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**EXCERPTS FROM  
“GUIDELINES FOR LEGISLATIVE AND INSTITUTIONAL  
REFORMS NEEDED FOR THE IMPLEMENTATION  
OF IWRM AT NATIONAL LEVEL  
IN ESCWA REGION”**

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## I. INTRODUCTION

During the last decade there have been immense interests in the ESCWA countries to follow an IWRM approach in developing water strategies and policies. This is evident by the formulation of national water strategies and implementation action plans and the enactment of numerous regulations in support of IWRM policies. However, in most countries a significant gap remains with respect to the ability of present institutional frameworks to effectively implement IWRM. This is fundamentally because the existing water resources management culture and its associated institutional arrangements, legislation and instruments - which take a sector-based approach - are inadequate to achieve integrated and participatory IWRM that is multi-sectoral oriented by its nature. Governance systems for IWRM thus require integrated approaches to social, economic, and environmental policy planning, natural resource preservation, as well as appropriate modalities for public participation. These proposed reforms should be culturally and politically sensitive to the specificities of countries of the region.

New institutional settings and reforms need to be carried out for the successful implementation of the IWRM plans. These reforms may include: re-structuring the role of water institutions, decentralization and providing more water management authority to water users, stimulate co-ordination among water sector stakeholders through joint activities and shared investments, co-ordination of financial resources on the decentral and central levels, enhancing the role of Water User Associations, Water Boards, NGO's, Civil Society, etc. In the ESCWA member States, to implement IWRM plans, an implementation framework that includes a clear description of roles and functions of the organizations involved in the implementation process, time schedule, level of responsibilities and relation to other stakeholders, communication channels and investment and monitoring plans, need to be established (UNESCWA, 2005).

In addition, water laws and legislative instruments are essential and powerful tools for formulation and implementation of IWRM plans. The legislation and regulation systems (e.g. laws, by-laws, rules, decrees, agreements, etc.) should deal with all water uses, monitoring of water quantity and quality, water allocation for various functions and sectors, water rights, etc). In many countries in the ESCWA region, water-related laws are insufficient, ineffective and outdated. There is a need to create modern water legislative instruments to support the implementation of IWRM plans. More efforts are still needed to revise and modernize existing laws and to strengthen the institutional reforms needed for implementation of the IWRM plans in many countries in the ESCWA region.

This summary paper is mainly focused on the following : (a) assessment of present status of institutional and legislative settings and appropriateness to implement IWRM plans; (b) identification of institutional and legislative challenges, constraints and gaps that hinder the implementation of IWRM plans in the region and assessment of opportunities; (c) proposal of scenarios and alternatives for the implementation of legal and institutional reforms and ultimately the IWRM process; (d) review of institutional and legislative measures undertaken by developed and developing countries from other regions and presentation of case studies in three selected countries in the ESCWA region (Egypt, Jordan, and Yemen); and (e) preparation of a set of recommendations to ESCWA Member States on the possible institutional and legislative reforms needed to facilitate the implementation of IWRM at the national/local levels. More details on the above subjects are presented in the ESCWA publication "Guidelines for Legislative and Institutional Reforms Needed for the Implementation of IWRM at National Level in ESCWA Region" (UNESCWA, 2006).

## II. REVIEW OF THE CURRENT STATUS OF INSTITUTIONAL AND LEGISLATIVE SETTINGS IN THE ESCWA REGION

Most ESCWA countries have developed water policies and strategies to enhance development, management, and use of scarce water resources in the region. These policies included various measures related to creating enabling environment, defining institutional roles and establishing management tools which are the three main pillars required for the successful implementation of IWRM. For example, Egypt, Jordan, Yemen, and Palestine have followed a participatory approach in developing their national water plans with active involvement of governmental agencies, ministries, civil society, water user organizations and others through meetings, workshops, and national conferences. Moreover these countries have achieved

progress in developing investment and implementation plans of the National Water Resources Plans, including the total investment required by the government and those can be made through loans and grants from donors and other financial institutions. Economic instruments such as cost recovery, taxes, incentives and fines measures were investigated and initiated in some countries to make more fund available to improve operation and maintenance costs of water resources infrastructure and, therefore, to increase water use efficiency (UNESCWA, 2005). In the same connection, most of the countries have assessed their current and future water resources and demands and the available management tools that could be utilized for IWRM implementation. For instance, with respect to water demand management, a package of measures has been proposed in Jordan to increase water tariff, introduce new modern irrigation techniques, and develop new codes for water use that stress on water savings aspects and assist in enhancing public awareness.

Many countries in the ESCWA region have established new ministries or independent authorities for water management at the de-central level and authorities for environmental protection. Several initiatives attempted to improve capacity building in the field of IWRM both in the field of water policy formulation and monitoring and evaluation of the water system. Other activities were related to basin water management such as in Syria and Jordan through establishing basin committees. Other efforts were focused on privatization issues and gender mainstreaming in the form of founding new companies or entities such as establishment of Water and Electricity Company in Saudi Arabia, formation of committees to study privatization of power generation and water in Bahrain, and establishment of the National Woman Council in Egypt.

It was necessary to modernize the existing water laws in order to cope with the new institutional developments and reforms in the water sector in the ESCWA countries. This process aims at supporting the proposed institutional reform measures, assisting decentralization and participatory water resources management, and assisting private sector involvement in water infrastructure projects (e.g. Law 5/23 for power generation and water in KSA and Sanitary Law/2002 in Qatar). Furthermore, most of the ESCWA countries have reviewed, adapted, and developed (new) laws that deal with controlling water use and abstraction, improving water quality, decentralization, and stakeholders involvement. Examples of these Laws are water Law/2002, Law 12/1995, and Law 54/2002 in Jordan; Law 12 for irrigation and drainage and Law 4/1994 for protection of the environment in Egypt; Water Law in Lebanon; Law 33/2002 in Yemen; and Law 11/1991 in Bahrain.

