



Fighting water scarcity in the Arab countries

The Arab countries account for more than 5 per cent of the world's population, but less than 1 per cent of global water resources. And as a consequence of the phenomena associated with climate change, the region is facing an even greater water shortage.

For 30 years now, IFAD and its partners in the region have worked to develop effective, replicable solutions to help poor rural communities manage their scarce water resources. More than half of IFAD's programmes and projects in the region include a focus on water.

IFAD's integrated approach supports water infrastructure development, rational use of available surface water and groundwater resources, whether fresh, brackish or saline, and promotes recycling grey water in marginal areas. Improved small-scale irrigation technologies, effective rain harvesting techniques, appropriate conservation infrastructure and improved varieties of drought-resistant seeds also help poor rural people cope with increasing water scarcity.

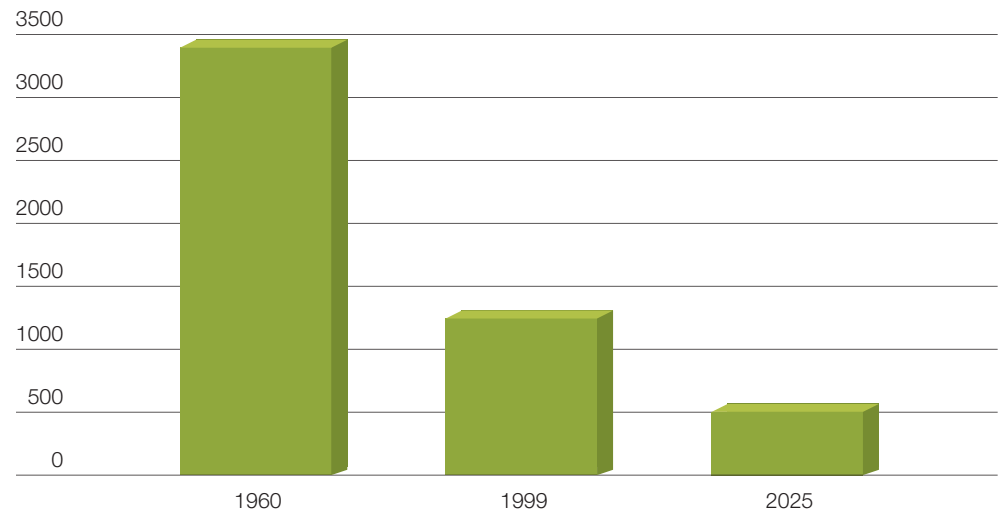
Current situation

Water supplies in the Arab countries are under severe stress. Demographic growth (2.6 per cent), economic growth, urbanization, industrialization and the expansion of irrigated agricultural lands have all contributed to a dramatic and unsustainable increase in water consumption over the past few decades. Frequent droughts, in conjunction with an overuse of groundwater and major aquifers, have greatly reduced the availability of both renewable and non-renewable water resources.



Enabling poor rural people to overcome poverty

Annual per capita water supply (cubic meters) 1960-1999 and projections for 2025



Most of the Arab countries are consequently heading towards a severe water scarcity. A close look at the current status of the water supply shows that it is continuing to decline. By 2025, the per capita water supply will be approximately 500 m³/cap/yr, or 15 per cent of what it used to be in 1960, when it stood at 3,300 m³/cap/yr.

The dilemma of the agricultural sector

The agricultural sector, which consumes over 83 per cent of the water in the region, is currently coming under various types of pressure. Firstly, it is under pressure to produce more food to help reduce the Arab countries' enormous food imports bill (US\$28 billion in 2006¹). This requires both a vertical and a horizontal expansion of agriculture that will increase productivity per hectare and the total area of cultivated lands. The region has the technologies, skills and land resources it needs to carry out such an expansion. There will be some water to do so only if water is used more efficiently on the presently cultivated land.

Secondly, the agricultural sector is under mounting pressure to divert increasingly larger quantities of the clean water resources that are now used in agriculture to cities and urban centres for domestic consumption. The total domestic water supply is expected to almost double by 2025, forcing governments to either divert about 11 km³/yr² from the agricultural sector or resort to expensive or, for some countries, unaffordable desalination technologies. In exchange, the agriculture sector starts to turn towards water reuse and towards using water of marginal quality to cover its requirements for production.

