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**Demographic Pressures in North Africa:
Causes and Consequences**

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I. Introduction

The region of North Africa has one of the most rapid population growth rates of the world, where the population has doubled in the last thirty years (since 1970). Given the extremely arid climate of North Africa, where fresh water availability is already a serious problem, overpopulation implies that there will be serious problems for the future of this region and possibly increased emigration. Such rapid population growth affects the development of the region. Governments in most countries of the region recognize rapid population growth as a serious problem and have developed programs that attempt to slower down the rates of population growth.

This paper provides an overall background of the demographic trends and their consequences in North Africa. The paper focuses on trends in fertility and mortality in the last three decades – from 1970 until 2000. Since migration is treated in a special session in this conference, it is excluded from the analysis in this paper. In researching the consequences of the rapid population growth we focused only on education, arable land, and fresh water resources.

II. Demographic Trends

II.1. Population size and growth

The population of North Africa has increased by a factor of three since 1950 and doubled in the last thirty years (from 1970 to 2000). The total number of population in 1970 was 71.5 million increased to 142.8 million in the year 2000. It is expected that the population of North Africa will reach 200 million in the year 2025 (The United Nations, 2002). Egypt comprises about 50 percent of the total population of the region (67.9 millions in 2000) followed by Algeria and Morocco (30.3 and 29.9 millions

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respectively). The population of Tunisia is estimated to be 9.5 million, while the less populated country in the region is Libya with 5.3 million inhabitants.

The population growth rates in the region are variable but decreasing in all countries, with the highest rate observed in Libya (2.13 percent per year) followed by Morocco (1.87 percent) then Algeria and Egypt (1.82 percent). The rate of population growth in Tunisia is the lowest among the North Africa countries (1.12 percent) and one of the lowest rates among developing countries in Asia, Africa, and Southern America. This may be attributed - in part - to the initial low rates of growth in 1970 and the strong family planning program in this country.

Table 1: Population 1970-2000 (in thousands)

Year	Algeria	Egypt	Libya	Morocco	Tunisia	North Africa
1970	13746	35285	1986	15310	5127	71454
1980	18740	43749	3043	19382	6448	91362
1990	24855	56223	4311	24624	8156	118169
2000	30291	67884	5290	29878	9459	142802
(2000/1970) %	220.36	192.4	266.4	195.2	184.5	199.9

Source: The United Nations (2002)

Table 2: Population growth rate (%) 1970-2000

Period	Algeria	Egypt	Libya	Morocco	Tunisia	North Africa
1970-1975	3.06	1.92	4.17	2.45	2.01	2.33
1975-1980	3.14	2.38	4.37	2.27	2.58	2.59
1980-1985	3.10	2.57	4.37	2.53	2.58	2.73
1985-1990	2.54	2.45	2.60	2.26	2.12	2.41
1990-1995	2.14	1.95	1.96	2.00	1.84	1.99
1995-2000	1.82	1.82	2.13	1.87	1.12	1.79

Source: The United Nations (2002)

II.3. Population Structure

The population structure in all North Africa countries – as presented in Table 3 and the population pyramids' graphs (Figure 1) – reflects a young population where almost one-third of the total population is less than 15 years old. This young structure of the population causes many problems in the fields of education, health, and all other public services and increases the dependency ratio and is expected to cause many problems in the future when these new generation enter to the labor force and face high rates of unemployment.

The percent of population less than 15 years old in Egypt is the highest among North Africa countries (35.4 percent) followed by Algeria and Morocco (34.8 and 34.7 percent respectively). The lowest percent is observed in Tunisia (29.7 percent). As I mentioned before, this may be attributed to the success of the family planning program in Tunisia.

