# Water Governance

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#### I. INTRODUCTION

Fresh water is a finite element constituting only 3 percent of the water on earth, of which 70 percent is captured in glaciers. The remaining portion is available in rivers, lakes, and groundwater. It is not uniformly distributed and some regions have smaller shares than others. The Arab region, which is home to 5 percent of the world population, has only 1 percent of the global available fresh water resources. Climate in Arab countries is arid to hyper-arid with little rainfall and more than 60 percent of the surface water originates outside the region. Average per capita water share in the region has been declining to less than 1,000 m<sup>3</sup> a year compared with an annual world average of 7,000 m<sup>3</sup>. The projected per capita share is expected to fall to about 500 m³ before 2025. In some Arab countries such as Jordan, Palestine, and Yemen the per capita share of water is already below 200 cubic meters per year.

Rapid population growth and the acceleration of economic and social development in Arab counties during the second half of the 20th

century have been associated with weaknesses THE IWRM-GOVERNANCE NEXUS FIGURE 1 **Political Dimension** WATER **Social Dimension Economic Dimension IWRM GOVERNANCE** 

**Environmental Sustainability** 

**Dimension** 

in institutional infrastructure and a deteriorated water governance system. This is reflected in water inequitable allocation, wasteful use of water, increasing pollution trends, lack of transparency, and inefficient water services. Increased demand for water combined with poor governance has resulted in intensified pressure on natural resources to serious levels. Improved water governance and management are becoming imperative if the needs of current and future generations are to be met in a sustainable manner and environmental protection is to be assured.

In this chapter, we define the governance challenge, review the water governance discourse that can achieve water sustainability goals in Arab countries, summarize the progress achieved in improving the governance system, and review potential desired outcomes of water governance reform and their impacts. Where possible some case studies are given to highlight success stories and/or lessons learned.

# II. WHAT DOES WATER GOVERNANCE MEAN?

The term 'water governance' is relatively new in the global discourse on water management. Water governance was emphasized during the Second World Water Forum at The Hague when the Global Water Partnership (GWP) stated that "the water crises is mainly crises of governance" (GWP, 2000). "Water governance refers to the range of political, social, economic, and administrative systems that are in place to regulate the development and management of water resources and provision of water services at different levels of society" (GWP, 2002), while recognizing the role played by environmental services (Rogers and Hall, 2003).

When comparing the definition of water governance with that of integrated water resources management (IWRM), the linkages become obvious. They both include four dimensions: social, economic, political, and environmental as depicted in Figure 1. IWRM provides a comprehensive approach to the development and management of water resources, addressing its management both as a resource and as a framework for water services provision (WWAP,

2006). Water governance "provides the context in which the IWRM approach can be applied", and addresses the "manner in which allocative and regulatory politics are exercised in the management of resources (natural, economic, and social)" (Rogers and Hall, 2003).

In broader terms governance can be regarded as "a container or an umbrella concept that considers multi-faceted processes where societal goals are pursued through the interaction of all interested actors in specific fields of development. Such processes require the promotion of decision-making dialogues and the participation of multiple stakeholders. It also takes into consideration the ways governments and social organisations interact, how they relate to the public, how decisions are taken, and how accountability is rendered" (Graham et al., 2003).

# III. WATER GOVERNANCE CHALLENGES IN ARAB COUNTRIES

The water sector in Arab countries is characterized by vast disparities in socioeconomic needs, access to financing, institutional arrangements, regulatory frameworks, stakeholders' participation, private sector involvement, trans-boundary challenges, and water stress levels. However there are common challenges, although they differ in their level and extent by country. Water scarcity in Arab countries has created competing demands for its services that have greatly complicated the challenge of governance. For decades water management was supply driven where governments developed infrastructure to capture and distribute water to users while neglecting to manage demand. This was associated with the lack of adequate policies and economic instruments, inefficient public sector service delivery, and significant expansion in irrigation. Today, water used for irrigation represents 85 percent of total fresh water consumption. However, water usage in irrigation is wasteful because incentives for farmers to adopt modern, water-conserving technologies are mostly inadequate. Significant amounts of water supplied for municipal use remain unaccounted for.

A review of the water policies that prevailed in

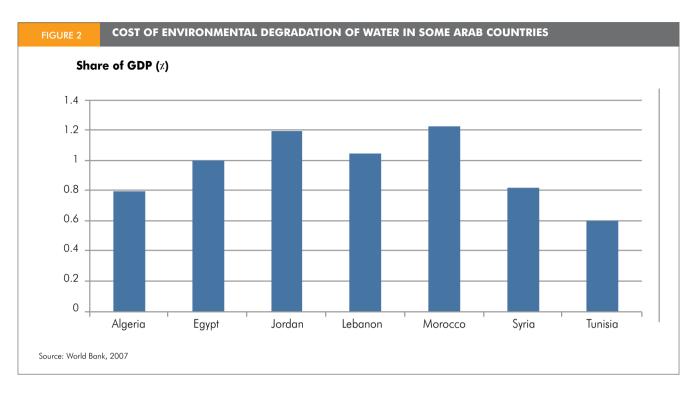


the 20<sup>th</sup> century reveals a misalignment between water management strategies on one hand and emerging resource realities, socioeconomic concerns, and development needs on the other hand. Water policy and management paradigms that dominated in that period can no longer be

# BOX 1: MINING NON-RENEWABLE GROUNDWATER RESOURCES

The boom associated with a heavily subsidized desert irrigation in the Kingdom of Saudi Arabia (KSA) that started in the early 1980s portrays a worrisome picture when seen from a water scarcity perspective. It tripled the total volume of water used for irrigation, from around 6.8 billion m<sup>3</sup> in 1980 to approximately 21 billion m<sup>3</sup> in 2004, totaling 463 billion m<sup>3</sup> during the last 30 years (almost six times the annual flow carried by the Nile). The sharp increase in groundwater abstractions reached its peak in the early 1990s (22.7 billion m³), when wheat production was at its peak. The result was a steep decline of Groundwater levels of the main aguifers in the period 1980-2000. In the Eastern Province, groundwater levels dropped at a rate of 10 m per year with a total drop of 150 meters, with the expansion of alfalfa production when dairy became a profitable activity. The same pattern have been observed with more or less severity in all the principal aquifers of KSA. This trend was a main driver for policy changes during the past 10 years.

