

EXECUTIVE SUMMARY

ARAB ENVIRONMENT WATER

2010 Report of the Arab Forum for Environment and Development (AFED)

The Arab world is facing the prospect of severe water and food shortages unless rapid and effective measures are taken to address the region's water scarcity dilemma. Even if all available fresh water resources in the region were utilized, Arab countries on the whole would still find themselves below the water scarcity level. Alarmingly, the 2010 report of the Arab Forum for Environment and Development (AFED) has found that Arabs will face, as early as 2015, the condition of severe water scarcity, at which the annual per capita share will be less than 500 cubic meters. This is below one-tenth of the world's average, currently estimated at over 6,000 cubic meters. Water scarcity is a limitation to economic development, food production, and human health and well being.

Why does an allocation that is below 500 cubic meters (500,000 liters) per capita represent severe water scarcity? Some figures can serve as a useful illustration: it takes 150 liters of water to make a quarter liter cup of coffee; one kilogram of wheat needs 1,300 liters, while one kilogram of beef takes 15,000 liters of water to be produced. The larger the difference between a region's water resources and its water needs, the higher its degree of water (and food) insecurity.

Water supply sources in the Arab world, two-thirds of which originate outside the region, are being stretched to their limits. Thirteen Arab countries are among the world's nineteen most water-scarce nations, and per capita water availability in eight countries is already below 200 cubic meters, less than half the amount designated as severe water scarcity. The figure drops to below 100 cubic meters in six countries. By 2015, the only countries in the region which will still pass the water scarcity test, at above 1,000 cubic meters per capita, will be Iraq and Sudan – and even that assumes that water supplies from Turkey and Ethiopia will continue to be sustained at their present levels. Without fundamental changes in policies and practices, the situation will get worse, with drastic social, political and economic ramifications.

The Arab region is one of the driest in the world. More than 70% of the land is dry and rainfall is sparse and poorly distributed; climate change will exacerbate the situation. By the end of the 21st century, Arab countries are predicted to experience an alarming 25% decrease in precipitation and a 25% increase in evaporation rates, according to climate change models. As a result, rain-fed agriculture will be threatened, with average yields estimated to decline by 20%.

Water use in the Arab region is dominated by agriculture, which utilizes about 85% of the water resources, against a world average of 70%. Irrigation efficiency is very low in most countries, at 30% against a world average of about 45%.

Agricultural productivity is still measured by tons produced per hectare of land regardless of water wasted, while it should be measured by tons produced per cubic meter of water so that water usage can be captured as part of the cost of production.

Since surface water supplies do not meet growing demand due to population growth and economic development, groundwater resources have been over-exploited beyond safe yield levels. This has resulted in significant declines in water tables and in the pollution of aquifers. Water pollution is a major challenge in the region due to increasing discharges into water bodies of domestic and industrial waste water, as well as agricultural chemicals, which raises serious health risks, especially among children. Over 43% of waste water in the region is discharged without treatment, while a small fraction not exceeding 20% is reused. Furthermore, overexploitation of groundwater along coastal areas is resulting in salt water intrusion.

Water shortages have compelled a number of Arab countries to rely heavily on desalination for the bulk of their municipal and industrial water needs. With 5% of the world population, Arab countries are endowed with just 1% of the world's renewable fresh water resources, while they have over 50% of the world's desalination capacity. At the projected rate of annual increases, current desalination capacity will be doubled by 2016, using expensive, fully imported and polluting technologies. In some countries part of the expensive desalinated water is being used to irrigate low-value crops, or even golf courses. The discharge from desalination stations contributes heavily to increased salinity and higher temperatures of seawater in coastal areas. Sustainability of desalination to meet increasing demand depends on technological breakthrough and developing local capacity, which make the technology more affordable and environmentally friendly. This might be achieved mainly by introducing new desalination methods using solar energy.

This AFED report has found that most public organizations in the Arab world, serving both irrigation and urban water needs, do not function properly and have not served their clients effectively. Responsibility for managing water and water services is dispersed across multiple institutions which rarely coordinate among themselves. Moreover, decision making is top-down with no, or ineffective, stakeholder participation.

The report argues that free water is wasted water. Artificially low prices and heavy subsidies to water services are at the root of inefficiency, overuse, excessive pollution, and environmental degradation. For example, the average price charged for water in the region is about 35% of the cost of production, and in the case of desalinated water it is only 10%. While water pricing has been advocated for a long time, especially in irrigation, it is seldom enacted, even though it is central to attracting increased investment in the sector. Nevertheless, finance alone will not address the water challenges, because no technological or engineering solutions will be effective without the necessary policy, institutional, and legal reforms.

Proper management of municipal and industrial water supplies requires the introduction of water pricing schemes. When assessing water rates for municipal and industrial users, policy-makers should seek pricing structures that meet the goals of local acceptability, economic efficiency, cost recovery, and equity. Flat fees should be replaced by a two-tier tariff structure: a fixed charge for individual

basic needs and for ensuring cash flow to providers, and a variable charge based on level of usage to encourage changed use patterns and enhance efficiency.

The problems plaguing water management in the region are daunting, and a sole focus on developing new supplies is no longer viable. There is an urgent need for a strategic shift from a culture of water development to one of improving water management, rationalizing water consumption, encouraging reuse and protecting water supplies from overuse and pollution.

A core recommendation of this AFED report is that before investing large capital into increasing supplies, less expensive investments that reduce water losses and enhance efficiency should be implemented. This means a reorientation in government's role, from being focused exclusively on being a provider to that of becoming an effective regulator and planner.

Arabs cannot afford to waste a single drop of water. Governments should urgently implement sustainable water management policies which rationalize demand to ensure more efficient use. This can be achieved by attaching an economic value to water, measured by the value of the end product from each drop. Governments should implement water efficiency measures, shift from irrigation by flooding to more efficient irrigation systems including drip irrigation, introduce crop varieties that are resilient to salinity and aridity, recycle and reuse wastewater, and develop affordable technologies for water desalination. More research is needed to address the challenges of food security and adaptation to climate change.

The main message of this report is threefold: First, the Arab world is already living a water crisis that will only get worse with inaction. Second, the water crisis, though serious and multi-dimensional, can be addressed through policy and institutional reforms as well as education, research, and public awareness campaigns. Third, averting a water crisis and suffering in the Arab world is only possible if Arab heads of state and governments make a strategic political decision to take up the recommendations for reforms seriously and urgently.

The state of water resources in the Arab world is precarious and worsening. It is perhaps the most serious challenge facing the region in the coming decades, and without concerted efforts at improving water management and institutions, the situation will only deteriorate further.

The water crisis is knocking on Arab doors; the time to act is now.

Fresh Water availability

cubic meters per person per year