Table 3: Population by broad age groups, North Africa, 2000

Country	Age group			Total
	0-14	15-64	65+	
Algeria	34.8	61.0	4.1	100.0
Egypt	35.4	60.5	4.1	100.0
Libya	33.9	62.7	3.4	100.0
Morocco	34.7	61.2	4.1	100.0
Tunisia	29.7	64.4	5.9	100.0

Source: The United Nations (2002)

II.4. Fertility

North Africa is a region with high but declining fertility. Fertility had been maintained at a high level for a considerable period of time, but a decline has begun in each country. During the 1970s all countries in North Africa had high fertility. The total fertility rate (TFR), which measures the average number of children a woman would have at the end of her reproductive period if she had children according to the age-specific fertility rates prevailing during a given period, was high, generally 6 or more live births per woman in each country (Table 4). One explanation for sustained high fertility is the tradition of early marriage. It is not surprising that during the 1970s, there was a strong anti-family-planning stance in North Africa (Yousif, et. al, 1996).

Recently, fertility in most countries of North Africa has started to decline rapidly. The level of fertility in the late 1990s was much lower than the level in the 1970s. The largest drop occurred in TFR in Morocco, Algeria, and Tunisia. High fertility levels in Egypt have also declined considerably in the recent years.

Figure 1: Population Pyramids of North Africa countries, 2000

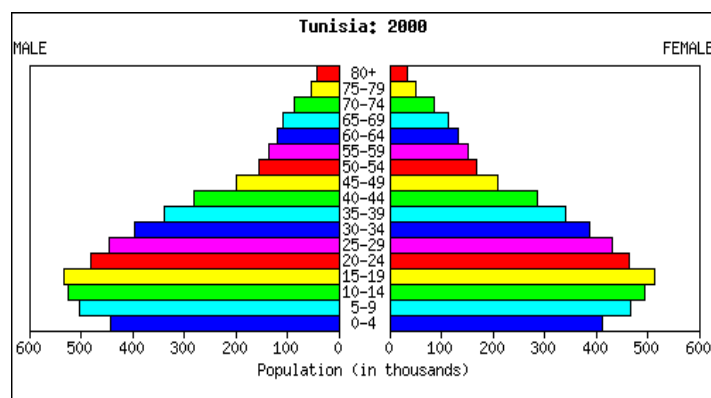
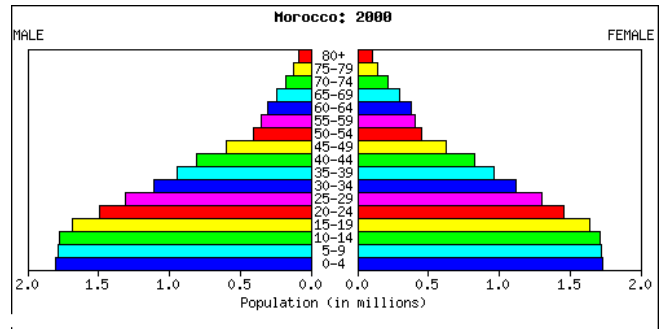
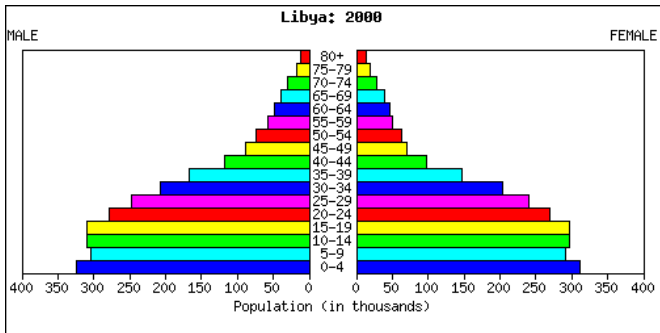
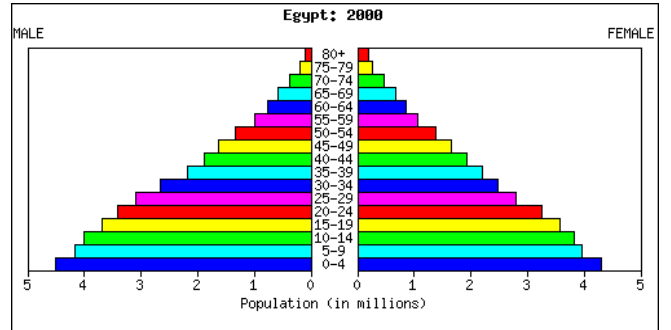
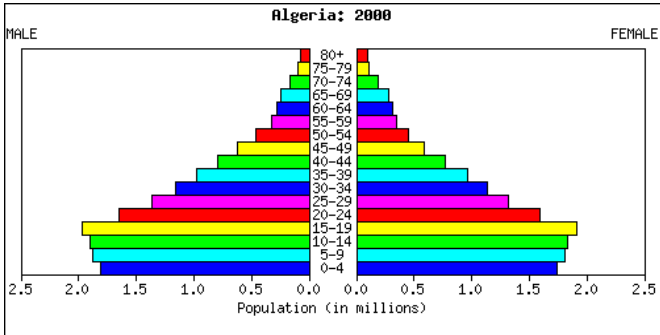


