WHY POPULATION MATTERS TO **WATER RESOURCES**

Water is a key element of life for everyone on Earth. As the world's population grows, the demand for water mounts and pressure on finite water resources intensifies. Climate change, which is also closely tied to population growth, will also lead to greater pressures on the availability of water resources.

The exact number of people living on Earth in the coming decades is uncertain, but we do know that the population will continue growing, and this will impact water availability. Investing in efforts that slow the rates of population growth through increasing access to voluntary family planning services can help ensure that ample water is available for global food production, ecosystem health, and political and social stability.

The State of Water Resources

Water may seem abundant, but less than one percent of the world's water can be used for human needs.[1] This amount has to be shared by many competing users. Stress on freshwater resources due to rising demand is already leading to water scarcity in many places. Water scarcity is measured in various ways, including per capita availability and percentage of water resources used. While political, social, and economic factors all help determine access to water, measures of physical water availability offer a starting point to assess current and future water scarcity.

One of the most commonly used measures of water availability is the per capita freshwater availability within national boundaries. The total number of people living in a country determines the per capita availability of water resources in that country. As a general benchmark, countries can be classified as *water scarce* if there are fewer than 1,000 cubic meters of renewable freshwater available per person per year, and as *water stressed* if there are between 1,000 and 1,667 cubic meters available per person per year.[2]

Approximately 2 billion people are currently living in areas faced with water stress or scarcity.
Water scarcity affects all social and economic sectors and threatens the health of ecosystems.

Links between Population and Water

Population growth is a major contributor to water scarcity. Growth in populations means mounting demand and competition for water for domestic, industrial, and municipal uses. Water is also needed for agriculture and industrial use, and for the evacuation of waste materials. The most water scarce or stressed areas are typically those with few water resources, high population densities, and high population growth rates.[3] Population growth limits the amount of water available per person, drives people into marginal regions—which are already water stressed—and also into cities. For instance, most of the countries in the Middle East and North Africa (MENA) region cannot meet their current water demand. Seven of the world's 10 water scarce countries are in the MENA region [4] (Table 1). With per capita water availability projected to fall by half by 2050, the situation is likely to be dire in the coming years.[5] Projections show that by 2035, 3.6 billion people will be living in areas with water stress or scarcity, as population growth causes more countries and regions to become water scarce[6]. The path of future population growth will impact water stress and scarcity (Figure 1). This path will largely depend on the choices that men and women make today about the size of their families, and the family planning services that are available to them as they make these choices.

Access to improved water sources is vitally important to improved health and development for women and communities worldwide.

TABLE 1: Population Pressures on the Top Water-Scarce Areas of the World

Country	Population 2010 (Thousands)	Projected population 2035 (Thousands)	Per capita water availability 2035 (m^3/person/yr)[7]
Kuwait	2,737	4,328	4.6
United Arab Emirates	7,512	11,042	13.6
Qatar	1,759	2,451	21.6
The Bahamas	343	426	46.9
Saudi Arabia	27,448	40,444	59.3
Bahrain	1,262	1,711	67.8
Libya	6,355	8,081	74.3
Maldives	316	392	76.6
Yemen	24,053	46,196	88.8
Singapore	5,086	6,098	98.4

Source: United Nations Population Division. 2011. *World Population Prospects: The 2010 Revision.* New York: UN Population Division.; Food and Agriculture Organization of the United Nations (FAO). 2011. *Information System on Water and Agriculture.* Rome: FAO.

Agriculture accounts for approximately 70 percent of global water use, and for as much as 95 percent of water use in predominantly agriculture-based countries. Agriculture not only requires a large amount of water, but it is also one of the most inefficient uses of water.[8] A growing population requires more food. More water is needed to produce that food. Agricultural productivity is a crucial component of global food security and, therefore, water scarcity and hunger are closely interrelated. Population growth, along with development, will double global food demand by 2050. This will require increased agricultural production and put increased pressure on water resources.[9]

