

1. Introduction

The population projections presented in this report span the period from 2006 to 2050 for Maldives. These projections are not intended as predictions or forecasts, but as illustrations of growth and change in the population which would occur if certain assumptions about future levels of fertility, mortality and net migration were to prevail over the projection period.

Projection assumptions are formulated after analysis of short and long-term historical trends, recent trends and patterns observed in other countries, and any other relevant information. Although the assumptions are carefully formulated to represent future trends, they are subject to uncertainty. Given the uncertainties about the future trends in population growth a set of alternative projections are derived, based on different demographic scenarios.

The report highlights the main features from each set of projections, so that their implications for policy-making and planning in both the public and private sectors can be anticipated and catered for. The report begins with a description of the base population, the projection methods and underlying assumptions. The results of the projections are presented along with a brief analysis of projected growth and age-sex structure. The appendix provides detailed tables of four selected projections.

2. Projection Methodology and Results

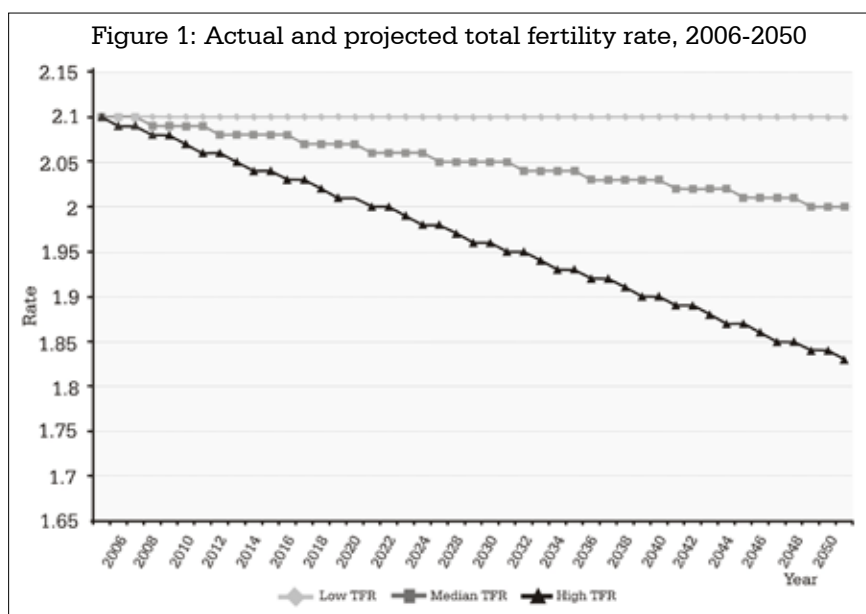
The *cohort component* method was used to derive the population projections. By this method, the base population is projected forward by calculating the effects of deaths and migration within each age-sex group according to specified mortality and migration assumptions. New birth cohorts are generated by applying specified fertility assumptions to the female population of childbearing age.

The demographic model in SPECTRUM, known as Dem Proj (Version 4), was used to make the population projections. The projection it makes are based on cohort component method and requires information on the main components of population growth, (1) the current population, and (2) fertility and mortality rates for a country or region. More specifically, the program requires information on the number of people by age and sex in the base year, as well as current year data and future assumptions about the total fertility rate (TFR), the age distribution of fertility, life expectancy at birth by sex, the most appropriate model life table, and the magnitude and pattern of international migration.

3. The Assumptions of the Projection

There are four broad categories of inputs and assumptions which need to specify before producing the desired projections:

- a. Base Population: The first input Variable is the Base Population. As for the starting point of the projection, the base population, male and female population figures, classified by age group as of 31 March 2006, excerpted from the recent Population and Housing Census of Maldives 2006, was used. The “age unknown” figure was proportionately distributed over all age groups.
- b. Fertility Assumption: The single most important factor in determining future population is the Total Fertility Rate (TFR). There are four alternative Total fertility variants – designated low, medium and high growth – which assume that fertility rates will be more or less same until the year 2050 when the total fertility rate will reach 2.1, 2.1 and 2.0 births per woman, respectively. The base total fertility rate in 2006 was 2.1 births per woman. The age specific fertility rates for 2006 are assumed to remain constant through out the projection.



