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# OIC OUTLOOK

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## POPULATION AGING: IS IT A CHALLENGE FOR OIC MEMBER COUNTRIES?

Attar Sokak No: 4, 06700 GOP, Ankara, TURKEY Tel: +90-312-468 6172 (4 lines) Fax: +90-312-467 3458 E-mail: oicankara@sesric.org Web: www.sesric.org

### OIC OUTLOOK

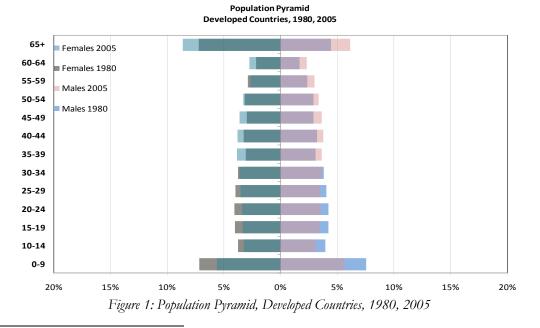
#### POPULATION AGING: IS IT A CHALLENGE FOR OIC MEMBER COUNTRIES?

#### INTRODUCTION

"Aging" is described as the process by which older individuals become a proportionally larger share of the total population<sup>1</sup>. Developed countries<sup>2</sup> have been aging with an increasing pace in the past few decades which had implications in social security and public health systems. This report attempts to discover to what extend aging is a challenge in OIC member countries. For this purpose, a comparison analysis is made on the ageing processes in the developed countries and OIC member countries .Within this context, first, the population and the labor force structures in both country groups are analyzed. Then the demographic determinants of aging are evaluated for OIC member countries. In order to understand the future prospects, a model to project future fertility rates of the OIC member countries is constructed. Based on the results of the projections made in the report, the last section concludes.

#### AGE STRUCTURE OF POPULATION AND LABOR FORCE

Developed countries had undergone a demographic transition decades ago which had led to long-lasting alterations in their social and economic structures. As a result of the transformation from high to low fertility rates and the continuous reduction of mortality, the proportion of older people increased together with the decreased proportion of young people in developed countries. These countries had been *aged* during these decades. Conventionally, older people are defined as those older than 60 years of age, and children are 14 years old and younger. In 2005, elderly constituted 20.1 % of the total population in developed countries compared to 17 % of children. (see Figure 1)



<sup>1</sup> United Nations, "World Population Ageing: 1950-2050", 2006

<sup>2</sup> According to the definitions of United Nations, Developed Countries are European Countries, North American Countries, Australia, New Zealand and Japan.

Considering that the share of elderly rose to 20.1 % in 2005 from 15.5 % in 1980, and conversely the proportion of children fell to 17 % from 22.4 % in 1980, it can be said that the aging process in these countries has been continual. In line with the aging process, median  $age^3$  also shifted from 32 ages to 38.6 years.

In contrast, OIC member countries are quite young with children constituting 35 % of the total population in OIC member Countries (see Figure 2). Additionally, only three OIC member countries; Lebanon, Albania and Kazakhstan, inhabits more than 10 % of their population being 60 years and older, as of 2005. The proportions of elderly are less than 6 % for all of the member countries in Arab Peninsula and sub-Saharan Africa, except Senegal and Gabon (see Figure 3)

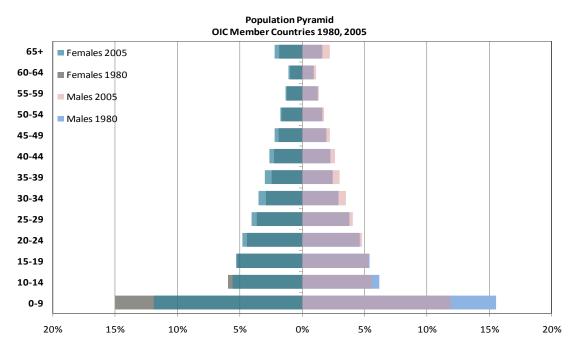


Figure 2: Population Pyramid, OIC Member Countries, 1980, 2005

However, although the current population structure of the OIC member countries does not signal an aged population like that of the developed countries, the evolution in the time span of 1980-2005, points to a gradually aging population with slight increase in the proportion of elderly from 5.4 % to 6.6 %, and remarkable decrease of the share of children from 47 % to 35 %. The upswing in the median age from 18 in 1980 to 22.1 in 2005 also suggest the existence of demographic aging in OIC member countries like the developed countries.

Still, since aging process of OIC member countries has not been distinctive, we do not expect the influences of population ageing on family composition, living arrangements, housing demands in the social sphere; voting patterns and political representation on the political sphere to have been strong.