Thirdly, as the largest employer of people in the rural and marginal areas, the agricultural sector is under pressure to halt the decline in its ability to generate employment opportunities, especially for young people. In 2006, 37 per cent, or 47.6 million people, out of an economically active population of 126 million, were engaged in agriculture, down from 47.8 per cent in the 1990s. More employment in the rural and marginal areas is expected to help reduce the influx of rural-urban migration, respond to increasing market demand and eventually reverse the decline of the sector's contribution to the GDP of Arab countries (see facts column).

Fourthly, the sector is facing growing pressure to begin to adapt to climate change, as more severe droughts and, in some areas, flash floods and crop-threatening weather anomalies are expected. The skilful integration of weather and climate forecasts in agriculture and rural development planning remains an unavoidable challenge.

1 UNDP 2008, Food Security, Poverty and Agriculture in Arab Countries: Facts, Challenges and Policy Considerations

2 AOAD 2006 Statistics- [http://www.aoad.org/ASSY27/Chap1/TAB9\(7\).htm](http://www.aoad.org/ASSY27/Chap1/TAB9(7).htm).

Possible solutions

Success in addressing the sector's multiple challenges on a comprehensive basis will depend on the region's ability to adopt a more integrated approach to the use of water resources in agriculture. Most international development agencies, such as UN-Water, the Global Water Partnership and the World Water Council, agree that better governance of water resources, rather than availability, is the key to resolving the growing water crisis.

This involves putting in place the political, social, economic and administrative systems needed to develop and manage water resources and to ensure equitable delivery of water-related services. It also entails recognition of the links between secure access to land and water, improvement of management practices, investment in small farmer technologies and infrastructure, and development of enabling policy frameworks and legislative processes.

In addition, IFAD believes that with the help of greater water efficiency, land and crop productivity, and integration of non-conventional water resources (brackish water and recycled grey water), in addition to the currently available water resources (146 km³/yr), the region's agricultural sector has a considerable potential to sustain a steady increase in production. Progress in these areas would therefore put the sector in a position to help to reduce dependency on food imports, generate additional rural employment opportunities, boost local economies and contribute to a reduction in rural poverty.

IFAD's role

IFAD has invested over US\$1.4 billion in 110 agricultural and rural development projects in Arab countries. About two thirds of these projects are related to community-based natural resource management, and 52 of them include subcomponents with a focus on water-related activities worth a total of about US\$473 million. In addition, IFAD has provided about US\$15 million in grant support for some 65 regional research and capacity-building programmes with a focus on water. It has also supported many other research and capacity-building programmes concerned with the development and use of improved drought-resistant varieties of seeds.



Poor rural people and their institutions are at the core of IFAD's integrated approach to natural resource management. Water is critical to these men and women pastoralists, fisherfolk and farmers, whether they are young or old, are part-time urban or rural residents, or belong to tribal or other marginalized groups. Water-related interventions are often linked to the management and governance of initiatives aimed at building up or restoring the natural asset base. IFAD believes that, for poor smallholder farmers, secure access to water cannot be separated from secure access to land. When farmers have secure access to both of these natural resources, they invest with confidence in management practices, training, technologies and organizations that will enable them to use limited water resources wisely.

Therefore, IFAD's investment in agricultural water management is focused on financing smallholder irrigation infrastructure and spate irrigation. It also, however, includes investments in activities related to soil and water conservation, watershed management, rainwater harvesting, water for livestock, inland fisheries and aquaculture activities.

Empowering people to manage effectively and reducing vulnerability to climate change

Above all, IFAD's interventions focus on improving rural people's institutional capacities to obtain, allocate, use and manage water in a sustainable and productive way.

In this context, management of water supply and water demand are equally critical. In order to ensure long-term adaptation to climate change and scarcer water availability, new approaches and policy frameworks, together with innovative and replicable solutions, are essential.

Given the prevalence of weak national land and water governance systems in most countries where IFAD invests, joint capacity-building efforts are usually designed to blend traditional knowledge, local institutions and private-sector entrepreneurs with modern State-level considerations governing water use.



