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Introduction

As part of the international preparatory process for the World Summit on Sustainable Development to be held in Johannesburg in 2002, the Commission on Sustainable Development called on all countries to carry out a 10 year review of the progress in the implementation of the commitments contained in Agenda 21. This report is the National Assessment of the Maldives on implementation of Agenda 21. The report provides a general assessment of the state of implementation of the key objectives in Agenda 21 and specifies the major accomplishments, the main constraints and challenges faced by the Maldives.

The National Assessment Report addresses combating poverty, population and sustainability, protecting and promoting human health; sustainable human settlements development, sustainable tourism development, fisheries and agriculture among the key economic and social dimensions for the Maldives. The report then assesses progress in the implementation of measures on climate change and conservation of biological diversity. The report also highlights the emerging problem of transboundary air pollution in South Asia and measures taken by the Maldives at the regional and national level to deal with this issue.

Though the National Assessment Report primarily records progress achieved by the Government, special attention is also given to consider the role played by civil society in promoting sustainable development in the Maldives. Following an evaluation of progress made by civil society, the report highlights the national strategy for sustainable development as outlined by the President in the Vision 2020 statement. The report also briefly assesses the various strategies adopted by the government to realise sustainable development and integrate environment and development in decision making.

The National Assessment Report of the Maldives is based on thematic papers developed for the National Consultation on the World Summit on Sustainable Development and the outcomes of the National Consultation. The National Preparatory Committee guided the preparation of the report and the report follows evaluation criteria proposed by CSD secretariat.

The Government of Maldives acknowledges the encouragement and support received by the United Nations Development Programme office in the Maldives and the Capacity 21 initiative of UNDP for the national preparatory process and preparation of the National Assessment Report.

Combating Poverty

Poverty reduction has emerged as a significant concern in the Maldives in the late 1990s, following the publication of the results of a nation-wide survey on the scale of poverty. The Vulnerability and Poverty Assessment (VPA) conducted in the Maldives in 1998 estimated that 13 percent of Maldivians are under the poverty line of US\$0.6 income per person per day (the lowest line); 22 percent are under the poverty line of US\$0.85 income per person per day (the medium line); and 43 percent are under the poverty line of US\$1.3 income per person per day. A UNICEF study using the 1993 Household Income Expenditure Survey, (HIES) pegged Maldives poverty line at US\$ 51.00 per month and estimated the annual average household income between \$111 to \$68. According to the UNICEF study, about 40 per cent of the atoll population had income below the defined poverty line of US\$ 51.

Poverty in Maldives is closely associated with the equity dimension in the distribution of income as well. Data from the household income and expenditure surveys (HIES), and national accounts point to significant geographical and social inequalities in income distribution. The VPA estimated the average level of per capita household income in the Maldives at about US \$2 per person per day. Incomes in Malé are higher than in the other islands; with average income per person per day in Malé estimated at US\$3 compared with the US\$ 1.7 average in the other atolls. The Asian Development Bank's Poverty Analysis Report 2000 lends support to the VPA findings on income inequalities and indicates that incomes in Malé are generally three times higher than in the atolls. It also suggests that, notwithstanding the fact that the costs of living are significantly higher in Malé; 70% of the population outside Malé earn within a relatively narrow band from US\$0.3 to US\$1.7 per day, with about 40% of the population having to live on less than US\$ 1 per day.

In terms of the regional distribution of income poverty, the VPA study showed the existence of income poverty everywhere in the country, even when the lowest poverty line of US\$ 0.6 per person per day is applied. Though Malé, the capital is by far the richest island, about 15 per cent of the income poor (4,500) live in Malé. Hinnavaru in Lhaviyani Atoll has the second largest absolute number of income poor with 1,750 persons (about one half of the island population) having an income of less than US\$ 0.6 per day. Twenty percent of the income poor in the Maldives lives in these two islands, and no other island has absolute number of income poor that exceeds 1,000. When applying the lowest poverty line for US\$ 0.6 per person per day, no poverty was found on 55 islands. It was also found that in certain islands with total population constituting only 2 per cent of the national population, "no

poverty is found according to all possible poverty lines". VPA also reveals that 25% of the poorest population reside on 19 islands that are spread throughout the country, and 50% of the poorest population is located on 50 islands.

The most well known indices of poverty are provided by the Human Development Reports of the United Nations Development Programme. The Human Development Report 2000 attributes a high Human Poverty Index (HPI-1) value of 25.4 percent to Maldives. While Maldives has a respectable 4 percent performance in knowledge indicator (measured as adult illiteracy rate), its HPI is high because of the country's low performance in longevity indicator and in decent standard of living indicators.

However, as in the Human Development Report of 2001, Maldives has had a significant jump in the ranking of human and income poverty among developing countries. The Maldives is now ranked among the medium human development countries with human poverty index ranking of 25 and a value of 15.8.

Apart from income poverty, food insecurity and lack of access to basic services are factors that increase the vulnerability of individuals. The Maldives being an island nation with population scattered in islands over a vast expanse of sea, food security is a serious human vulnerability concern. At present, almost all food requirements, medicines and goods, except fresh fish and coconut are imported from other countries; perishable foods by air and non-perishable by sea transport. Imported food items are stored in Malé and distributed throughout the country by the local, small business entrepreneurs. The country's traditional food distribution system is largely via boat from the storage facilities in Malé to islands through the ad hoc transport system, which is operating in the country. As transport from Malé to other islands is via small boats called *dhonis*, the quantity that can be transported across on one trip is small. The frequency of food supplies to islands depend on the transport vessels, the distance from Malé and the demand for replenishment. Most of the islands in the country have no proper storage facilities for rice and other food items other than in the small warehouses of the small businesses.

According to the VPA study, 6 percent of the population reported a food crisis in the previous year and the problem appears to be most severe in the atolls in the south where more than 10% of the population experienced food insecurity. The period of short supply ranges from 1 to 30 days in different regions of the country and high winds and storms are the main reasons for the short supplies.

The sixth National Development Plan (2001-2006) recognises poverty reduction as an encompassing objective of the plan and a programme of action focusing on improving equitable access to health care, quality education, basic utilities, and income generation through community mobilisation is proposed for the Plan period. The government is also pursuing regional development and population consolidation strategies in order to reduce the inequalities in income across atolls.

Over the last 10 years considerable progress has been recorded in the provision of physical infrastructure required to promote standards of living and welfare as well as economic activity. Notable improvements have been recorded in the quantity of national housing stock and in expanding access to electricity. Over 93% of the population have access to electricity now compared to around 66%, ten years ago. Access to safe drinking water has also improved significantly with 77% of population now having access to safe drinking water.

International development agencies are also assisting the Maldives in combating poverty. The sustainable livelihoods projects and integrated atoll development projects in the most vulnerable atolls are particularly noteworthy in this regard. The UNDP project successes from Noonu Atoll and Laamu Atoll are now being replicated in the other atolls of the Maldives.

Population and Sustainability

The earliest records of the population of Maldives are from the census of 1911 and then there were 72,237 persons in the Maldives with a sex ratio of 119. Due to various factors such as dearth of adequate medical care, prevalence of killer diseases such as malaria and influenza, and the effects of famine, population growth rate fluctuated between positive and negative growth until the 1950s. As a result of prudent measures taken to address the high levels of infant and childhood mortality that prevailed in the country and to bring about improvements in the general health of the population, mortality declined rapidly and with sustained high fertility rates, population increased. By the time of the first modern census in 1977, the population has nearly doubled its size in 1911, with a census count of 142,832 and the sex ratio has improved to 111.

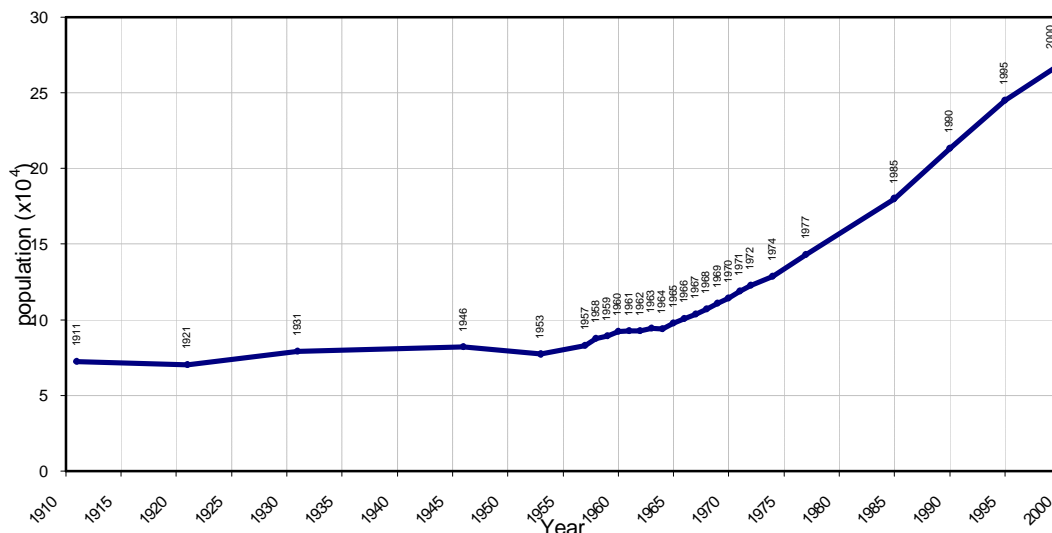


Figure 1: Population of Maldives (1911-2000)

Between 1977 and 1985, the annual exponential growth rate averaged at 3.2 percent. The intercensal period 1985 to 1990 saw the average annual growth rate increase to 3.4 percent causing concern about the rapidly increasing population and increasing pressures for resources. Specific policy measures to address the population growth led to the onset of fertility decline during the early part of the 1990s. The census of 1995 showed the average intercensal growth rate during 1990 to 1995 decline to 2.7 percent per annum. Adding to the effect of MCH and child spacing programmes, the effect of increasing availability of primary and secondary schooling opportunities, particularly for girls, further enhanced the momentum of fertility decline with the census of 2000 showing an average annual growth rate during 1995 to 2000 at 1.9 percent.

The age structural effects of the past demographic trends pose both problems and prospects for sustainable development. Despite the declining growth rate in the recent years, the momentum effect of the young age structure can be expected to cause significant population increase in the years to come. The present age structure is causing heavy strains on the provision of schooling and other social services as well as on the provision of human capital needed to provide these services, yet the school age population is expected to decline gradually in the coming years. However, the new entrants into the labour market will create new concerns at the policy level during this period. The challenge will be to provide the necessary human capital for full employment in the existing and the newly emerging sectors of the economy. Every effort need to be made in providing quality schooling and appropriate skills training to the emerging workforce in order to ensure that the rapidly growing numbers of new entrants to the labour market are adequately skilled to take up the opportunities offered by the growing economy. This of course assumes that current levels of economic growth would be sustained in the future and economic diversification would occur to provide the numbers of jobs required by the large numbers of new entrants into the labour market in the near future. Given the growing pool of entrants to the labour market due to the high population growth in mid 1980s and 1990s, areas of economic diversification and ways of creating new employment opportunities need to be identified. Although ageing per se is not yet identified as a population problem in the Maldives – nor is it expected to be in the next 50 years – the growing numbers of the elderly in the population needs policy attention.