Table 4: Total fertility rate (children per woman), North Africa, 1970-2000.

Period	Algeria	Egypt	Libya	Morocco	Tunisia	More developed regions	Less developed regions
1970-1975	7.38	5.54	7.59	6.89	6.21	2.13	5.42
1975-1980	7.18	5.27	7.38	5.90	5.69	1.91	4.62
1980-1985	6.36	5.06	7.18	5.40	4.90	1.85	4.12
1985-1990	4.97	4.58	5.65	4.60	4.12	1.83	3.80
1990-1995	4.05	3.80	4.10	3.90	3.13	1.69	3.37
1995-2000	3.25	3.40	3.80	3.40	2.31	1.57	3.10

Source: The United Nations (2002)

Table 5: Age-specific Fertility Rates in North Africa, 1995-2000

Country	Age group						
	15-19	20-24	25-29	30-34	35-39	40-44	45-49
Algeria	22.17	124.22	200.20	152.20	102.57	40.98	7.67
Egypt	51.82	199.44	203.66	130.42	68.20	21.76	4.69
Libya	19.24	93.87	178.43	199.31	161.71	88.46	18.99
Morocco	33.54	134.43	178.10	150.04	105.82	64.73	13.36
Tunisia	11.55	77.15	133.52	129.82	74.84	32.34	2.77

Source: The United Nations (2002)

II.5. Mortality

The sensitivity of mortality to cultural and religious factors is less than fertility and family planning. Mortality in the countries of North Africa has improved quite rapidly in the last three decades (Table 6). Crude death rates decreased from rates around 15 deaths per thousand to an average of 6.5 per thousand in Egypt, Morocco, and Tunisia; and to 5.7 in Algeria; and less than 5 per thousand in Libya (4.7 per thousand). Life expectancy at birth is a summative measure of longevity and health. During the period of 1970-2000 life expectancy at birth increased by about 17.1 years in Libya and about 14 years of the other four countries in the region (see Tables 6 and 7).

Table 6: Crude death rate (per 1,000 population), 1970-2000

Period	Algeria	Egypt	Libya	Morocco	Tunisia
1970-1975	15.4	16.3	14.8	15.7	12.3
1975-1980	13.4	14.2	12.7	13.0	10.0
1980-1985	10.4	12.7	10.9	11.4	8.3
1985-1990	7.8	9.6	5.3	8.9	7.3
1990-1995	6.6	7.9	4.6	7.6	6.3
1995-2000	5.7	6.8	4.7	6.6	6.7

Source: The United Nations (2002)