FACTS

- The Arab region has a total area of about 14 million square kilometres, of which more than 87 per cent is desert, with extreme aridity and poor vegetation cover.³
- The average amount of rain received by the Arab region is estimated at 2,148 km³ per year, of which about 50 per cent occurs in the Sudan.⁴ Total precipitation averages 156 mm/yr⁵ but varies considerably from one country to another.
- Over 90 per cent of rainwater in dry marginal rangelands,⁶ including the Arab region, is lost to evaporation.
- Renewable water resources in the Arab region are estimated at around 335 km³/yr; more than half of this amount originates outside the region and enters the regions primarily via international rivers.
- Per capita renewable water resources in the region are currently estimated at 1,100 m³ per year, compared to a global average of 8,900 m³ per person per year. The ratio is expected to drop to 547 m³/yr by the year 2050.⁷
- Fifteen of the 20 countries in the world with the lowest internal renewable freshwater supply (below the water stress threshold of 1,000 m³) are Arab countries.
- The water demand of the growing Arab population exceeds 200 km³/yr (about 60 per cent of this comes from renewable resources)⁸ and is rapidly escalating.
- Unlike the rest of the world, where 80 per cent of agricultural land is rainfed (accounting for over 60 per cent of world food production), there is little rainfed agriculture in the Arab region due to low soil humidity. Therefore, crop production depends on irrigation using river water, groundwater and, increasingly, marginal water and treated wastewater.
- The agricultural sector is the prime water consumer at the regional level, with an annual average consumption level of 146 km³, or 83 per cent of the total amount of water available.
- On average, 37 per cent, or 47.6 million people out of an economically active population of 126 million, were engaged in agriculture in 2006, down from 47.8 per cent in the 1990s.⁹ However, the percentage remains quite high in some countries (50 per cent in Yemen, for example).
- Agriculture's contribution to gross domestic product is quite low, ranging between 0.3 per cent in Kuwait and Qatar¹⁰ to 34 per cent in the Sudan. The regional average was 12.5 per cent in 2005.¹¹
- The total domestic water supply is presently estimated at about 16.7 km³ and is expected to rise to 27.6 km³ by the year 2025.¹²
- Due to water scarcity, a total of approximately 30 km³ of unconventional water supplies (desalinated seawater) are being produced every year, mainly in the Gulf countries.¹³
- The storage capacity of dams in the region, which is estimated at 280 km³,¹⁴ has proved to be crucial in protecting livelihoods during drought periods.

3 Arab Countries Regional Report, WWF5, 2009.

4 World Bank, 2007a.

5 FAO, 1997.

6 World Bank 2007a.

7 World Water Forum 2006, WB2007, UNDP 2008.

8 World Bank 2007a.

9 IFAD, Thematic Priorities in NENA 2008.

10 AOAD 2006 Statistics.

11 IFAD, Thematic Priorities in NENA 2008.

12 AOAD 2006 Statistics.

13 FAO-Aquastat database.

14 World Bank, 2007a.

IFAD also focuses on empowering water users by strengthening their local institutions or, in their absence, supporting the creation of water users groups and fostering the delegation or transfer of the responsibility for management and ownership of the schemes to them, with an emphasis on gender equality issues.

Water and environment

Activities related to the environmentally responsible use of water, such as safeguarding environmental flows, environmental services or flood protection, are included in about a third of IFAD's current portfolio. Paid environmental or watershed services are increasingly recognized as a potential source of additional income for the rural poor. IFAD has granted funds to international research centres that are working on the testing and the scaling up of mechanisms for compensating the upland poor for rendering such services under increasingly challenging climate change conditions. Its Global Environment and Climate Change Unit (GECC), which contributes to the environmental agenda by executing projects funded by the Global Environment Facility (GEF), has a current portfolio of US\$85 million. The use of water and the environment for production purposes is regulated by IFAD's Environmental and Social Assessment Procedures, which include Operational Statements regarding irrigation, range resources, inland fisheries and wetlands.

Water and livestock

Despite the importance of this sector to the rural poor, poor livestock-keepers have failed to achieve sustainable returns due to poor access to water and to the failure of policymakers to recognize the importance of livestock for the rural poor or to support them with appropriate policies and interventions. IFAD seeks to reduce the poverty of poor livestock-keepers by enhancing water-livestock interactions through targeted interventions that increase the opportunities for the rural poor to maximize their returns from water and livestock resources.