Source: Personal communication.



sustained in an era of water scarcity exacerbated by climate change, growing populations, and ambitious development agendas. Saleth and Dinar (2004) have argued that "the emphasis on engineering solutions, the treatment of water as a free good, and bureaucratic allocation and management are now inconsistent with the requirements and challenges of the new era" of water scarcity. A great challenge was, and still is therefore, to introduce policy reforms and new institutional arrangements that can adequately address the new realities of water resource scarcity and meet the demands of economic and social development in an environmentally sustainable manner.

Increasingly, there is recognition that the crisis in the water sector has lingered for so long because of the lack of supporting institutions. It is argued that the water crisis has "revealed the inherent limitations of today's institutions in dealing effectively with the new set of problems related more to resource allocation and management than to resource development" (Saleth and Dinar, 2004). Most public sector organizations in Arab countries (serving both irrigation and urban water supply needs) do not function properly and have been unable to serve their customers efficiently. Responsibility for managing water and water services is

dispersed across multiple institutions, which rarely communicate or coordinate among themselves. Decision-making processes take top-down direction with absent or ineffective stakeholders' participation. Information is hardly shared between policy makers and authorities charged with implementation or between governmental and non-governmental actors. The challenge is to develop alternative institutional arrangements involving the public sector, the private sector, and communities and equip them with the right technical, economic, and legal tools to function properly.

Poor water governance manifests itself in a number of ways with undesired economic, social, and environmental consequences. For example, most Arab countries extract underground water well beyond the renewal rate, mainly because energy subsidies make it cheaper for many users to do so (Box 1). Water use is becoming less and less efficient even as water grows scarcer. Apart from efficiency concerns, there are serious equity problems with current water practices. In urban areas, people in unserved quarters rely on water supplied by private vendors, often at 10-20 times the official tariff rate. Lack of clean water for drinking in rural areas forces people to travel long distances to fetch their needs, a task often delegated to women and children who usually

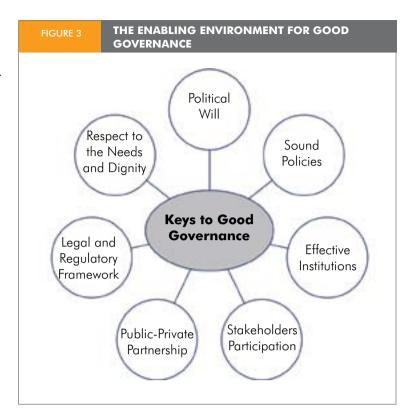
pay the cost. The poor always suffer the most.

Untreated wastewater from municipal and industrial sources as well as agricultural runoff is polluting shallow aquifers, rivers, streams, and lakes. Increased water contamination combined with poor water supply and sanitation is causing damage to public health, increased utility costs, reduced fish catch, reduced wetland services, and salinization of agricultural land and thus generating significant opportunity costs. Studies of environmental degradation in some Arab countries due to water pollution estimate the costs at 0.5 to 1.2 percent of their GDP (World Bank, 2007), as shown in Figure 2.

Figure 2: Annual cost of environmental degradation of water in some Arab countries

Moreover, the water sector in the region did not recognize for a long time that many of the decisions governing its performance are made outside the sector. Thus, water policies missed the critical linkages with other economic sectors, viewing water resource management problems as the exclusive domain of the water sector (Saleth and Dinar, 2004). According to Saleth and Dinar (2004), "it is inappropriate to insulate the water economy from market forces through the politically rooted system of public provision and subsidized water charges", particularly in a water scarce region. As a result, the economic value of water is often not considered in setting agricultural and trade policies in many Arab Countries. For example, scarce water is used in irrigation of high water consuming crops such as rice, sugarcane, and banana. By 2009, the area cultivated with rice in the Nile Delta was more than double the area proposed in the post High Aswan Dam (HAD) era and significant part of the yield has been exported to foreign markets.

Thus the ability to address the challenge of managing scarce water resources with the least ecological and social costs, will depend on introducing policy reforms and institutional frameworks that create the new governance structure needed for sustainable water allocation and management (Saleth and Dinar, 2004). For example, Arab countries need to adopt a water policy that can achieve a balance between the cost of delivering water for agricultural use and the revenue associated with crop cultivation. They should cultivate crops of high productivity



and high added value. Doing so would allow countries to import basic food products while guaranteeing the availability of necessary funding to pay for such imports in a sustainable manner. Therefore, water and agricultural policies should be coupled. They should also be adaptable to changes in the global markets while efforts should be expended to raise the efficiency of water and production inputs and achieve higher revenue per unit water.

# IV. ADVANCING THE WATER GOVERNANCE AGENDA

Governance becomes 'effective' or 'good' when conditions of equity, accountability, participation, transparency, predictability, and responsiveness prevail (Tiihonen, 2004). Building on Kooiman's (2003) conceptual work, governance is a complex product of social-political interactions in which various societal actors are involved at different levels. In the case of water governance, these interactions will directly generate policy outcomes affecting agriculture, food, health, education, economic development, and poverty alleviation. For these complex interrelationships to succeed, they have to take into consideration

that they are interdependent and that no one agent, group, or sector has all the knowledge and facts required to set policy, make decisions, or take actions (Kooiman, 2003). Because of this complexity, good governance does not just appear but is the culmination of multi-faceted, long-term processes that have to be carefully planned and nurtured (Rhodes, 1996; Kooiman, 2003; Tiihonen, 2004). For good governance to emerge, contextually appropriate conditions must exist and an enabling environment must be cultivated (Tiihonen, 2004), as depicted in Figure 3. Parties concerned must be open to committing to collective decision-making, effective and functional institutions need to be developed, and policy, legal, and political frameworks must be suitable to the goals that are being pursued for the common good (Rhodes, 1996; Kooiman, 2003; Tiihonen, 2004).