Table 7: Life expectancy at birth (in years), 1970-2000

Period	Algeria	Egypt	Libyan	Morocco	Tunisia
1970-1975	54.5	52.1	52.9	52.9	55.6
1975-1980	57.5	54.1	57.7	55.8	60.0
1980-1985	60.5	56.6	62.4	58.3	63.1
1985-1990	64.9	61.0	66.7	61.9	65.6
1990-1995	67.0	63.9	69.0	64.4	67.8
1995-2000	68.9	66.3	70.0	66.6	69.5

Source: The United Nations (2002)

III. Consequences of population trends

III.1. Education

It is not only the total number of pupils that increases due to the high rates of population growth, but also the enrolment ratio due to modernization and urbanization. These two factors add more pressure on educational services in the North Africa countries (See Tables 8). The secondary education in Algeria and Tunisia almost doubled in the last two decades. School enrollment ratios in Egypt and Libya which were initially high in 1980 continued their increasing trends in the 1990s. Enrollment ratios in Morocco still lower than the region's average.

Table 8: School age population (6-17) in North Africa, 1980-2000 (in thousands)

Country	1980	2000	Percent of 2000/1980
Algeria	6025	8442	140.1
Egypt	12178	19118	157.0
Libya	922	1464	158.8
Morocco	5868	8015	136.6
Tunisia	1973	2425	122.9

Source: The United Nations (2002)

III.2 Arable Land

The world population is growing eight times as fast as cultivated land area, and the food security of hundreds of millions of people may be at risk early in this century (IFPRI, 1995). In many developing countries rapid population growth has meant that arable land per capita has declined sharply in recent years. In North Africa, the arable land per capita decreased by rates between 60 and 83 percent from 1979-81 to 1997-99. Further decreases can easily be predicted in the near future (see Table 9).

Table 9: Arable land in North Africa (hectares per capita)

Country	1979-81	1997-99	Percent of 1997-99/1979-81
Algeria	0.37	0.26	70.3
Egypt	0.06	0.05	83.3
Libya	0.58	0.37	63.8
Morocco	0.39	0.32	82.1
Tunisia	0.51	0.31	60.8

Source: The World Bank (2001a)

III.3 Water resources

Water is the foundation of life. Historians point out that the appearances of ancient civilizations were definitely connected to water: The Nile River gave birth to the immortal civilization of the Egyptians, the Yellow River and the Yang-Tze River nurtured China's 5,000 long years of culture. The blue Mediterranean created the ancient Greeks and the glorious era of the Romans.

According to the United Nation's statistics, there are now about 1.2 billion people live in areas lacking water in the world. In 1996 the United Nations issued a forecasting report that by 2050, the world population lacking water will be 2.4 billion. The Food and Agriculture Organization believes that at the end of this century, a serious water shortage phenomenon will appear in the Middle East. The publicly recognized standard is: average water usage per person per annum can not fall below one thousand cubic meters. If lower than this standard, the development of modern society will be affected. Based on this standard, all the countries of North Africa, except Morocco, are considered water shortage countries. The continuous growth of population will make demands on water sources continue to grow, and the fresh water per capita to decline (see Table 10).

Table 10: Water Availability: Fresh Water resources (cubic meters per capita)

Country	1999	2025	Percent of 2025/1999
Algeria	477	323	67.7
Egypt	930	649	69.8
Libya	148	94	63.5
Morocco	1062	764	71.9
Tunisia	434	322	74.2

Source: The World Bank (2001b)

IV. Conclusion

The high fertility sustained over the 1960s and 1970s in North Africa has produced a young age structure and has strengthened the future momentum of population growth. The strong population growth momentum will have a great effect on the future demographic situation in the countries of North Africa. Potential mothers for several decades to come have already been born. Therefore, the recent decline in fertility in North Africa will not have its full demographic impact for several years. With sustained high fertility the age composition of the population will be dominated by the young, those who are age 15 or younger. The social consequences of this young age structure are inevitable, particularly added pressure on services and increasing demand for education. Given the shortage of fresh water in the region and the limited area of arable land, the fresh water and the arable land per capita will sharply decrease in the near future.

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