



Water in the Green Economy in Practice: Towards Rio+20

Regional Session: Western Asia (ESCWA)

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Regional context

The Arab region is one of the most water scarce regions in the world, as most countries are located in arid or semi-arid areas. In 2008, 16 out of 22 Arab countries were below the annual per capita water poverty threshold of 1,000 m³ of total renewable water resources¹, a situation that is rapidly worsening as populations continue to grow. Rapid population growth also boosts demand for food, in turn driving intensive domestic agricultural water use and threatening the sustainability of water resources. Energy poverty of Arab countries outside the Gulf Cooperation Council (GCC) limits the ability to produce and distribute water resources to urban, rural and remote communities in an optimal manner since the production and distribution of water is closely related to the availability of energy. Improvements in the quality of water have been limited by sewage infiltration to water networks resulting from poor infrastructural investment and maintenance as well as intermittent water supply. Climate change is also expected to have negative impacts on water resources of the region. These water challenges restrict progress towards achieving the MDGs related to poverty and hunger, health, education, gender equality, and environmental sustainability.

Arab countries have responded to these water challenges with various policies. GCC countries as well as Egypt, Iraq and Jordan have constructed desalination facilities. The reuse of treated wastewater is also being encouraged for use in irrigation as to help protect and alleviate some of the pressures on the limited fresh water resources. Integrated water resource management (IWRM) principles and tools, natural resources accounting, and virtual water calculations have been promoted by international and regional organisations to improve the valuation of water resources as an integral component of development planning. This has contributed to the reform of water tariff structures and gradual phase-out of agricultural subsidies in some parts of the region. These measures, however, have not been sufficient to meet the growing regional water demand and to ensure the sustainability of water resources in the region. Most countries continue to consume more water than their renewable water resources budget can bear, which is leading to the reduction of water resources on a net and per capita basis. As a result, progress towards the achievement of the MDG targets on water supply and sanitation is limited and has not resulted in the multiplier effects that a sound and sustainable water sector can provide for achieving the other MDGs.

Arab countries have shown some progress in achieving the MDG targets related to access to improved water and sanitation services, although the Least Developed Countries – including Sudan and Yemen – and countries in conflict are still suffering from limited access to improved water and sanitation services in urban and rural areas. As of 2008, eighty-five

¹ FAO, AQUASTAT



percent of Western Asia used improved sanitation (an increase of 5% from 1990) and 90% had access to improved drinking water sources (an increase of 4% from 1990)². However, with intermittent water supply most people in the region do not receive a sufficient amount of good quality water services. This has imposed an additional economic burden on the general population, and particularly on the poor, since most people still resort to private water vendors or informal mechanisms to offset gaps in the quality or quantity of water provided through the public water distribution networks. In response to this challenge, the Arab Ministerial Water Council (AMWC) mandated ESCWA to lead a regional coordination mechanism involving the Arab Countries Water Utilities Association (ACWUA), the Arab Water Council (AWC), the Center for Environment and Development for the Arab region and Europe (CEDARE) and the Arab Network for Environment and Development (RAED) to develop, on the basis of the basic water and sanitation MDG indicators, a monitoring mechanism that incorporates an additional set of indicators specific to the Arab region. Reporting on the progress of the Arab countries in achieving the basic as well as the additional indicators is expected to be done through this regional monitoring mechanism and under the political umbrella of the AMWC.

MDG-7 on ensuring environmental sustainability has often been considered at odds with efforts to achieve rapid economic growth. Aggressive economic growth has in turn been negatively associated with environmental degradation, which has left many to perceive economic growth and environmental sustainability as competing goals. In the end, both must be pursued in a manner that supports progress towards sustainable development.

Efforts to foster a green economy seek to highlight opportunities that the environment sector presents for development by attracting new investments, as well as cleaning up existing inefficient or polluting industries. An improved water sector is one of the industries that can lead the way towards a greener and cleaner future by providing the enabling infrastructure and input needed to meet sustainable development targets. However, care must be taken to ensure that efforts to promote opportunities in the water industry and associated sectors that seek improved service delivery from the industry (e.g. agriculture, tourism, etc.) do not neglect questions of water resource sustainability, particularly in the water scarce ESCWA region. Doing so can result in serious implications for rural poverty, employment, food security and human health.