### **III. ASSESSMENT AND EVALUATION OF THE CURRENT INSTITUTIONAL AND LEGAL ARRANGEMENTS IN THE ESCWA REGION**

As explained in the previous section, many activities took place in ESCWA countries to develop water policies and to adapt new institutional and legal settings to implement these policies following IWRM principles. However there are many challenges and gaps that still exist such as: a) lack of integration between sectoral water-related policies which leads to fragmented programs and inefficient utilization of technical capacities and financial resources; b) absence of social and economic dimensions in developed water policies (e.g. alleviating poverty and reducing unemployment); c) insufficient awareness on environmental issues that should be integrated with water strategies due to lack of capacities and shortage of water quality and environmental data and information (e.g. limitation of monitoring networks, absence of water quality indicators and guidelines that relate the environmental degradation to the pollution sources, etc.); and d) Public resistance and lack of political will and enabling environment to initiate and develop economic instruments such as metering water use, pricing of irrigation water, cost sharing on operation and maintenance of water resources infrastructures, and applying polluters pay principle on all polluters, both governmental and private sector entities. More details on institutional and legislative challenges are presented below.

#### **A. LACK OF COORDINATION AND INTEGRATION AMONG INSTITUTIONS**

Despite the fact that stakeholder involvement and participatory management approaches have been widely accepted and supported by decision makers in many developed and developing countries in the World, there are still many constraints and challenges that ESCWA countries are facing to implement these

approaches in the water sector. For instance, inappropriateness and overlap of roles and functions of current water-related institutions within the context of IWRM and lack of coordination and integration means among concerned stakeholders hinder the implementation of IWRM policies. Most of existing coordination instruments are related to short-term activities/projects and lack sustainability and empowerment. Stakeholder participation process is usually practiced through technical committees that are typically inactive following the completion of these projects. Some actors that have a vital role in water management do not participate in IWRM plan formulation. For example, at the central level, ministries of planning and finance that are responsible for allocating and providing the required investments to implement national water plans have no significant roles during the formulation phase of water policies. Ministries of interior and foreign affairs that are responsible of enforcing water laws and regulation and strengthening cooperation between riparian countries, respectively, are not consulted at the early phases of water policy development.

Lack of decentralization (i.e. bottom-up approaches) and absence of communication channels and public consultation are other key obstacles that limit the ability of local governments and the public at large to formulate or implement local and operational plans or to participate in decision making. Furthermore, inefficient local administrative structures and lack of capacities of water end-users minimize the opportunities to operationalize IWRM at the lowest levels. The proactive roles of municipalities, localities, civil society, and private sector need to be stimulated and strengthened.

#### B. INADEQUATE TECHNICAL, INSTITUTIONAL AND LEGAL CAPACITIES

Water institutions in the ESCWA region have severe shortage of the skilled staff on issues related to IWRM. Involved personnel are commonly engineers or environmentalists. There is a severe shortage of other professions such as agronomists, economists, sociologists, lawyers, environmental health experts, etc. Multi-discipline efforts need to be mobilized for the mainstreaming of environmental, economic, social, and legal dimensions in the developed IWRM policies and strategies. At the local level, there is a serious shortage of capacities, knowledge, know-how and other capabilities needed to participate in and implement water policies and projects. This can be attributed to the centralized approach (i.e. top-down approach) of water policy development and lack of advanced training and capacity building campaigns on the new emerging IWRM issues and approaches.

#### C. LACK OF DATA AND INFORMATION EXCHANGE

Data exchange is a major constraint that impedes the implementation of IWRM in many ESCWA countries. In most cases, there is no coordination between various authorities with respect to data collection and management. Data collection and monitoring programmes are often carried out by various authorities without coordination and integration which leads to inefficient utilization of available technical and financial resources. For instance, water quality monitoring networks may be established by agencies responsible of water, environment and health without exchanging or sharing the monitoring results. There is a need to harmonize the water use terminologies used such as water duties, water requirement, water consumptions, etc., which could be misinterpreted by water experts from the same institution. Moreover, the frequency of data collection is variable and some data is not regularly updated as there is no standard procedures developed for data collection and analysis. There is a need to establish a mechanism for data exchange and dissemination among various stakeholders. Moreover, no legal framework that regulate data collection, analysis, and dissemination processes exists in many ESCWA countries. It is essential to develop a centralized, accredited and shared database that include all data and information related to IWRM through advanced information systems and powerful communication tools and networks. There is also a need to develop protocols, agreements, decrees, etc., and to establish effective mechanisms for data exchange and data sharing among all concerned institutions at all levels and to provide the legal support to the right-to-know and means of dissemination of simplified information to all water users and the public at large about critical water resources issues.

#### D. LIMITED BUDGET AND FINANCIAL RESOURCES

The developed water strategies and policies as reported by many ESCWA countries indicated that the required investments are too high and not affordable by many governments in the region. The weakness of financial resources, the increase of foreign debts and low investment opportunities impede the development and management of water resources. Additionally, many governments face difficulties to allocate the necessary budget to finance the operation and maintenance programmes for the water infrastructures. There are no clear modalities to involve private sector and financial institutions to invest in the water sector. The role of private sector remains limited if it is compared to other economic sectors such as trade and telecommunication. There is a lack of motivation measures and incentive systems for effective private sector and investors participation in water projects. Hence, the governments rely mostly on donor supported projects to cover part of the required investments which is unsustainable on the long term. Cost recovery and cost sharing through public-private partnerships are some attempts carried out by a few ESCWA countries to mobilize funds and budgets but these efforts still needs significant legal and regulatory arrangements and amendments in many countries in the region. Taxes, charges and penalties for over exploitation of water resources and discharge of pollutants to waterways are not effectively applied, which can be potential sources for self-funding the water sector.

#### E. INSUFFICIENT LEGAL SETTINGS FOR IWRM IMPLEMENTATION

Water-related legislations are often inadequate, technically inappropriate and/or economically unaffordable. The lack of credible, comprehensive and effective enforcement in many ESCWA member states has led to a marginal success in compliance with water-related and environmental legislation. For instance, there is lack of legal instruments that regulate water allocation among water using sectors and within the same sector (e.g. water rights and the possibility of trading these rights among water users which is often practiced unofficially among various users). Also, there are inadequate legal and regulatory framework to apply economic instruments such as the “polluter pays principle”, fines associated with excess pollution loads, incentives for good practices, etc.