Many Arab countries, whether motivated by the many challenges of sustainable water resources management or driven to act under pressure from the donor community or both, have launched water sector governance reform programs. The reform agenda includes key institutional issues related to the legal, policy, and administrative aspects of water resource development and management. Three major components of governance, namely, public sector reform, stakeholder participation, and public-private partnerships, which are being promoted to improve water management and governance, will be discussed.

#### **Public Sector Reform**

Progress in terms of accountability of the public sector is considered particularly important for the successful implementation of an overall governance reform agenda in the region. New water sector strategies and national plans have been formulated since the late 1990s in many countries in the region, including Bahrain, Djibouti, Egypt, Jordan, Lebanon, Libya, Saudi Arabia, Syria, Tunisia, West Bank and Gaza, and Yemen (World Bank, 2007). The new policies integrate supply augmentation

#### **BOX 2: PARTICIPATORY IRRIGATION MANAGEMENT**

The World Bank-supported Irrigation Improvement Project (IIP) in Yemen was articulated around Participatory Irrigation Management (PIM). The project prompted the government to create enabling legal and institutional environments to establish two main irrigation-user organizations: water user associations (WUAs) and irrigation councils (ICs). Each WUA is in charge of implementing PIM in its respective irrigation command area. The WUA is to (1) provide reliable and sustainable irrigation services, (2) perform maintenance and rehabilitation, (3) collect fees from beneficiaries, and (4) develop the capability for self-reliant operation and maintenance (O&M). At later, more advanced stages, ICs were established in both Wadi Zabid and Wadi Tuban with strong representation from the WUAs. The IC acts as the High Executive and Administrative Authority in each wadi (riverbed) representing the local government, WUAs, and the Ministry of Agriculture and Irrigation. The ICs are responsible for (1) applying the IC's by-laws and implementing its executive procedures, (2) coordinating activities between government authorities that continue to be in charge of O&M of head works/primary canals and the WUAs in charge of O&M of the secondary and tertiary systems, (3) protecting water user rights and resolving conflicts and pending issues, and (4) monitoring the

social, financial, and technical performance of WUAs.

In the Nile Delta area, the IWRM action plan has instituted measures that enhance user voice in the O&M of services. The Ministry of Water Resources and Irrigation (MWRI) has delegated responsibilities of O&M to water user associations (WUAs) at the tertiary-canal (mesqa) level. The MWRI plan also entails empowering Branch Canals WUAs to manage irrigation and drainage O&M at the secondary or branch-canal level. Since Branch Canals are also sources for drinking water, members include households, with strong participation of women who oversee the water quality, environmental, and health issues. In a parallel process, Integrated Water Management and Irrigation Districts are being established, to integrate all public services under one entity which works closely with WUAs and Branch canals WUAs. The key measure required is an amendment to Law 12/1984 to empower WUAs. New large scale irrigation projects are now being implemented following an integrated water management approach with the Water User Associations (WUA) taking the lead to maximize economic and social benefits while safeguarding the environment as in the case of the IIIMP project in Egypt.

Source: World Bank, 2009

with demand management. Some countries (Egypt, Jordan, Morocco) have established high-level national planning and coordination entities to combine the voices of those key ministries that have direct and indirect impact on water such as agriculture, housing, finance, and trade. Water ministries in the region are undergoing organizational restructuring in order to introduce flexibility and efficiency in their operations through more decentralization of their functions.

In 2000, the Palestinian Water Authority (PWA) prepared a National Water Plan to set strategic directions for the sector up to 2020. The objective is to achieve sectoral goals, elucidate the role of service providers, and shift the functions of the PWA to regional utilities. The latter is in charge of operations, maintenance, repairs, wastewater collection and treatment, bulk water supply, water reuse, and water allocation for industrial and agriculture use. A Water Council chaired by the President of the PWA is established with representatives from water user associations, ministries, academics, and regional utilities. The government continues to own the regional water utility assets with community representation on their boards. In its drive to strengthen the water sector governance, the PWA developed a new comprehensive water law in 2002. The law covered aspects of water management such as developing and managing resources, increasing capacity, improving quality, and preventing water pollution and depletion.

Public water supply and sanitation institutions in Arab countries are shifting to be more clientoriented with improved institutional capacity to pursue the principles of efficiency, transparency, accountability, and equity in delivering services to their clients. These shifts are designed to address the problems afflicting these institutions "such as unclear lines of responsibility for operations, low tariffs, difficulties retaining qualified personnel, and political interference in staffing policies and other aspects of operations" (World Bank, 2007). In Egypt, the government separated service provision from regulation in the water supply and sanitation sector. The Holding Company (HC), established in 2004, has autonomous authority and is managed by a board consisting of a wide range of stakeholders. The HC operates at the local level through

# **BOX3: PUBLIC PRIVATE PARTNERSHIP (PPP) IN IRRIGATION**

In Morocco, the Guerdane project includes a 10,000 ha irrigation area serving 600 citrus farmers where the groundwater source was running out. Government was prepared to allocate water from the dam complex of Chakoukane-Aoulouz and to co-finance the development of the 60 mile conveyance pipe and distribution structure. In July 2004, the bid was won by a consortium led by Omnium Nord-Africain (ONA), a Moroccan industrial conglomerate, with participation of French and Austrian companies. The consortium will enter into a 30-year concession for the construction, co-financing, and operation and management of the irrigation network. The project will cost an estimated \$85 million of which the Moroccan government will provide \$50 million, equally split as loans and grants. The water tariff agreed by the consortium is towards the lower limit of the existing cost range of groundwater supply, so farmers will benefit from a cost saving. (World Water Forum, 2004)

The West Delta Irrigation Project in Egypt is another major PPP project involving construction and operation of piped irrigation system to transport Nile water to support high value agricultural development in an area of 100,000 ha located to the west of the Nile delta. The area was initially developed using groundwater which is now showing increasing signs of depletion and deterioration in quality. A Design-Build-Operate (DBO) option with a capital contribution by a private operator and participating farmers was considered as the preferred transaction model for the project area. Water charges will include a flat fee to cover infrastructure cost and a variable fee to cover operation and maintenance cost and operator profit. From the onset, a Water User Organization was established to be fully involved in project preparation and to oversee the performance of the Private Operator together with an independent Regulatory Office. The project preparation started in 2005 with a strategic environmental assessment (SEA) which thoroughly examined the economic, social, and economic cost and benefits of the project following a basin wide consultation with the stakeholders.

