



Source: [http://www.healthpolicyinitiative.com/Publications/Documents/788\\_1\\_Family\\_Planning\\_and\\_the\\_MDGs\\_FINAL\\_June\\_09\\_acc.pdf](http://www.healthpolicyinitiative.com/Publications/Documents/788_1_Family_Planning_and_the_MDGs_FINAL_June_09_acc.pdf)

# Population and Water

Water is crucial for all life on earth. It plays an essential role in our health, economy, food production, and environment. Safe drinking water and freshwater are imperative for development and public health since 21 of the 37 primary diseases in developing countries are related to water and sanitation.<sup>1</sup> Despite its importance, water is a finite natural resource and cannot be created. Instead, the hydrologic cycle recycles water through the atmosphere.<sup>1</sup> The fact that our supply is finite has dire implications on our world population of nearly 7 billion people and growing. The global water consumption rate doubles every twenty years, a pace that is double the rate of population growth.<sup>1</sup> If population and consumption trends persist, it is estimated that the demand for water will surpass its availability by 56%,<sup>1</sup> and 1.8 billion people<sup>2</sup> will be living in regions of water scarcity by 2025. This situation is exacerbated by the fact that developing countries, already experiencing water-stress, often have the highest population growth rates—bringing more people into a region that already cannot support them.<sup>3</sup>

***Water-stressed** countries are regions with fewer than 1,700 m<sup>3</sup> of water per person per year.<sup>4</sup> People living in water-stressed regions must make painful decisions about using water for personal consumption, agriculture, or industry.<sup>4</sup>*

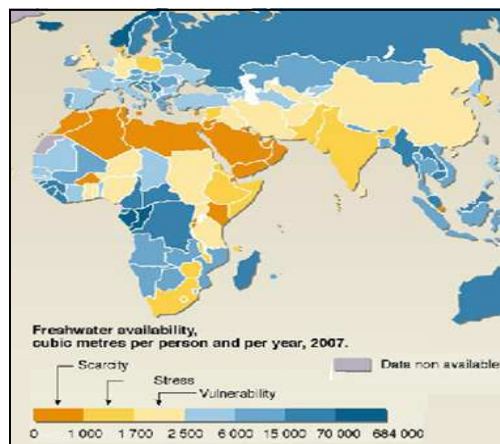
*Regions with fewer than 1,000 m<sup>3</sup> per person per year are defined as **water-scarce**. Water-scarcity hinders economic development, strains the environment, and drastically limits food availability<sup>4</sup>*

## The current situation

The 2009 World Water Development report revealed that nearly half of the global population will be living in regions of high water stress by 2030.<sup>9</sup> This projection is particularly daunting considering that in 2000, 508 million people inhabited water-stressed or water-scarce regions<sup>4</sup>—indicating that the percentage of the world population affected by water-scarcity could balloon from 8%<sup>4,10</sup> to 47%<sup>10</sup> in a mere three decades. This water scarcity directly correlates with poverty. The amount of people living on less than \$1.25 a day approximately corresponds with the amount of those unable to access safe drinking water.<sup>7</sup>

The global population is expanding by 80 million people annually, increasing the demand for freshwater by about 64 billion m<sup>3</sup> a year.<sup>3</sup> In fact, water withdrawals tripled over the last 50 years due to population growth.<sup>5</sup> This rapid growth rate also caused the potential global availability of water to decline from 12,900 m<sup>3</sup> per capita per year in 1970, to 9,000 m<sup>3</sup> in 1990, to about 7,000 m<sup>3</sup> in 2000.<sup>6</sup>

## Water-scarce and water-stressed countries, 2007



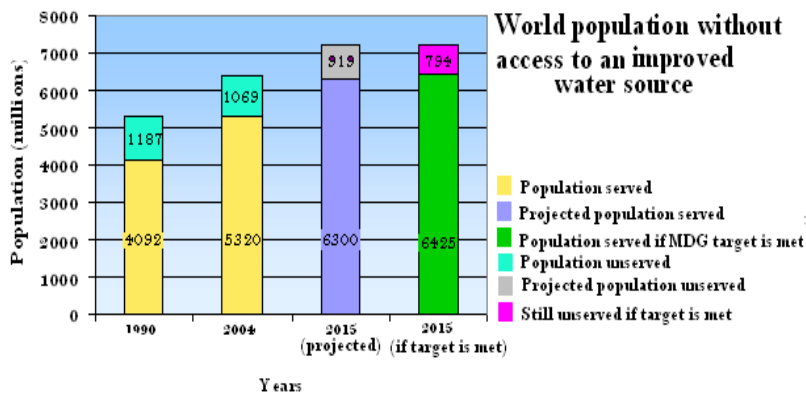
Source: <http://www.unep.org/dewa/vitalwater/jpg/0221-waterstress-EN.jpg>