The existing laws need to be updated especially with regard to standards of discharging industrial effluents to waterways. It is notable that regulations that aim at controlling pollution and sewage and industrial effluent treatment at sources are absent. There are also no technical specifications for water quality requirements for various functions and uses (e.g. agriculture, domestic, industrial, tourism, navigation, etc.). The establishment of a legal framework for shared water resources management is of utmost importance at the regional level to manage the scarce water resources in the region from both the quantity and quality points of view. In this connection, it is necessary to adjust the existing national laws to facilitate the development of the regional legal framework and to improve capacities of the ESCWA countries on issues related to management of shared water resources such as the international laws and agreements, negotiation skills, conflict resolution, etc.

#### F. LACK OF LAW COMPLIANCE AND ENFORCEMENT INSTRUMENTS

Poor enforcement of laws and regulations and deficient environmental and health risk assessment systems are among the other key issues associated with the implementation of IWRM plans in the ESCWA region. Incompliance with and inability to enforce water laws are mainly caused due to lack of inspection capabilities and continuous monitoring by water institutions, lack of procedures and rules for investigating violations and assessing penalties and lack of empowerment and authority to water and environmental inspectors to compel violations through court actions. There is a need to establish an effective law compliance and enforcement system for water issues and to provide the necessary financial and technical support required by water institutions to the water police officers and inspectors.

#### IV. CASE STUDIES FROM SELECTED ESCWA COUNTRIES AND LESSONS LEARNED FROM OTHER REGIONS

Many countries in the ESCWA region have achieved significant progress in the field of development of IWRM plans (UNESCWA, 2005). With respect to institutional and legal reforms, some successful practices in Egypt, Jordan, and Yemen are presented in this Section. Experiences and lessons learned from other developed and developing countries outside ESCWA region are demonstrated in Box 1

##### A. EGYPT

Water demand in Egypt is increasing due to the rapid population growth, industrial development and agricultural horizontal expansion while the opportunities of increasing water resources are limited. These challenges urged the Ministry of Water Resources and Irrigation (MWRI) to formulate the National Water Resources Plan (NWRP) in 2005 following an IWRM approach. The NWRP was developed through an intensive stakeholder involvement process at both central and de-central levels (e.g. concerned ministries, civil society, water user organizations, research institutes, governorates, private sector, NGO's, water boards, water user associations, etc.). The NWRP includes about 90 measures that were categorized under three main pillars: i) measures to develop new water resources, ii) measure for making better use of existing water resources by increasing the efficiency of the water system, and iii) measures for improving water quality and therefore protecting health and environmental conditions. To support these technical measures a package of institutional reforms and legal amendments have been performed for the implementation of the NWRP. An implementation framework was developed to define the role and responsibilities of all concerned stakeholders. An investment plan was prepared to determine the total required investment costs and the contribution by all stakeholders involved in the implementation process (NWRP, 2005).

In order to facilitate NWRP implementation, two inter-ministerial committees have been established: a) a high ministerial committee (HMC) which is responsible of supervision of implementation of the NWRP and involves all concerned ministers and chaired by the Prime Minister, and b) a technical committee that includes representatives and experts from the same ministries constituting the HMC and have the responsibilities of preparation of activities and priority issues for the HMC meetings, collection of data and information and coordination between various actors.

The MWRI has established the Institutional Reform Unit (IRU) that developed the institutional reform strategy (MWRI, 2005). Institutional reform activities included the establishment of water boards at the district level, launching the Integrated Irrigation Improvement and Management Project (IIIMP), establishment of water user organizations at the *Mesqa/field* level, establishment of Integrated Water Management Directorates, and creation of two Holding Companies for South Valley and North Sinai Projects. With respect to legal framework, MWRI revised and adapted the Law 12/1984 for irrigation and drainage to facilitate active participation of Water User Organizations (WUO's) and Water Boards in water system management at the local level. MWRI is currently revising Law 48/1982 to improve the water quality in waterways. The amended laws will enable WUO to engage in assessment and collection of user charges, budgeting, and contraction. The amended laws define the structure of WUO's at local and regional levels, identify their responsibilities and mandates in relation to other water institutions, and facilitate their effective involvement in water policies formulation and implementation.

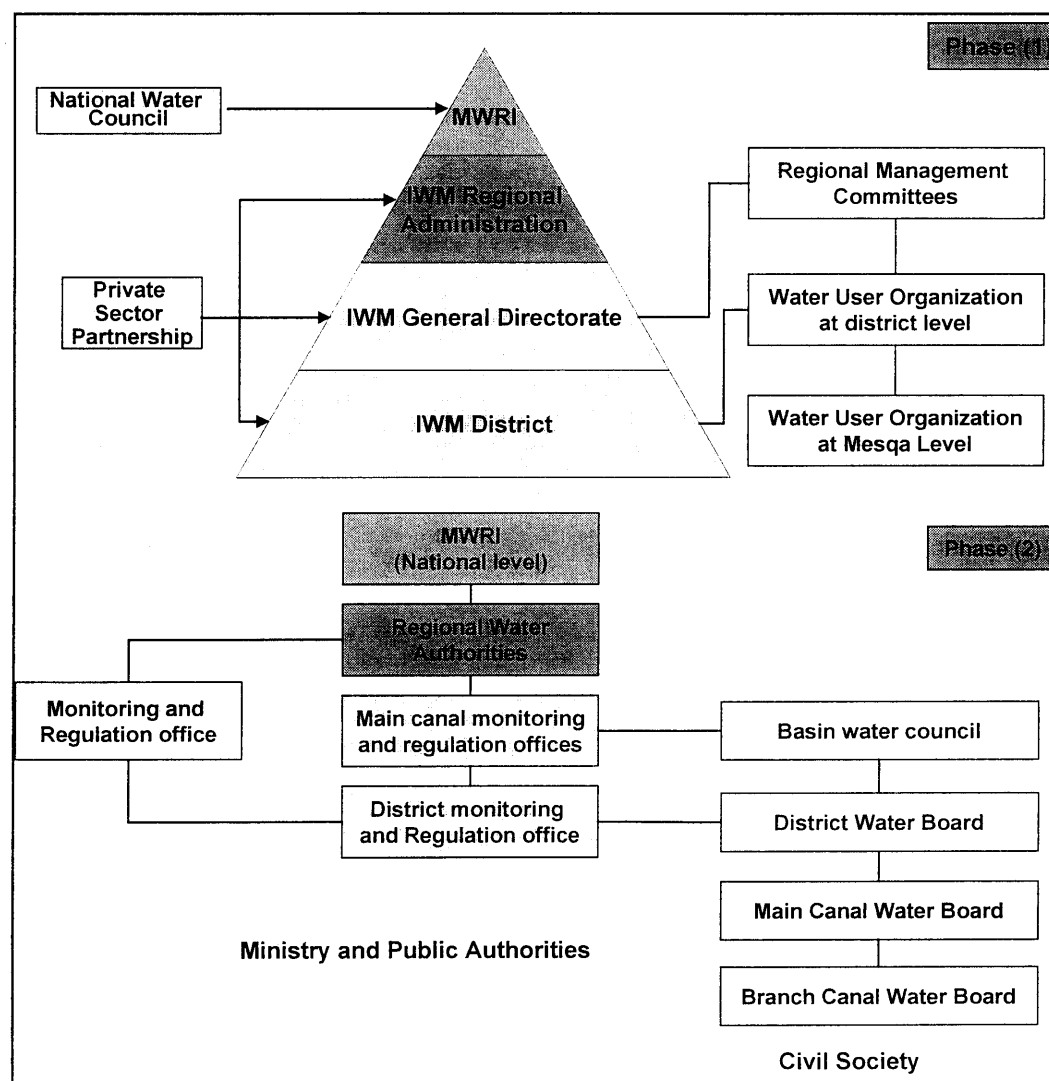
MWRI has also developed a vision for Institutional Reforms (IR) of the water sector based on participation, decentralization, basin organization, water quality, private sector participation, cost recovery, and privatization principles. It is proposed to implement the IR vision throughout two phases (see Figure 1). The first phase includes: a) reorganization of all MWRI local administrations as integrated units at district, directorate and regional levels; b) establishment and operationalization of water users organizations at the branch canal, district, and directorate levels; c) gradually transfer operation and maintenance activities to WUO's and Water Boards under the guidance and supervision of the MWRI; and d) divide the Nile Valley and Delta into five regional administrations that are hydrologically homogenous and establish Regional Management Committees (RMC) to manage the water system in each sub-region. The second phase includes: a) reorganization of regional administrations as authorities or public institutions that comprise