A green economy would thus facilitate the search for alternative solutions for multifaceted challenges through a sustainable development lens. This includes highlighting how new technologies and traditional techniques can be used to build a bridge and find a balance between the needs of today and the future.

Some recent projects in the Arab region show how green economic thinking has already resulted in new initiatives that are driven and derived from the unique regional setting.

² WHO and UNICEF, 2010



ESCWA countries have started to deploy different technologies and technical solutions to meet regional challenges. Some are adaptations of ancient techniques, while others are grounded in the research and development of new technologies. These examples are then complemented by lessons learned from building the capacity and strengthening the institutions responsible for delivering modern and improved water services in the ESCWA region.

The session on water and the green economy in the ESCWA Region focuses on how progress towards the MDG targets related to water supply and sanitation can contribute to fostering a green economy within the context of sustainable development and poverty eradication. This is realised through efforts to improve the technical and financial capacity of water utilities to deliver accessible and reliable water services for domestic use in urban and rural communities. This is examined through two case studies elaborated by the session panellists, which will showcase different models for improving the efficiency, performance and service delivery of publicly and privately operated water utilities through centralised and decentralised approaches.

In addition, case study briefs are provided to offer insights into other success stories and challenges facing the water sector in the ESCWA region that complement many of the lessons drawn from the two case studies. These include reference and recognition of regional specific characteristics and concerns related to the water-energy nexus, the use of traditional knowledge, and efforts underway to overcome the extreme level of water scarcity faced in the region through the development of non-conventional water resources and management schemes.

Challenges

The main challenges for water management in the ESCWA region are:

(a) Water scarcity and water quality

While many countries in the world do not enjoy sufficient amount of water resources, water scarcity of the ESCWA region in terms of per capita availability of renewable water resources is unique. In 2008, the total annual per capita share of renewable water resources in the ESCWA region was only around 566 m³, while 5 out of the 14 ESCWA countries had an annual per capita share of even less than 100 m³. Furthermore, this extremely low level of water resources availability is rapidly decreasing with the blossoming regional population that quadrupled in the last half century from about 67 million in 1961 to over 250 million in 2009.³ This lack of water resources constrains the economic and social development of the region which also affects the progress towards achieving the MDGs. Moreover, the quality of water is poor in several countries mainly resulting from discharge of untreated wastewater, and poor maintenance and lack of investment. Increasing salinity of groundwater due to

³ World Bank, World Development Indicators; FAO, AQUASTAT



excessive pumping of groundwater and sea water intrusion due to reduction of river run-off is also affecting the quality of water resources.

(b) Shared water resources and conflicts

Water resources in the region are mostly shared among countries, thus leading to competition over their use. Most of the major rivers of the region including the Nile, the Euphrates and Tigris as well as many groundwater aquifers are shared between countries inside and outside of the ESCWA region. Without adequate mechanisms to reduce the risks of conflicts over shared water resources, the region is a candidate for disputes and conflicts, not only between riparian countries of international watercourses, but also between riparian countries of smaller shared surface water and transboundary aquifers. Geopolitical factors and power imbalances significantly contribute to the existing low level of cooperation in the management of shared water resources in the region.

(c) Water, food and energy nexus

Excessive agricultural water use and energy shortages in several ESCWA countries are additional water challenges of the region. Agriculture is still a very important economic sector in many countries of the region and employs large segments of the population. In particular, for many people living in rural areas, agriculture is still probably the most important source of income. Also, domestic agricultural production can reduce external commodity price shocks that have been witnessed globally between 2007 and 2008. However, agricultural sector consumes over 80% of total water withdrawals in Yemen, Oman, Saudi Arabia, Syria and UAE, all of which suffer from extreme water scarcity.⁴ This level of agricultural water use seriously threatens the sustainability of water resources of the region, particularly the non renewable aquifers. Additionally, the high scarcity value of water in the region makes water use in non-cash crop irrigation economically unfeasible. Nevertheless, considering the rooted role of agricultural sector in the lives of people living in the rural areas of the region, national agricultural policies need to be reviewed in light of the growing water scarcity and a holistic socio-economic and political perspective on food security.