Earlier National Development Plans (NDPs) tend to interpret population distribution problems mainly from the perspective of population congestion in Malé and thus the focus was on finding solutions to this problem through the development of regional growth centres and selected islands. While some attempts have been made to implement such programmes during the 80s and the early 90s, little success was achieved in implementing these policies, due to high costs of infrastructure and logistical difficulties. Towards the late 90s the perception of the population and development problems gradually shifted. It is now accepted that the present spatial distribution of population across 199 inhabited islands, most of which have populations of less than 500 people, is not conducive for equitable and sustainable development for the entire population. In many of the islands the per capita cost of providing basic infrastructure such as schools, health care facilities, public buildings, and harbour are far too high to produce a scale economy. Thus, a population and development consolidation strategy is now being pursued in order to develop islands with greatest potential for growth and expansion.

The low level of awareness on the linkages between population, environment and sustainable development at the local level is also an issue of concern. Much remains to be done in improving this situation. Limited research has been conducted on the interaction between population and sustainable development in the particular context of the Maldives. A major factor for this shortfall is the dearth of adequately skilled personnel in the field. Further, the complexity of the interactions between population variables and sustainable development in the small island setting is a likely contributing factor. However, with the establishment of a national population programme co-ordinating mechanism within the Ministry of Planning and National Development, a system has been set up to provide the necessary technical inputs for effective policy formulation on population and undertake relevant policy research in the area of population and sustainable development.

The Ministry of Planning and National Development is also co-ordinating the formulation of a National Population Policy document, which includes several goals and strategies addressing issues pertaining to population and sustainable development. These include, improvement of women's health, education and employment, promote gender equality and equity, improvement of the quality of life of human settlements and environment, reduction of population growth rates, population redistribution through regional development and population and development consolidation, sustainable provision of energy, transportation and communication and urban development. In addition to these the Population Policy also includes strategies to address the age-structural implications of past high population growth and the effects of the momentum of population growth on social and economic services in the future.

Most of these policies have been implemented for some time but in fragmented form by the respective government agencies responsible for their implementation. The current effort of preparing a National Population Policy document is aimed at more effective co-ordination of these policies. The National Population Policy draws largely from explicit statements made by the President of the Republic of Maldives in various addresses made to the country on matters relating to the different strategies outlined above. It is also guided by the government's Vision 2020 outlined by the President in 1999.

Patterns of internal migration are also a population related sustainability concern. Census data have been used to analyse the flow of internal migration in the country in the recent years. It shows that the country's geography and the concentration of development in and around Malé have been the most significant factors for the rapid growth population and resulting environmental problems faced by Malé. The analysis of census data also provides important lessons for sustainable development of other population centres that are being

developed under the regional development efforts in the atolls. One of the most significant social development concerns is that the current pattern of economic growth while providing important economic benefits for development at the macro as well as micro levels also has negative social implications for families living in the atolls. Most males work away from their home islands for long duration while women are left to take care of the household.

While the existing socio-cultural system provides family support to the elderly and those with special needs, it is important that these efforts are financially supported from an appropriate social security system. Government recognises the urgency of establishing a social security system in the country and has identified it as a high priority task for implementation.

The effect of population growth on the delicate balance between resources and consumption is already evident in many islands of the country. While it may be difficult to assess, it is important to estimate the optimum population for the Maldives urgently.

Access to detailed data on demographic trends and factors needs to be improved through analysis and publication. At present a vast amount of demographic data is collected through the quinquennial censuses and surveys conducted by line ministries. The capacity to analyse such data needs to be strengthened. With the aim of achieving the objective of improving data accessibility the government has begun publishing the annual Statistical Yearbook of Maldives and the detailed tables of the Census on both paper and electronic media. Population data is now published on CD-ROM and on the World Wide Web. More data pertaining to the linkages between demographic factors and trends, environment and sustainable development needs to be collected.

Protecting and Promoting Human Health

Health has improved significantly over the last 20 years. In 1977, 120 infants in every thousand in Maldives died before reaching the age of one. In 2000, the comparative infant mortality rate figure was 21. In 1977, life expectancy at birth was 46.5 years. At present the average life expectancy is 71.4 years. The sex differentials in life expectancy also has changed from an atypical situation of lower life expectancy for females than males to the more universal trend of slightly higher life expectancy for females (72.2) compared to males (70.7). Improvements in health care delivery and referral services have also had a significant impact on maternal deaths. Maternal mortality rate declined from 6 per thousand live births in the year 1978 to less than 1 per thousand in the year 2000.

Maldives has made notable achievements in the control of communicable diseases as well. Malaria has been successfully eradicated. Vaccine preventable diseases have also been controlled to such an extent that diseases like polio, neonatal tetanus, whooping cough and diphtheria may soon be eradicated. Tuberculosis continues to persist though data shows a decreasing trend in cases under treatment and in prevalence rate. The Maldives is well within the leprosy elimination target set by World Health Organisation.

The geography of the country and human resource capacity still pose enormous challenges in providing health care for all. There are communities that are yet to be completely serviced, and where people have to travel a great distance to access quality health services. By the year 2000 there were about 124 general doctors and 110 specialist physicians in the country. Malé with a quarter of the country's population has 84 specialists and 59 general doctors. The atolls have 26 specialist doctors and 65 general doctors. It takes about 12 hours for some islanders to reach the main referral hospital in Malé and more than 2 hours to reach their next main Health Centre or Hospital. A significant number of the highly qualified health professionals and doctors are expatriates, which raises the issue of local human resource development to sustain and improve the level of health care.

The prevalence of early marriages, a high divorce rate and early motherhood, pose serious risks to women and reproductive health is an area of concern. According to the Reproductive Health Baseline Survey 1999, modern contraceptive use rate is 32 percent. Cultural attitudes and psychological factors continue to restrict utilization of family planning methods. Other maternal health-related problems include anaemia, inadequate pre and postnatal care, adolescent and repeated pregnancies due particularly to early marriages and

some complications at birth. A UNICEF report published in 1998 shows that Anaemia is particularly serious with about 52 per cent of children, 68 per cent of pregnant women and 62 per cent of non-pregnant women below the required WHO levels of acceptable haemoglobin.

Diarrhoeal diseases and worm infestations are yet to be fully controlled. In Malé, there was an almost 78 per cent reduction in diarrhoea cases between 1994 and 1995, while the atolls recorded an increase in number of diarrhoea cases. The atoll population is at higher risk due to prevailing disparities in sanitation, the continuing use of *Gifilis* as well as improper use of septic tanks and poor sanitation practices. Worm infestation in children also continues to be a problem. A 1992 survey showed that about 68 per cent of children under-three years of age had worms and between 50–75 % of all children under five years may be affected.

While improvements in other areas of human and social development have been achieved, much needs to be done in the area of nutrition. The Vulnerability and Poverty Assessment report shows the extent of stunting and wasting among children 1-5 years old. It revealed that 36 percent of children in the age group 1-5 years could be considered as suffering from stunting and 20 percent from wasting. Evidence of stunting was found among 43% of the atoll's children. Stunting among girls was estimated at 49% compared with 37 percent for boys, with the incidence of stunting among girls reaching more than 70% in a number of atolls. This is supported by data in the Health Master Plan, 1996-2005 and the 1998 UNICEF Report on children. Prohibitive costs of fruits and vegetables in the country constrain the majority in consuming them. A 1994 survey showed that a little under 30% of children consumed vegetables and fruits. The Vulnerability and Poverty Assessment report of 1998 suggests that the nutritional situation in the country is worsening and nutrition appears to be a serious challenge for the sustainable development of the country.

The threat of life style diseases is also emerging as a major health problem and lack of data makes the observation of trends difficult. The 1995 data show that diabetes and cardiovascular-related causes of death were 9 and 31 per cent respectively. Tobacco consumption (either smoking or chewing) still remains high and according to a 1995 survey, there is a smoker in 71 per cent of households, 90 per cent of males and 10 per cent of females are smokers, more than 90 per cent of smokers were under 20 years and 5 per cent started smoking at school. Tobacco prevalence survey 2001 conducted by Ministry of Health shows that tobacco prevalence has decreased by 37% among males and 15% among females.

Drug abuse is also an issue of concern. While the drugs vary, the prevailing drug of choice appears to be Brown Sugar, a form of heroin, which has now overtaken marijuana. Increasing drug abuse and addiction among the youth are imminent health concerns.

While there is no available official data on sexually-transmitted diseases (STDs) HIV/AIDS-specific data exist and show a cumulative 10 HIV positive cases. With HIV/AIDS now endemic in the population, this is a matter of serious concern.

Maldives has traditionally been dependent for drinking water on shallow wells to provide access to islands freshwater lenses. These lenses are susceptible to pollution. As a result of declining quality of water in many islands, high priority has been given to the construction of rainwater tanks, both community and individual, and rainwater collection schemes. The aim is to ensure that the total population has access to at least 10 litres of safe water for drinking and cooking per person per day. This policy has greatly facilitated the shift from well water to rain water in many islands. Almost all households in the atolls use rainwater as the principal source of drinking water now.

91% of the population has access to safe drinking water. However, during the dry periods, some islands are faced with water shortages and hence revert to ground water for drinking and cooking. 25% of the atoll population experience periods with insufficient supplies of drinking water. The five wards of Malé have access to desalinated piped water supplied by Malé Water and Sewerage Company. While 17.3 of all settlements in the country had access to water within 200 metres of the house in 1993, due to improvements in the urban sector, this proportion has risen to 20.3% in 1998. However, it has to be noted that desalinated water is extremely costly and the dependency on imported fuel for desalination is an issue that needs consideration from a sustainability perspective.

In Malé and Villingili, households are connected to a conventional gravity flow system with pumping stations to dispose the untreated sewage to the deep sea. Although the situation in the atolls show marked improvement, most households are still dependent on septic tanks. Ground water contamination from leakages caused by improper construction of septic tanks is a significant problem in the atolls. The percentage of the atoll population without access to toilet facilities decreased from more than 60 percent in 1990 to 20 percent in 1998. Although the sanitation situation is improving, many toilets still discharge sewage and human waste into the ground water. This ground water is still used in many islands for cooking, washing and even for drinking. Of all settlements, household sewerage connections increased from 19.2% in 1993 to 31.5% in 1998. Again these reflect improvements in the city level.

The Government of Maldives formulated a ten year Health Master Plan (1996-2005) in order to continue the effort for the improvement of health of the people. This plan calls for a renewal of commitment to meet the challenge in the pursuit of WHO slogan "Health for

All” and other such international initiatives. The Health Master Plan outlines policy measures, objectives and strategies for sustaining and improving the country’s health care. Notable achievements in the area of environmental health include the completion of the Healthy Islands Plan of Action, Environmental Health Plan of Action and a review of Environmental Health Situation in the Maldives.

Sustainable Human Settlements

At present shelter related problems in Maldives are related to both the availability of housing and the quality of available accommodation. In the capital Malé housing shortages are acute and overcrowding and congestion is severe. The predominant problems in the atolls are low housing standards and the absence of supporting infrastructure such as electricity, clean water, safe sanitation and harbour facilities. The major cause of these problems is unequal geographic distribution of population.

Population density among the atolls and the islands differs greatly across the country. At present, over a quarter of the population, 27.4% (74,069) live in Malé. Addu Atoll has the next highest population at 18,515, while Vaavu Atoll has the smallest population at 1,753. There are only three islands that have a population greater than 5,000. They are Kulhudhufushi (6,581), Fuvahmulah (7,528) and Hithadhoo (9,461). According to 2000 census, 54 islands have a population between 1000 and 5000 people, 66 islands between 500 and 1,000 people and 76 islands have a population less than 500 people.