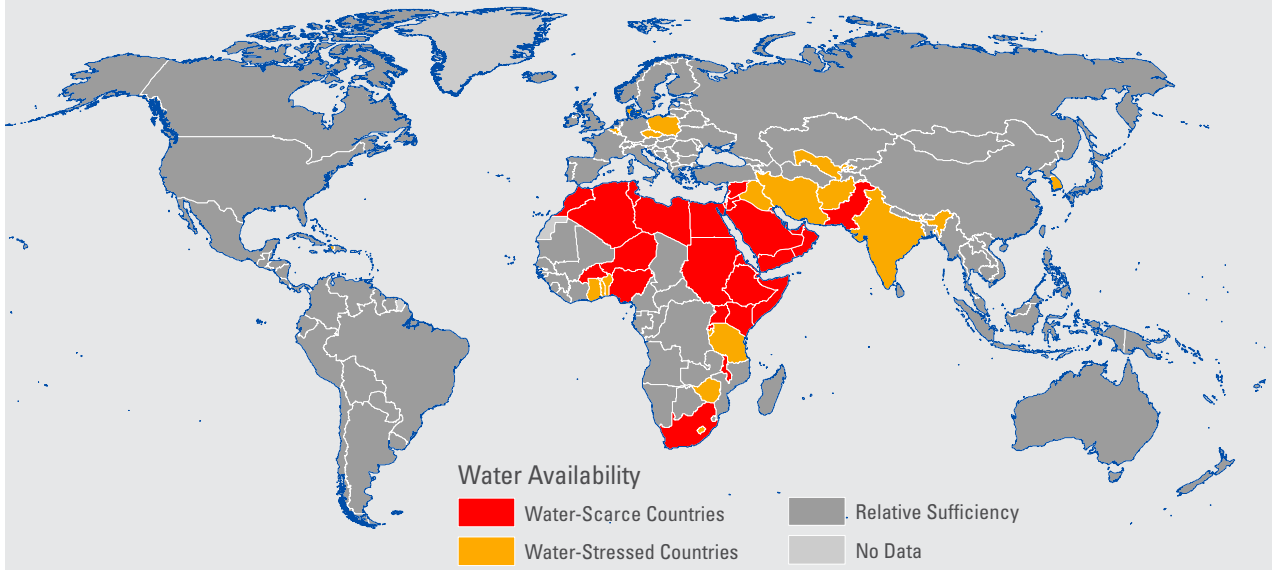
The majority of the world's population growth in the next 40 years will be absorbed by urban areas, particularly in less developed regions.[10] Urbanization leads to increased pressure on water sources as individuals become more concentrated in one area. Further, increases in per capita water consumption driven by development intensify water demand and strain local water capacity.[11] Although water withdrawals for domestic and municipal use globally account for a modest part of total water use, they are growing rapidly, especially as a result of population growth in urban areas of developing countries.[12]

Industrial production depends on water for processing, cooling, and disposal of waste products. Demand for water for industrial use is increasing with rapid industrialization to meet the many needs of a growing population. Population growth contributes to that increase, but income growth and the changes in consumption play a larger role.[13]

At the household level, demand for water is determined by demographic factors including household size, composition, and age structure. Population growth leads directly to increases in overall water demand, while other demographic factors such as population distribution and age structure modify the pattern in demand and determine increases in household water demand. Overall, the amount of water each person uses is expected to increase as incomes grow and consumption increases.[14]

Rapid population growth and urbanization could expose more people to water shortages, with negative implications for livelihoods, health, and security. These demographic trends, coupled with increasing per-capita water

Figure 1: Population Growth Impacts Water-Scarce and Water-Stressed Countries
Data on the amount of total renewable freshwater available in each country (2008-2012) is from the Food and Agriculture Organization of the United Nations. Total renewable freshwater includes the amount of both internal and external renewable water available to a country. This value is then divided by 2010 population figures provided by the United Nations Population Division to produce a per capita rate.



Source: Population Action International (PAI). *Mapping Population and Climate Change.* Washington, DC: PAI.

consumption, will be a huge development challenge.[15] Declining water availability in some areas due to climate change will exacerbate this challenge.[16] The rate of unmet need for family planning in most of these countries is very high, meaning many women would like to avoid pregnancy but are not using modern contraception.

Women, in particular, will be most affected by these additional burdens. Women and girls in developing countries are largely responsible for obtaining family water supplies and may have to walk long distances to reach a water source. Women are also mainly responsible for household hygiene and nursing sick children, who frequently become ill with diarrheal disease without clean water. Girls may be pulled out of school to help fetch water when it is not readily available at a nearby source, negatively affecting their educational opportunities. A lack of clean water and sanitation facilities exacerbates an already vicious poverty cycle by robbing girls of educational opportunities, causing disease and malnutrition, and ultimately reducing lifelong productivity.[17]

Policy Considerations

Population growth, along with rising incomes, changing dietary patterns, urbanization and industrial development, will increase demand for a fixed supply of water. Water demand patterns of the future will be characterized by growing competition between sectors, especially in developing countries, where population growth rates are high.

Strategies for efficient and sustainable development and management of water resources are needed to ensure access to the world's limited water resources and to cope with competing demands. Policymakers need to address systemic barriers that inhibit water access, such as poverty. Institutional reforms that enhance water access, like expansion of infrastructure and investments in water management and distribution, are key policy interventions. Other critical water sector approaches include investments in personnel and good governance systems.

Slowing population growth rates can also be an effective strategy for achieving universal access to clean and safe water resources. The challenge of a rapidly growing population on the efforts to provide adequate and clean water to every citizen has been acknowledged in various policy and planning documents. However, this recognition needs to be translated to implementation of programs and projects that directly address the identified challenge.

An estimated 215 million women in developing countries want to avoid pregnancy but are not using modern contraception. Increasing access to voluntary family planning services can help slow population growth, and complement ongoing efforts to ensure adequate and clean water for all.

Endnotes

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