The linkage between water and energy adds another water challenge to the region. In energy deficient ESCWA countries, water supply is sometimes limited due to energy shortages as energy is required for the production and distribution of water. The Yemen case represents this issue well. In the case of the energy rich GCC countries, although they, to certain extent, have been able to address the water challenges through increasing investments in desalination, the large government subsidies for the construction and the operation and maintenance of these desalination plants is viewed to be economically unsustainable on the long run.

(d) Climate change

⁴ FAO, AQUASTAT



It is predicted that climate change will have significant impacts on the water accounts, and this in turn threatens to negatively affect water availability in the region. While the impacts of climate change is expected to vary from country to country, from the regional perspective, the ESCWA region is expected to suffer a reduction in its water availability as a result of less precipitation, higher temperature and more active evapotranspiration. Although detailed impacts of climate change on water resources are still to be scrutinised, considering the high water scarcity level in the ESCWA region, even a slight reduction of water availability or a change in the pattern or frequency of its flows will result in significant social and economic national and regional impacts. Moreover, as a result of climate change, extreme weather events such as droughts and floods are already increasing in the region. Cyclone activity in the Gulf region has also recently intensified with the three strongest cyclones occurring since 2000.⁵

Approaches

Financing, capacity building, water planning, and technological application and development are commonly used tools identified from regional experiences. In order to address the increasing gap between water supply and demand, some countries in the region have undergone institutional reforms adopting the principles of integrated water resources management within their policies.

Many countries of the region have tried to strike a balance between supply and demand management approaches in order to satisfy the growing water demand. Among the tools that are being adopted by an increasing number of the region's countries is an increasing reliance on the use of non-conventional water resources, namely desalinated water and treated wastewater. Investment in desalination of sea water and brackish groundwater is growing in the region, particularly in the energy rich GCC countries, and to a lesser extent in other countries of the region; although use of desalinated water is mostly confined to domestic and industrial uses only. Treated wastewater has also attracted interest in many countries of the region, not only because of the direct benefits that are realised from its reuse especially for irrigation thus alleviating some pressure on the limited freshwater resources, but also for the direct and indirect environmental benefits realised from the treatment of domestic and industrial wastewater that would otherwise be a source of public health hazards and a source of contamination of other fresh surface and groundwater resources. Treated wastewater, although representing only a small percentage of national water demand, is considered a significant and reliable water resource in and around the large urban centres. In this regard, treated wastewater from the city of Cairo, Riyadh, or Damascus constitutes a water resource that can contribute to partly satisfying the demand for irrigation water within and around those cities.

⁵ Gulf news, "Facts about Tropical Cyclone Phet", 6 June 2010, available at <http://gulfnews.com/news/gulf/oman/facts-about-tropical-cyclone-phet-1.636372>



For the water and sanitation service sub-sector, the adopted national reform programmes have also led to the establishment of more efficient decentralised water and sanitation utilities. Both the utilities and consumers have directly benefited from these reform programmes. Tariff readjustments, autonomy and commercialisation have allowed the utilities to provide better and more reliable and predictable service levels, relieving consumers from the need to seek other less quality and more expensive water services from private vendors.

The use of traditional water management approaches is also considered to be an important tool that can contribute to effective management of water resources. Some countries of the region are investing in maintaining and restoring some of these traditional water collection systems like terracing of mountains in Yemen and household level rainwater harvesting reservoirs in Palestine and Jordan as well as the revitalisation of traditional rules, customs and norms for water allocation in Yemen. Traditional landscaping, urban planning and traditional architecture are also being considered in some areas as an integral part of water and environmental management. Reintroduction of local indigenous plants within national efforts to create work opportunities and generate income by increasing the competitiveness of micro and small agro-industries is being implemented in South Lebanon. Similarly rooftop water rainwater collection and farming help some Palestinian households to partly satisfy their water and vegetable needs.