<sup>&</sup>lt;sup>3</sup> Median age is the age which divides the age distribution into two equal parts. One half falls below the median value and the one half above the median value.

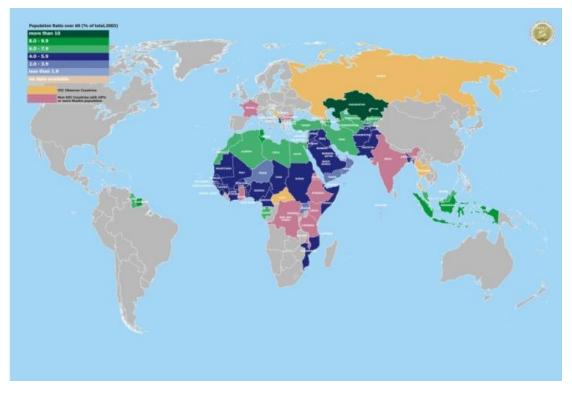


Figure 3: Population Ratio Over 60 Years Age (% of Total, 2005)

Old-age dependency ratio is the ratio of persons in the "*dependent*" ages (over age 60) to those in the "*economically productive*" ages (over age 15-59). As it increases, there are more burdens on the working age group to support the non-working old age. On the labor force side, simultaneous with the aging of the population, old age dependency ratio has moved upwards from 25 % to 32 %<sup>4</sup> in the considered period (see Figure 4) in the developed countries leading to concerns about economic development (i.e. shrinking and aging of the labor force, possible deterioration of the social security systems) as well as public health (i.e. challenges about sustainability of medical care and related programs).

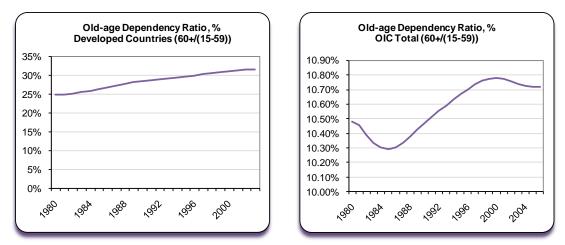


Figure 4: Old-age Dependency Ratio, %, Developed Countries

Figure 5: Old-age Dependency Ratio, %, OIC Total

<sup>&</sup>lt;sup>4</sup> Calculated from United Nations annualized data by International Labor Organization, Database of Labor Statistics, http://laborsta.ilo.org/

As an example, compared to 1990, public expenditures on old age cash benefits as percent of GDP in 2003 shifted in Austria from 9.5 %<sup>5</sup> to 12.4 % and in Germany from 8.5 % to 11%. France, Italy and Greece supported elderly continuously with more than 10 % of their GDPs in the same period. Likewise, public health care expenditures as percentage of GDP increased to 7.7 % in Germany, 5.9 % in United States and 5.8 % in United Kingdom in 2000 from their 5.9 %, 4.8 % and 5 % values in 1990, respectively.

In OIC member countries, old age dependency ratio had been quite lower than the developed countries. Unproductive elderly population had only been around 10 % of the working population in the past two decades. Still, with the aging of the population, starting from 1985, 10.3 % of the old dependency ratio has slightly moved upwards to 10.7 % in 2004 (see Figure 5)

#### DEMOGRAPHIC DETERMINANTS OF AGING IN OIC MEMBER COUNTRIES AND FUTURE PROSPECTS

The transformation to higher proportion of elderly population, simultaneous with lower proportion for children, increased median ages for the whole population and upward trend of the dependency ratio can be explained in the demographic dynamics of the OIC member countries.

OIC average fertility rate from 5.7 children per each woman in reproduction age 15-49, in 1980 gradually declined to 3.3 children through 2006<sup>6</sup> (see Figure 6). Both adult and infant mortality rates dramatically stepped down from 1980 onwards. Adult mortality rate has been 277 per 1000 people in 1980, whereas it has fallen to 260 in 2006. Similarly, infant mortality rate has reduced to 55 per 1000 new born infants in 2006 from its 95 level in 1980<sup>7</sup> (see Figure 7, Figure 8).

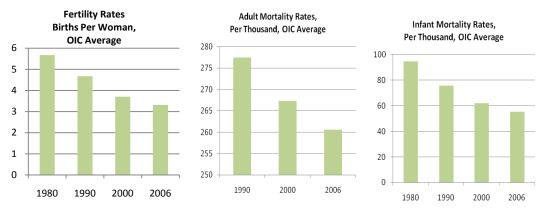


Figure 6: Fertility Rates, Births Per Woman, OIC Average Figure 7: Adult Mortality Rates, Per Thousand, OIC Average Figure 8: Infant Mortality Rates, Per Thousand, OIC Average

In order to analyze the possible future population growth path of the OIC member countries, some assumptions about the demographic dynamics should be made. The global improvements in health care and medical treatments reduce the future path of the growth rate of population to be determined by the future path of the total fertility rate, only.