In 1995, 35 out of 200 inhabited islands have a density equal to or more than 50 persons per hectare. Seven islands were recorded to have densities in excess of 200 persons per hectare. Kandholhudhoo in Raa Atoll has a population of 2800 people with an estimated density of over 600 persons per hectare. An average house in some of the overcrowded islands accommodates over 12 persons excluding small children. In most of the densely populated islands, housing conditions are of poor quality. They are too small in size relative to the number of inhabitants, poor in the quality of construction and poor in accessibility to services, especially water and sanitation.

With over one fourth of the population living in capital Malé, access to land for shelter is an acute problem in Malé. The original land area of Malé covered about 100 hectares and in 1969 Malé had 13,336 people with a density of 133.36 persons per hectare. Since 1970s, the population of Malé started increasing dramatically and to meet the additional housing demands land reclamation was initiated in the late 1970s and land area of Malé was almost doubled to 192 hectares. Even with the doubling of land area the density has now reached nearly 400 persons per hectare. Malé is now home for 74,069 Maldivians and several thousand expatriates. Though the average household size has remained constant around 9 persons in Malé, information is not available on the quality and size of the dwellings used by the households.

The severe land shortage problem in Malé is further compounded by the sub-division of plots because of land inheritance patterns. Malé Municipality restricts subdivision to a minimum plot size of 55.74 m² but in the past there have been instances of plots divided into 35 m². Municipality regulations also restrict heights of buildings to 10 floors or 30.48m. Because of these constraints, Malé has extremely narrow buildings rising to several floors and clusters of over crowded sub-standard small housing units.

Even with the acute housing shortage in Malé, there are no homeless poor or people sleeping rough on the streets and parks. In the context of the present housing issues in Malé, under the Malé Housing Development project 128 flats have been developed and leased to the residents of Malé. It is also envisaged that over 400 new flats will be constructed in the remaining blocks within the area allocated for public housing development. Villingili in the vicinity of Malé has already been developed as the fifth ward of Malé. Currently, 383 housing plots of 130 m² each have been allocated out of a possible 454. The population of Villingili has increased from 300 in 1995 to 4291 in 2000. The number of households increased from 44 in 1995 to 601 in 2000. The other priority project to address the Malé housing issue is the Hulhumale Land Reclamation and Development Project. This project involves the reclamation of approximately 12.8 km² of reef and lagoon in Hulhule and will provide about 25,000 additional dwelling units. After reclamation, the area is to be zoned for residential, mixed and industrial uses as well as for airport and port uses.

In order to ensure geographically balanced development, the government is facilitating the migration of inhabitants in smaller, more vulnerable and more remote islands to larger islands. The people of Hondaidhoo have been encouraged to move to Hanimadhoo, while the people of Maakan'doodhoo are in the process of moving to Milandhoo and Funadhoo. Part of the population of Firun'baidhoo have also been moved to Funadhoo and the rest will be resettled in the near future. Another significant policy aimed at more equitable development of the country is regional development. The first Regional Development Project involves developing two regions, the Northern Development Region (NDR) (Haa Alifu, Haa Dhaalu and Shaviyani Atolls) and the Southern Development Region (SDR) (Gaafu Alifu, Gaafu Dhaalu Gnaviyani and Addu Atolls). Khulhudhufushi is being developed as the regional growth hub in the north and Hithadhoo as the hub in the south.

The non-availability of housing finance is the other major constraint in the delivery of quality shelter to the Maldivians. New families who get plots of land have to build their new home with their own finance. There is no organised provision of building materials and the house builder has to purchase and transport building materials, and find his own finance. The

construction cost of a single storey house with a floor area of approximately 38 square meters is between Rf 76,000 to Rf 95,000. Such a floor area accommodates one bedroom, a living room, kitchen and a toilet. Very few people have finance to build a new house. To build house additional finances can be borrowed at the bank. However, it is not feasible, as borrowers have to mortgage with the Bank collateral of value worth two times the value of the facility given by the bank; the owner has to contribute at least 50% of the cost of the project it finances; and the repayment period is on average just three years.

The present legal framework is also a factor hindering the re-development of plots of land in Malé as high rise environmentally sustainable housing. The present laws on land ownership have to be revised and possibly new laws need to be introduced to meet the needs of urban growth, such as a condominium property law. Also essential for such redevelopment would be strong government support and funding for housing development through grants, or loans or private sector investments. It would also be necessary to vest powers of legal authority on acquisition, compulsory purchase, and redevelopment for housing and urban development matters to a strengthened Maldives Housing and Urban Development Board.

The other major constraints in urban development and human settlement management are lack of human resources and the lack of appropriate guidelines, data and indicators. The Maldives Housing and Urban Development Board is presently implementing a capacity building project for land management, housing and urban development with assistance from the World Bank. The main objective of this assistance is to prepare a strategy and a plan of action to improve the legal and regulatory framework for land and housing markets. The scope of work of this project covers administrative and institutional reform of the legal and regulatory framework governing land administration and management including property registration and land information systems; a housing and urban development strategy for the Maldives, including urban planning and development tools; and market oriented mechanisms and incentives for private sector participation; and the international training of staff.

Strengthening urban data systems and use of indicators is also essential for urban planning and settlements development. The Population and Housing Census of 2000 contain several data sets on housing and these data sets will be very useful for strengthening the urban data system. The data collected by the census has the advantage that it can be updated every five years and provide scope for comparative analysis.

To effectively meet the shelter and settlements challenges posed by the increase in population and uneven distribution of population an enabling shelter strategy is urgently required for the Maldives.

Sustainable Tourism Development

Tourism in the Maldives began in 1972 and the tourism sector has seen rapid progress over the 30 years of development. To ensure sustainable development of the industry, tourism planning was commenced in the 1980s. Two, ten year Master Plans have been formulated and the implementation of the first phase of the second Master Plan has been completed. Maldives now attracts close to half a million of tourists annually which is about double the size of the population. The number of tourist arrivals grew more than two-fold from 235,852 in 1992 to more than 460,984 in 2001. Bed capacity in Maldives expanded accordingly, from 8,645 in 1992 to more than 17,006 in 2001. The tourism sector is one of the largest employers in the country. The direct employment in the tourist resorts for 2000 was 7651 locals and 7268 foreigners.

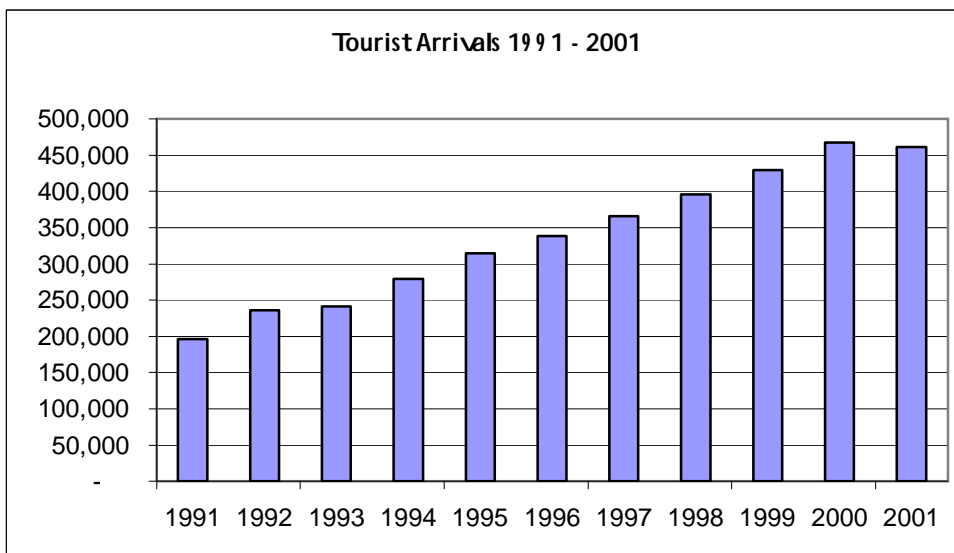


Figure 2: Tourist Arrivals (1991 – 2001)

Tourism generates substantial economic benefits for the Maldives, contributing 32.5% to GDP in 2001. Tourism in the Maldives is also fragile and volatile because of the heavy reliance on one dominant tourist market. The extreme vulnerability of the tourism industry was fully evident following the September 11 terrorist attacks in New York and Washington. The Maldives tourism industry was adversely affected by the decline in the number of arrivals and many tourism dependent enterprises were harshly impacted.

The European market is the main supplier of tourists and in the last three years, increasing numbers of tourists to Maldives were from different countries of North Western Europe, accounting for nearly 79% of the tourists in 2001. On the other hand, while many

other countries are getting increasing numbers of Asian tourists, this is not the case with the Maldives. Though there was an increase in absolute number, the number of Asian tourists as a percentage of the total tourists to the Maldives has declined from 19.90% in 1997 to 17.6% in 2001.

Substantial control of the tourism trade, investment and business are in the hands of foreigners, both resort owners and tour operators. Based on statistics compiled by Ministry of Tourism, more than 22% of the resorts were either foreign-owned or with foreign partnership while more than 48.3% of the resorts in Maldives were managed by foreigners in 2001. Foreigners also fill many of the high-skilled positions such as managers, chefs and diving specialists. There are few Maldivians in high-skill jobs, especially management and professional skill areas.

Being a small island economy, Maldives has a high propensity to import. Consequently the international tourist expenditure has to be supported by substantial imports which result in leakages of foreign exchange. The main leakages are: imports of food and other daily needs to support the international tourist expenditure due to unavailability of production inputs; remittances by the large number of expatriate workers who work in the resorts; payments to service the foreign capital whether in equity or debt.

Some of the economic linkages between tourism and other economic sectors are limited because of limitation of natural resources, inadequately developed manufacturing sector, unavailability of local labour and lack of capital. For instance, many types of handicraft and souvenirs are imported, as it could be sold to tourists cheaper. There are some economic linkages with agriculture and fisheries sector, but the strongest linkage for tourism is with construction sector apart from the financial sector. Strengthening of these linkages is important to enhance tourism benefits for the growth and development of the economy as a whole.

Tourism is also overly reliant on marine-based activities such as snorkelling and diving. This makes it very vulnerable to environmental changes. The 1997-1998 El-Nino event caused coral bleaching worldwide due to sustained high temperatures. Coral bleaching affected the tourist diving and snorkelling areas in the Maldives too.

Fisheries

Fisheries play a significant role in the Maldivian economy and society. In 1985, the tourism industry surpassed fisheries in terms of its contribution to GDP. However, fisheries is the largest contributor to exports and is the most dominant in terms of employment of the local labour force, employing over 20%. Most of this employment is in outlying islands, and hence, fisheries is the primary source of income to the islands. Though, the contribution of fisheries to GDP declined from 10.7% in 1990 to 6.1% in 2000, the fisheries sector's gross earnings have been increasing over the years. Earnings received by local fishermen from Maldives Industrial Fisheries Cooperation (MIFCO) reached US\$9.05 million and US\$12.20 million in 1998 and 1999 respectively. The total recorded fish catch increased from 140,567 metric tons in 1995 to 118,963 metric tons in 2000. Total revenue from export of marine products was 481 million Rufiya in 2000.

Tuna and tuna-related species comprise over 86% of the total fish catch. In the year 2000, out of the 118,963 metric tons of fish catch, tuna and tuna related species comprised 101,728 metric tons (figure 3). Tuna species, especially skipjack and yellowfin tuna which form the greater part of Maldivian catch, are highly migratory and thus stock status is not affected by Maldivian fisheries alone. The Indian Ocean skipjack tuna stocks are generally believed to be large. However, some researchers are pointing to signs of potential problems in the skipjack resources that are being exploited by the Maldivian fishery. These indications include, decline in both Maldivian skipjack catch rates and average size of fish.