Domestic water and sanitation

In accordance with IFAD's demand-driven approach, over half of its projects include activities dealing with domestic water supply. Consequently, in addition to agricultural production projects, IFAD also undertakes people-focused rural development projects. IFAD investments in domestic water and sanitation are mainly focused on domestic water provision for communities and, where possible, households. This includes the rehabilitation of old systems and/or the construction of new water infrastructure works (e.g., boreholes, shallow wells, water-harvesting devices and ponds, pipes and tanks), alongside the training of local beneficiaries in operation and maintenance skills and the formation of water user groups. Sanitation and hygiene have received increasing attention. In fact, IFAD funding in water and sanitation in the region tripled between 1994 and 2004.

Partnerships

Over the past 30 years, IFAD has accumulated a great deal of experience in combating water scarcity in the region in partnership with many different agencies, such as the International Development Research Centre (through the WaDImena Project), the International Centre for Agricultural Research in Dry Areas, the International Centre for Biosaline Agriculture, the Arab Centre for the Studies of Arid Zones and Dry Lands, the Arab Organization for Agricultural Development and the International Centre for Advanced Mediterranean Agronomic Studies. These partnerships are now yielding extensive knowledge and know how regarding a multitude of workable innovations. What is needed now is a more enabling policy environment for up scaling and replication in the context of greater investments in the water and agricultural sectors of the Arab region.





Collective efforts permit the sustainable use of soil and water for poverty reduction in Jordan

IFAD's Yarmouk Agricultural Resources Development Project in Jordan was launched in 2000 to improve food security and incomes while arresting land degradation through sustainable soil and water management. The US\$33.1 million project, which includes a highly concessional loan of US\$10.1 million, has provided technical and financial support to its target group of poor farmers in order to help them adopt soil and water conservation measures and to improve agricultural production practices. It has also promoted and funded credit for on- and off-farm enterprises

and strengthened the capacities of the agricultural directorates in the project area to provide needed technical support and extension services. As a result, some 2,625 resource-poor rural households have benefited from soil and water conservation measures and have been able to increase their incomes and quality of life.

The project's spring protection and rehabilitation programme is also benefiting 214 households, while income-generating programmes are assisting 800 women to develop small-scale enterprises. An estimated 7,950 additional households are receiving direct benefits from credit and technology transfer programmes. The project's innovative participatory approach to managing and conserving soil and water resources is ensuring the sustainability of agricultural production in the area while empowering the poorest families by giving them access to productive resources and directly involving them in decision-making processes.

Making large-scale irrigation work for poor communities in the Sudan

More than 67,000 poor farming families in the Sudan are receiving support for the development of the individual and institutional capacities they need to manage a traditional large-scale spate irrigation scheme. Spate irrigation diverts water to fields from rivers during peak floods. The water is silt-laden and fertilizes the soil while wetting the root zone. Established in the 1920s for cotton production, the productivity of this type of irrigation scheme, whose management was fragmented and clientelist, declined until the 1970s. This decline was accompanied by a shift to subsistence crops and a decrease in the recovery rates of water fees. The traditional approach to rehabilitating such schemes focuses on infrastructure, but the new IFAD-supported Gash Sustainable Livelihoods Regeneration Project puts household livelihoods first.

Capacity development and institutional reforms ensure that all stakeholders are involved in decision-making. This is seen as key to the success of the project. Reforms designed to help people gain more secure rights to land and water are being developed based on existing local organizations. These land and water users associations are also being strengthened in order to counter the strong tradition of supply-driven irrigation management. This is a major challenge which must be met in order to ensure that farmers have land and water rights and that they take responsibility for their own livelihoods.

Promising prospects for the use of saline and brackish water for forage and horticulture production

The first phase of the IFAD-financed Programme for Saving Freshwater Resources with Salt-Tolerant Forage Production in Marginal Areas of the West Asia and North Africa Region is showing promising results. The four-year programme, implemented by the Dubai-based International Centre for Biosaline Agriculture (ICBA), has developed local forage varieties that are tolerant to high salt content and can be used for the mass production of animal feed to replace forage imports. The approach involves introducing improved technologies for using saline water in the mass cultivation of salt-tolerant forage crops and horticulture. The programme represents a new frontier in agricultural research and a substantial contribution to food security in the region.

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