## Depleting aquifers will contribute to widespread food scarcity

Nations around the world have been overpumping their aquifers. While most are replenishable, some of them are not—particularly in many of the most populous regions. For example, the water table in Yemen is falling by approximately 6 feet per year.<sup>11</sup> With quickly declining water tables and one of the world's most rapidly growing populations, Yemen ranks high among failing states. Meanwhile, China's Hai basin is facing a shortfall of approximately 40 billion tons of water per year. When the aquifer depletes, this will cause a 40 million ton decline in grain production—equivalent to a lost food supply for 130 million citizens.<sup>11</sup> Many nations overpumping their water resources concurrently could lead to the simultaneous depletion of aquifers, and in turn, agriculture cutbacks. Thus, the world's current water scarcity could soon lead to a devastating food scarcity.<sup>11</sup>

## Clean water supplies are imperative for public health yet many people lack access to this resource

Only 20% of the global population has access to running water and over 1 billion people do not have access to clean water.<sup>1</sup> This prevalence of inadequate water affects the health of 1.2 billion people worldwide and contributes to the death of approximately 15 million children annually.<sup>7</sup> Half of the population in developing countries is suffering from water-related diseases.<sup>1</sup> In these developing countries, *nearly 80% of diseases* are linked to water, leading to 3 million early deaths.<sup>7</sup>



Source of information for graph: [http://www.who.int/water\\_sanitation\\_health/monitoring/jmpfinal.pdf](http://www.who.int/water_sanitation_health/monitoring/jmpfinal.pdf)

## Water plays a crucial role in agricultural production

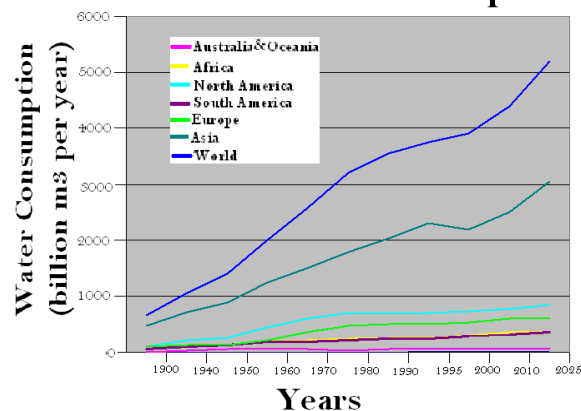
Fresh water and food production are intricately connected, producing one ton of grain requires 1,000 tons of water. Food production is so wholly dependent on water that agriculture can use 75 to 90% of freshwater in a region.<sup>1</sup> Water scarcity creates food shortages, raises food prices, and increases a country's dependence on food imports.<sup>3</sup> This water scarcity, which used to be a local dilemma, has since grown into an international issue. Since producing grain requires large quantities of water, countries have started to cut back on their own grain production—opting to import instead. Thus, the global water market is nearly synonymous with the international grain market. The situation has become so extreme that several of the largest cities worldwide—including Los Angeles, Cairo, and New Delhi—can only increase their water consumption by reducing agricultural water use. Nearly every country in the Middle East and North Africa is approaching its water limit—turning the region into the world's fastest growing grain import market.<sup>11</sup>

***“There has been a widespread failure to recognize water’s vital role in providing food, energy, sanitation, disaster relief, environmental sustainability and other benefits.***

***This has left hundreds of millions of people suffering from poverty and ill health and exposed to the risks of water-related diseases.”***

***~Ban Ki-moon, secretary-general of the United Nations<sup>10</sup>***

## Global Water Consumption



Source of data used for graph: <http://www.urbanecoist.com/wp-content/uploads/2009/01/water-usage-graph-world-continents1.jpg>