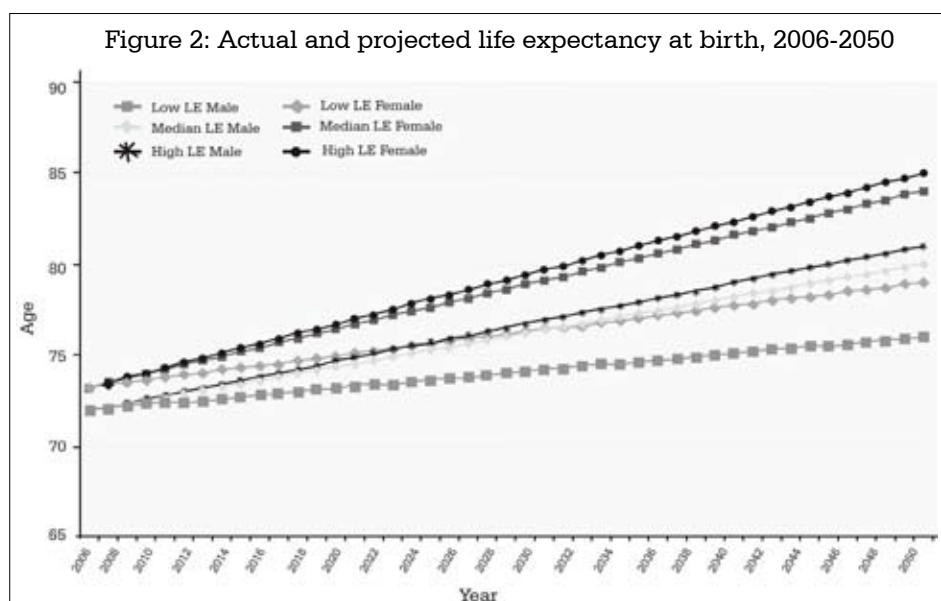
The assumption that fertility is declining dramatically in the Maldives is backed by the study, rapid fertility decline in the Maldives and previous census and vital registrations. This study demonstrates that the families are having less number of children; the average of six children for woman in 1985 fell for 5.4 in 1995, and 2.8 in 2000 and 2.1 in 2006. Therefore much lower fertility is a distinct possibility in the future. Accordingly, Maldives-high growth projection includes an assumption that fertility will fall over the next 50 years to a level roughly equivalent to current levels in developed countries.

c. Mortality Assumptions: Life expectancy figures (by sex) for the base and end periods of projection are also required. Life expectancy figures for the 2006 calculated from the vital registration system are used in the projections.

The advances of the medicine and the improvement in the general conditions of life of the population had contributed to raise the life expectancy of the Maldivians, that increased 13.76 years for women and 9.7 years for men between 1985 and 2006 that is of 62.2 for 71.9 years, and 59.48 for 73.24 years respectively (See figure 2). Depending on the mortality experience of Maldives, gains in life expectancy at birth is expected to continue throughout the projection period. Mortality is projected by assuming that life expectancy rises according to one of three schedules low, medium and high. Each schedule provides for slower gains at higher levels. In the high growth schedule for instance the gain in life expectancy is one year for both males and females from the initial life expectancy of 71.7 for men and 73.2 for women. Mortality assumptions for the end period of projections (i.e. 2050) are provided in Table 1.