private sector and civil society; b) reorganization of the MWRI at central level and transfer of duties of operation and maintenance to the regional authorities. c) restructure of the Groundwater Sector as Desert Irrigation Sector and the Shore Protection Authority to be responsible for the development and management of water resources management in coastal areas. The MWRI will have a supervisory and regulatory role on the IR activities and the newly established entities and will continue to formulate the national water policies and to have the responsibility of water allocation to various regions and water using sectors (MWRI, 2005).

B. JORDAN

There are many water management challenges in Jordan due to severe water shortage, the rapid population growth and increase in industrial development. The gap between water demand and supply is increasing and is compensated by over exploitation of available groundwater resources. Water scarcity is expected to increase in the future and may result in a decrease of water use for agricultural purposes.

There are three independent public agencies responsible of water sector management: a) the Ministry



**Figure 1- Institutional Reform (IR) Vision in Egypt**

Sources: MWRI, 2005

of Water and Irrigation (MWI), that was established in 1992 and is responsible of water resources and strategy development, water resources planning, research development, management of information systems,

and management of financial resources; b) the Water Authority of Jordan (WAJ) that was established by law 18/1988 and is responsible for water and sewerage services throughout Jordan and also water resources management; and c) the Jordan Valley Authority (JVA) that was established by law 19/1988 and is responsible for development of Jordan River Valley in particular development of water resources for agriculture in the Jordan Valley. There are other Jordanian agencies that have programs connected to water resources and water quality management such as Ministry of Health, Ministry of Agriculture, and Ministry of Municipal, Rural Affairs, and Environment.

With respect to legislative settings, water laws have been established to provide the proper legal framework for the institutional reform actions such as law 30/2001 to define the roles and responsibilities of the Jordan Valley Authority, Law 54/2002 regarding public health, Law 85/2002 to regulate groundwater usage, and Law 12/2003 for environmental protection.

Jordan has formulated the water strategy in 1997 (currently is being reviewed and updated). The strategy stresses on the need for improved resources management with particular emphasis on sustainability of present and future uses, water protection against pollution, depletion of water resources, achieving the highest practical efficiency in the conveyance, distribution, application and use of water resources. The strategy takes into account both supply and demand management. The strategy ensures that the rightful shares of the Kingdom's shared water resources will be achieved through bilateral and multilateral negotiations and agreements. Jordan's water strategy provided the foundation and initiative to develop policies addressing specific issues facing Jordan's water sector. Four policies have been developed and approved by the Cabinet of Ministers (Ministry of Water and Irrigation, 2002). The institutional and legal reforms are addressed below as relevant to each developed policy.

### *1. Groundwater Management Policy*

The groundwater policy deals with management of groundwater resources through development, protection, management and reducing abstraction for each renewable aquifer to the sustainable rate. The policy comprises: resources exploration, monitoring, resource protection, resources development, priority of allocation, regulation and control, and private sector participation. Implementation of the groundwater management policy is the responsibility of MWI and WAJ.

### *2. Irrigation Water Policy*

Irrigation water policy includes agricultural use, resource management, technology transfer, water quality, and efficiency. Specific policy statements includes: sustainability of irrigated agriculture, resources development and use, technology transfer, farm water management, irrigation water quality, management administration, water pricing, regulation, and control. The policy adapted the management of irrigation water as an economic good and the price of water should cover at least operation and maintenance costs and if possible the capital costs as well. The water price varies according to its quality in the developed policy. The implementation of irrigation water policy is the responsibility of JVA.

### **Box 1 Experiences and lessons learned from other countries outside ESCWA region**

ESCWA countries could make use of the vast experience on institutional and legal reforms took place in developed countries. For instance in the Netherlands, the past few decades have seen a process of restructuring of water management responsibilities. This is because of the fact that the Netherlands has three tiers of directly elected government: national, provincial and municipal, each has its own legislation and executive organizations. In addition, the water boards have the single task of managing the water in their individual areas. They are independent of, but supervised by, provincial government. Three major legal and institutional developments occurred, namely, the water Management Act (1990), the Water Board Act (1992) and the Flood Protection Act (1996) to produce a clearer distinction between the roles of the different tiers of the government. This enabled the national government to have greater power to influence the policies of the water boards by establishing policy guidelines for water boards to follow and to monitor their progress.