## Population growth will dramatically affect the future

The world's population is projected to expand to 9 billion people by 2050.<sup>5</sup> It is estimated that 90% of the additional 3 billion people will be living in developing countries—many of which are already experiencing water stress or scarcity.<sup>3</sup> Estimates show that by 2030, 75 to 250 million people in Africa alone will be experiencing water scarcity.<sup>7</sup> Millennium Development Goal 7 aims to increase access to safe water,<sup>8</sup> but due to population growth, water supplies will have to reach an added 1.5 billion people by 2015 in order to meet this MDG.<sup>6</sup> Some progress has been made towards achieving MDG 7. For example, 5.3 billion people in 2004—up from 4.1 billion people in 1990—accessed water from improved sources. However, the actual percentage of people without access has not significantly changed since 1990 because of the increased population.<sup>8</sup>

Least developed countries	Average annual increase in population served (thousands)		Increase needed by a factor of:
	1990-2004 (actual)	2005-2015 (required)	
Ethiopia	319	4,312	12.5
Congo	628	3,009	4.8
Niger	192	719	3.8
Maldives	4	14	3.7
Togo	76	277	3.7
Madagascar	241	834	3.5
Vanuatu	2	8	3.4
Mozambique	230	764	3.3
Yemen	327	1,073	3.3
Guinea	126	396	3.1

**Least developed countries that need to more than triple their 1990-2004 rate of increase in order to reach the MDG 7 by 2015**

Source of data used for table: [http://www.who.int/water\\_sanitation\\_health/monitoring/jmpfinal.pdf](http://www.who.int/water_sanitation_health/monitoring/jmpfinal.pdf)

1. "Water Facts & Water Stories from Across the Globe," (The World Water Organization, 2010) Accessed June 16, 2010. [http://www.theworldwater.org/water\\_facts.php](http://www.theworldwater.org/water_facts.php)

2. "Majority of world population face water shortages unless action taken, warns Migiro," *UN News Centre*, (UN News Service, 5 Feb 2009), Accessed June 19, 2010. <http://www.un.org/apps/news/story.asp?NewsID=29796&Cr=water&Cr1=agriculture>

3. "Water in a Changing World," *UN Water Development Report 3*, (World Water Assessment Programme, 2009), Accessed June 21, 2010. [http://www.unesco.org/water/wap/wdr/wdr3/pdf/WWDR3\\_Facts\\_and\\_Figures.pdf](http://www.unesco.org/water/wap/wdr/wdr3/pdf/WWDR3_Facts_and_Figures.pdf)

4. "Chapter 2: Environmental Trends: Water and Population," *State of the World Population 2001*, (UNFPA, 2001), Accessed June 16, 2010. <http://www.unfpa.org/swp/2001/english/ch02.html>

5. Richard Connor, Jean-Marc Faures, Johan Kuylenstierna, "Chapter 7. Evaluation of water use," *Water in a changing world*, (World Water Development Report 3, 2009), Accessed June 21, 2010. [http://www.unesco.org/water/wap/wdr/wdr3/pdf/18\\_WWDR3\\_ch\\_7.pdf](http://www.unesco.org/water/wap/wdr/wdr3/pdf/18_WWDR3_ch_7.pdf)

6. "Vital Water Graphics, An overview of the state of the world's fresh and marine waters: 2nd Edition," (United Nations Environment Programme: 2008), Accessed June 15, 2010. <http://www.unep.org/dewa/vitalwater/article186.html>

7. "Ballooning global population adding to water crisis, warns new UN report," *UN News Centre*, (UN News Service, March 12, 2009), Accessed June 16, 2010. <http://www.un.org/apps/news/story.asp?NewsID=30167&Cr=water&Cr1=supply>

8. "Meeting the MDG Drinking Water and Sanitation Target: The Urban and Rural Challenge of the Decade," (New York: World Health Organization and UNICEF, 2006), Accessed June 21, 2010. [http://www.who.int/water\\_sanitation\\_health/monitoring/jmpfinal.pdf](http://www.who.int/water_sanitation_health/monitoring/jmpfinal.pdf)

9. "3th UN-World Water Development Report 2009," *Protos*, (Protos, April 10, 2009), Accessed July 6 2010. <http://www.protos.be/protosh2o/water-in-the-world/3th-un-world-water-development-report>

10. "Distilled Demographics Video: The Death Rate," (Population Reference Bureau: 2010), Accessed July 6, 2010. <http://www.prb.org/Journalists/Wcasts/2010/distilleddemographics4.aspx>

11. Brown, Lester R., "Plan B 4.0," Lester R. Brown, New York: Earth Policy Institute, 2009.