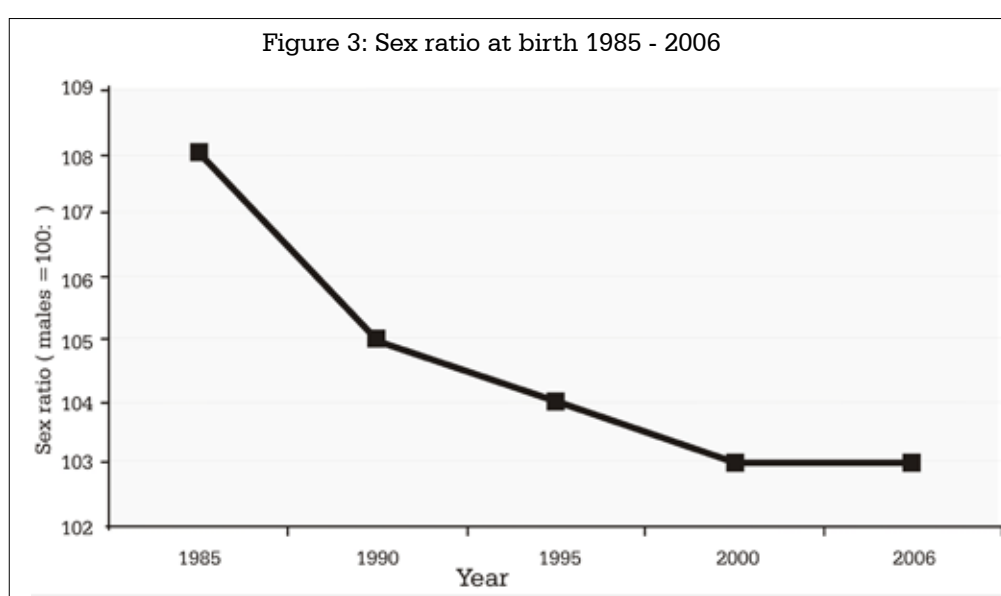
Table 1: Projection Scenarios and Assumptions

Scenarios	Assumptions		
	Total fertility rate	Life expectancy at birth (years)	
	Babies per women	Male	Female
High growth	2.1	81.0	85.0
Medium growth	2.0	80.0	84.0
Low growth	1.8	76.0	79.0



d. International Migration Assumption: The significance of International Migration factor for the Maldives population growth is not clear. However, for the purpose of this report it is assumed that there is no significant emigration or immigration taking place in the country.

e. Sex Ratio: As for the sex ratio which divide the number of male and female, the female to male ratio is 103 based on the results of the 2006 Population and Housing Census of Maldives and is assumed to remain constant from 2006 onward for the projection series until 2050. (See Figure 3).



4. Population projection

Using different combinations of the above assumptions, four different Projections were generated. These projections were labeled Maldives-Medium, Maldives-high, Maldives-Low. Table 1 shows different combinations of inputs used to generate each. The medium-growth projection is considered the most suitable for assessing future population changes.

4.1 Medium-growth scenario

- Fertility: the total fertility rate will decrease to 2.08 births per woman by 2050
- Mortality: life expectancy at birth will increase to 80.0 years for males and 84.0 years for females by 2050.

The other projection series allows assessing the impact on population size and structuring resulting from changes in the assumptions for each of the components of population change. The varying assumptions of these three projections are as follows:

4.2 High Growth

- Fertility: The total fertility rate falls from 2.8 births per woman to replacement level fertility of 2.1
- Mortality: Life expectancy at birth will rise by 0.5 years in every 10-year period. The initial life expectancies at birth are 70.7 for men and 72.2 years for women. By the end of the projection, these will have risen to 71.7 for men and 73.2 years for women.

4.3 Low Growth

- Fertility: The total fertility rate falls from 2.11 births per woman to 2.08 births per women by the end of the projection.
- Mortality: Life expectancy at birth will rise by 5 years in every 10-year period. By the end of the projection it will have risen to 72 for men and 75 for women.

After specifying the inputs in the SPECTRUM, a detailed report on four scenarios of projected population can be extracted. The output from SPECTRUM contains details about the projected population like age composition, dependency ratios etc. However, for the sake of brevity projected population (Table 2) and growth rate (Figure 4) figures for all four Scenarios at five-year intervals are presented. The Population figures have been presented in thousands and the growth rates are in percentages.

5. Projected Population Growth

5.1 Population size and growth

The total population enumerated in Maldives at the first census in 1911 was only 72.2 thousand; at the last census of population (2006) it was 298.9 thousand. This represents a four-fold increase since 1911. The populations resulting from the four projections scenarios are shown in Table 2 and are graphed in Figure 4.