(World Water Forum, 2006; Biaetti and Abdel-Dayem, 2008; World Bank, 2009)

companies responsible of service provision and day-to-day operation and maintenance of the networks. Their work is monitored monthly against a set of performance indicators. Along with the Holding Company, the Egyptian Water Regulatory Agency (EWRA) was also created to provide economic regulation for the sector. EWRA links government, society, and the Holding Company to ensure that national policies and regulations are implemented (World Bank, 2007, 2009).



In Tunisia, Société Nationale d'Exploitation et de Distribution des Eaux - SONEDE is following a pricing policy which enables a full cost recovery of operations, with tourist establishments paying the highest rates and households the lowest. Unaccounted for water in Tunis has been reduced below 10%. In 2002, the Moroccan government decentralized responsibility for water supply and sanitation services to the municipalities, and left to them the right to choose how to manage service provision from a menu of several choices. They can manage water services themselves; they can create an independent public provider to delegate water services to; they can delegate water services to the National Office of Potable Water (ONEP); or they can contract out water services to private firms (World Bank, 2007; Louati and Bucknall, 2009). Moreover, Morocco has introduced autonomy and privatization to urban water supply (Saleth and Dinar, 2004). To promote water conservation, the government has introduced a revolving loan fund for urban users to assist them cover the costs of water meters and retrofitting water appliances (Saleth and Dinar, 2004). Another public policy innovative practice has been the creation of River Basin Organizations. According to Saleth and Dinar (2204), "The RBOs in Morocco are unique ... Since they are managed by agricultural agencies, they serve as an organizational means of integrating water delivery with the provision of farm inputs."

# Stakeholder's Participation

Participation is central to promoting good governance - creating a climate of accountability and transparency (Abdel-Dayem et al., 2004; WWAR, 2006). Stakeholder participation represents the 'demand side' of good governance. Improvements with regard to more participation of stakeholders are important not only to take into account the needs, values, and opinions of those who are affected by the reforms, but also to ensure that the implications of a new development model are acceptable to communities. Stakeholder participation involves taking part in planning, design, implementation, operation, and maintenance of water works, in setting and administering tariffs, and in supervision and quality control. People's access to relevant water information is an essential precondition for successful participation.

The most structured procedure for participation is that of water users in the irrigation sector. Many countries in the region have made considerable progress passing some responsibility for operating and managing irrigation systems to groups of users known as water user associations (WUA). Egypt, Jordan, Libya, Morocco, Oman, Tunisia, and Yemen promote the involvement of users in the irrigation sector in activities such as management, operation, and maintenance



of local infrastructure (Box 2). Initiatives for establishing water user associations were mostly borne out of the framework of multi-lateral and bilateral financed irrigation projects, which included components for policy and institutional reform. These initiatives are at different levels of implementation and their sustainability beyond the projects' lifetime has not been evaluated yet. Although the objectives for introducing water user organizations are quite similar across the region, the institutional structure and legal status may be quite different (Salman, 1997). In some cases the legal framework that supports and empowers WUAs is not available yet or is undergoing a slow making process (Mohamed and Jagannathan, 2009). It is linked to a great extent with the pace of the on-going political and economic reform in each country. It is important to recognize that "meaningful participation cannot be achieved unless there is greater transfer of responsibility, authority, and resources" to the parties concerned (Mohamed and Jagannathan, 2009).

Effective arrangements and mechanisms are still not available to monitor and evaluate the progress and impact of participatory irrigation management on financial sustainability, natural resource-base sustainability, reduction of avoidable transaction and overhead costs, and piloting, transferring, and scaling up of best practices. Thus, it is too early

to draw conclusions on the quality of irrigation services provided by WUAs, as opposed to those previously provided by corresponding government entities. Indicators and benchmarking to measure progress in participatory irrigation management have been developed and tested in other regions but rarely used in Arab countries (Gonzalez and Salman, 2002).

In this context, the political trend in Tunisia is toward decentralization and participatory management to close gaps in the water management system. Thus, all levels of the administration have made great efforts to help local organizations take control of operating and maintaining their water distribution facilities within the overall framework of IWRM. A key factor of success are the regulations that guide such trend toward greater participation by the beneficiaries/stakeholders. A 2009 UN report has highlighted the central role of increased water users' participation, suggesting the need for Tunisia to "continue implementing policies geared towards sustainable socio-economic development by reconciling user needs with the social and environmental value of water" (WWAP, 2009).

# **Public-private Sector Partnership**

The introduction of public-private partnerships (PPP) has been an important development in water service delivery in Arab countries (AWC, 2008), but it has not displaced public provision as the lead method for delivering these services. Its primary impact has been to mobilize private capital for upstream provision (water treatment, desalination), with only a few cities shifting to private provision of water services at the customer level.

Oman has made substantial efforts to broaden private sector participation and improve the foreign investment climate, with privatization and changes in its foreign capital investment law. PPP has been extended to management of water supply networks in Jordan and Morocco, as well as to construction of new water supply and sanitation systems in Algeria, Egypt, Qatar, Saudi Arabia, and UAE. Management contracts have been signed with the private sector to operate the utilities in Amman and Casablanca. In the irrigation sector, the Guerdane project in

### **FUTURE WATER STRATEGY FOR THE UNITED ARAB EMIRATES**

#### Khalil Ammar and Rachael McDonnell

The United Arab Emirates is located within the hyper-arid and arid climate zones of the Arabian Peninsula and the limited rainfall leads to natural water scarcity. Against these sparse supply conditions, demand for fresh water has increased with accelerating population growth, higher living standards, and expansion of the agricultural, forestry and industrial sectors. The per capita water consumption is now amongst the highest in the world, creating enormous strains on the water budget. This growing demand was initially met through the pumping of non-renewable water resources but many of these aguifers have now become depleted with resulting declines in levels and deterioration in water quality. Reliance has therefore shifted to non-conventional water resources particularly desalinated and reclaimed water, to bridge the gap between supply and demand although this brings increased stresses on energy supplies and ecological systems.