Maldives is over dependent on tuna for export and the heavy dependence on skipjack alone makes the industry fragile, especially because of the volatility of tuna prices in the international market. Export of tuna constituted 87% and 60% of Maldives total marine product exports by value in 1998 and 1999 respectively. In 2000, the estimated percentage was 77%. Recent years, however, show a trend in diversification into new fisheries and new products. One of the fastest expanding segments of the fisheries sector is the local Yellowfin fishery. This is a new fishery, and from 1997 – 1999 the export of fresh chilled Yellowfin increased substantially. Along with MIFCO, private sector is heavily involved in the export of Yellowfin. While MIFCO mainly exports Yellowfin for European markets, private sector mainly caters for the Japanese and United States markets. Additional measures are needed to diversify the fisheries industry and add value to its products.

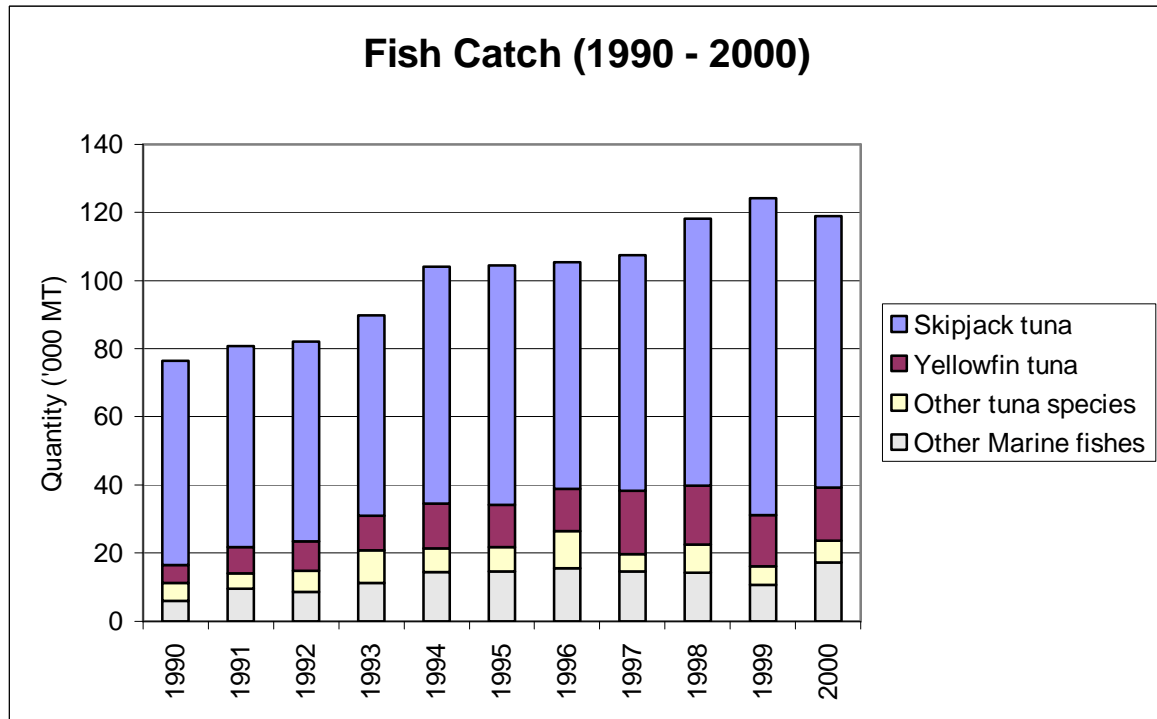


Figure 3: Composition of fish catch (1990-2000) Source: State of the Environment Report 2001, Ministry of Home Affairs, Housing and Environment.

The introduction of large fishing vessels with bigger hulls, more powerful engines, and the ability to venture outer sea has increased the catch in recent years. The hull sizes of the larger vessels are almost double the size of a conventional second-generation fishing vessel with their engine capacity being much higher. The catching capacities of these vessels are higher as they are able to go further out in the sea and they are able to fish in much adverse weather conditions. These vessels are capable of landing 10 – 15 tons of fresh fish per fishing trip while the conventional mechanised vessels can only land about 5 tons of fresh fish per fishing trip. It is estimated that there are more than 100 of these larger vessels operating in the country at present and a number of vessels are in the construction process. However, the capacity and efficiency of the secondary production sector (MIFCO and private buyers) did not keep pace with this increase in harvesting capacity. Furthermore, the increased capacity was not accompanied by the adoption of appropriate means of on-board post harvest handling of catch. This resulted in an increase in landings of poor quality fish.

During 2000 the government initiated a program to liberalise the export of the frozen and canned skipjack tuna. The tuna liberalisation program is expected to have favourable impacts on the fishing industry. More private sector involvement in the fisheries sector is expected as a result of this policy shift. Increased value addition and product diversification is

predicted. Therefore, provided that there is a healthy world market for tuna, the local tuna fishery is expected to undergo an expansion in the near future.

Although tuna has historically been the major fish resource and little use was made of reef fish resources, over the last decade or so, exploitation of reef resources in the Maldives has become an important component of the country's fisheries sector. Demand for marine products such as lobsters and reef fish increased locally with increase in demand from the tourist resorts. High demand in the international market for certain reef species has increased pressure on these reef resources. Reef resources that are exploited mainly for export include groupers, sea cucumber, sharks and ornamental varieties.

A specific fishery for grouper started in the Maldives in 1992. Export figures show a declining trend in the quantity of groupers exported as well as total value of exports and given the pressure on the grouper resources, it is highly likely that grouper resources are being over fished. Export figures for dried sea cucumber also show a much lower bulk of exports in mid and late 1990's compared to the peak years during early 1990's, with correspondingly low value for exports. The live ornamental species export trade (Aquarium Fish) exploits about 100 species of marine organisms, majority of which are reef fish. The total quantities of ornamental species exported by the "Ornamental Fish" industry too have declined in recent years. Concern has also been expressed that some species are being, locally over-exploited or exploited close to maximum sustainable levels in the area around Malé.

Reef sharks as well as oceanic sharks are exploited mainly for the fins. Dried shark fins fetch good prices in the international market. Threat of over-exploitation is the biggest environmental problem posed by commercial exploitation of reef resources. The export quantities of most of the reef species have declined. Since stock status is not monitored regularly it is not known if stocks are over-exploited.

Maldives has an existing pool of fishermen skilled in eco-friendly fishing methods such as pole and line fishing. Pole and line fishing using vessels of similar size to Maldivian *masdhoni* have been shown to be the most economically efficient fishing units by a comprehensive study by Food and Agriculture Organisation (FAO) in 2000. This gear used by Maldivian fishermen was shown to be more economically efficient than purse seining and trawling. Figure 4 provides details of fish catch by fishing methods. Although the fisheries industry expanded through the mechanisation of the traditional fishing fleet, fuel distribution and fish collection systems, the fishing practice remained traditional. Most fish are caught using lines that target a certain species and thus by-catch that is wasted is almost non-existent. The tuna fishery is largely based on pole and line fishing from mechanised *dhonis*, thus

producing a "dolphin friendly" product. Other species such as groupers are caught using hand lines and sea cucumbers are collected by hand or using lines. Gillnets are mainly used for targeting reef sharks.

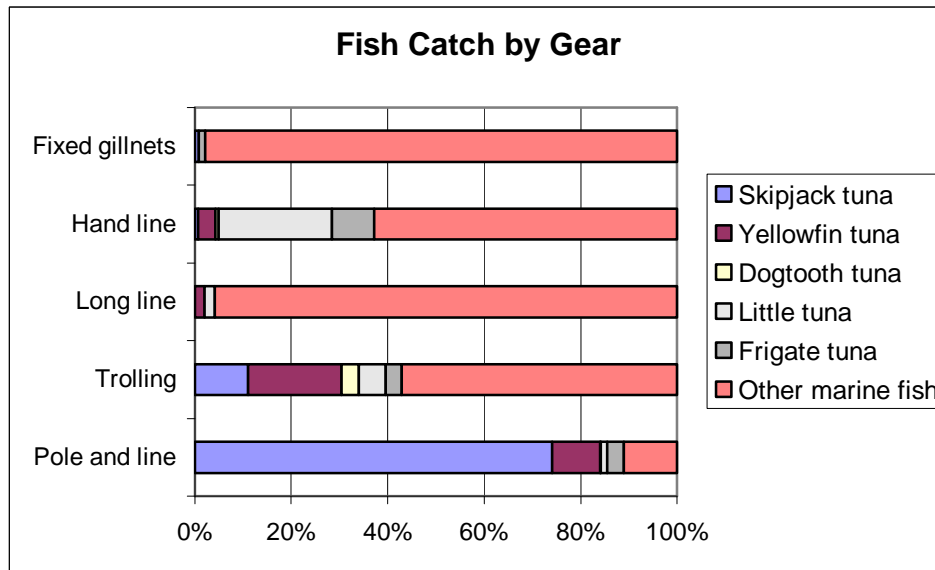


Figure 4: Fish Catch by Gear Source: State of the Environment Report 2001, Ministry of Home Affairs, Housing and Environment.

The Maldives continues to play an important role in the management of fisheries both regionally and internationally. The Maldives has ratified the UN Agreement on Highly Migratory and Straddling Fish Stocks. Maldives has also ratified the UN convention on Law of the Sea. These are significant steps taken by the Government and will have implications for the local fishery, especially on how the pelagic fishery is developed and managed.

The existing capacity for undertaking research into the marine resources of the country is not sufficient to make informed decisions. Therefore, there is an urgent need to strengthen the research capability of the country to make available the information needed to ensure effective and efficient management of the marine resources of the country.

The higher costs of production due to natural geographic limitations and resultant high costs of production infrastructure in the Maldives make its fish and fish products non-competitive at international markets without concessions based on its LDC status. In the event of graduation of the Maldives from its LDC status within the next five years, Maldives may lose its 24% tariff concession on EU markets, thereby making its main fish product, canned tuna, non competitive in its major export market.

Agriculture

The Agriculture sector contributed 3.6% of the national GDP in 1995, but in 2000, the sector contributed only 2.8%. However, production of horticultural crops increased by 18% in the same period (tables 1 and 2). Some of the products that are presently farmed on agricultural islands in Maldives are papaya, watermelon, banana, chilli, taro, salad greens, cabbages and coconut. Most staple foods are imported.

<u>Crops</u>	<u>Unit</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
Coconut	Kg	3,883,103	3,576,896	3,578,284	4,191,452
Papaya	Kg	556,113	854,199	738,454	555,111
Watermelon	Kg	189,690	312,662	756,519	111,052
Banana	Kg	6,911,670	6,992,369	3,364,839	3,131,921
Chili	Kg	13,562	8,806	7,311	14,778
Root crops	Kg	722,029	1,212,486	1,351,130	1,735,833

Table 1: Production of major crops during 1993-1996

<u>Crops</u>	<u>Unit</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
Coconut	Kg	4,225,688	3,826,834	3,342,013	4,744,905
Papaya	Kg	803,215	761,982	621,023	597,913
Watermelon	Kg	753,166	1,977,215	1,641,888	2,534,608
Banana	Kg	7,079,658	7,199,765	5,127,994	7,175,038
Chilli	Kg	12,376	17,506	18,814	22,049
Root crops	Kg	498,661	747,299	420,706	330,844

Table 2: Production of major crops during 1997-2000

<u>Crops</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>
Banana (Fresh Or Dried)	152,335	306,730	321,256	298,471
Bread Fruit (Fresh Or Chilled)	1,468	1,502	2,630	12,180
Cabbage (Fresh Or Chilled)	661,468	753,007	816,941	922,092
Chillies (Fresh Or Chilled)	213,114	261,333	296,893	293,089
Cucumber (Fresh Or Chilled)	360,495	402,841	449,878	465,711
Lime (Fresh Or Dried)	294,553	384,874	449,906	479,531
Mango (Fresh Or Dried)	110,213	158,187	198,902	170,237
Papaws (Papayas), Fresh	68,039	75,681	84,832	112,310
Passion Fruit (Fresh Or Dried)	29,316	32,497	51,984	56,611
Pumpkin (Fresh Or Chilled)	82,098	117,416	130,793	125,995
Watermelons, Fresh	861,713	1,024,518	1,192,168	841,363

Table 3: Import of major crops (unit Kg) 1997-1998

Apart from domestic consumption needs, the continuous influx of tourists has generated increasing demand for fresh agricultural products (table 3 shows the import of major crops). This sector has the potential for further development to enable Maldives to become self-sufficient in some vegetable and fruits, save foreign exchange as well as to provide alternative occupations to Maldivians who prefer jobs in the agricultural sector. Some of the strengths for agriculture development include presence of untapped islands which can be developed into agricultural islands; a sizeable, ready domestic market of about 300,000 people and close to half a million tourists.

