



## Drops of Information by Region

The global water situation is extremely complex. Each region, country and settlement faces serious and different problems that lead to different levels of priority and focus for the development of processes for the formulation of public policies.

For the Forum's operational means, the world has been divided into five regions: **Africa, America, Asia-Pacific, Europe and the Middle East.**

### AFRICA

In Africa, as well as poverty and the impact of natural disasters such as droughts, floods and desertification, there exists an inadequate management of water, a lack of planning for environmental and ecological problems, and a dire need for investment for infrastructure.

Africa has only 9% of the world's water resources. During the last ten years, the continent has experienced almost a third of the catastrophes relating to water that occurred at a worldwide level, with almost 135 million people affected by droughts, equivalent to 80% of the total population. Africa is perhaps the continent that generates the greatest concern due to the direct relationship that exists between poverty and the lack of access to and quality of water resources. There are grave disparities regarding the access to, storage of and sanitation of water, and the distribution of water is the lowest in the world.

- In 43 of Africa's large cities, 19% of the population do not have any drinking water or sanitation, according to statistics published in the Worldwide Evaluation of Water Storage and Sanitation by the WHO and UNICEF in the year 2000.
- Only 25% of the urban population of Africa has access to hygiene services connected to a drainage system.
- The lack of drinking water and sanitation services has generated a crisis situation in health matters in diverse regions of the continent, where hunger and water-related diseases are a constant threat.
- In Sub-Saharan Africa, over 1.1 million people die annually of malaria. The disease is the main cause of infant mortality.
- 20% of children under 5 in Africa die of malaria, meaning that an African child dies every 30 seconds. This disease represents 10% of the continent's deaths.
- The costs relating to malaria represent an annual loss of 12 billion U.S. dollars for Africa's GDP. Economists attribute malaria to the deficit of annual economic growth of up to 1.3% in some African countries.
- In the 1990's, 58% of 67 urban centers in 29 African countries (including the majority of the continent's largest cities) used water from rivers 25 or more kilometers away.
- In the large river basins of the Niger River, Lake Chad and the Senegal River, the total amount of water available has dropped by between 40% and 60%.
- It is calculated that the desertification process (the degradation of dry lands) affects 46% of Africa; of that surface area, 55% runs a high risk of becoming desert. The zones most affected are located along the edge of deserts and affect in total some 485 million people.
- In Africa, nearly 85% of water extracted is channeled to agriculture, but this figure varies greatly from one region to another:
  - In arid regions, where irrigation plays an important part in agriculture, water channeled to that end reaches its highest level of extraction
  - The northern region represents more than half of the water extracted for agricultural use in the entire continent
  - The wet regions show the lowest levels of extraction of water for agriculture: 62% in the Gulf of Guinea and 43% in the central region
- In some mountainous regions of eastern Africa, women consume up to 27% of their calorific energy in activities relating to the storage of water.



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- It is estimated that in South Africa alone, all women walking daily in order to seek water for their families is the equivalent to 16 times the journey to the Moon and back.
- Nearly 230 million Africans will suffer from a lack of water by the year 2025.
- It is expected that 25 African countries will suffer a lack of water or tension as a result of that lack in the next 20 to 30 years.
- In Africa 29% of water-related natural disasters occurred between 1990-2001.

### AMERICA

Many of the problems affecting this region are related to the need to increase water and sanitation coverage and the necessity for greater social participation. Furthermore, schemes for the management of shared basins are necessary, as there are more than 70 basins shared by two or more countries.

In the American continent, accelerated urbanization and population growth has generated an increase in demand for water and the need to transfer it from one basin to another in order to satisfy needs. Furthermore, the figures relating to water and sanitation services show enormous disparities between urban and rural areas.

#### *North America*

- North America has the highest level of water storage and sanitation in the world.
- 100% of the urban population has drinking water and sanitation services.
- In Canada, the per capita availability of water is the highest in the world, and the quality of water is in second place.
- Despite the substantial efforts that have been made in the region in order to reduce water pollution, in 1998 a third of the rivers and lakes in the United States were not clean enough to allow fishing or swimming in them.
- In the United States, 120 of the 822 species of freshwater fish are in danger of extinction, representing 15% of the total fish species.
- The United States is the world's second-largest producer of hydro electricity, with 10 or 12% of its total energy produced this way.
- The United States and Canada, together with Europe, have achieved the complete recovery of the costs of water supply and have developed schemes of public and private participation.
- In the United States, agriculture is responsible for 49% of the total use of freshwater; 80% of that amount is used for irrigation.