In addition to these water challenges, water governance in the country has its own challenges. The UAE is a federal nation and its constitution of 1971 defines under Article 23 that natural resources are the property of individual Emirates. As a result, whilst federal ministries hold some strategic and coordinating responsibilities, institutions, legislation, and regulations governing natural, and more recently non-conventional, water resources are to be vested with the individual Emirate level. Day to day operations and management also take place at the local level. In addition, there are increasing inputs to water (and energy) management and regulations from Gulf Cooperative Council agreements.

Against this background research has been undertaken at the International Centre for Biosaline Agriculture (ICBA) in Dubai to develop new strategic policy ideas for the UAE. This work involved developing an updated and integrated assessment of UAE's water resources and their use, from which options have been identified to improve the efficiency of water allocation and use, reduce costs, and improve environmental conditions. The governance of water was also reviewed particularly the responsibilities, laws, and regulations of the various institutions involved.

A number of key initiatives and associated policy instruments have been defined, and are currently under review. Unsurprisingly, a priority area for new water policies is water demand management, particularly in agriculture. This would achieve both sustainable development and significant reductions in related future investments in production capacity and infrastructure. Another key area is the coordination of water governance amongst the different Emirates that would foster increased consistency and transparency in areas such as technical, economic, and environmental regulations and standards. This could bring greater scales of economy in future infrastructure development as well as more effective regulatory control. The key initiatives are as follows:

#### **Initiative 1**

Develop legislation, standards, and federal mechanisms for coordinating water resources management for cross-Emirate and cross-sectoral policy development:

 Move to appropriately allocate and effectively use water resources for the benefit of current and future

Morocco is under construction and the West Delta in Egypt is in the bidding phase (Box 3). In 2010, the Egyptian Parliament passed a new law for setting up public-private partnerships in infrastructure development, which is expected to boost the role of the private sector in all economic sectors including water.

# Case study: PPPs in the urban water sector of Jordan

Jordan's water supply and sanitation sector provides two insightful lessons about PPPs.

i. The Greater Amman water supply and wastewater service management contract In 1999, a Management Contract was signed

between the Water Authority of Jordan (WAJ) and a private consortium, known as LEMA (Suez Lyonnaise des Eaux, Montgomery Watson and a Jordanian company (Arabtech Jardaneh) (LEMA)). The management contract ended on December 31, 2006. LEMA was the operator responsible for managing, operating, and maintaining the facilities in a cost-effective manner with reduced cost and increased profitability in the water and wastewater operations of the service area. The Program Management Unit (PMU), a body within WAJ was created to monitor the progress of the Greater Amman Water Supply Program. The aim of both the management contract and the Capital Investment Program was to restructure and rehabilitate the water supply services in Amman.

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- generations;
- Develop regulations, standards, and specifications for benchmarking management;
- Support stakeholder coordination and understanding;
- Integrate the predicted consequences of climate and environmental change;
- Guide and oversee the creation of a national water database;
- Ban water export; and
- Establish a national water council to coordinate activities among stakeholders and provide a forum for dialogue.

#### **Initiative 2**

Enhance natural water resource protection and develop a groundwater strategic reserve:

- Introduce water budgeting at the national, regional, and local levels that accounts of all water supplies and uses:
- Coordinate the merging of Emirate-level activities to form a national water quantity and quality monitoring system;
- Further develop the operation of check dams in the Northern Emirates to improve retention of floodwater and groundwater recharge; and
- Promote zoning and artificial groundwater recharge.

#### **Initiative 3**

Develop national agricultural policy aimed at water conservation and increasing value to the economy:

- Undertake further research to deepen knowledge of the UAE's agricultural economy and its use of water;
- Build on this knowledge to initiate an agricultural plan to better conserve scarce water resources; and

 Promote a new agricultural development model that is water conservative, environmentally benign, and commercially viable.

ARAB ENVIRONMENT: WATER

#### **Initiative 4**

Rationalize water consumption to be within the global daily per capita water consumption rate:

 Save water by limiting the daily per capita consumption to be around the global average of 200 liters per capita per day, through awareness programs and campaigns, and the adoption of modern systems and technologies to save water in various sectors.

#### **Initiative 5**

Review and develop a clear water pricing policy:

- Rationalize the tariff system so that slab pricing is common to all Emirates;
- Reduce subsidies paid by governments to close the gap between actual cost and imposed tariffs; and
- Review possibilities of introducing water pricing for groundwater or reclaimed water.

In the next few months these initiatives will be considered in greater depth and any structural changes to adopt these initiatives will require careful negotiations amongst the various stakeholders. Water security is one of the cornerstones to the future development of the UAE and none of the decisions to be made are going to be easy. However, the challenges cannot be avoided in the UAE, nor can they in any other Arab country.

Dr. Khalil Ammar and Dr. Rachael McDonnell, international Center for Biosaline Agriculture, Dubai.

The Governorate of Amman service area is the largest domestic water market in the country. The operator's compensation was based on its ability to reduce operating expenditures while increasing revenues from the provision of water and wastewater services. The operator is paid an annual 'performance incentive compensation', which permits the operator to retain a percentage of the gains in profitability over the term of the contract.

The responsibilities of the private operator included transferring water to the water treatment plants and distributing the treated water, maintaining the facilities at specified standards of maintenance and developing a comprehensive

maintenance management program, rehabilitating and repairing the facilities as required, supplying drinking water to subscribers, taking responsibility for billing, collections, and customer service related to subscribers in the service area, and cooperating with WAJ in implementing its Capital Investment Program (WAJ, 1999). LEMA's performance has been evaluated against over 60 measurable targets.