Developments in animal husbandry are slow as local breeds and varieties are inadequate. Certain reservation exists regarding introduction of animals from neighbouring countries due to fear of introducing pest and diseases and adaptation to local food and climate. Nevertheless, the Government has initiated a project on poultry production. The project assisted in exploring the potential for battery production of eggs and developing an improved

breed of chicken. It had been shown that battery production is viable using small incubators. The newly developed breed has the potential to grow faster, larger body weight and acquires adequate traits of disease resistance.

With the possibility of commercial ports in Northern and Southern Maldives, there will likely be increased demand for local agricultural products, as trans-shipment vessels need to replenish their stores with fishes, meats, fresh produce and fruits to meet the dietary needs of the crew. There are thus, good reasons to further develop the sector and to attract more local participation in the agricultural sector.

There is anecdotal evidence that production is increasing and there is potential to increase output to achieve self-sufficiency in certain products. However, the lack of reliable agricultural statistics makes planning, policy analysis and formulation of developmental projects very difficult. Even basic information regarding land and its utilisation, area, yield of production etc is lacking. The institutional arrangement for collection of the data from the field and their processing are also inadequate. Appropriate formats, procedures and arrangements for collection, processing and publication of the data are also lacking. Most importantly, due to poor statistic, the economic contribution of the sector is ambiguous and the potential cannot be acknowledged. Therefore, the budget allocation for sector development is inadequate. Budgetary constraints hindered many agricultural activities during the period 1997-2000. Focus on strengthening the capacity of national statistical system to provide reliable and timely food and agricultural statistics and other basic information is pivotal for sector development.

To date, agriculture sector has no defined core planning document or strategic plan that guide the coordinated and harmonious development of the sector. Failure to address important issues impeding the development of the sector, failure to practice good governance, and poor participation of the private sector are some of the negative outcomes, which have resulted from absence of a proper plan, which can guide the sector's growth.

Agriculture development is also constrained by a number of other factors. Influx of cheaper imports makes harvests from community-based farms in Maldives not competitive. Distribution of the products to resorts where the main demand lies imposes high operation costs because of poor inter-island linkages. The transport difficulty has also rendered the delivery of perishable products non-viable. Lack of market information and distribution channels means farmers are not able to distribute and market their products economically and efficiently. Lack of capital to finance agricultural activities and preference among Maldivians to choose fishing over agricultural activities for livelihood because of the shorter gestation period

of their investment and more immediate earnings are other factors that hinder the development of agriculture. The lack of trained staff in the already understaffed agriculture sector is also a major obstacle.

Solid Waste Disposal

Solid waste disposal is now one of the most critical environmental issues in the Maldives. The amount and the rate of solid waste generated vary throughout the country and there is a significant difference between the amount of waste generated in Malé and that of in the atolls. The amount of solid waste generated in Malé has been increasing at an alarming rate over the past 10 years. The solid waste generated almost doubled within the period 1990 to 1995 and in the next five years (1995 to 2000) the amount of waste generated increased by eight fold.

On average 2.48 kg of waste are generated per capita per day in Malé while in the atolls this value is around 0.66 kg of waste per capita per day. Average waste generation in the resorts stands at 7.2 kg per guest per day. The rapidly developing construction industry is contributing significantly to the composition of the waste.

The large quantity of waste generated coupled with limited land area and technology makes the disposal of waste a challenge for the country. Until 1991, solid waste generated in Malé was used for land reclamation in Malé. Presently, solid waste generated in Malé is collected and taken to a transfer station. From the transfer station, the waste is transported to Thilafushi, a municipal landfill, located 5 km away from Malé. The Thilafushi landfill site has now become a landfill for the central region of the country. In addition to waste from Malé, it now receives waste from islands in Malé atoll, the resorts and the Malé International Airport.

Solid wastes generated in the atolls are disposed using various methods. Organic wastes are composted at home backyards in most of the islands. Non-biodegradable waste such as plastics is dumped near the beach in many islands and buried in a few islands. Burning of combustible waste at designated areas in the islands is also widely practised in many islands.

Current waste disposal practices adversely affect the environment through habitat destruction and pollution. Often, wetland areas such as swamps and mangroves are considered as disposal areas and reclamation of such areas to increase land space often takes place. Dumping of solid waste near beaches also has adverse effects on the reefs and lagoons of the islands.

The amount of hazardous waste generated in the Maldives is very small. In 1998, it was estimated that 0.4 ton of hazardous waste was generated daily in Malé. Though figures for

hazardous waste generated for the atolls have not been estimated, it is believed that the generation of hazardous waste would be minimal. Hazardous waste mainly includes clinical wastes and waste oil from electric generators and vehicles. At present, hazardous waste generated in Malé is transported to Thilafushi.

The management of solid wastes is identified as a key environmental issue in the Second National Environment Action Plan. In 1998, a study on The Solid Waste Management for Malé city in the Republic of Maldives was carried out with the assistance of Japan International Co-operation Agency (JICA), to assess the solid waste disposal problems in inhabited islands and resorts.

The Ministry of Home Affairs, Housing and Environment is currently in the process of developing a national waste management strategy for the country. An interagency technical committee was formed in April 2000 to advise the Ministry on the national waste management strategy. Under the South Regional Development Project, and with the guidance of the technical committee, work is underway to develop a solid waste disposal site in Hithadhoo. A similar site is being developed under the Northern Regional Development Project in Kulhudhufushi. These waste disposal sites are expected to become operational in 2002.

Barging of solid waste collected at the transfer station from Malé to Thilafushi has proved practical and efficient. The experience gained from this operation is planned to be utilised in all the inhabited islands of Malé Atoll in 2002. Plans are underway to barge the solid waste collected from the inhabited islands in Malé atoll to the Thilafushi landfill. When this project is implemented, the problem of solid waste disposal in Malé Atoll would be significantly improved.

Maldives is party to the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal. The Environment Protection and Preservation Act (Law 4/93) of the Maldives provides a statutory framework enabling the control and regulation of the transboundary movement of hazardous waste controlled under the Basel Convention.

Climate Change and Sea Level Rise

The Maldives being a fragile low lying small island ecosystem, is very vulnerable to climate change and its associated impacts especially the predicted sea level rise. Although the Maldives contributes minimally to the global greenhouse gas emissions: 0.001%, it is among the most susceptible to impacts of the changes in climate.

The Intergovernmental Panel on Climate Change (IPCC) in its Third Assessment Report estimates a projected sea level rise of 0.09m to 0.88m for 1990 to 2100. With more than 80% of the land area of Maldives less than a meter above mean sea level, the slightest rise in sea level will prove extremely threatening. This is further aggravated by the variation of the tide. Many islands already suffer inundation and shoreline erosion because of their low elevation. The inundation often leads to freshwater shortages and disease outbreaks. The magnitude of rise in sea level projected in the IPCC Third Assessment Report threatens the very existence of life and livelihood in the Maldives.

A particular concern of the Maldives is the impact of climate change on the groundwater availability. In the islands rainwater lenses lie atop salt water. As sea level rises, the thickness of the freshwater lenses decrease, and the volume of freshwater decreases. Sea level rise would also increase the likelihood of storm over wash of the islands, causing increased incidence of saltwater contamination of the freshwater lenses.

The tourism industry relying heavily on the marine ecosystems is also under threat from the impacts of climate change. An increase in temperature can very easily bring the reef growth and reef ecosystems to an alarmingly poor status. Although almost all the reefs have recovered from the coral bleaching event of 1997 /1998, the impacts of bleaching were felt on around 90% of the reefs of Maldives, bleaching them totally or partially. The corals already growing at highest tolerable temperatures (approximately 30°, Celsius) have a very grim possibility of survival given the predicted rises in temperature of 1.4 to 5.8°C for the period of 1990 to 2100.

The islands of Maldives are reef-based and coral reefs serve as natural breakwaters. With damage to the coral reefs comes the bigger danger of losing the natural protection of the islands from the waves and currents. An island with a degraded reef is more open for coastal damages such as beach erosion and more susceptible to inundation by uncontrolled

waves reaching the shore. The Maldives faces severe constraints in adapting to increased erosion expected with the rising sea level. A major constraint is the lack of capacity to evaluate the magnitude of erosion and identify quantitatively the major causes of erosion. Without such knowledge, appropriate adaptation strategies cannot be formulated.

Fishery is also likely to suffer from the impacts of climate change. Tuna fishery is the main fishery and tuna is a migratory species. A possible change in temperatures can drive the tuna stock to more favourable temperatures. This can lead to a decline in the fisheries industry as the fishermen lose their fishing grounds. As the tuna fishery is based on pole and line method using bait-fish; any changes to the availability of bait fish caused by damage to the reefs would also affect the tuna fishery.

President Gayoom played an important role in bringing the climate change issue to the attention of the world community. He drew the world attention to climate change by addressing the UN General Assembly, Commonwealth Heads of Government Meeting in Vancouver and the SAARC Summit held in 1987. On the request of the President, the Commonwealth and the SAARC established expert groups to study the impacts of greenhouse effect and global warming. A United Nations Environment Programme mission visited the Maldives and recommended training of local personnel to monitor and evaluate impacts of expected environmental changes and the development of strategies that would permit sustainable development.

The Maldives is a party to the United Nations Framework Convention on Climate Change (UNFCCC). The Maldives signed the Convention on 12th June 1992 and ratified the same on 9th November 1992. The Maldives played a very important role with Alliance of Small Island States (AOSIS) in the negotiation process that started in Berlin and culminated in Kyoto. The Maldives was the first country to sign the Kyoto Protocol on 16th March 1998 and it ratified the Protocol on 30th December 1998. The first National Communication of the Maldives to UNFCCC was submitted at the 7th Session of the Conference of the Parties to UNFCCC held in Marrakesh in 2001. The National Greenhouse Gas Inventory, National Mitigation Plan, Vulnerability Assessment and Adaptation Options are included in the national communication of Maldives.

As the Maldives is very vulnerable to the predicted climate change and sea level rise, the Government has given serious attention to adaptation measures. Various programmes have been designed and implemented in areas such as coastal protection, freshwater management and coral reef protection. A breakwater has been constructed around the capital Malé costing around 30 million US Dollars. The government has also taken measures to

protect the coral reefs by reducing import duty on construction materials and prohibiting use of coral for government buildings and tourist resorts and by banning coral mining from house reefs.