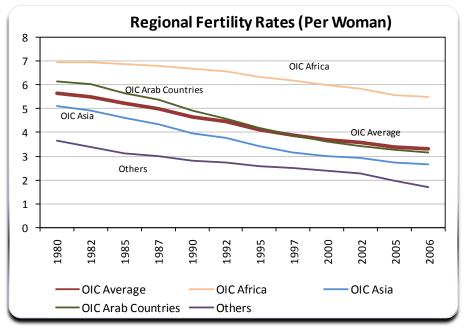
<sup>5</sup>Source: International Labor Organization, Social Security Expenditure Database, http://www.ilo.org/dyn/sesame/ifpses.socialdbexp

<sup>&</sup>lt;sup>6</sup> Source: Calculated from SESRIC Database "BASEIND",

http://www.sesric.org/stat\_database.php and International Labor Organization, Database of Labor Statistics, http://laborsta.ilo.org/

<sup>&</sup>lt;sup>7</sup> Source: Calculated from Statistical, Economic and Social Research and Training Centre for Islamic Countries, BASEIND, http://www.sesric.org/stat\_database.php and International Labor Organization, Database of Labor Statistics, http://laborsta.ilo.org/.

Replacement level of fertility is the level of fertility required to ensure a population replaces itself in size. The critical point is that the replacement level of fertility falls below 2.1 persistently. An average of two children will 'replace' all mothers and fathers. However, mortality and the unbalanced sex ratio at birth induces that replacement level fertility is actually a little higher. This level is conventionally assumed to be 2.1 children per woman in the reproduction age group of 15-49.



\*Others: Guyana, Suriname, Albania

Figure 9: Regional Fertility Rates, Per Woman

In the last decades, OIC average fertility rate has decreased with the contribution of all the subregions of OIC, including Africa. Even in Africa, the most fertile region of the OIC, fertility rate has decreased (see Figure 9).

If the fertility rates of the OIC member countries follow the same path of 1980-2006 period, the fertility rates in 35 of the member countries are projected to fall till 2.1 children per woman, before 2050 (For detailed projected figures, see Appendix 1)8. Only 18 sub-Saharan member countries- Sudan, Cameroon, Mauritania, Togo, Gambia, Senegal, Mozambique, Nigeria, Benin, Guinea, Burkina Faso, Somalia, Mali, Chad, Niger, Uganda, Sierra Leone, Guinea-Bissau- and Yemen will continue to have total fertility rates above replacement level of fertility. (see Table 1)

To be more precise, Albania, Indonesia, Iran, Kazakhstan, Lebanon, Tunisia and Turkey have already fallen below long-term replacement level of fertility. Algeria, Bahrain, Brunei, Kuwait, Morocco and United Arab Emirates are expected to realize it very soon; in the following two years. In Azerbaijan, Guyana, Kyrgyz Republic, Libya, Maldives, Qatar, Suriname, Turkmenistan, Uzbekistan, Bangladesh, Egypt, Jordan, Malaysia, Oman and Syria, total fertility rates are forecasted to fall below 2.1 in the next decade.

<sup>&</sup>lt;sup>8</sup> Total Fertility Rates are from SESRIC Database "BASEIND" http://www.sesric.org/stat\_database.php and Number of Women at Reproduction Ages 15-49 are from ILO Database of Labor Statistics, http://laborsta.ilo.org/. Total number of births is calculated by the formula: number of women at reproduction ages 15-49\*total fertility rate for each country. Then, total number of births and number of women at reproduction ages 15-49 are projected annually up to 2050 by their 1980-2006 average annual growth rates to obtain country-wise total fertility rate.

| Period The Fertility Rate Falls<br>Below 2.1 | Countries   | Number of<br>Countries |
|--|---|------------------------|
| Already                                      | Albania, Indonesia, Iran, Kazakhstan, Lebanon, Tunisia,<br>Turkey   | 7                      |
| Before 2010                                  | Algeria, Bahrain, Brunei, Kuwait, Morocco, UAE  | 6                      |
| 2011-2015                                    | Azerbaijan, Guyana, Kyrgyz Republic, Libya, Maldives,<br>Qatar, Suriname, Turkmenistan, Uzbekistan  | 9                      |
| 2016-2020                                    | Bangladesh, Egypt, Jordan, Malaysia, Oman, Syria  | 6                      |
| 2021-2030                                    | Gabon, Saudi Arabia, Tajikistan   | 3                      |
| 2031-2040                                    | Pakistan, Comoros   | 2                      |
| 2041-2050                                    | Djibouti, Côte d'Ivoire   | 2                      |
| Not until 2050                               | Sudan, Cameroon, Mauritania, Togo, Gambia, Yemen,<br>Senegal, Mozambique, Nigeria, Benin, Guinea, Burkina<br>Faso, Somalia, Mali, Chad, Niger, Uganda, Sierra Leone,<br>Guinea-Bissau | 19                     |