Also, the French Water Agencies were legally established by a law that introduced water management in relation to the natural (hydrological) environment. It divided the country into six main drainage basins, each with a consultative body (the basin committee) and an executive body (the water agency). The law triggered the introduction of an innovative system of charges, at rates set by the basin committees. The creation of these water agencies was originated in a debate in the Senate that arose as a result of a new awareness that water-related problems can only be solved on the scale of the hydrological unit, in this case the river basin. The idea was to foster dialogue, promote a comprehensive outlook on a basin-wide scale and, of course, obtain funds for the projects needed. The agencies were also given the means necessary to provide incentives in the water law. These take the form of charges paid by users and polluters in relation to the water volume used and the degree of pollution caused.

There have also been many lessons learnt in less developed countries in other regions in the World. For example in Mexico, water policies were designed based on the division of the country into 13 hydrological administrative regions. Based on the 2001-2006 National Water program, 13 regional water programs were developed for these regions to identify the specific goals and actions that help in achieving the national goals. A National Water Commission (CNA) was created in 1989 to deal with water management as an autonomous agency. The CNA has the authority for the management of the national waters as stipulated in the Law of National Water. The administrative structure of CAN consists of a Technical Council, General Directorate, six sub-directorates, five units at the national, regional and state levels. The membership of the Technical Council of the CNA consists of the Ministers of concerned ministries. The Council is empowered by the Law to review and approve policies, programmes and budget of the Commission, and to approve the establishment of the basins councils.

*References: National Water Commission (2006), Cecelia et. Al. (2003), and WWF (2006).*

### **3. Utility Water Policy**

The utility water policy addresses ten issues: institutional development, private sector participation, water pricing and cost recovery, human resources, water resources management, water quality and environment, services levels, public awareness, conservation and investment. Jordan has a pioneer experience in private sector partnership. The WAJ has a management contract with International Consortium for Management Contract of Amman (LEMA) to construct, operate and manage water infrastructure and water services and sanitation. This experience had many positive impacts: it reduced the unaccounted-for-water (UFW), increases water allocated to Amman by 10%, improves capacity building of the staff, and reduces the water treatment cost by 10%.

### **4. Wastewater Management Policy**

The wastewater management policy includes resources development, resources management, wastewater collection, and treatment, reuse of treated effluent and sludge, and pricing. The total investment required is 1266 MDJ (1 Jordanian Dinar = 1.4 US\$) of which 19% is covered by the government, while 56% is covered by international donors.

Jordan has distinguished experience in the region in water policy formulation especially with regards to demand management, stakeholder participation, and public-private partnerships that are considered major

achievements towards IWRM implementation. Nevertheless, there are some challenges that may impede policy implementation, for example, institutional roles of all actors are still not well defined, there is still a need for updating existing laws that regulate groundwater abstraction and more importantly the inadequate technical and institutional capabilities in the water sectors. Moreover, insufficient financial resources and the carrying capacity of water infrastructure may further delay policy implementation.

### C. YEMEN

Water policies were formulated in Yemen from many decades to manage groundwater abstraction that exceeded the safe yield, to fulfill the increasing water demands in all water using sectors, and to improve low water use efficiency, to improve groundwater quality and to enhance the inadequate institutional capacities. These challenges urged the Government to carry out the necessary reforms in the water sector. The reform activities started in 1995 with the consolidation of water resources management functions under one authority (i.e. the National Water Resources Authority – NWRA) and introduction of basin planning approaches. NWRA has received powerful impetus by the creation of the Ministry of Water and Environment (MWE) in 2003. The MWE included four independent authorities National Water Resources Authority, National Authority for Water Supply and Sanitation, General Authority for Water Supply at Rural Areas, and General Authority for Environmental Protection (Riaz, 2004).

To support the institutional reforms, laws have been developed to provide the required legal framework such as: Law 4/2000 to facilitate participation at the de-central level and the water law in 2002 that aims at controlling groundwater abstraction and regulating well licensing. In 1995, Yemen Government launched Improvement Water Resources Management Project by following stakeholder participation and involvement approaches. The project includes users participation in irrigation management, stimulating water user participation and establishment of water user associations that are involved in maintenance of irrigation canals, and launching public awareness campaign regarding IWRM issues.

The National Water Sector Strategy and Investment Program (NWSSIP) 2005-2009 has been developed after extensive consultation with stakeholders. The NWSSIP comprises five themes: water resources management, urban water supply and sanitation, rural water supply and sanitation, irrigation and watershed management, and human and environmental aspects as follows (Ministry of Water and Environment & Ministry of Agriculture and Irrigation, 2004):

#### *1. Water Resources Management*

The objectives of the water resources management theme are: ensure greater degree of sustainability, priority to domestic needs of rural and urban population, maximize economic benefits through improved water allocation without affecting equity and social norms, improve public awareness regarding available water resources and water issues, and alleviate poverty through improving water use efficiency and equity in water allocation. These objectives are achieved through a package of measures includes: a) creating enabling institutional framework through improving capacity building, activating and enforcing water law, enhancing cooperation and coordination among stakeholders, decentralization, and stimulating the non-governmental organizations to play their vital role; b) providing information, raising awareness, and creating water management vision; c) supplying water related public goods through investment in water infrastructure; and d) protecting water rights, implementing water law, and creating conducive macroeconomic environment

#### *2. Urban Water Supply and Sanitation*

The urban water supply and sanitation theme aims at: increasing coverage, financial sustainability, separation of regulatory and executive functions, knowledge and skills development and enhancing community involvement. These objectives are realized through: a) expanding coverage, continuing and deepening the reform program after evaluation; b) developing regulation, monitoring, support, and policy function; c) promoting private sector investment, and public private partnership; and d) ensuring sufficient water resources for drinking purposes.

### *3. Rural Water Supply and Sanitation*

Due to the required high investment costs, it is foreseen that Yemen will face some difficulties to achieve the targets of MDGs in this sector by 2015. The specified targets (about 50% of those defined by the MDG's) will be realized through: a) setting up sector strategy and coordination through restructuring, decentralization, involvement of non-governmental partners, and uniform approach to prioritization of rural water investments; b) broadening and adopting low-cost technology choices; c) ensuring adequate water resources and good quality; and d) adopting bottom-up management approach.

