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1 rue Miollis, 75352 Paris Cedex 15, France

Embargoed: Sunday, March 20, 1999, 16:00 GMT

Released exclusively in Paris

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The World Water Gap

World's Ability to Feed Itself Threatened by Water Shortage

Ismail Serageldin, Chairman of the World Commission on Water for the 21st Century, is available for interviews in Paris on Friday, March 19, 1999. Please call Frederick Kiel or Jean-Michel Brun at (01) 40 69 30 11 to schedule time.

The water equation is simple but deadly: some 20 percent more water is needed than is available to feed the additional 3 billion people who will be alive by 2025, warns the newly formed **World Commission on Water for the 21st Century**.

The **World Commission's** statement, issued to commemorate World Water Day, 1999 (March 22) marks the first time that a major effort is being made to link global *water scarcity* with *food security* -- the ability of a country to feed itself.

"Water is life. Shortage of fresh water is looming as the most serious obstacle to food security, poverty reduction and protection of the environment," says Ismail Serageldin, Chairman of the **Water Commission** and World Bank Vice President for Special Programs.

"Even if we do everything we can to make irrigated agriculture more water efficient, humanity will still need at least 17 percent more fresh water to meet all its food needs than is currently

available . . . the world water gap,” says Dr. Serageldin. “If we follow business-as-usual, all water sectors will need 56 percent more water.”

The Commission warns: “We are facing a world water gap right now, this minute, and the crisis will only get worse. The consequences of failing to bridge the world water gap will be higher food prices and expensive food imports for water scarce countries that are predominantly poor. Already, 800 million people are going hungry because they cannot afford to buy food.”

The World Water Commission was formed to call public attention to the water crisis and to find solutions. While more water is needed to feed ourselves, we already face severe water-related problems, such as:

- 1.4 billion people live without clean drinking water;
- 2.3 billion people lack adequate sanitation;
- Seven million die yearly from diseases linked to water;
- Half the world’s rivers and lakes are seriously polluted;
- Important rivers like the Yangtse do not flow to the sea for much of the year because of upstream withdrawals;
- Food shortages could create millions of environmental refugees.

Currently, nearly 450 million people in 29 countries face water shortage problems, a figure that is projected to jump to nearly 2.5 billion people by 2050.

Two-thirds of the world’s population live in areas receiving only one-quarter of the world’s annual rainfall. For example, about 20 percent of the global annual rain runoff each year occurs in the Amazon Basin, a vast region with fewer than 10 million people, a tiny fraction of the world’s population. Similarly, the Congo River and its tributaries account for about 30 percent of the entire African continent’s annual runoff, but the watershed contains only 10 percent of Africa’s population.

The entire Mediterranean region, including parts of southern Europe, North Africa and Middle East, India, parts of China, most of Sub-Sahara Africa and major regions in North and South America, especially the western United States, will face severe water shortages in the coming

years. Europe also faces serious problems. Already, half of its lakes, an important source of freshwater, are eutrophied.

The World Commission on Water for the 21st Century, supported by all agencies of the United Nations and the World Bank, has been set up to bring together the work of thousands of scientists, economists and members of civil society from across disciplinary boundaries to devise solutions to the water crisis and alert decision-makers of its dangers. Government sponsors include Australia, Belgium Canada, Denmark, Finland, France, Japan, Luxembourg, the Netherlands, Sweden, the United Kingdom, the United States.

The Commission will guide the development of the **World Water Vision and Framework for Action**, a program that will be presented at the 2nd World Water Forum and Ministerial Conference, scheduled for World Water Day, 2000, March 17-22, in The Hague, Netherlands. This conference is aimed at converting public awareness on water into political commitment.

The World Water Gap

The World Water Commission, which includes Nobel laureates, eminent scientists and policy makers, says that “water scarcity, not shortage of land, will be the main constraint to increased agricultural production in developing countries in the coming years.”

In the last thirty years, the world has been able to feed its burgeoning population only because the science-driven Green Revolution more than doubled food grain production. The increase came mostly on irrigated lands, which comprise less than a fifth of all cropped area but produce some 45 percent of the world’s food. As a result, the number of people eating less than 2,100 calories per day, a standard index of malnutrition, has fallen by three-quarters.