Table 1: Time Period the Total Fertility Rate Falls Below Long-Term Replacement Level of Fertility

#### CONCLUSIONS AND POLICY RECOMMENDATIONS

As a policy implication, the small proportion of elderly together with high proportion of children imply that policies focusing on younger generations such as infant health care policies, education policies for pre-school children, education policies for primary, secondary and tertiary education age groups, skills development to meet the changing needs of the labor market and employment of the young are more crucial than social security challenges for the time-being in the OIC member countries. Young generation focused policies are more valid for OIC member countries in Sub-Saharan Africa. This is true particularly for member countries like Sudan, Cameroon, Mauritania, Togo, Gambia, Senegal, Mozambique, Nigeria, Benin, Guinea, Burkina Faso, Somalia, Mali, Chad, Niger, Uganda, Sierra Leone, Guinea-Bissau and Yemen for which the fertility rate is predicted to remain above the replacement level even after 2050.

For other member countries like Albania, Indonesia, Iran, Kazakhstan, Lebanon, Tunisia and Turkey, fertility rate has already fallen below 2.1 children per woman. To a less extend, countries like Algeria, Bahrain, Brunei, Kuwait, Morocco and UAE, for which the fertility rate is about to fall below the replacement level before 2010, may apply population policies which will keep fertility rates just above the replacement level. To this end, these countries may avoid rapid increase in the old age dependency ratio coming after dramatic slowdown of fertility rates.

Given the current structure of the population and the labor force, aging does not seem to be one of the crucial challenges in most of the OIC member countries compared to the situation in the developed countries. However, as long as old age mortality and fertility continues to decline, the proportion of older persons will continue to increase. For this reason, in the next half century, most of the OIC member countries are projected to be in a position which they may have to consider the aging issue in their development policies. These policies may include advancing health and well-being into old age. Member countries may have also to consider the adoption of certain mechanisms for the elderly as part of labor force. These may include developing appropriate works for the elderly, prolonging the retirement age, abolishing the age limitation for the newly employed workers, activating the support system for the organizations of introducing works to the elderly; to establish and enlarge the joint workplace for the elderly.

Appendix 1: Projected Fertility Rates (Per Woman)