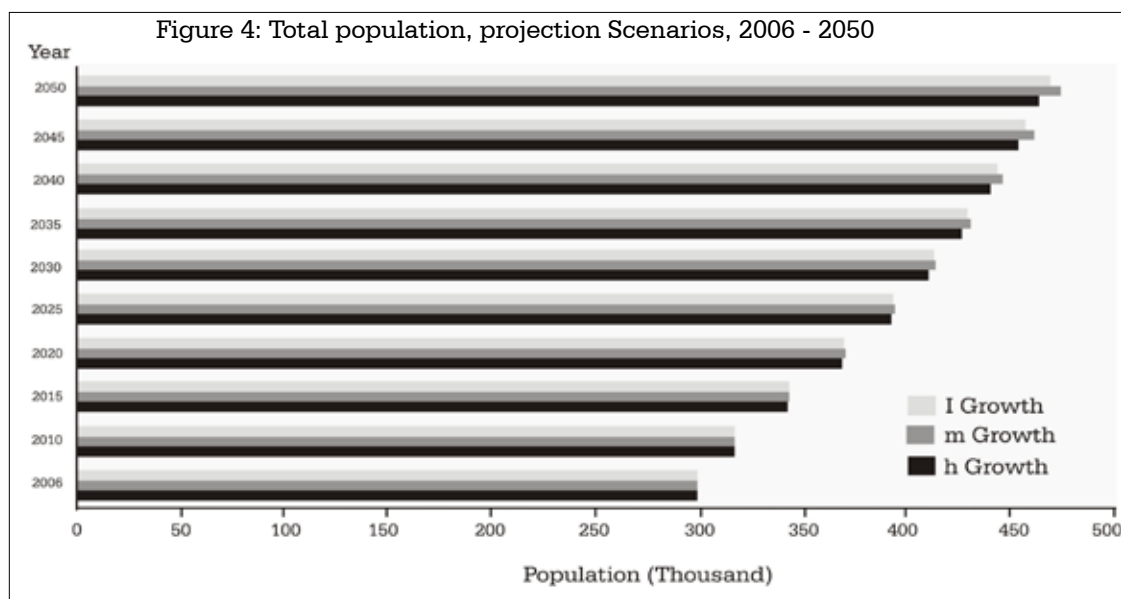


Table 2: Total population, Projection Scenario, Maldives 2006 - 2050

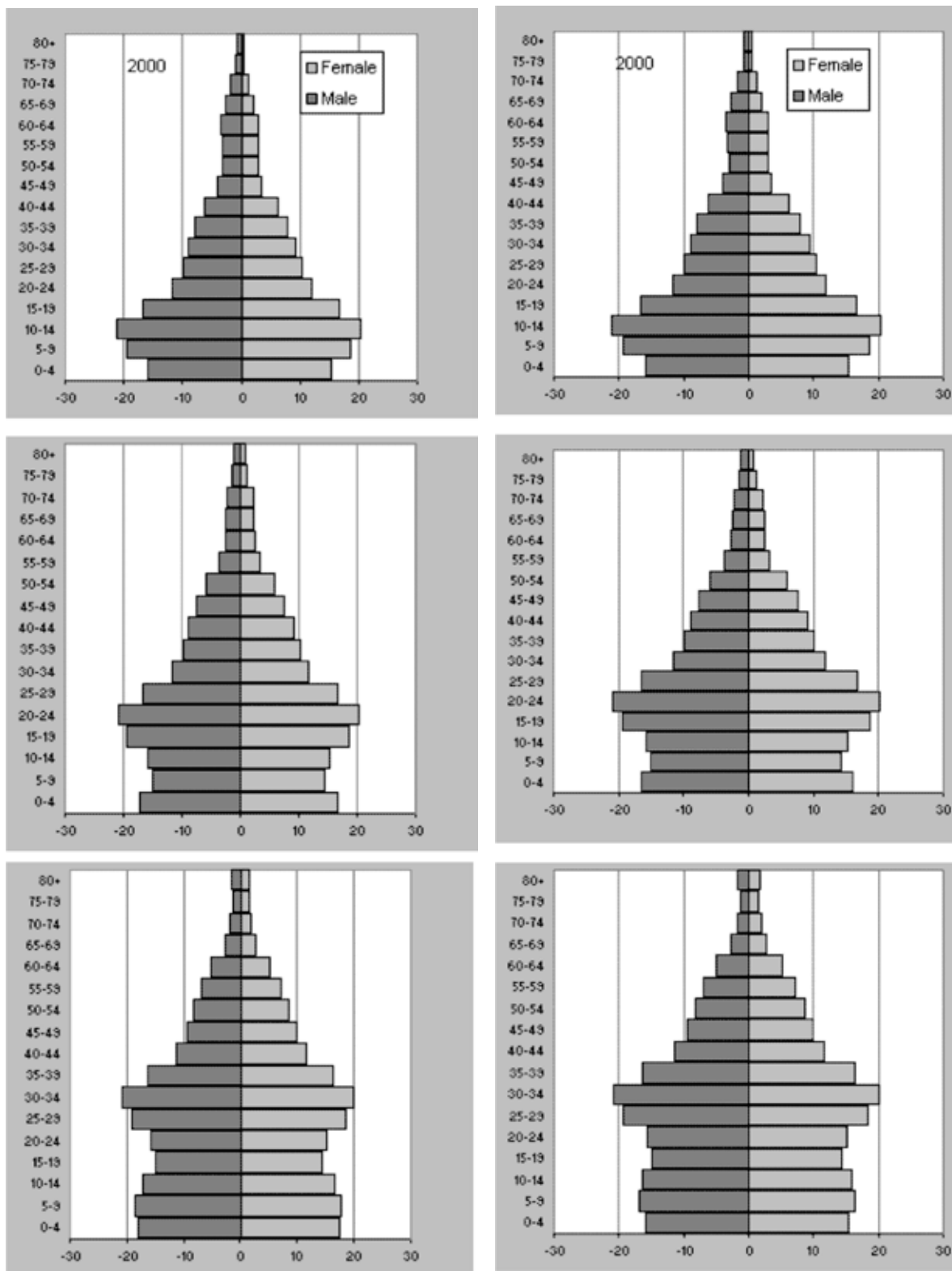
Year	Total Population (Thousand)		
	High growth	Medium growth	Low growth
2006	298.97	298.97	298.97
2010	317.20	317.28	317.23
2015	343.07	343.43	343.24
2020	369.34	370.33	369.96
2025	392.45	394.39	393.77
2030	410.98	414.03	413.00
2035	426.55	430.84	429.06
2040	440.79	446.55	443.79
2045	453.80	461.50	457.64
2050	464.46	474.66	469.64

The people in 2006 are projected to grow between 357 and 396 thousand people by 2020. In all the projection scenarios the population is projected to grow continuously throughout the entire projection period. In constant growth projection the population is projected to grow at increasing rates, reaching 396.17 thousand in 2020. In high growth projection the population is projected to reach 374.97 thousand in 2020, but at slower rates. In Medium growth projection the population is projected to reach 366.91 thousand in 2020. The low growth scenario projects the lowest population for 2020 of 357.05 thousand people.

Selected population Pyramids. Low and High growth projections, Maldives, 2000-2020

High Projection

Low Projection



6. Conclusion

The population projections presented here provides an assessment of the future population growth of the Maldives. They represent the statistical outcomes of various combinations of selected assumptions concerning future changes in various dynamics of population change. However the most important elements in the projections, the assumptions, are subject to uncertainty and their limitations should be fully recognized in interpreting these projections.

The projections are trend-based and only demonstrate what is likely to happen to the population if the assumptions based on past demographic trends in the country hold true. Inevitably, population projections are therefore subject to change due to changes in the contributing factors such as, birth rates, life expectancy and international migration. So the projections will have to be revised in line with any new data as they become available.

Due to difficulties in making assumptions, particularly of internal migration trends, at the regional level, the present projections does not attempt to provide disaggregated projections by atolls.

Bearing these limitations in mind, the projections should provide a useful contribution to the planning and policy-making process as they give some indication of where future pressures are likely to arise and of the likely requirements in terms of service needs in both public and private sectors.