The first national communication of Maldives to the United Nations Framework Convention on Climate Change identifies the following as the major action areas for the future:

- ✍ It is necessary to build the capacity to quantify the magnitude of erosion on islands in the Maldives; determine the importance of natural versus human induced erosion on islands in the Maldives; and quantify changes in process mechanisms promoting erosion.

- ✍ A major constraint to effective adaptation to climate change and sea level rise in the Maldives is lack of appropriate and tested practical solutions to coastal erosion. Therefore it is necessary to develop a range of practical solutions to combat coastal erosion through use of systematically collected environmental data as a basis to designing a range of environmentally appropriate solutions to manage coastal erosion; test and monitor each management tool to determine the effect of environmental processes and effectiveness in combating erosion; and develop technical guidelines for the design and construction of different management tools and appropriateness for representative island types.

- ✍ Effective erosion management is currently constrained by a weak evaluation process that is not mandatory. A Coastal Erosion Management Strategy needs to be developed that provides clear and practical guidance on steps that need to be undertaken to properly assess an erosion issue and formulate appropriate management solutions.

- ✍ Identify the main elements of a National Population Consolidation Strategy and programme with particular attention being given to increasing the opportunities of small, isolated and vulnerable island communities and assessing the environmental implications of settlement consolidation and measures to protect island populations from the negative impacts of predicted climate change and sea level rise.

- ✍ Develop a water resource management strategy taking into consideration the impacts of climate change and sea level rise on the precipitation patterns and groundwater salinity and introduce alternate distillation and desalination technologies as a water resource for the high density populated islands to reduce dependency on fossil fuel desalination technologies.
- ✍ Voice the nation's climate change concerns internationally through continued active participation in regional and international climate change related activities and strengthening participation in portraying a collective voice for all small island states at international forum.
- ✍ Reflect climate change concerns in regulatory processes through incorporating climate change implications into present environmental impact assessment processes and integrate climate change related policy issues in the national audit of government organisations.
- ✍ Create sustainable financing mechanisms for programmes related to climate change activities through facilitating effective access to external funding and generating internal funding.
- ✍ Build national capacity to adapt to climate change through human resource development; institutional strengthening; research and monitoring and public awareness activities.
- ✍ Incorporate adaptive measures to climate change into national development planning with particular emphasis on coastal zone management, infrastructure protection, food security and economy diversification.
- ✍ Develop appropriate measures to mitigate greenhouse gas emissions.

Transboundary Air Pollution

Air quality of the Maldives is generally considered to be good and is in pristine state. However, recently it has been observed that transboundary air pollution is affecting the air quality of the Maldives. Transboundary air pollution in the Maldives became first known in 1997, when large parts of the country were affected by haze caused by forest fires in Indonesia. The haze layer blanketed the country between October 1997 and December 1997 and significantly affected the routine lives of the Maldivians. The actual state of the transboundary movement of air pollutants over the Maldives was measured in the Indian Ocean Experiment (INDOEX). INDOEX was carried out by a team of more than 200 international scientists and was led by the Centre for Clouds, Chemistry and Climate (C4) of the University of California. INDOEX results showed widespread pollution over large sections of the Indian Ocean. In March and April 1999, the scientists were surprised to find a dense brownish pollution haze layer stretching an area of more than 10 million square kilometres over the Indian Ocean tropical region. Because of the pollution, visibility over the open ocean dropped below 10 km, a visibility that is typically found near polluted regions in the eastern United States and Europe.

As air pollution is an emerging environmental issue in South Asia, on the initiative of United Nations Environment Programme a declaration to promote regional co-operation in the area of air pollution was agreed in 1998. The Malé Declaration on Control and Prevention of Air Pollution and its Likely Transboundary Effects for South Asia was adopted by Ministers of Environment at the seventh meeting of the Governing Council of South Asia Co-operative Environment Programme (SACEP) in Malé.

In 2001, the Government adopted, Addressing Air Pollution - National Strategy for Action with the aim to establish the necessary framework for addressing air pollution to protect the environment of the Maldives. The action plan calls for regular monitoring of air pollution and to assess the impacts of air pollution on human health and assets, introduction of preventive and management measures for air pollution at the source level, development of suitable coordinating mechanisms for the successful implementation of the air pollution action plan and for building adequate capacity to address the issue of air pollution.

In 1998 and 1999, the Maldives contributed to the Indian Ocean Experiment (INDOEX) which was carried by an international group of scientists. A climate observatory was established at Kaashidhoo in 1998 as part of the Indian Ocean Experiment (INDOEX). The station was developed as a model station for frontline atmospheric research in the tropics.

It was aimed at providing an excellent venue for scientists to study a range of critical issues of general interest to the climate research community. The station was shutdown in July 2000 due to technical problems. A similar observatory is planned to be established in Hanimadhoo to continue the climate research under the second phase of INDOEX as Asian Brown Cloud (ABC) with assistance from UNEP. This station will monitor the impact of pollutant emissions in the region.

Conservation of Biological Diversity

The extent of biological diversity including flora and fauna present in the islands of the Maldives is not adequately documented or thoroughly researched. The main types of ecosystems found are coral reefs, islands, sea grass, swamps and mangrove areas. Coral reefs are the major type of ecosystem that exists in the Maldives in terms of area as well the diversity of life that exists in the system. This diversity is amongst the richest in the region and the corals reefs of the Maldives are significant on a global scale as well, being the 7th largest in the world, covering a total area of 8,920 km² and contributing 5% of the worlds reef area.

Based on published plant species lists and vegetation descriptions, 583 species of plants are found in the Maldives and, of these 323 are cultivated species and 260 are native or naturalised species. Over 300 plant species are known to have medicinal values, and are utilised for traditional medicinal practices. In comparison to the rich terrestrial faunal diversity of the South Asia region, the Maldives demonstrates a rather small proportion of the representatives. However, about 165 bird species have been recorded from the Maldives including seabirds, shorebirds and terrestrial birds.

In contrast to the terrestrial biological diversity marine biological diversity shows an outstanding richness. Most recent accounts recognise 187 species of stony corals recorded in the Maldives and to date a total of 1090 fish species have been officially recorded. Marine algae including some 21 species of *Cyanophyceae* (blue-green), 163 *Rhodophyceae* (red), 83 *Chlorophyceae* (green) and 18 *Phaeophyceae* (brown) have been recorded in the country. Other groups include; 36 species of sponges, a little over 400 species of molluscs, about 350 species of marine crustaceans and over 80 species of echinoderms.

Five species of turtles are found in the Maldivian waters, all of which are endangered, including loggerhead turtle *Caretta caretta*, green turtle *Chelonia mydas*, Hawksbill turtle *Eretmochelys imbricata*, Olive Ridley turtle *Lepidochelys olivacea*, and leatherback turtle *Dermochelys coriacea*. Marine mammals recorded include 7 species of dolphins and 9 species of whales.

The government has taken decisive measures to conserve and maintain the biological diversity found in the Maldives. The first National Biodiversity Strategy and Action Plan (NBSAP) of the country was adopted in 2001, following extensive stakeholder participation throughout the country, and through community based planning approaches. The Maldives became a party to the United Nations Convention on Biological Diversity in 1992 and recently

submitted the first country report on biological diversity to the Secretariat of the Convention on Biological Diversity.

The Government has also implemented several important measures for the protection of important habitats and threatened species. The Government designated 15 marine protected areas in 1995 and designated 10 more areas in 1999. The Government banned export of important bait fish as aquarium fish; banned fishing from the house reefs of tourist resorts; and gave protection status to threatened marine resources such as sharks, sea turtles, giant clams, and black coral. In 1996, the White Tern, *Gygis alba monte* was protected under the National Environment Protection Act and 22 additional bird species were protected in 1999 under the same Act.

A tree planting programme was launched nation-wide during the year 1996 with the aim of adding a million trees to the island ecosystems within 3 years. The tree planting programme was a concerted effort to conserve, rehabilitate and manage the environment. Due to the extensive support the programme received the initial target of one million trees was almost achieved by the end of 1996 itself. Therefore a new target of 2 million trees was set. Following on from the two million-tree programme, a 3 year fruit tree planting programme was launched nation-wide in June 2000, in an effort to increase fruit trees in the country. The objectives of the programme include increasing awareness and interest in growing fruit trees, increasing local production and generating the spirit of growing trees in all islands.

In order to better manage and conserve protected areas a pilot project on the establishment and management of protected areas has been initiated with the assistance of the Government of Australia through AUSAID.

Civil Society in Sustainable Development

Agenda 21 calls for the development or improvement of mechanisms to facilitate the involvement of concerned individuals, groups and organisations in decision-making at all levels. In the Maldives, the Government has devolved many of the administrative and developmental responsibilities to Atoll Development Committees, the Island Development Committees (IDCs) and Women's Development Committees (WDCs). IDCs and WDCs are elected community organisations and in many atolls and islands they play a very important role in economic, social and environmental affairs. The planning and implementation framework provided by these committees are now being successfully used to empower the island community to identify their problems and seek their own solutions. The Atoll Development Committees are appointed by the Atoll Chiefs and are involved in atoll level planning and decision making while the elected Island Development Committees contribute to land-use planning at the island level as well as mobilising voluntary efforts for community development and building networks. There are many good examples of successful community development initiatives pursued by the Island Development Committees in the areas of education, health, infrastructure development and environmental protection. Recently the Island Development Committees in Noonu Atoll have shown great innovation in mobilising community financial resources for community development projects.

Community participation in development has been promoted intensively with the help of UNDP and ADB, and some true success stories are available from this experience in the atolls. These include the Nilandhe Atoll Integrated Development Project and the UNDP Sustainable Livelihoods programmes in Noonu and Laamu atoll. The Ministry of Atolls Administration is also implementing a community based Southern Atolls Development Project with financial support from the Asian Development Bank. In most of these projects, the Island Developing Committees and the Women's Development Committees are actively involved in the planning and management of the projects.

The national level NGOs also have carried out many successful programmes mainly with the support of external donor agencies. They work in different areas of specialisation ranging from health education, thalassaemia, drugs counselling and awareness raising, HIV/AIDS, environmental protection, development and addressing the special needs of people. NGOs such as the Society for Health Education (SHE), Foundation for the Advancement of Self Help in Attaining Needs (FASHAN), Volunteers for Environment,

Social Harmony and Improvement (VESHI), Care Society of Maldives, Ecocare Maldives, Kaduhulhudhoo Island Development Society (KIDS) and BluePeace are active in the spheres of sustainable development at the national level. At the island level there are a number of registered active clubs and societies working with community participation in promoting sustainable development. The Ministry of Youth and Sports and the Ministry of Planning and National Development are implementing activities to strengthen the role of non-governmental organisations in sustainable development of the country.

The Government recognises the importance of the involvement of NGOs in the development planning and decision making process and has invited representation of non-governmental organisations in some of the key councils and committees such as the National Development Plan Preparation Committees, Gender Equality Council and Social Welfare Council. NGOs also were invited to participate in the consultative process on the Vision 2020 strategies and they made important contributions. The Ministry of Home Affairs, Housing and Environment is at present considering elevating the National Commission for the Protection of the Environment to the status of National Sustainable Development Commission and inviting participation from NGOs and private sector in addition to the key government ministries that are represented at present.

In 2001, the Maldives celebrated the International Year of Volunteers and several forums were held to discuss the future of voluntarism and community participation in development in the Maldives. In these forums it was recognised that urgent action was needed in certain areas in order to ensure the sustainability of voluntarism and community participation in development in the Maldives. It was identified that a legal framework for activities of non-governmental organisations need to be developed urgently and that there was also the need to have an umbrella organisation to represent the interests and issues of non-governmental organisations. Furthermore it was recognised that at present most of the non-governmental organisations were working in isolation and there is a need to build networks and foster partnerships among NGOs as well as with NGOs and government agencies. The need for advocacy and awareness raising to revive the spirit of voluntarism was also identified as a priority action.