|                      | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 | 2026 | 2027 | 2028 | 2029 | 2030 | 2031 | 2032 | 2033 |
|----------------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Albania              | 1.4  | 1.3  | 1.3  | 1.3  | 1.2  | 1.2  | 1.1  | 1.1  | 1.0  | 1.0  | 1.0  | 0.9  | 0.9  | 0.9  | 0.8  | 0.8  | 0.8  | 0.7  | 0.7  | 0.7  | 0.7  | 0.6  | 0.6  | 0.6  | 0.6  | 0.5  | 0.5  | 0.5  |
| Indonesia            | 2.2  | 2.1  | 2.1  | 2.0  | 2.0  | 1.9  | 1.9  | 1.8  | 1.8  | 1.7  | 1.7  | 1.6  | 1.6  | 1.6  | 1.5  | 1.5  | 1.4  | 1.4  | 1.4  | 1.3  | 1.3  | 1.3  | 1.2  | 1.2  | 1.2  | 1.1  | 1.1  | 1.1  |
| Iran                 | 2.1  | 2.0  | 1.9  | 1.8  | 1.8  | 1.7  | 1.6  | 1.5  | 1.5  | 1.4  | 1.4  | 1.3  | 1.2  | 1.2  | 1.1  | 1.1  | 1.0  | 1.0  | 1.0  | 0.9  | 0.9  | 0.8  | 0.8  | 0.8  | 0.7  | 0.7  | 0.7  | 0.6  |
| Kazakhstan           | 2.1  | 2.1  | 2.0  | 2.0  | 2.0  | 2.0  | 1.9  | 1.9  | 1.9  | 1.9  | 1.9  | 1.8  | 1.8  | 1.8  | 1.8  | 1.7  | 1.7  | 1.7  | 1.7  | 1.7  | 1.6  | 1.6  | 1.6  | 1.6  | 1.6  | 1.5  | 1.5  | 1.5  |
| Lebanon              | 2.2  | 2.1  | 2.1  | 2.0  | 2.0  | 2.0  | 1.9  | 1.9  | 1.8  | 1.8  | 1.7  | 1.7  | 1.7  | 1.6  | 1.6  | 1.5  | 1.5  | 1.5  | 1.4  | 1.4  | 1.4  | 1.3  | 1.3  | 1.3  | 1.2  | 1.2  | 1.2  | 1.2  |
| Tunisia              | 2.0  | 1.9  | 1.9  | 1.8  | 1.7  | 1.7  | 1.6  | 1.5  | 1.5  | 1.4  | 1.4  | 1.3  | 1.3  | 1.2  | 1.2  | 1.2  | 1.1  | 1.1  | 1.0  | 1.0  | 1.0  | 0.9  | 0.9  | 0.9  | 0.8  | 0.8  | 0.8  | 0.7  |
| Turkey               | 2.2  | 2.1  | 2.1  | 2.0  | 2.0  | 1.9  | 1.9  | 1.8  | 1.8  | 1.7  | 1.7  | 1.7  | 1.6  | 1.6  | 1.5  | 1.5  | 1.5  | 1.4  | 1.4  | 1.3  | 1.3  | 1.3  | 1.2  | 1.2  | 1.2  | 1.2  | 1.1  | 1.1  |
| Algeria              | 2.4  | 2.3  | 2.2  | 2.1  | 2.0  | 2.0  | 1.9  | 1.8  | 1.7  | 1.7  | 1.6  | 1.5  | 1.5  | 1.4  | 1.4  | 1.3  | 1.3  | 1.2  | 1.2  | 1.1  | 1.1  | 1.0  | 1.0  | 1.0  | 0.9  | 0.9  | 0.8  | 0.8  |
| Bahrain              | 2.3  | 2.2  | 2.2  | 2.1  | 2.0  | 2.0  | 1.9  | 1.9  | 1.8  | 1.8  | 1.7  | 1.7  | 1.6  | 1.6  | 1.5  | 1.5  | 1.4  | 1.4  | 1.4  | 1.3  | 1.3  | 1.2  | 1.2  | 1.2  | 1.1  | 1.1  | 1.1  | 1.0  |
| Kuwait               | 2.3  | 2.2  | 2.2  | 2.1  | 2.0  | 2.0  | 1.9  | 1.8  | 1.8  | 1.7  | 1.7  | 1.6  | 1.6  | 1.5  | 1.5  | 1.4  | 1.4  | 1.3  | 1.3  | 1.2  | 1.2  | 1.2  | 1.1  | 1.1  | 1.1  | 1.0  | 1.0  | 1.0  |