But these gains are threatened. Irrigated agriculture will have to provide 70 percent of the increased food needed for an additional 3 billion people expected by 2025. But even if irrigation reaches water use efficiency levels of 70 percent at the basin level everywhere (from an average of 45 percent) we would still need 17 percent more water. That is the basis of the water gap.”

Depending on rain-fed agriculture would cause massive environmental damage: more land would have to be cleared; forests would be lost; habitats would be destroyed; and biodiversity

would be threatened. Every hectare of irrigated land represents 2.5 hectares of pasture or forest that need not be developed for agriculture.

“Competition for water from growing cities, industry and the environment means that irrigated agriculture is not likely to get any additional water, even though our best-case estimates call for a 17 percent increase,” says Dr. Serageldin.

Urban populations of the developing world are expected to triple in the next thirty years. In 1950, there were less than 100 cities with a population in excess of 1 million; by 2025, that number is expected to rise to 650. Now, some 23 cities -- 18 of them in the developing world -- have populations exceeding 10 million. Soon, half of the world's people will live in urban areas.

Some of the world's largest cities, including Beijing, Buenos Aires, Dhaka, Lima and Mexico City, depend heavily on groundwater for their water supply, but dependence on aquifers, which take many years to fill, is not sustainable. Groundwater from aquifers beneath or close to Mexico City, for example, provides it with more than 3.2 billion liters per day, but already, water shortages occur in many parts of the capital. Bangkok, which is depleting its aquifer for drinking and sanitation, is literally sinking. Most of the world's megacities are on the coast, where aquifer depletion leads to salt-water intrusion and the contamination of precious fresh water.

“Thus, these megacities will be competing for agricultural water,” Dr. Serageldin says.

Agriculture itself is dependent on aquifers, which are being used at an unsustainable rate. For example, India is using twice as much water from its aquifers as is being replenished naturally. That country could lose a quarter of its total food production by 2025. Libya consumes 3.7 times its renewable water resources, 75 percent of it for agriculture.

Asia's agriculture faces the most severe water problems of any continent. Slightly more than 50 percent of Asian agriculture is irrigated. Agriculture accounts for 87 percent of China's water consumption. In India, agriculture consumes an estimated 93 percent of all renewable water.

“Severe conflicts due to competing claims for water may erupt from what are increasingly rancorous disputes over water,” warns Mr. Serageldin, whose 1995 call to arms over water, and the dangers of war, spurred a new momentum on international collaboration in managing water.

The Global Water Partnership and the World Water Council were created and led to the foundation of the **World Water Commission**.

Solutions

The international community and the Commission have outlined a set of recommendations to ensure better management of scarce water resources. These include better institutional arrangements, water pricing and forcing polluters to pay. However, the Commission says, radical and more innovative solutions will also have to be found to increase water supplies and reduce losses.

Some of these possible solutions include:

- making desalinization affordable;
- using remote sensing to find the much great quantities of ground water that is thought to exist;
- finding more efficient and more affordable ways to recycle waste water;
- finding more useful collect technologies for rainwater;
- finding ways to replenish groundwater;
- developing toilets that don't use water to deal with human waste;
- developing technology to transport fresh water over long distances, including across oceans;
- using biotechnology to breed less thirsty and more drought-resistant plants;
- using computers to integrate the different uses of water.

The key, however, is to generate public awareness, and from it behavioral change and the political will to create a better water future.

Water is Precious

Water is finite. Just 2.5 percent of the world's water is fresh, rather than seawater, and two-thirds of all fresh water that does exist is locked in ice caps and glaciers. Of the remaining amount, some two-thirds is "lost" to evaporation. From what is left, some 20 percent is in areas too remote for human access, while of the other 80 percent, three-quarters comes at the wrong time or place, through monsoons, hurricanes and floods, and can only be partially captured for human use.

The renewable fresh water supply on land -- water made available year after year by rainfall -- less than 0.08 of one percent of the total water on the planet. Of this tiny fraction of water available for human use, some two-thirds is devoted to agriculture, a figure that rises to more than 80 percent, sometimes 90 percent, in many developing countries, where the real water crunch is coming.

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