure from natural disasters, eliminate risks to life and property, deliver efficient and prompt relief support and educate the public on hazards and risks. Among the objectives set in the National Development Plan are the following:

- Develop National Disaster Management and Response Plans
- Protect Critical Infrastructure
- Develop land use plans and building codes
- Population and development consolidation in safe islands
- Legal Framework for Disaster Management
- Strengthen and decentralize national disaster management plans
- Build capacity for early warning prediction and dissemination
- Training and capacity building of locals in disaster management.

The inclusion of disaster management in the National Development Plans would imply that there would be budgetary allocation for such activities in the national budget and the Government will ensure continuity of programs. Chapter 35 of the 7th NDP, which deals with “National Security and Border control” talks about the need for long term planning and institutionalisation of preparedness mechanisms which involves establishing a legal framework for the NDMC, developing standard operating procedures for the center and assistance to participating agencies to develop disaster management plans. This chapter also notes the need involving island communities in disaster planning, mitigation and preparedness measures so that they can adequately provide their own first response. The 7th National Development Plan is for the period 2006-2010. UN agencies in the country too have included in their UN Development Assistance Framework (UNDAF) outcomes two goals directly addressing issues of disaster vulnerability and climate change. The country support will be for a period of next three years. This is the first time that the UNDAF focuses on disaster vulnerability. The World Bank has also included disaster risk management in its draft country strategy paper. There is a concerted effort by all the Red Cross agencies here to also have a long term plan for Disaster Risk Management.

Decision Making process about mega development projects in your country

The modal Ministry for facilitating the development of the National Development Plan (NDP) is the Ministry of Planning and National Development (MPND) . The NDP is prepared through an extensive consultation process with all Government departments, Civil

Society, International Partners. The present NDP is based on the Vision 2020 exercise which addresses socio-economic issues of the country. The NDP is prepared in eight phases, which include background studies, developing sectoral strategies, workshops and financial layouts for each sector plan and final government approval. These plans include various infrastructure development projects in line with the objectives of the sectoral plan. The process of a particular infrastructure project begins with the line Ministry presenting a proposal to MPND for review through a Technical Appraisal and Prioritisation committee. After this first review, the proposal goes through to the Ministry of Finance for availability of funds and a budget check for domestic or external funding. In case it is within the planned public sector investment programs within the budget, its approval is ratified by the Attorney General's office or in case it falls in the category of foreign assistance the Department of Foreign Affairs facilitates its submission for Foreign Assistance. However the final approval authority can only be given by the President's office. Any checks and balances to ensure that the mega project is done at the level of the technical appraisal and prioritisation committee. A study titled "Climate Change Vulnerability and Adaptation assessment of Maldives land and Beaches" by Ahmed Shiyag informs that the process to assess and mitigate the environmental impacts of all mega projects exist through formal Environmental Impact Assessment requirements, but it is reported that it is less efficiently implemented in Government project as compared to private investment such as resort development etc. EIA for large projects such as land reclamation in islands that expose islands to environment and climate change measures, are usually done through a single visit by a person from the Ministry of Environment (ref). The same report recommends the urgent need to enhance environmental regulations to minimise the gap between environment policy and legal implementation. Public infrastructure projects like land reclamation and access infrastructure such as harbors and jetties need to go through firm environment regulations. Additionally the legal framework has to be strengthened to control the design and implementation process of all development projects.

Government approach to Risk Reduction

To the most pertinent problem of rising sea level due to climate change, the Government of Maldives has plans for construction of sea walls around the islands. At the moment, the Capital city Male' which houses a third of the population of the country is protected by a sea wall. The costs for such an investment across the country in 200 inhabited islands are prohibitive. The other solution against sea level rise is land elevation. The Government is proposing Safer Islands Strategy whereby communities living on smaller, less inhabited and potentially more vulnerable islands would be settled on larger islands, with better natural protection and enhanced by coastal defences. Land elevation and land reclamation is key strategy to adapt to the needs of the larger population and sea level rise. However, the reef and coral environments are sensitive to disturbance particularly in areas surrounding the populated islands and resorts. The Government needs to constantly manage the development process in a sustainable manner that ensures the protection of the fragile environment and the preservation of the ecosystem