### *4. Irrigation and Watershed Management*

The objectives of this theme are: sustainability of water resources, improving farmers income, enhancing water supply, and improving institutional performance in support of farmers. These objectives can be achieved through: reducing groundwater abstraction, securing of farmers water rights, refocusing research and extension, applying cost recovery on public irrigation schemes, establishment of water user associations, reviewing watershed management with an integrated approach, enhancing institutional coordination on agricultural water use, and strengthening the role of community organizations and civil society.

### *5. Human and Environmental Aspects*

The objectives are to ensure equitable access and efficient use and ensure sustainability for both water quantity as well as quality. The approach to achieve these objectives is: to reduce poverty through environmental management, protect water resources, get environmental monitoring and regulation fully operational.

The NWSSIP is a major step towards achieving of stakeholders participation and overcoming water challenges in Yemen. However, there are some progress to be achieved with regard to formulation of concrete local action plans, improving the capacity building of water institutions, establishment of local offices of NWRA at local level to operationalize the national plan, and improving cooperation and coordination mechanisms among the Ministry of Agriculture and Irrigation and the Ministry of Water and Environment and other key stakeholders to achieve optimum use of water resources in the country.

## **V. GUIDELINES FOR THE REQUIRED INSTITUTIONAL ARRANGEMENTS FOR IMPLEMENTATION OF IWRM POLICIES**

The IWRM process comprises various fundamental and interrelated elements in the planning cycle for implementation of IWRM. Along with the technical measures that describe how the country will secure water in the future, from both the quantity and quality point of views, the national IWRM plan should also include an implementation framework which provides an overview of the actions to be taken by various stakeholders, and the required budgets and recurrent costs. More detailed local action plans at the de-central level are then developed for operationalization and implementation of the national policies. The national and local action plans should describe how the actions taken by various stakeholders will be coordinated, monitored and evaluated. This monitoring and evaluation process will follow the progress of implementation and provide feedback on the impacts of implementation on the water resources system, and therefore, will contribute to the next round of the plan development.

Proper enabling environment is needed for implementation of the IWRM measures and policies. The enabling environment basically consists of the national, regional and local policies and legislation that enable the stakeholders to act and play their roles in the development and management of water resources. This includes the change in the water governance regarding the range of political, social, economic, and administrative systems that are in place to manage water resources in an integrated manner. The traditional central management approach will need to be replaced by participatory and demand-driven sustainable development approaches. The institutional roles and functions of the organizations at various levels need to be changed and well described. This also necessitates the creation of operational coordination mechanisms between different agencies and the development of effective financial and incentive systems to meet water needs and to enable all actors to perform their tasks and duties. It is also important to secure political

commitment at the highest level to support the proposed legal and institutional reforms. However, it is highly recommended to avoid unrealistic reforms that are not politically or socially acceptable and to focus on decided priorities in a coherent and integrative way that suits the broader social and political policies of the country.

IWRM approaches require intensive capacity building programmes to enhance and improve technical capabilities (e.g. engineering and applied science, hydrology and environmental aspects, social and political sciences, etc.) in addition to skills in communication, coordination, negotiation, conflict resolution, facilitation and community mobilization. Capacity building efforts should not be limited to governmental agencies but should also include private sector, non-governmental and community based organizations, and individual stakeholders. Importantly, countries in the ESCWA region should begin to address these capacity building needs and to develop a comprehensive knowledge base on IWRM.

It is proposed to establish a new implementation framework that includes a clear description of roles and functions of the organizations involved in the implementation process, time schedule, level of responsibilities and relation to other stakeholders, communication channels and investment and monitoring plans in the ESCWA countries. This institutional structure/entity (see Figure 2) aims to facilitate policy integration, to ensure programme coordination and communication both horizontally and vertically and to monitor the achievement of social and economic objectives at the national and local levels for implementation of IWRM plans. This institutional structure may include the following mechanisms/entities for successful implementation of IWRM:

#### A. NATIONAL WATER COUNCIL

For policy integration and to strengthen cooperation and coordination among concerned stakeholders, there is a need to establish a National/inter-ministerial Water Council (NWC) at the highest political level. The NWC is to be chaired by the Head of State or the Prime Minister and comprise the concerned ministers and heads of governmental agencies. As a minimum requirement, NWC needs to include ministers of water resources, agriculture, housing and municipalities, health, environment, industry, finance and planning. The mandate of the proposed council is to coordinate Government policies, to follow-up the implementation of national IWRM plans and to set policy priorities for the implementation of developed strategies and programmes. The NWC should be supported by a technical committee responsible of collection of data, information and plans, and periodical reporting to the NWC for approval and presentation to the Cabinet, and coordination between stakeholders regarding the decisions and recommendations taken by the NWC.

It is also proposed to establish IWRM focal units in concerned ministries to follow up on decisions taken by the NWC and to advise on means of integrating sectoral policies and priorities of their respective institutions into the national IWRM plans and programmes. These IWRM units will need to be strengthened, both technically and institutionally, by various ministries and organizations in coordination with the water resources ministries and agencies.

#### B. REGIONAL WATER COUNCIL

Within the country, it is proposed to initiate and create regional water committees based on hydrologic boundaries and units to facilitate the calculation of water resources and demands at that level and to ensure integration of policies among sub-regions with various administrative structures but sharing the same hydrologic boundaries (e.g. groundwater aquifers, river basins, etc.). The regional water council would provide a forum for active participation of ministries representatives at the regional (i.e. de-central) levels along with representatives from civil society, private sector, NGO's, water user organizations and water boards. The proposed mandates of regional water council are to: develop and implement IWRM plans and programs at the regional levels, develop water allocation criteria, define water quality standards, monitor water consumption of different sectors at the regional level, manage, operate and maintain the regional water structures (dams, barrages, etc), develop financial instruments and water use tariffs, define charges for water polluters, resolve conflicts among localities and to provide feedback to the NWC on the status of implementation of IWRM policies on the regional level.