#### *Latin America and the Caribbean*

- The region of Latin America and the Caribbean (LAC) is very rich in water resources: the Amazon, Orinoco, San Francisco, Parana, Paraguay and Magdalena basins transport over 30% of the world's continental surface water. However, two thirds of the territory of the region is classified as arid or semi-arid. These zones include large extensions of the central and northern areas of Mexico, northeastern Brazil, Argentina, Chile, Bolivia and Peru.
- Over 100 million people, a figure representing a quarter of the total population of Latin America, live in areas of water stress, mainly in Mexico, Argentina and the nations along the west coast of the continent.
- The LAC region has relatively high levels of drinking water and sanitation services, although it is characterized by striking differences between regions. The total coverage of drinking water extends to 87% of the population, while that of sanitation to 78%. A total of 68 million people in the region are without access to drinking water, and 116 million people do not have access to adequate sanitation.
- There exist great discrepancies between urban and rural zones: 94% of the urban population of Latin America has drinking water coverage, compared to 65% of the rural population.



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- The cost of supplying water to the region's cities is continually increasing. In order to supply Mexico City, water must be pumped to altitudes above 1,000 meters above sea level. In Lima, contamination has increased the cost of water treatment by 30%.
- The quantity of heavy metals in the subterranean waters of Latin America seems to double every 15 years. The presence of these metals is caused by them being shifted by rainwater.
- The exhausting of aquifers and the intrusion of saltwater are also serious sources of contamination of subterranean waters.
- Over the last decade, Central America and the Caribbean have suffered close to 20% of hydro-meteorological disasters in the world. Although at a worldwide scale this only represents 1% of the population affected, it totals 36,000 deaths, equivalent to a third of the total number of people who lost their lives around the world due to floods.

### MIDDLE EAST

Five per cent of the world's population lives in countries of the Middle East and North Africa, and has less than 1% of the world's available water. The lack of water, the deterioration of its quality, the fragmented management of the resource and its sanitation are some of the region's most demanding challenges.

In the Middle East, over 85% of the territory is classified as arid or hyper-arid, with annual precipitation of less than 100 mm. The majority of the region suffers from a scarcity of water, which hampers socio-economic development. Egypt, for example, depends entirely on the water of the River Nile, which is affected by natural causes and by Sudan, Ethiopia and Uganda that control the river's sources and influence its current. Iran, Syria and Turkey depend on the Tigris, Euphrates and Orontes rivers. The construction of dams on one of those rivers could cause a serious shortage for one or more of those countries. Lebanon, Syria, Jordan and Israel extract water from the same sources. On the west bank of the Jordan River, Israel, Judea, Samara and Gaza share the same water sources.

- Water availability in this region has performed a determining factor in activities, settlements, socio-economic interaction and population growth. The River Nile accommodated one of history's greatest civilizations, as did the Euphrates and Tigris. The ancient Yemeni civilization was linked to the availability of water resources, and its decadence is historically related to the destruction of the ancient Maareb dam.
- In the Arab region there are several trans-border rivers such as the Nile, (Burundi, Congo, Egypt, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, Uganda) and its tributaries, the Senegal River (Guinea, Mali, Mauritania, Senegal), the Juba and Shebeli rivers (Ethiopia, Kenya, Somalia), the Tigris and Euphrates (Syria, Turkey, Iran, Iraq), and their tributaries.
- Nearly 20 different large aquifer systems predominate in the Arab countries of Asia. These systems are made up of semi confined/shallow aquifers and deep confined aquifers of different geological formation. Eight of these basins are considered trans-border.
- The average annual precipitation of the Arab countries varies considerably, between 18mm/per year in Egypt and the Persian Gulf countries, and 827mm/per year in the Lebanon.
- The availability of renewable water resources in the Arab countries is estimated at 338km<sup>3</sup>/per year. Over 55% of that volume has its source outside the region.
- Due to the scarcity of water resources in the region, unconventional water supply systems have been adopted, such as desalinization plants and programs for the reuse of waste waters.
- Three quarters of Saudi Arabia's water resources come from fossil aquifers that, according to reports, are depleting by an average of 5.2 km<sup>3</sup> per year.



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- The average annual proportion of renewable water resources per inhabitant in the Arab region has reduced drastically. While in 1950 it was more than 4,000 mm., the proportion reduced to 1,312m<sup>3</sup>/per inhabitant, per year in 1995, 1,233m<sup>3</sup>/per inhabitant, per year in 1988, and it is expected to drop to 547m<sup>3</sup>/per inhabitant/per year by the year 2050.
- The supply of water per capita for the region has dropped to a third of the level registered in 1960, and it is expected to drop to half over the next 25 years.
- The supply of renewable water in the Arabian Peninsula is well below the critical level of 1,000 m<sup>3</sup> per capita, a value used to indicate a chronic water shortage.