The first major result of the projections is that population of the Maldives is expected to continue to grow in the period 2000-2020, and is expected to reach 367.63 thousand in 2020. By the standards of many small island developing countries, the Maldivian population is neither large nor growing rapidly. Nonetheless the projected growth of population over the next twenty years will affect the Maldives in many ways. Some of the effects will be beneficial. For example; falling birthrates will enable women to further their education, supply more paid labour and, through the combined effects of higher female education, increased employability of females, higher savings resulting from smaller family size and increased empowerment of women, enable families to invest more in the education of each child and allow the government to focus on improving the quality of primary schooling as opposed to quantity. On the other hand, more people will mean more demands on socio-economic services such as education, healthcare, employment and social welfare. Thus, policy changes are needed to maximize the rewards of the demographic changes while minimising the negative impacts.

Some of the far reaching and profound implications of declining fertility and mortality levels as they affect the age structure of the population, such as giving rise to population ageing, labour force shortages, are not of significant policy concern during the medium term (10-20 years). Some salient features of the present population projections are:

- **Adolescents population:** Half the population of Maldives are under the age 19. The proportion of population at younger ages (below 15) has begun to decline, while the number of adolescents (those aged 10-19 years of age) is currently at its peak. In the immediate future, therefore, there would be a steady increase in the number of persons entering the labour market and the reproductive ages. Therefore the Maldives now has the largest-ever generation of adolescents who are approaching adulthood. High priority and attention should be given to all dimensions of their development and a successful transition to adulthood. Meeting the needs of the adolescents, including their reproductive and sexual health needs and access to quality secondary education is a major challenge of the decades ahead. Moreover the increase in drug use and drug related crime has become a major social ill to the society. Unless urgent and sufficient attention is paid these emerging problems will grow out of control with the increasing numbers of young people. This is the cohort that needs the maximum attention and policies and programmes must be geared to improving their access to gainful employment, vocational and technical education and skill development, meeting their reproductive health needs, information and counseling services.

- **Size of the work force:** The most significant demographic change that is expected to occur during the projection period is the rapid growth of the working age population. Between now and 2020 it is estimated that around 67,000 people will enter the working age. (about 70% of the population in 2020). Therefore creation of new jobs to productively absorb the growing populations and reduce unemployment is one of the major challenges the government will face. Labor force training and workforce investment play critical roles in addressing these challenges.

- **Declining ratios:** The relatively short period of gradually shrinking child population and a corresponding bulge in the working age population in a nation's history is often referred to as the 'window of opportunity' for the obvious reason that it is an opportunity that will never be repeated. Among other positive gains offered by this demographic shift include, enabling women to spend less quantity but more quality time caring for children, providing more free time for them to invest in their own human capital development and thus enabling them to participate in more equitable gainful employment and allowing families to invest more in the education and care of their children. However, in order to maximize the benefits of these opportunities, appropriate policies need to be implemented to create more flexible labor markets enabling women to increase their labour force participation in all sectors.

- **Education:** The effect of declining birth rates can be seen in the reduction in the demand for primary school classes in parts of the country. This means that the government will now be able to gradually shift the focus from quantity to improving the quality of primary schooling throughout the country.

As the children from large birth cohorts in the past shift to secondary and higher school ages more emphasis is now required on providing the right quantity and quality of secondary schooling opportunities throughout the country, with a clear emphasis on providing the skills required for the local job market in the skills-shortage areas.

- Ageing of the population: Ageing of the population is not a major issue at present and will remain so for the duration of the projections. Therefore the issue is not that of population ageing, but it is of the individual well-being of the growing numbers of elderly at a time of rapid socio-economic change and family nuclearisation. Nonetheless, it would be prudent to be aware of and to plan for population ageing well in advance if the Maldives is to mitigate the negative implications of such a demographic phenomenon in the years to come.
- Family planning & reproductive health services: All indicators point to the fact that demographic transition is well underway in the Maldives. While mortality rates have declined significantly in the past decades, fertility decline has hastened during the past decade. Having sustained a declining trend of fertility since the early 1990s, it is no longer necessary for the Maldives to conduct advocacy programmes encouraging small families. It is now inevitable that fertility levels will keep on declining unless some dramatic change of policy encouraging a pro-natalist regime occurs sometime soon.