# ii. The NGWA Managing Consultant contract

In 2004, WAJ conducted through the PMU an open competition to hire an experienced water and wastewater operations firm as a 'Managing Consultant'. The objective was to assist the



Northern Governorates Water Authority (NGWA) increase the efficiency of its water and wastewater services. NGWA is a water utility that provides services to 210,000 customers (residential and commercial) in the four northern governorates (Ajloun, Irbid, Jerash and Mafraq) of the country. Thus, the partnership in this case was a three-year contract between WAJ (specifically the PMU) and the Managing Consultant. The latter is a joint venture of the British water operator Severn Trent Water International and a local engineering firm, Consulting Engineering Center.

WAJ remains responsible for service delivery, general management, custodianship of facilities and personnel matters, all financing requirements of service delivery, asset ownership, as well as legal responsibility for all administrative activities. The Managing Consultant's primary responsibility was to provide advisory services to the new utility - NGWA - and help NGWA breakeven financially to become an operating company (a public water company) within three years.

The Managing Consultant's role included operating the water and wastewater facilities, carrying out leak detection and repair, carrying out day-to-day responsibilities for non-revenue water (NRW) reduction, maintaining the facilities, developing a comprehensive maintenance management

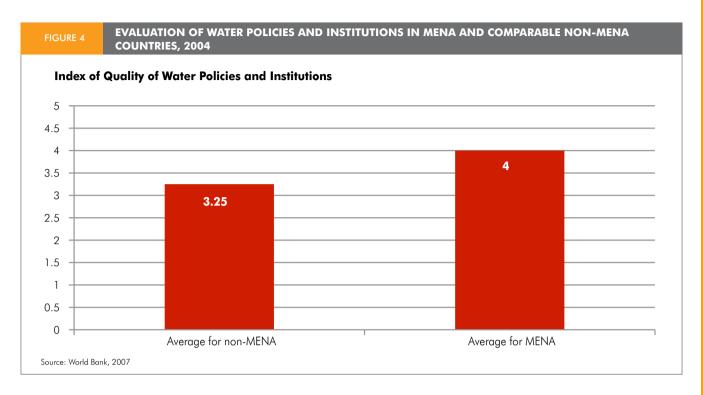
program, carrying out all billings, collections, and customer relations and service functions, reaching the defined objective of an operating ratio (or cost recovery) of 105% and a balanced cash-flow, and meeting all of the criteria necessary for WAJ to ultimately assign responsibility for the management of water and wastewater services to an operating company. The contract value was approximately \$6.5 million and was co-financed with KfW (the German Development Bank). It was monitored by the PMU, which created a performance indicator and benchmarking system for NGWA.

#### iii. Lessons learned

An in-depth study of the two PPPs in Jordan revealed that three institutional factors, namelt, contract flexibility and accountability, governance structure, and legal setting, emerged as the most important in determining their effectiveness. First, the Amman management contract offered flexibility in terms of the ability to review and modify the contract. However, both the Amman management contract and the NGWA Management Consultant contract were relatively inflexible in terms of affording the service provider the degree of autonomy it needed in order to be effective. It could also be argued that these two urban contracts fostered accountability to customers and government. The performance standards in both cases were explicit, although as some pointed out were unattainable.

Second, participation was weaker in the Amman management contract mainly because of its internal set-up. Unlike the NGWA Managing Consultant contract, LEMA had not developed a business plan of any description. As a result, there was no vision for the company, and therefore no unifying document around which staff might have coalesced them in finding a common sense of purpose. In sum, both internal and external governance were weakest in LEMA, and this dampened the participatory approach. Another reason for believing that the NGWA Managing Consultant contract was more participatory is that it included an elaborate governance arrangement for decision-making that involved actors from both outside and within the NGWA.

Third, the most constraining laws that confronted both LEMA and the Managing Consultant were:



(a) Jordan's government procurement regime is framed by the Government By-Work Regulation No.71 (1986), and the Supplies Regulation No.32 (1993). Both of these are overly bureaucratic and emphasize securing the lowest cost for supplies, which inherently forces a compromise on the quality aspects of nearly any given procurement; (b) the auditing bodies which were numerous and inconsistent in their assessments; (c) the Civil Service Law (2002) which is very rigid and limiting because it does not allow an entity like LEMA to operate on a commercial basis; and (d) the Water and Sewerage Authority Law (1973), which does not provide for any applicable penalties when illegal stormwater connections to the network are discovered. The latter made it very difficult for both LEMA, and the Managing Consultant team to oblige customers to disconnect.

Another adverse effect of the legal setting was, and still is, the lack of consensus on which entity should assume the role of a regulator of Jordan's water sector. This means the lines of responsibility between key organizations are also quite nebulous. However, overall, the various laws and regulations have provided a fairly comprehensive set of 'checks' as to who-does-what, which means the lines of accountability are spelled out. The end effect is that they could not deliver services to their customers as effectively as they might want to.

#### V. PROGRESS AND LIMITATIONS

The last two decades have witnessed progress in improving water governance in Arab countries, which can be characterized as slow but steady. It is hard to make generalized conclusions due to the diverse political, social, and economic conditions in the region. According to the World Bank (2007), the averaged index of quality of water management and accountability in 10 MENA countries was above the average score for 27 lowand middle-income countries from outside the region (Figure 4). This index covers the adequacy of what is called a policy mix (legislation, property rights, and allocation mechanisms) as well as instruments and policies to control water pollution (standards, instruments, and stakeholders participation). This is an evidence of the efforts made by the region to improve water management during the past 10-20 years.

The overall evaluation of the World Bank study shows that with respect to the issues of governance and administrative reforms, the MENA region rates high in indicators related to political stability; is fair in terms of service delivery and anticorruption; and rates low on issues of public voice, accountability, and participation. The study identifies as a main constraint the overall size of the public sector.

#### OPINION

# RIGHT TO WATER: A PARLIAMENTARIAN VIEW

### Adnan Badran

Right to water is a principle of insuring water for all. Parliamentarians, as a legislative body, should make this right explicit in the law of all countries as a basic human right.