### C. LOCAL WATER COUNCIL

This council is proposed to act on the lowest provincial/local level to monitor and follow up the implementation of local action plans on the operational levels, to carry responsibilities of operation and maintenance of water resources infrastructure, to identify local issues and priorities that should be incorporated in regional and national plans, to resolve conflicts among water users at local level, and to ensure decentralization and stakeholder participation at the lowest levels (e.g. water boards, water user associations, local units, NGO's, private sector, civil society, the public at large, etc.). This platform will assist and encourage participatory water management approaches at the community level (i.e. both top-down and bottom-up processes) and will ensure that implemented measures will reach the communities' own integrated strategies and interests.

### D. POLICY EVALUATION AND MONITORING COMMISSION

Defining indicators, establishing benchmarks and setting up mechanisms for monitoring and evaluation are essential activities for successful implementation of national plans. Formation of a policy evaluation and monitoring commission is needed to evaluate the water policy contents, planning process, the organizational aspects and the process and impacts of policy implementation. This will enable governmental water organizations and agencies to find out whether the implementation process is on track, to evaluate and measure short- and long-term impacts, and to determine if actions are needed to re-adjust policies and programmes. The proposed commission should be independent from water authorities and ministries and consists of high profile experts and professionals in the field. Performance indicators are used by the commission to guarantee quality of the policy and accountability of committed parties. An annual report is suggested to be prepared by the commission to give the necessary inputs to adjust the management process. This annual report will be subjected to discussion in the parliament and the National Water Council (NWC) to ensure political support by the Governments to water management at the national level.

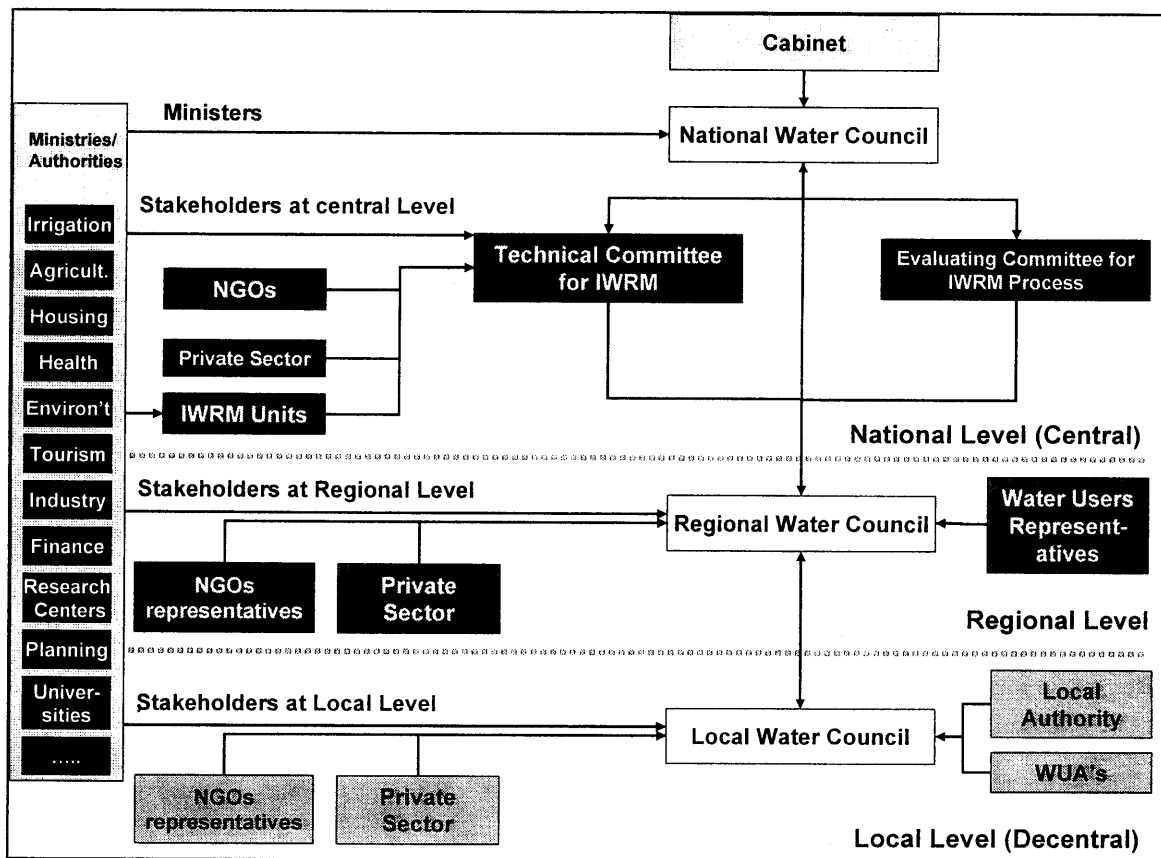


Figure (2) Proposed Institutional Structure for implementation of IWRM plans at the national level in the ESCWA countries

It is worth mentioning that the proposed institutional structure at the three management levels (i.e. national, regional, and local levels) will be more suitable for countries that have complex water systems and characterized by multi-level administrative and hydrologic structures. It is foreseen that the proposed institutional structure will provide opportunities for direct and effective horizontal and vertical linkages among various entities and will stimulate stakeholder participation in water management at all levels, and therefore will mobilize technical, political and financial support for the implementation process. Furthermore, the operationalization of the proposed structure will not urge for large investments and will not require the creation of new water institutions as most of the entities proposed already exist in the ESCWA countries (e.g. water ministries/agencies, water associations, NGO's, local and regional entities, etc.) but will only need reorganization and reformulation of these entities within a coherent and integrative system/structure (as shown in the Figure) and also stakeholders to be assigned modified and adapted roles and responsibilities for implementation of national IWRM plans. Another alternative for the proposed institutional structure can be adjusted by considering the direct connection between two management levels only: the national and local levels in case of countries that have simple water management systems and less administrative complexity. In such case, there is a need to expand the experience of water user associations and community based organizations to cover wider areas of the country as key actors of water resources management at the grass-root level, in addition to conducting intensive capacity and knowledge building programmes to enhance local capabilities in dealing with IWRM policies and plans.