Women and Sustainable Development

In the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992, empowerment of women was identified as a matter of concern for sustainable development. Over the last 30 years the economy of Maldives has achieved impressive growth through economic restructuring. However, the role of women in the economy over the same period declined sharply. In the 1970s women's labour force participation stood at a remarkable 62.3% while in 1995 it dropped to a mere 28%. One of the most important reasons for the decline in labour force participation is the economic restructuring around the tourism industry in the 1980s and 1990s. Inherent cultural values and beliefs and lack of an enabling environment for women to work in tourist resorts restricted the participation of women in the development of the tourism industry. Another important reason for the decline in women's participation in the labour force could be the introduction of new technologies in the fisheries industry. Given the active role that women played in developing agriculture for subsistence, their participation in the labour force declined with the marginalisation of agriculture as well.

Though the participation rate achieved during the 1970s has not been recovered, the role played by women in economic development of Maldives has been increasing since the 1990s. The number of women in the economically active population increased substantially between 1990 and 2000 from 11,237 to 29,708. In fact, the rate of growth for women in the labour force over the period is much greater than the growth rate for men. This could be attributed to the efforts made by the government, international organisations and civil society towards encouraging the participation of women in economic development both in Malé and in the atolls.

In order to increase the participation of women in the economic development of Maldives the government facilitated financial assistance to women through loan schemes to encourage self-employment. The Southern Atoll Development Project (SADP) and the Atoll Credit and Development Banking Project are two macro level loan schemes implemented by the Government of Maldives. These loan schemes are funded by IFAD and OPEC and operated for the atoll community. Women utilised approximately 25 percent of these funds. The Ministry of Women's Affairs and Social Security (MWASS) administers an ongoing government of Maldives loan scheme to women to the value of one million Rufiya, which is open to the entire country. The Development Banking Cell of the Bank of Maldives (DBC) has also dispersed over one thousand loans only to women.

In collaboration with the government, international organisations also provide financial support to facilitate micro-credit to women. A US\$100,000 loan scheme funded by the European Union (EU) through UNFPA is currently being administered for women by the MWASS. Successful applicants from Addu Atoll, Laamu Atoll and Malé are provided with Rf 15,000 loans with no collateral to enhance their income generating capabilities

In addition to the initiatives undertaken by the government the civil society is also playing a proactive role in enhancing the participation of women in developmental activities. The Island Women's Committees (IWC) have organised at island level, short skills development programmes to boost the income generating skills of women so as to enable them to become empowered through financial independence.

Establishment of gender equality in the social context calls for equal opportunities for women in access to human capital, health and their participation in public life. The Government has ratified international conventions such as CRC and CEDAW and the has been working for the advancement of women in all arenas. A number of policy objectives in the Sixth National Development Plan are geared towards achieving a gender balance in all developmental activities and the elimination of any form of discrimination against women.

Gender inequality in education and training now can have strong repercussions for the next generation as the burden of bearing and rearing children fall largely on women (World Bank 2000/2001). In 1979, the President of Maldives introduced a programme called "Asaasee Thauleem" with the objective of extending basic literacy to distant communities and this initiative had a profound impact on women. As a result, there is no discrepancy between men and women in terms of basic literacy. The Government of Maldives has also over the years laid strong foundations to ensure equal opportunities in education for girls and boys.

Building on these foundations, the Government continues to facilitate education opportunities for children at all levels. There are no disparities between girls and boys in terms of enrolment and completion of school at the primary and lower secondary levels. However, when it comes to upper secondary and tertiary education, the number of boys is significantly higher than the number of girls. This is because not all the islands have facilities to provide education beyond primary grades and thus, when the students are required to move to islands that offer secondary education facilities, cultural norms restrict the mobility of girls. Access of girls to higher education improved when secondary schools were established in some of the highly populated islands.

In order to encourage further education for girls, recent initiatives taken up by Ministry of Education and UNFPA include scholarships programme for girls from the atolls to study in Malé. This scholarship programme was well received by the atoll community and thus the Ministry of Education is now continuing it as a government scholarship programme.

In order to minimise the tendency of girls to get married at a much earlier age than boys the minimum age for marriage has been determined as 18 years. Prior to this, the average age of marriage for girls was 16.8 years in 1995.

Men and women have equal access to health care in the Maldives. Women have equal rights as men to seek medical assistance from the hospitals and Health Centres. NGOs have also made invaluable contribution to improving the reproductive health of women. One such NGO is Society for Health Education (SHE), working with International Planned Parenthood Federation (IPPF) to strengthen their reproductive health programme. Another NGO, Foundation for the Advancement of Self Help in Attaining Needs (FASHAN) also conducts activities to create awareness among youths on family planning and sex education with the aim of increasing responsibility among youths.

While significant steps have been taken in promoting gender equality in human resource development and health care, their beneficiaries and women are limited. Traditional beliefs and norms and early marriage hinder women from pursuing training and skills development opportunities. Nutritional deficiencies and maternal morbidity are the key issues in women's health.

Considerable steps are also taken towards increasing women's participation in decision-making and advancing their status in the society. In the 1999 parliamentary election more women than ever before contested. Since 1990, women's representation in the People's Majlis has more than doubled from 4.17 % in 1990 to 10% in 2000. In the Atolls, the Atoll Chiefs and the Island Chiefs are the main decision makers. Traditionally only men were appointed to these positions. Since 2000, women are also appointed as Assistant Island Chiefs and Island Chiefs. In 2001, for the first time a woman was appointed as the Atoll Chief. Similarly, women are represented at all national and most international conferences.

In order to promote the government's policy on achieving equality between women and men, the national machinery that was established for the purpose in 1979 has been periodically reviewed and strengthened. Today, the Ministry of Women's Affairs and Social Security functions as the lead agency for mainstreaming gender issues in all development policies and programmes.

In the 5th NDP, women's concerns were addressed in isolation whereas the 6th NDP considers gender as a cross cutting issue and a gender perspective has been integrated into the development objectives and plans of all the sectors. This is a significant step forward made by the government in acknowledging gender as an integral part of the national development process.

An important step forward for protecting the rights of women is the family law, which was enacted in 2000. The law has been in force since mid 2001. It aims to reduce the divorce rate and strengthen the alimony and child support mechanisms so that it will reduce the burden on divorced women who normally undertake the responsibility of looking after the children in case of divorce.

The women in the Maldives have traditionally played a key role in environmental protection and environmental stewardship and continue to do so. In islands where successful environmental protection initiatives have been undertaken, it can be seen that the women played a major part in those initiatives. Solid waste management is one area where the contribution of women is particularly noteworthy.

WDCs in some islands play a very active and effective role in waste management and maintaining cleanliness in the islands. IWCs along with the support of the Island Development Committees in some of the islands in South Ari Atoll such as Omadhoo, Dhidhdhoo and Dhigurah have been very successful in managing waste in these islands. This is a tremendous achievement on the part of both the committees and the people of the islands. Women also play an active role in the activities of NGOs such as Volunteers for Environment Social Harmony and Improvement (VESHI), BluePeace and Ecocare.

Official Development Assistance

Sustainable development requires increased investment, for which domestic and external financial resources are needed. Agenda 21 calls for new and additional financial resources to be provided to support Agenda 21 programmes and to meet international targets of official development assistance.

The Maldives heavily depends on external support in the form of grant aid, soft loans, training and technical assistance, for socio-economic development. However, there has been a steady decline in overseas development assistance starting from US\$ 52.5 million in 1995 down to US \$ 29.3 million in 1997 and US \$ 23.9 million in 2000.

According to concerned officials, this decline in assistance is to do with the difficulties in the mobilisation of donor funding. The funding priorities and specific guidelines for assistance are not made clear by many donors and thus it takes considerable time and effort to develop project proposals that could be acceptable to a given donor agency. In some instances, proposal preparation has lasted the duration of fiscal years and deadlines for submission of proposals elapsed. There have been instances where assistance did not materialise after considerable preparation. One such example is the preparation of Maldives for the SIDS Donors Meeting in 1999. Though positive signals were received from donors and expectations raised, none of the project proposals submitted for donor assistance was successful.

External debt of the Maldives is on the increase. Debt increased from US\$ 127 million in 1997 to an estimated US \$ 154.98 million by 2000. The debt service ration, which stood at 3.3% of export earnings in 1996 increased to 3.4% at the end of 1999.

Sustainable Development Strategies

The Government of Maldives recognises the special vulnerabilities of the nation and places a high priority to streamline the development planning process to achieve sustainability and to ensure protection of the environment. The Government defines this role as one that will uphold socio-economic development, which is economically efficient, socially equitable, and improve the quality of human life while living within the carrying capacity of the supporting ecosystems.

Since the Earth Summit in 1992, the government has developed and adopted a number of strategies and plans aimed at sustainable development of the Maldives. All such strategies and development plans conform to the principles outlined in the Rio Declaration and Agenda 21. Furthermore, these strategies and plans pave the way to engage the community in meaningful dialogue to contribute to the successful implementation of sustainable development.

Vision 2020

First and foremost among the strategies for sustainable development is the Vision 2020, declared by the President in July 1999. This vision was guided by the achievements, opportunities and issues that emerged from the development experience of the last two decades. The vision for the year 2020 is to make the Maldives a top-ranking middle-income developing country, which is capable of defending its freedom and sovereignty. The following goals were identified to make the vision a reality:

- ✍ Ensure that the Maldives remains a country of socio-economic and political stability;
- ✍ Further consolidate democratic governance of the country and ensure that Maldives continue to enjoy justice, equality, rule of law, peace and security;
- ✍ Make gender equality a reality with the participation of men and women in political, social and economic activities on an equal footing;
- ✍ Foster and emphasise objectivity, rationality, responsibility, initiative and a more caring society in which family ties are even stronger than at present;
- ✍ Ensure that the youth is fully committed to contribute to the nation's progress and prosperity and are afforded the opportunity to realise their full potential;

- ✍ Provide satisfactory living conditions to everyone;
- ✍ Enhance awareness of and commitment to healthy lifestyles and make available good quality medical care to all citizens in the area that they live. Provide easy access to a health insurance scheme that will enable all citizens to meet their medical expenses;
- ✍ Pursue environment friendly lifestyles with the aid of modern technology;
- ✍ Establish the most conducive conditions for brisk commerce and economic activities, and make the Maldives the hub of regional free trade. Diversify the country's economy with export-oriented trade in services and industrial development;
- ✍ Ensure that economic benefits are equitably distributed and every citizen has the opportunity for productive employment;
- ✍ Improve the competence of Maldivians through education. Make 10 years of formal schooling a minimum standard throughout the Maldives, and establish good quality tertiary education centres and a system for the provision of technical knowledge and skills necessary for sustainable development;
- ✍ Ensure that modern technology is widely available and used in the country;
- ✍ Play an active role in international affairs, consistent with the country's self image and international norms of conduct, in the interest of protecting the Maldives independence and sovereignty.