To insure this, countries in the Arab region should look at water as shared commodity and a basic denominator for economic common market. Water networks can be built across borders of the region, whereby water-rich countries charge water-poor countries for their consumption, similar to the currently operational regional power grid for electricity sharing.

The Arab region could establish a common economic market around water and energy as the European Union countries have done for steel and coal.

Parliamentarians need to legislate in the direction of promoting complimentarity and distribution of water resources across borders, by creating trans-Mena regional water carries from areas of abundance to areas of water scarcity..

Arab countries are located in arid and semi-arid zones, which are critically at the threshold of water scarcity. Droughts, rising temperatures, seasonal fluctuation of rainfall and rise of the sea level are expected to increase with the predicted climate change. Any reduction of rainfall and rise in temperature will further threaten the fragile ecological system of the Arab countries, destroy the biological diversity and increase desertification, destroying the biodiversity balance. This may lead to the spread of disease and malnutrition, epidemics, poverty and people migration to the North. Parliamentarians need to move, diligently and swiftly, to adopt preventive measures against climate change disasters.

The need for legislation is imperative for good governance, which guarantees better water management and efficient use of water, mainly in agriculture and industry, through reducing loss, better technology in irrigation and recycling.

Transboundary water basins as Euphrates and Tigris between Turkey, Syria and Iraq, should be governed

by a legal framework, and international treaties should be put in place to avoid future conflicts over water basin rights between neighbors. This is the only possible path to avoid conflicts and future wars in the region.

The Nile basin also needs a binding legal framework in the form of international treaty among the 12 African nations which share its water. Transboundary waters may be instrumental in creating stability and economic cooperation among neighboring countries of the shared basins, including rivers, lakes and large underground aquifers. Otherwise, sharing countries may go to wars over water rights.

Jordan, considered the 4th poorest country in the world in water resources, is taking measures to build dams which depend on scarce rainfall to fill, and is also building south-north national carrier to tap underground water. It is also looking to desalination, through Red Sea-Dead Sea project, to overcome shortage of water, and to prevent environmental disaster of the shrinking Dead Sea, similar to that of the Ural Sea, as well as generating power and help moderate the harsh environment of the Wadi Araba Valley.

As parliamentarians of the Arab region, we should tackle the main water issues through appropriate legislation, which helps to find solutions at the national level as well as across borders, particularly to overcome implications of global warming. It is essential to implement overall management of water resources, harnessing science and technology for efficient use of water, including desalination, recycling, efficient irrigation systems and breeding new crops which can withstand increasing drought and tolerate brackish waters.

It is essential to act now for building peace around energy and water for us and for future generations.

Dr. Adnan Badran is a former Prime Minister, President of University of Petra and Member of the Senate in Jordan. The text is his opening address on behalf of MENA/Arab states at the Parliamentarian Session during the Fifth World Water Forum on 18-19 March 2009 in Istanbul, Turkey.

According to the World Bank (2007), "the new policies and organizations are not fully achieving their intended goals in most countries" of the region because: (a) "the existing regime of subsidies does not encourage growth of organizational capacity", (b) "legislation often lacks the necessary implementing rules and regulations", and (c) "enforcement tends to be weak". Further, the World Bank (2007) argues that "potential solutions to the region's water problems are well known but have often not been implemented because of constraints in the broader political economy" in each country.

Access to reliable data and exchange of information remains a big constraint. Data collection and monitoring programs are conducted by a variety of authorities without co-ordination and integration. When data is available, it is not continuous, comparable, reliable, properly reported, or disclosed to the public. Information on water resources management (quantity and quality) and water sector performance is considered in many instants as classified information not to be disclosed. The drivers could be political motivated by the need to avoid the rise of public pressure or concerns, or economic motivated by the need to protect export and tourism. Sometimes, it is purely bureaucratic succumbing to the adage: 'Public Authorities Control Information'.

The crucial role of research in creating the knowledge base needed to improve water governance has not yet been sufficiently emphasized. Innovations in science and technology are needed in order to sustainably manage both conventional and nonconventional water resources. Relevant research development could greatly enhance institutional capacity, improve governance performance, and reduce associated running costs. Few Arab countries have highly reputed water research centers that conduct research on water resources management. The National Water Research Center (NWRC) in Egypt is one of a few in the region. Its research agenda and products are aligned with the national water plan of the country. Relevant research is emerging today from the Gulf countries, where research and innovations have become central in formulating water strategies and plans. The rewards from this type of research could be reaped quickly as is exemplified by the



international rating of King Saud University of Riyadh, which has been significantly enhanced in a short period due to an aggressive program of academic development (AWC, 2009).

Progress in capacity building, training, and development of the professional skills necessary to meet current and future challenges are receiving increasing attention. Newly established regional organizations such as the Arab Water Council (AWC) and the Arab Water Countries Utilities Association (ACWUA) seek to promote 'good' water governance in Arab countries. They implement capacity building and training programs with priority given to policy and institutional reform, water governance, and water management. In 2009, the AWC established the Arab Water Academy (AWA), based in Abu-Dhabi, to be a centre of excellence and agent of change in water management, water service provision, water finance, and water diplomacy. Other examples of regional water governance capacity building programs include the Partner Fora on Water Governance in the Arab Countries started in 2006. This program is implemented by AWC and ACWUA in partnership with the InWEnt - Capacity Building International, Germany. The program brings world experience, lessons learned, and case studies from around the world and from within the region, and allows water stakeholders from the region to engage in reviews, analyses, discussion, and debate on approaches and applications of 'good' water governance in the region. In 2009, the United Nations Development Program (UNDP) launched the Water Governance Program in the Arab States (WGP-AS), to address regional water challenges resulting from geographic and climatic conditions, lack of peace and security, population growth, increased water demand, inadequate access to clean water and sanitation, insufficient capacity, and limited resources, in addition to deficiencies in data and monitoring tools.