## **VI. LEGISLATIVE REQUIREMENTS FOR IMPLEMENTATION OF IWRM POLICIES**

Current water laws and regulations need to be modernized to operationalize IWRM policies and plans in the ESCWA countries. The following are the key legal amendments need to be considered by water ministries and agencies:

- Provide authority and empowerment to Water User Organizations (WUO's), civil society Non-governmental Organizations (NGO's), and all end users in water management and define their rights and responsibilities in the water laws. The legislative amendments are expected to enable these entities to mobilize funds (e.g. taxes, grants, bank loans, etc.) to manage, maintain and operate water infrastructures at the lowest appropriate level.
- Activate the roles of financial institutions, banks, and economic authorities to support IWRM programs with active involvement of private sector and investors through Public-Private Partnership (PPP) contracts. In this respect, amended laws should include administrative, organizational, and regulatory settings in order to define the terms of reference, duties and rights of both parties in a clear and transparent manner to ensure accountability and commitment.
- Define the mandates, responsibilities, and roles of the entities of proposed institutional structure in the study (as explained in the previous section) to implement IWRM (i.e. establishment of national, regional, and local water councils, monitoring and evaluation commission, etc.) in order to stimulate their vital roles and provide the public and political support at all levels of water resources management.
- Initiate and activate effective economic instruments in water laws to provide legal framework and support to policies such as cost recovery, water pricing, enforcing polluter pay principles based on pollution loads and not only concentrations, penalties for over use/exploitation of (ground) water resources, etc.
- Empower and provide authority to inspectors and enforcement officials in water, health and environmental institutions to play active role and to ensure compliance with standards and regulation in the water laws in coordination with other enforcement authorities such as Ministry of Interior, National Security agencies, Water Police, etc.
- Involve lawyers and parliamentarians from the beginning of the process of development of water policies and strategies to raise their awareness and knowledge on the legal aspects and reforms needed to better manage the water sector. This will speed up the process of the review and approval of the amended laws by the parliaments and the cabinet, which often takes several years for discussion and debate by all concerned parties..

## VII. CONCLUSIONS AND RECOMMENDATIONS

The successful implementation of IWRM plans will require ESCWA countries to perform significant institutional and legislative reforms. To facilitate the implementation of IWRM plans, there is a need for establishment of effective and appropriate coordination mechanisms among different agencies and development of financial structures that enable these agencies to perform their tasks effectively and in a sustainable manner. At the operational level, stakeholders should be responsible for monitoring, progress reporting and evaluation of the implementation of various measures and actions and to provide feedback on the impacts of the implementation of specific activities on water resources to a leading agency. This process calls for the establishment of a reformed institutional structure, that involves decision makers, at the highest political level, from ministries, agencies, local administrations in addition to representatives from civil society, NGOs, private sector, and other actors concerned with management of water resources. The nature, structure and organization of reformed institutions should allow for involvement of all sectors at all levels to guarantee a nation-wide consultation and to promote bottom-up approach in planning and implementation of IWRM combined with the more common top-down approach. The reformed institutional structure should be able to warrant the political support and commitment and provide the enabling environment needed to implement multi-sectoral water policies and strategies in the ESCWA Member States.

The legislation and regulation systems should include water legislative instruments to support the implementation of IWRM plans and new emerging challenges such as water charging and cost recovery, participatory approach in water management and decentralization processes, empowerment of local authorities in terms of technical capacities and financial resources, establishment of procedures for dialogue and consensus among all interested parties, and effective enforcement and compliance, functioning of water institutions, etc.

The study highlighted the following key recommendations:

### A. ESCWA MEMBER STATES

1. Implement all phases of the IWRM planning cycles that include; (i) developing and finalisation of the national water strategies; (ii) complementing these strategies with implementation and investment plans; (iii) developing and implementing local action plans on the operational level; and (iv) monitoring and evaluation of implementation processes of IWRM plans.
2. Encourage an effective involvement of all stakeholders (multi-level participation, bottom-up and top-down approaches, etc.) in planning, implementation, monitoring and evaluation of IWRM plans, in particular private sector, NGO's, local communities, water end-users, the public, etc., in order to promote "ownership feeling" at all levels and to build public support and partnerships required for implementation of programmes and operational plans. .
3. Establish an institutional structure for implementation of IWRM plans to enhance policy integration, to ensure programme coordination and to ensure implementation of IWRM plans at the national and local levels. This institutional structure/entity should embrace four essential mechanisms; a national water co uncil at the highest political level, regional water council, de-central/local council and commission for water policy evaluation and monitoring. The role, mandates and responsibilities of these entities/mechanisms should be clearly defined (as explained in the previous section) to ensure operationalization of IWRM plans at all levels.
4. Review and modernize all legal instruments and regulatory frameworks to enable the institutionalization of proposed reforms and the implementation of IWRM plans. For instance it is essential, through an enforceable legal system, to define roles and responsibilities of all stakeholders concerned with implementation of national water plans to avoid overlap and duplication of efforts and inefficient utilization of limited resources, to provide sufficient authority and power to water boards and civil society to perform their duties and to facilitate and encourage the involvement of financial institutions and investors in funding IWRM plans and programmes.

5. Review, assess and upgrade all economic instruments (e.g. fines, taxes, polluter pays principles, incentives, loans, subsidies, etc.) in the legislative systems to ensure compliance by users and to empower and provide technical support to enforcement officials (e.g. water police, inspectors, etc.) by the concerned water resources ministries and authorities.

#### B. ESCWA AND REGIONAL/INTERNATIONAL ORGANIZATIONS

1. Provide technical support and expertise to member states in the field of institutional and legal developments and reforms, needed for the implementation of IWRM through capacity building workshops and regional meetings for knowledge exchange and to demonstrate experiences and lessons learned from developed countries in other regions.
2. Prepare guidelines and advanced manuals/reports on the institutional and legal reforms that are necessary for implementation of IWRM plans in the ESCWA regions. The reforms should be culturally and politically acceptable, applicable and relevant to the countries in the region.
3. Assist member states, in coordination with the donor agencies and communities, in generating the required funds and financial resources required to assemble and implement the institutional and legal reforms measures in the national water policies.
4. Develop regional IWRM policies and plans, that comprise an ideal model for institutional and legal settings, for the ESCWA region in collaboration with other regional organizations active in this field such as the Arab Water Council, Centre for Environment and Development for the Arab Region and Europe (CEDARE), UNDP, UNESCO, World Bank, etc.

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