The public consultation process that followed the declaration of the Vision 2020 by the President has been the most comprehensive, effective and meaningful public participation in decision making ever in the Maldives. Public consultations were held in all the islands in all the atolls to get the views and aspirations of the peoples of the Maldives. Initial consultations started from the grass-root level where the Island Development Committees, Women Development Committees and other community based organisations were invited to participate and contribute their views at island level. Consultations were then held at the atoll level based on the reports of the consultations at the island level. Following those, representatives from the atolls participated in regional level consultations held in five regions to consolidate the views of the people at the regional level. Reports of the regional consultations were submitted to the national level consultation held in Malé. Parallel to the participatory consultative process, the government agencies were invited to develop policies and strategies to realise the Vision. Based on the reports of the public consultations and the strategy documents prepared by the government agencies national level consultations were held in Malé to adopt strategies required to achieve the Vision goals. At the national level

consultations, all stakeholders, including non-governmental organisations, and the civil society representatives participated.

The Vision 2020 implementation strategies provide the framework for the preparation of the future national development plans and sectoral master plans. It will also serve as the guide to the nation's longer-term social and economic development and establish a clear and consistent policy direction for the formulation of development priorities. It will also enable the full integration of all aspects of social, economic and environmental concerns in the sector strategies.

National Development Planning

The first ever plan for the socio-economic development of Maldives covered the period 1950-52, and was more of a policy statement than an integrated development plan. Development plans were not prepared for the next thirty years. With the establishment of the National Planning Agency (NPA) in 1978, the government intended to return to strategic development planning and the preparation of three-year national development plans. The first formal National Development Plan (NDP), covered the period 1985-87 and since then four more NDPs were prepared covering the periods 1988-90, 1991-1993, 1994-1996, 1997-2000.

The National Development Plan formalises the planning process by reviewing the current economic situation, medium-term prospects and constraints on development. The NDPs highlights recent sectoral development achievements, and establishes development objectives, priorities and strategies based on those accomplishments. It identifies and assesses medium-term options for the nation's development based upon a dynamic and development-oriented interpretation of comparative advantage and a thorough evaluation of both development opportunities and constraints. It also outlines the sector priorities and the main elements of strategies designed to deepen and diversify the country's economic structure and to promote self-sustaining growth and greater self-reliance. These analyses form the basis for identifying programmes and projects to be proposed to the domestic budget and foreign donors.

Though the past national development plans covered three year periods, the sixth national development plan covers a five year time frame. This is to conform to the Vision 2020, which is to be implemented in four five year phases. The sixth national development lays the groundwork for the realisation of the long term goals of vision 2020.

The sixth NDP is a strategic plan providing the policy framework for the development of sectoral plans and programmes. The plan is based on three major focus areas: economic growth, infrastructure development and social development. The national development objectives set out in the sixth NDP are:

- ✍ Diversify and expand the economy by further developing existing industries and by exploring new economic activities, while ensuring the sustainability of physical and natural resources;
- ✍ Increase the role of private sector in the development process, particularly in expanding the economic base of the country;
- ✍ Improve the quality and relevance of educational, health and social services, while ensuring that the benefits of development are shared equitably among the population;
- ✍ Increase the human resource capacity and productivity by providing relevant training and employment opportunities;
- ✍ Pursue legislative, regulatory, governance and administrative reform to facilitate rapid economic and social development;
- ✍ Develop a sustainable and cost effective transportation and telecommunication infrastructure to facilitate economic, social and regional development;
- ✍ Ensure socio-political stability and democratic participation of all in the development process, while upholding the national unity and social cohesiveness based on shared social, cultural and religious values.

The sixth national development plan recognises that the environment of the Maldives is extremely fragile and vulnerable to a number of local and external threats. NDP identifies environment protection as one of the top priorities of the government and endorses the policies and measures identified in the second National Environment Action Plan. In addition, the sixth NDP stresses the following policies for environmental protection:

- ✍ Promote sustainable resource management through preservation of natural resources and biological diversity
- ✍ Minimise dangers to the natural resource base and environment due to economic development and the rapid population growth
- ✍ Contribute to the international efforts to find solutions to global environmental threats, especially those pertaining to the vulnerable Small Island Developing Nations

- ✍ Promote integrated planning and administrative practices by developing meaningful principles and procedures for sustainable resource use and environmental protection.

Social development is also given priority in the sixth National Development Plan. Ten integrated themes are identified and relevant policies and corresponding strategies are outlined. The ten themes under social development are: poverty eradication, education and training, health care and social security, gender, youth and media. One of the highlights of the sixth NDP is the fact that for the first time, poverty reduction is an encompassing objective of the national development plan.

National Population and Development Consolidation Strategy

The National Population and Development Consolidation Strategy (NPDCS) and the development of growth centres throughout the country are advocated by the Government for the sustainability of development. The successful implementation of this strategy will result in significant reduction of the number of inhabited islands and it is envisaged that this strategy would lead the country to a path of development that is socially, economically and environmentally more sustainable as well as more cost effective.

The Government recognises that the promotion of more concentrated development patterns will help to: maximise the utility and efficiency of public service, energy and infrastructure expenditures; reinforce and revitalise the role of the islands and island groups as centres of commerce, industry and community life; reduce development pressures on natural resources; and preserve the character and aesthetic integrity of the country.

Regional Development

Regional development is a priority sustainable development objective of the Government. Regional development is being fostered to ensure equal opportunity to participate in and benefit from national development. Limited government and national resources requires that urban regional growth centres be developed sequentially. It is envisaged these will grow naturally once constraints to private sector investment have been removed but also as a result of selective complementary public investment in physical infrastructure and social services. These growth centres will encourage inward migration similar to that in Malé.

A Regional Development Plan was prepared in 1995 with the assistance of the Asian Development Bank. The plan defines the regions for development, ranks the regions for

suitability and considers and ranks islands within each region that might be used as urban service centres. The plan also addresses the general policy reforms that will be required to support regional development.

Following the recommendations of the RDP, Regional Development Project – Phase 1 is currently being implemented with the assistance from the Asian Development Bank and Islamic Development Bank. The focus of development in the first project is on Hithadhoo in the Southern Development Region and Kulhudhuffushi in the Northern Development Region.

Environmental Planning

The first National Environment Action Plan (NEAP) was developed in 1989 to address the environmental planning and management needs of the country. The Action Plan contains the overall strategy of the Government in the environment sector which represents a combined approach to managing and solving existing problems and establishing the mechanisms and procedures for future sound management of the environment.

The principle aim of the National Environment Action Plan is: “to help the Government of Maldives to maintain and improve the environment of the country, including the marine and ocean area contained within the Exclusive Economic Zone, and to manage the resources contained therein for the collective benefit and enjoyment of present and future generations.”

The approach to environmental management adopted in the National Environment Action Plan is through:

- ✍ the continuous assessment of the state of the environment within the country, including the impact of man’s activities on environment and the effect of these activities on the quality of the human environment.
- ✍ the development and implementation of management methods suited to natural and social environment of the country, which will maintain or enhance environmental quality, while at the same time, utilising the resources on a sustainable basis.
- ✍ the development and implementation of comprehensive national environmental legislation and participation in international agreements to provide for responsible and effective management of the country.

- ✍ the strengthening of national capabilities and institutional arrangements and financial support which will enable the Action Plan to be implemented in an efficient and economic manner.

The Second National Environment Action Plan of Maldives was adopted in 1999 to address the pressing environmental challenges. The second National Environment Action Plan identifies the need to take an integrated approach to the management of the environment and to work towards the goal of sustainable development. The aim of NEAP II is to protect and preserve the environment of the Maldives, and to sustainably manage its resources for the collective benefit and enjoyment of present and future generations. The NEAP identifies climate change and sea level rise; coastal zone management; biological diversity conservation; integrated reef resources management; integrated water resources management; management of solid wastes and sewage; pollution control and managing hazardous wastes; sustainable tourism development; land resources management and sustainable agriculture; human settlements and urbanization and sustainable fisheries management as the key issues to be addressed.

Indicators of Sustainable Development

In the Maldives, the work on Sustainable Development Indicators (SID) began following a National Workshop on Indicators of Sustainable Development in Bandos Island Resort from 4-5 March 1998. This workshop was organized with the assistance of the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP) and the Government of Netherlands.

Twenty seven participants from various ministries, departments and other organizations in the Maldives attended the workshop. In the workshop, the participants were briefed on how indicators can be used in planning and charting a course towards sustainable development. The practical lessons learned in the Netherlands were also presented. The workshop identified the priority issues of sustainable development in the Maldives and matched the priority issues to the menu of indicators developed by the UNCSO and contained in the publication “Indicators of Sustainable Development: Framework and Methodologies”.

It was noted by the Workshop that many of the social, economic and environmental indicators listed in the CSD menu were already in use in the Maldives. The workshop further identified data availability for the menu of indicators in terms of short, medium and long term. The workshop also observed that some of the indicators in the list were not applicable to the

Maldives and in addition there was a need for new indicators to particularly highlight the sustainable tourism development, social and ethical values, cultural heritage and human resource development.

In line with priority sustainable development issues of the Maldives, a set of 65 SDIs were initially selected in the National Workshop for further consideration. It was also decided to follow the DSR framework developed by the UNCSO. The Ministry of Home Affairs, Housing and Environment in consultation with the working group further reduced the number of indicators and later selected a set of 35 core indicators. Data was available for most of the indicators in the core set and the Ministry of Home Affairs, Housing and Environment has compiled a report on the indicators in 1999 with data available to the end of 1998. However, it was noted that the data available for environmental indicators was not fully reliable and efforts were needed to initiate systematic collection of data for these indicators. The Ministry presently needs to update the indicators with the available data.

In the Maldives the work on sustainable development indicators needs to be further strengthened through human resource development, providing necessary hardware and software and establishing a good networking mechanism among the key agencies involved in the process.

One of the critical findings of the testing process was the importance of using indicators that measure the special vulnerabilities of the Maldives being a small island developing state. In this regard, the economic as well as environmental vulnerability needs to be addressed and it is highlighted that in the next phase emphasis should be given to identify or develop indicators that will address issues of vulnerability. The areas of vulnerability identified include climate change and sea level rise, marine oil pollution, sustainable tourism development, fisheries development as well as the high dependency of Maldives on imports.

The Maldives also has started using the DSR framework in State of the Environment Reporting and hopes to use the DSR framework and SDIs in monitoring the implementation of the Second National Environment Action Plan.

Legal and Regulatory Framework

In chapter 8 on making decisions for sustainable development, Agenda 21 recognises the need to foster the evolution of sustainable development law, based on sound economic, social and environmental principles and appropriate risk assessment, and backed up by

enforcement. The Environmental Protection and Preservation Act (4/93) of Maldives was enacted by the Citizen's Majlis in April 1993. This act established a framework upon which regulations and policies can be developed to protect and preserve the natural environment and resources for the benefit of future generations. The Act 4/93 also contains important provisions on environmental advise, environmental policy formulation, biodiversity conservation, environmental impact assessment, waste disposal and hazardous waste. Act 4/93 consists of:

- clause 2: concerned government authorities shall provide necessary guidelines and advice;
- clause 3: MHAHE responsible for formulating policies as well as rules and regulations
- clause 4: MHAHE shall identify and designate protected areas and nature reserves
- clause 5: Environmental Impact Assessment mandatory for all new projects
- clause 6: power to terminate developments causing significantly detrimental environmental impacts
- clause 7: disposal of waste, oil and poisonous substances shall be regulated
- clause 8: disposal and transboundary movement of hazardous wastes banned
- clause 9: fines for damage to the environment
- clause 10: compensation for environmental damage that may take place.

The lack of legal framework for the preparation of development plans particularly land use plans is a major constraint for the sustainable development of Maldives. Though some land use plans have been prepared for islands with high population density at the initiative of the Ministry of Atolls Administration, such plans are not fully implemented. Maldives does not have a town and country planning act or a land use planning act and thus land use planning is carried out on a very ad hoc basis.

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