# VI. CONCLUSION

The water sector in Arab countries suffers from a weak governance structure due to inadequate policies and institutions. Institutional limitations and water scarcity are compelling Arab governments to introduce reforms to "create flexible but effective water allocation and management mechanisms" (Saleth and Dinar, 2004). Several Arab countries have been able to achieve progress over the past two decades in reforming their water sector policies, reinforcing institutions, modernizing legal frameworks, and building capacities to improve water management and services. Gradually, but slowly, water beneficiaries are now viewed as water customers or partners (Saleth and Dinar, 2004). In some Arab countries, it is now recognized that nongovernment groups have to be granted a more enlarged role in water governance.

Policies for sustainable water management have been developed, but they face challenges in their implementation and there is a lack of monitoring tools. Public and private institutions are moving towards greater accountability, transparency, and rule of law. However several policy, financial, and capacity gaps still exist. Participation of stakeholders and civil society groups has improved and private sector participation is growing in water supply and sanitation as well as in building and operating irrigation infrastructure. Legislation and regulation have improved but they still have to

be strengthened and enforced to address current and future changes. In many countries the legal and regulatory framework is still inadequate and there is a need to provide better financial and technical support to water governance.

Overall, ongoing reform processes are geared towards sustainable water management that balances demand (economic instruments) with supply (service delivery). Some Arab countries have realized that fundamental reforms in water management are more likely to result from policy changes in trade, social protection, and economic instruments than from changes under the control of water ministries (World Bank, 2007). Political reforms involving nationwide institutional changes can reduce the transaction costs of water sector reforms directly because the changes within the water sector form only a small part of the overall reform process. Thus the ability of most countries in the region to reform the water sector will critically depend on the speed with which overall political reforms are undertaken to create a new governance structure needed for sustainable water allocation and management.

Positive impacts can be noticed in the region, but more still needs to be done. To date, increased attention to water has not always translated into assigning priority to institutional and regulatory reforms within either the water governance agenda or the broader national governance agenda. Advancing the water reform agenda will be vital to fostering investments, putting in place strategic water policies, and ensuring coherent implementation. The state of the overall national governance will determine how far and how fast water governance can be improved.

#### VII. RECOMMENDATIONS

The capacity of institutions participating in drafting and monitoring national and local IWRM plans needs to be improved, particularly at the local level. Improving the legal framework and the rule of law is also needed. To improve water service efficiency and ensure accountability, the public sector has to shape new rules and regulations governing private sector participation in the water sector. It will need to create a more balanced regulatory framework that keeps abreast of public responsibility and private interest and

manages risks adequately in a manner that does not inhibit entrepreneurship and innovation. More experience and institution-strengthening measures are needed to expand public-private partnership (PPP) capacity so that it can make a real contribution to meeting the region's growing urban water service needs.

Participation must not be understood as an end in itself with the rise of organized water user groups as the final objective. Participation has to be a means of achieving joint responsibility at all levels of decision-making processes, where actors form part of the problem as well as the solution.

The Organization for Economic Co-operation and Development (OECD), in a recent unpublished study, defined five major regulatory development gaps which need to be addressed in order to consolidate the progress achieved in improving water governance: (a) the financing gap for meeting the financial cost of setting up regulatory agencies and ensuring their viability; (b) the capacity gap to raise the technical expertise and competences of staff; (c) the policy gap that can establish regulatory agencies' autonomy and independence from the executive power; (d) the information gap to reduce the asymmetry of information between the regulator, the operator, and the user; and (e) the participation gap to allow real citizen involvement in the work of the regulatory agencies. Although these are globally recognized gaps, they aptly apply to most of the Arab countries as discussed in this chapter. More effort should be mobilized to close gaps in policy and institutional reforms, build capacities and skills, disclose information, raise awareness, and allow a broader participation of stakeholders.

In Arab countries today, extraordinary measures of cooperation are required at local, national, and regional levels to improve the existing patterns of water governance in an arena where different interests as well as dissimilar values and norms prevail. Therefore, the way forward in Arab countries is to recognize the importance of planning and implementing frameworks for good water governance that take account of differing social, economic, environmental, and cultural contexts, including the introduction of processes of interaction between state and non-state actors and mechanisms for recognizing mutual responsibilities for governance.

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# **NOTES**

- IWRM is "a process which promotes the coordinated development and management of water, land, and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of the ecosystems" (GWP, 2000).
- After the construction of HAD, an annual rice area of 315,000 ha was proposed in the Northern Nile Delta for protection against sea water intrusion and salinization of the soil.
- http://faostat.fao.org/site/567/DesktopDefault. aspx?PageID=567#ancor
- 4. This is an important body within the context of the management contract because the PMU was established in 1997 as an entity within WAJ whose task it is to coordinate and monitor the Greater Amman water supply and wastewater service management contract, as well as oversee the Capital Investment Program for Amman and prepare other governorates for commercialization of their water utilities and PSP (PMU, 2007).

- 5. NRW is the metered volume of water that is not producing revenue, so it is the difference between water produced and water billed. NRW has three main components: physical (real) losses (i.e. leaks, overflow at storage tanks); commercial (apparent) losses (i.e. water theft through illegal connections, customer meter under registration, and data-handling errors etc.); and unbilled authorized consumption which is water used by the utility for operational purposes e.g. firefighting and water provided for free to certain customer groups (World Bank, 2006).
- 6. An operating ratio of 105% means operating revenue exceeds operating costs by 5%. Sources of operating revenue include: water sales in the service area, sewerage and drainage fees, meter subscriber fees, water sales to other governorates, water connection fees, sewage connection fees, water sales by NGWA tankers. Operating costs include salaries, electricity, etc. (Interview).
- All countries of the MENA region at the World Bank are Arab Countries except Iran, although the MENA region does not include Sudan, Somalia, and Djibouti, which are part of the Africa Region.
- The Arab Water Council was established in April 2004 as a non-profit independent regional organization open to all water stakeholders to promote improved water management for sustainable development in the Arab countries.
- The Arab Countries Water Utilities Association (ACWUA) was founded in April 2007 as a regional center of excellence, to partner with water supply and wastewater utilities in Arab countries to provide best practice service delivery to their customers.