| United Arab Emirates | 2.3  | 2.2  | 2.2  | 2.1  | 2.0  | 2.0  | 1.9  | 1.8  | 1.8  | 1.7  | 1.7  | 1.6  | 1.6  | 1.5  | 1.5  | 1.4  | 1.4  | 1.3  | 1.3  | 1.2  | 1.2  | 1.2  | 1.1  | 1.1  | 1.0  | 1.0  | 1.0  | 0.9  |
| Brunei               | 2.3  | 2.3  | 2.2  | 2.2  | 2.1  | 2.1  | 2.0  | 2.0  | 1.9  | 1.9  | 1.9  | 1.8  | 1.8  | 1.7  | 1.7  | 1.7  | 1.6  | 1.6  | 1.6  | 1.5  | 1.5  | 1.5  | 1.4  | 1.4  | 1.4  | 1.4  | 1.3  | 1.3  |
| Morocco              | 2.4  | 2.3  | 2.2  | 2.2  | 2.1  | 2.0  | 2.0  | 1.9  | 1.8  | 1.8  | 1.7  | 1.7  | 1.6  | 1.6  | 1.5  | 1.5  | 1.4  | 1.4  | 1.3  | 1.3  | 1.3  | 1.2  | 1.2  | 1.1  | 1.1  | 1.1  | 1.0  | 1.0  |
| Uzbekistan           | 2.4  | 2.3  | 2.3  | 2.2  | 2.2  | 2.1  | 2.0  | 2.0  | 1.9  | 1.9  | 1.8  | 1.8  | 1.7  | 1.7  | 1.7  | 1.6  | 1.6  | 1.5  | 1.5  | 1.4  | 1.4  | 1.4  | 1.3  | 1.3  | 1.3  | 1.2  | 1.2  | 1.2  |
| Azerbaijan           | 2.3  | 2.3  | 2.2  | 2.2  | 2.2  | 2.2  | 2.1  | 2.1  | 2.1  | 2.1  | 2.0  | 2.0  | 2.0  | 1.9  | 1.9  | 1.9  | 1.9  | 1.9  | 1.8  | 1.8  | 1.8  | 1.8  | 1.7  | 1.7  | 1.7  | 1.7  | 1.7  | 1.6  |
| Kyrgyz Republic      | 2.4  | 2.4  | 2.3  | 2.3  | 2.2  | 2.2  | 2.1  | 2.1  | 2.0  | 2.0  | 2.0  | 1.9  | 1.9  | 1.8  | 1.8  | 1.8  | 1.7  | 1.7  | 1.7  | 1.6  | 1.6  | 1.6  | 1.5  | 1.5  | 1.5  | 1.4  | 1.4  | 1.4  |
| Maldives             | 2.7  | 2.6  | 2.5  | 2.4  | 2.3  | 2.3  | 2.2  | 2.1  | 2.0  | 2.0  | 1.9  | 1.8  | 1.8  | 1.7  | 1.6  | 1.6  | 1.5  | 1.5  | 1.4  | 1.4  | 1.3  | 1.3  | 1.2  | 1.2  | 1.1  | 1.1  | 1.1  | 1.0  |
| Guyana               | 2.4  | 2.4  | 2.3  | 2.3  | 2.3  | 2.2  | 2.2  | 2.2  | 2.1  | 2.1  | 2.1  | 2.0  | 2.0  | 2.0  | 2.0  | 1.9  | 1.9  | 1.9  | 1.8  | 1.8  | 1.8  | 1.8  | 1.7  | 1.7  | 1.7  | 1.7  | 1.6  | 1.6  |
| Libya                | 2.8  | 2.7  | 2.6  | 2.5  | 2.4  | 2.3  | 2.2  | 2.2  | 2.1  | 2.0  | 1.9  | 1.9  | 1.8  | 1.7  | 1.7  | 1.6  | 1.6  | 1.5  | 1.4  | 1.4  | 1.3  | 1.3  | 1.2  | 1.2  | 1.2  | 1.1  | 1.1  | 1.0  |
| Qatar                | 2.7  | 2.6  | 2.5  | 2.5  | 2.4  | 2.3  | 2.3  | 2.2  | 2.1  | 2.1  | 2.0  | 2.0  | 1.9  | 1.9  | 1.8  | 1.8  | 1.7  | 1.7  | 1.6  | 1.6  | 1.5  | 1.5  | 1.4  | 1.4  | 1.4  | 1.3  | 1.3  | 1.2  |
| Turkmenistan         | 2.6  | 2.5  | 2.5  | 2.4  | 2.4  | 2.3  | 2.2  | 2.2  | 2.1  | 2.1  | 2.0  | 2.0  | 1.9  | 1.9  | 1.8  | 1.8  | 1.7  | 1.7  | 1.7  | 1.6  | 1.6  | 1.5  | 1.5  | 1.5  | 1.4  | 1.4  | 1.4  | 1.3  |