Like traditional approaches, advances in technology are also considered to be an important tool in the management of water resources. Advances in desalination technology have assisted some countries of the region to adopt strategies that rely on desalinated water to satisfy growing domestic water demand. In this regard, the UAE have adopted strategies that promote the recharge of groundwater with excess desalinated water in an effort to establish a strategic groundwater storage reserves. Oman, in an effort to maintain groundwater reserves for future generations, has also adopted a strategy that prohibits the use of groundwater and promotes investing in desalination as an alternative source for domestic water supply. Water planning and technological application and development is also actively pursued to address interrelated challenges of water, food and energy. In Saudi Arabia, solar energy desalination technologies are pursued to reduce energy costs of desalination, while greenhouse hydroponics farming has been experimented in the ESCWA region including Lebanon, UAE and Qatar, where over 90% of food is imported. Many of the countries of the region are realising the benefits of applying water saving technology, especially in agriculture. In this regards some countries have introduced financial incentives for farmers to invest in sprinkler and drip irrigation.

It should also be realised that while the application of technology has led in some cases to water savings and higher water use efficiency and productivity, in other cases the use of technology, like the introduction of deep drilling and heavy submersible pumps have led to the near exhaustion of many aquifers, like is the case in the highlands of Yemen. The shift from rain-fed farming to irrigated agriculture in Syria has also lead to higher land



productivity, but leading at the same time to wasteful irrigation practices in areas relying on surface water and to depletion of aquifers in groundwater irrigated lands.

Lessons learnt

- Although most countries of the ESCWA region have already achieved, or are on track to achieve, the water and sanitation MDGs targets, financial constraints and political instability of some countries are considered to be the main reasons for their inability to achieve those targets.
- Water planning and capacity building (management, human resources, institutions, etc.) have played an important role in increasing access to water and sanitation services.
- Having been developed mainly on the basis of health considerations, the current water and sanitation MDG indicators do not reflect the level or quality of water and sanitation services. This in turn has raised the need to develop a regional initiative to complement the current MDGs with additional indicators that, while clarifying the level and quality of services; take also the specificities of the region into account.
- In the ESCWA region, water challenges are closely connected to agricultural development and food security as the agricultural sector consumes the majority of the available water resources. Nevertheless, the agricultural sector is economically sensitive since in many countries of the ESCWA region it provides the largest employment opportunities.
- Current levels of agricultural water use in many of the countries of the region are not sustainable and irrigation practices are not efficient. Agriculture, on the other hand contributes to the social stability of the region. Ideally scarce water should be allocated as to optimise the social and economic value derived from its use. In this respect, sustainability of groundwater use needs to be realised and considered within the national plans of the region's countries.
- Agricultural subsidies in the region need to be reevaluated as to promote water saving and increase the water use efficiency in irrigation. Cost recovery of water supply and sanitation services is a strong element of the financial sustainability of water utilities and allows for better service delivery to consumers.
- Education, awareness raising and communication programmes that target the agricultural sector are likely to have significant impact, especially when integrated with other programmes and projects that introduce water saving technologies and techniques.
- Water challenges are also connected to the energy sector as the production and distribution of water requires energy. Frequent energy cuts have contributed to depriving consumers of adequate water supply services.



- As shown from regional experiences, technological developments play an important role in addressing water challenges in the region. Advancements in desalination, wastewater treatment, and water loss reduction can contribute to facing the water challenges in the region. Nevertheless, technological advancements in drilling and pumping have contributed to the near exhaustion of many aquifers.
- Traditional water systems and knowledge need to be revitalised and integrated into the concepts and principles of integrated water resources management. Rain-fed farming, rainwater harvesting, reintroduction of indigenous agricultural species, and customary water allocation rules are examples of these traditional water management systems.
- While the region shares common aspects of some water challenges, differences between countries of the region require taking into account national specificities when addressing ways to tackle these challenges at the national level.
- Integrated planning among national institutions and stakeholder participation are important elements of policy development, sustainable water and sanitation services, and successful project implementation.