### ASIA – PACIFIC

In the Asia-Pacific region there is a great variety of critical water-related issues: in the north and south the main problem is the impact of natural disasters. In Central Asia trans-border basins, in Southeast Asia sanitation and poverty, and in the Pacific Ocean area climatic change is causing concern.

The Asia-Pacific region covers 23% of the Earth's total surface. It extends to Mongolia, in the north, to Tonga, in the south, from Japan in the east, to Pakistan in the west. It houses 58% of the world population, 40% of which is concentrated in 5 countries: China, India, Indonesia, Pakistan and Bangladesh. The region is vast and diverse, and the management of water resources has become an increasing challenge. Agriculture is the activity consuming the most water (86%), while industry consumes 8% and domestic use 6%. China, India and Indonesia have more than half the region's water.

- Tibet, due to its geographical location, is Asia hydrological basin. Ten of the region's most important rivers begin there and irrigate more than 11 countries in the region: China, India, Bangladesh, Nepal, Bhutan, Pakistan, Thailand, Myanmar, Laos, Cambodia and Vietnam; home to 85% of the population of Asia.
- The region is characterized by constant tension due to the occurrence of hurricanes and extreme meteorological phenomena. The scarcity of water and contamination are key themes.
- The region of Tibet, or "Asia's water tower," as the Chinese call it, suffers from indiscriminate deforestation and erratic construction of dams that block the natural flow of rivers, and consequently, access to them further downstream. This, added to the area's dense population, is changing the climatic patterns of the region and the world.
- A third of the region's population does not have access to basic mechanisms of water sanitation.
- 35% of the water-related natural disasters between 1990 and 2001 occurred in Asia. In this region, all the rivers that traverse cities are seriously contaminated.
- The levels of suspended solids in rivers in Asia has increased four-fold over the last three decades. The rivers of Asia have a biochemical oxygen demand (BOD) 1.4 times higher than the worldwide average, and a level of bacteria from human waste three times higher than the worldwide average.
- Bangladesh is currently facing history's most serious "intoxication" of water (with high concentrations of arsenic in the drinking water), which affects between 35 and 77 million people, in a country of 130 million inhabitants.
- In Asia, nearly 84% of water extracted is used for agricultural purposes, compared to 71% in the rest of the world.
- In China, water wastage by industry is a huge problem, as the volume of water consumption per unit of steel is between 4 and 9 times greater than in Europe and developed countries in the Americas. Added to this, the bad conditions of the water supply and infrastructure lead to an increase in domestic wastage.



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### EUROPE

In Europe the panorama regarding water also presents challenges. Although scarcity and the deficient quality of water affect a low percentage of the population, the water resources are not fairly distributed among the countries. Europe produces approximately a third of the greenhouses gases at a worldwide level. The contamination of land by fertilizers, pesticides and agents such as heavy metals and radionuclide is high, as well as the excessive exploitation and contamination of subterranean water.

In southern and Eastern Europe sanitation actions must be intensified, and infrastructure, in many parts more than 100 years old, has deteriorated and the pressure for water has led to serious problems of scarcity, flooding, contamination and damages to the ecosystem.

- 18% of the population of Europe lives in countries suffering from a lack of water. Cyprus, Malta, Italy and Spain suffer from water-caused stress.
- The Mediterranean coasts of Italy, Spain and Turkey are affected by the excessive extraction of water for human consumption, tourism and irrigation.
- In Europe 300 liters of water per inhabitant are consumed per day, half as much as in the United States and Japan, but 20 times more than in Sub-Saharan Africa. This consumption continues to grow.
- The loss of water due to leakage in distribution systems can be up to 40% of the supply.
- 33% of the water extracted is used for agriculture, 16% for urban use, 11% for industrial use and 40% for the production of energy.
- The soil of Europe has excess nitrogen that could contaminate both surface and subterranean water. The existence of nitrates in water for human consumption, especially in shallow wells, affects all of Europe.
- 60% of the forests suffer serious damage from acid rain, contamination, drought or forest fires.
- 66% of waste goes into spillways, and therefore sanitation measures are of high priority.
- In Europe, only the upper sections of 14 major rivers are in "a good state."

#### Sources:

UNESCO web page on Water

Web page of International Freshwater Year 2003

*For more information visit:*

[http://www.unesco.org/water/wwap/index\\_es.shtml](http://www.unesco.org/water/wwap/index_es.shtml)

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