| Suriname             | 2.5  | 2.5  | 2.4  | 2.4  | 2.3  | 2.3  | 2.3  | 2.2  | 2.2  | 2.1  | 2.1  | 2.1  | 2.0  | 2.0  | 2.0  | 1.9  | 1.9  | 1.9  | 1.8  | 1.8  | 1.8  | 1.7  | 1.7  | 1.7  | 1.7  | 1.6  | 1.6  | 1.6  |
| Oman                 | 3.1  | 3.0  | 2.9  | 2.8  | 2.7  | 2.6  | 2.6  | 2.5  | 2.4  | 2.3  | 2.2  | 2.2  | 2.1  | 2.0  | 2.0  | 1.9  | 1.8  | 1.8  | 1.7  | 1.7  | 1.6  | 1.6  | 1.5  | 1.5  | 1.4  | 1.4  | 1.3  | 1.3  |
| Bangladesh           | 2.9  | 2.8  | 2.8  | 2.7  | 2.6  | 2.6  | 2.5  | 2.5  | 2.4  | 2.3  | 2.3  | 2.2  | 2.2  | 2.1  | 2.1  | 2.0  | 2.0  | 1.9  | 1.9  | 1.8  | 1.8  | 1.8  | 1.7  | 1.7  | 1.6  | 1.6  | 1.6  | 1.5  |
| Egypt                | 2.9  | 2.8  | 2.8  | 2.7  | 2.6  | 2.6  | 2.5  | 2.5  | 2.4  | 2.3  | 2.3  | 2.2  | 2.2  | 2.1  | 2.1  | 2.0  | 2.0  | 1.9  | 1.9  | 1.8  | 1.8  | 1.8  | 1.7  | 1.7  | 1.6  | 1.6  | 1.6  | 1.5  |
| Syria                | 3.2  | 3.1  | 3.0  | 2.9  | 2.8  | 2.7  | 2.6  | 2.6  | 2.5  | 2.4  | 2.3  | 2.3  | 2.2  | 2.1  | 2.1  | 2.0  | 1.9  | 1.9  | 1.8  | 1.8  | 1.7  | 1.6  | 1.6  | 1.5  | 1.5  | 1.4  | 1.4  | 1.4  |
| Jordan               | 3.2  | 3.1  | 3.0  | 2.9  | 2.8  | 2.8  | 2.7  | 2.6  | 2.5  | 2.4  | 2.4  | 2.3  | 2.2  | 2.2  | 2.1  | 2.0  | 2.0  | 1.9  | 1.9  | 1.8  | 1.8  | 1.7  | 1.7  | 1.6  | 1.6  | 1.5  | 1.5  | 1.4  |
| Malaysia             | 2.7  | 2.7  | 2.6  | 2.6  | 2.5  | 2.5  | 2.4  | 2.4  | 2.4  | 2.3  | 2.3  | 2.2  | 2.2  | 2.2  | 2.1  | 2.1  | 2.1  | 2.0  | 2.0  | 2.0  | 1.9  | 1.9  | 1.9  | 1.8  | 1.8  | 1.8  | 1.7  | 1.7  |
| Saudi Arabia         | 3.4  | 3.3  | 3.2  | 3.1  | 3.0  | 3.0  | 2.9  | 2.8  | 2.7  | 2.6  | 2.6  | 2.5  | 2.4  | 2.4  | 2.3  | 2.2  | 2.2  | 2.1  | 2.0  | 2.0  | 1.9  | 1.9  | 1.8  | 1.8  | 1.7  | 1.7  | 1.6  | 1.6  |
| Gabon                | 3.1  | 3.0  | 3.0  | 2.9  | 2.9  | 2.8  | 2.8  | 2.7  | 2.7  | 2.6  | 2.6  | 2.5  | 2.5  | 2.4  | 2.4  | 2.4  | 2.3  | 2.3  | 2.2  | 2.2  | 2.1  | 2.1  | 2.1  | 2.0  | 2.0  | 2.0  | 1.9  | 1.9  |
| Tajikistan           | 3.4  | 3.3  | 3.3  | 3.2  | 3.1  | 3.1  | 3.0  | 3.0  | 2.9  | 2.8  | 2.8  | 2.7  | 2.7  | 2.6  | 2.6  | 2.5  | 2.5  | 2.4  | 2.4  | 2.3  | 2.3  | 2.2  | 2.2  | 2.2  | 2.1  | 2.1  | 2.0  | 2.0  |
| Pakistan             | 3.9  | 3.8  | 3.7  | 3.6  | 3.6  | 3.5  | 3.4  | 3.3  | 3.3  | 3.2  | 3.1  | 3.0  | 3.0  | 2.9  | 2.8  | 2.8  | 2.7  | 2.7  | 2.6  | 2.5  | 2.5  | 2.4  | 2.4  | 2.3  | 2.3  | 2.2  | 2.2  | 2.1  |

|               | 2006 | 2034 | 2035 | 2036 | 2037 | 2038 | 2039 | 2040 | 2041 | 2042 | 2043 | 2044 | 2045 | 2046 | 2047 | 2048 | 2049 | 2050 |
|---------------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| Comoros       | 4.0  | 2.1  | 2.1  | 2.0  | 2.0  | 1.9  | 1.9  | 1.9  | 1.8  | 1.8  | 1.7  | 1.7  | 1.7  | 1.6  | 1.6  | 1.5  | 1.5  | 1.5  |
| Djibouti      | 4.1  | 2.4  | 2.4  | 2.3  | 2.3  | 2.2  | 2.2  | 2.2  | 2.1  | 2.1  | 2.0  | 2.0  | 2.0  | 1.9  | 1.9  | 1.9  | 1.8  | 1.8  |
| Cote d'Ivoire | 4.6  | 2.8  | 2.7  | 2.7  | 2.6  | 2.6  | 2.5  | 2.5  | 2.4  | 2.4  | 2.3  | 2.3  | 2.3  | 2.2  | 2.2  | 2.1  | 2.1  | 2.1  |
| Sudan         | 4.3  | 2.8  | 2.8  | 2.7  | 2.7  | 2.6  | 2.6  | 2.6  | 2.5  | 2.5  | 2.4  | 2.4  | 2.4  | 2.3  | 2.3  | 2.3  | 2.2  | 2.2  |
| Cameroon      | 4.4  | 2.9  | 2.9  | 2.9  | 2.8  | 2.8  | 2.7  | 2.7  | 2.7  | 2.6  | 2.6  | 2.5  | 2.5  | 2.5  | 2.4  | 2.4  | 2.4  | 2.3  |
| Mauritania    | 4.5  | 3.1  | 3.1  | 3.1  | 3.0  | 3.0  | 2.9  | 2.9  | 2.9  | 2.8  | 2.8  | 2.8  | 2.7  | 2.7  | 2.6  | 2.6  | 2.6  | 2.5  |
| Togo          | 4.9  | 3.3  | 3.3  | 3.2  | 3.2  | 3.2  | 3.1  | 3.1  | 3.0  | 3.0  | 2.9  | 2.9  | 2.9  | 2.8  | 2.8  | 2.8  | 2.7  | 2.7  |
| Gambia        | 4.8  | 3.5  | 3.4  | 3.4  | 3.3  | 3.3  | 3.3  | 3.2  | 3.2  | 3.2  | 3.1  | 3.1  | 3.0  | 3.0  | 3.0  | 2.9  | 2.9  | 2.9  |
| Yemen         | 5.6  | 3.5  | 3.4  | 3.4  | 3.3  | 3.3  | 3.2  | 3.1  | 3.1  | 3.0  | 3.0  | 2.9  | 2.9  | 2.8  | 2.8  | 2.7  | 2.7  | 2.7  |
| Senegal       | 5.3  | 3.9  | 3.9  | 3.8  | 3.8  | 3.8  | 3.7  | 3.7  | 3.6  | 3.6  | 3.6  | 3.5  | 3.5  | 3.5  | 3.4  | 3.4  | 3.3  | 3.3  |
| Mozambique    | 5.2  | 4.1  | 4.1  | 4.0  | 4.0  | 4.0  | 3.9  | 3.9  | 3.9  | 3.8  | 3.8  | 3.8  | 3.7  | 3.7  | 3.7  | 3.6  | 3.6  | 3.6  |
| Nigeria       | 5.4  | 4.1  | 4.1  | 4.1  | 4.0  | 4.0  | 4.0  | 3.9  | 3.9  | 3.8  | 3.8  | 3.8  | 3.7  | 3.7  | 3.7  | 3.6  | 3.6  | 3.6  |
| Benin         | 5.5  | 4.2  | 4.1  | 4.1  | 4.1  | 4.0  | 4.0  | 3.9  | 3.9  | 3.9  | 3.8  | 3.8  | 3.7  | 3.7  | 3.7  | 3.6  | 3.6  | 3.6  |
| Guinea        | 5.5  | 4.2  | 4.2  | 4.2  | 4.1  | 4.1  | 4.0  | 4.0  | 4.0  | 3.9  | 3.9  | 3.9  | 3.8  | 3.8  | 3.8  | 3.7  | 3.7  | 3.7  |
| Burkina Faso  | 6.1  | 4.7  | 4.7  | 4.7  | 4.6  | 4.6  | 4.5  | 4.5  | 4.5  | 4.4  | 4.4  | 4.3  | 4.3  | 4.3  | 4.2  | 4.2  | 4.1  | 4.1  |
| Somalia       | 6.1  | 5.1  | 5.1  | 5.0  | 5.0  | 5.0  | 4.9  | 4.9  | 4.9  | 4.8  | 4.8  | 4.8  | 4.8  | 4.7  | 4.7  | 4.7  | 4.6  | 4.6  |
| Mali          | 6.6  | 5.7  | 5.6  | 5.6  | 5.6  | 5.5  | 5.5  | 5.5  | 5.5  | 5.4  | 5.4  | 5.4  | 5.3  | 5.3  | 5.3  | 5.3  | 5.2  | 5.2  |
| Chad          | 6.3  | 5.9  | 5.9  | 5.9  | 5.9  | 5.8  | 5.8  | 5.8  | 5.8  | 5.8  | 5.8  | 5.8  | 5.7  | 5.7  | 5.7  | 5.7  | 5.7  | 5.7  |
| Niger         | 7.0  | 6.0  | 5.9  | 5.9  | 5.9  | 5.8  | 5.8  | 5.8  | 5.8  | 5.7  | 5.7  | 5.7  | 5.6  | 5.6  | 5.6  | 5.5  | 5.5  | 5.5  |
| Uganda        | 6.7  | 6.3  | 6.3  | 6.3  | 6.3  | 6.2  | 6.2  | 6.2  | 6.2  | 6.2  | 6.2  | 6.2  | 6.1  | 6.1  | 6.1  | 6.1  | 6.1  | 6.1  |
| Sierra Leone  | 6.5  | 6.5  | 6.5  | 6.5  | 6.5  | 6.5  | 6.5  | 6.5  | 6.5  | 6.5  | 6.5  | 6.5  | 6.5  | 6.5  | 6.5  | 6.5  | 6.5  | 6.5  |
| Guinea-Bissau | 7.1  | 7.1  | 7.1  | 7.1  | 7.1  | 7.1  | 7.1  | 7.1  | 7.1  | 7.1  | 7.1  | 7.1  | 7.1  | 7.1  | 7.1  | 7.1  | 7.1  | 7.1  |

Appendix 1 (Continued): Projected Fertility Rates (Per Woman)