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& Southeastern European Countries
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Effective Water Governance

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OUTLINE

- I- Water Resources and Management in Lebanon: current situation**
- II- Integrated Water Resource Planning (IWRM) in Lebanon**
- III- The conceptual framework of IWRM in Lebanon**
- IV- Action Plan for IWRM Enforcement in Lebanon**

I- WATER RESOURCES AND MANAGEMENT IN LEBANON CURRENT SITUATION

- Starting the year 2000, the IWRM is a clear option for the Lebanese Government in order to implement the reform in the water sector along with the 10 year strategic plan prepared by the MEW, General Directorate of Hydraulic and Electric Resources to deal with the water resources as a complete cycle from the resources to the usage of water, treatment and reuse with the new vision under the concept of the Laws 221; 241 and 337 (restructuring the water sector) and By Laws published in October 2005.

- Lebanon needs an overall management strategy looking at the entire water cycle and integrating the environmental, social and economic parameters. the basic pillars of IWRM are:
 - The enabling environment of appropriate policies and laws,
 - The institutional roles and framework
 - The management instruments for the institutions to apply on a daily basis.



Main Water Pressures in Lebanon

a- Lebanese Populations under Water Stress

b- Unsustainable Water Management and Uses

c- Environmental Risks

d- Governance/ Management Crisis

II- INTEGRATED WATER RESOURCES PLANNING (IWRP) IN LEBANON

National Decennial Strategic Plan for the Water Sector (2000-2010)

- Insure additional water resources based upon the construction of dams and the water recharge of aquifers.
- Potable water projects, based upon the rehabilitation and network development, the reduction of unaccounted for water
- Irrigation projects, rehabilitation and new development schemes.
- Wastewater projects: sewer lines, wastewater treatment plants and sea outfall
- Project of alignment and rectification of rivers for flood mitigation.

III- The Conceptual Framework of IWRM in Lebanon

The Concept of Integration

The concept of integration of policies on water management can be explained better when it is seen from two aspects: the horizontal aspect (cross sectorial integration) and the vertical aspect (sub-sectorial integration).

- **Horizontal integration** (integrating policies among various sectors) involves the coordination and mutual coherence and ideally, compatibility of the objectives among different sectorial policies (in agriculture, industry, domestic sector)
- **Vertical integration** of policies refers to a sub-sectorial approach. It suggests a coordination between the different available policies such as economic and management instruments, legislation / regulation, institutional set up and technologies belonging to the same sector.

Applying IWRM in Lebanon: the Tools & Methods

- the prerequisite for preparing and implementing IWRM is a clear political will and the appropriate reform in the governance of water. Achieving a more effective governance of water requires a set of actions, such as those for:
 - Setting sensible economic policies
 - Preparing clear legal/frameworks and strong regulations
 - Ensuring financial sustainability
 - Getting legitimacy and "ownership" by society
 - Developing adequate administrative capacity to manage the resources

- Management of the water resources involving legal and institutional tools should be suitable for all water sectors (drinking, irrigation, sanitary, flood mitigation and reuse).
- The application should be made with the involvement of scientific, technical, economical and financial instruments which are properly adapted for the social and cultural Lebanese environment.
- Integrated Water Resources Planning and Management (IWRP and IWRM) required greater collective awareness, solidarity and cooperation on all sides (Ministries, Water Establishment, Municipalities, Private Sectors, Regulatory Bodies, Donors Agencies, EU Water Initiative: Med Component, National Dialogue in Lebanon 2005 with ESCWA and other Agencies)
- Water is a vital resource for Lebanon whether it is surface or underground and must be planned and managed in:
 - a global integrated approach
 - with a quantitative, qualitative, coherent and balanced concept



Task Force

The Task Force (TF) is responsible for driving the implementation of the Dialogue.

TF Function

The TF agrees on and ensures delivery of the strategic orientations, corresponding objectives and key activities of the Dialogue.

- ***TF Membership***

All decisions relating to the driving of the Dialogue are taken in a concise and operational configuration including all key involved actors/parties.

Ministry of Energy and Water,

- Ministry for Environment,

Ministry for Agriculture,

Ministry of Finance,

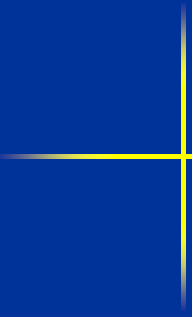
- Council of Development and Reconstruction,

- Representative of the Water Establishments,

- Representative of Municipal Authorities,

- Representative of Non-Governmental Organisations NGOs, Representative of Academia,

- MED EUWI, represented by the Hellenic Ministry for Environment, Physical Planning and Public Works, Greece and/or the MED EUWI Secretariat (GWP-Med).



Involved actors/parties should each identify one regular representative eventually with an alternative to the TF, by the end of January 2008. In order to facilitate decision-making on important issues, the participation of high level officers is highly recommended.

The General Director of Hydraulic and Electrical Resources of the Ministry of Energy and Water acts as the Coordinator of the Task Force.

The Secretariat of the Mediterranean Component of the EU Water Initiative (Global Water Partnership – Mediterranean) acts as policy and Technical Advisor / Facilitator for the Dialogue's implementation.

It will follow closely the works of the TF and will provide key analytical inputs into it. It will therefore be invited to all TF and MStF meetings.

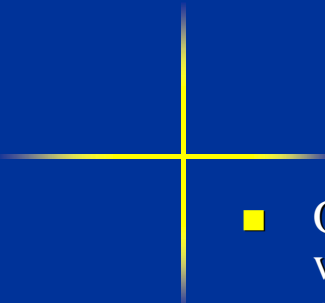
- The following steps are suggested until the end of 2008:
- 1- Agreement between the key parties involved on the suggestions made in the present Note and formal communication of the Lebanese Ministry for Energy and Water to the Hellenic Ministry for Environment, Physical Planning and Public Works and the European Commission.
- 2- Recruitment of a core team of Lebanese and international experts to prepare the ToR per activity in Phase I.
- 3- Finalization of the ToR of Phase I.
- 4- Eventually, start up desk study activities for the review of the Lebanese Decennial Strategic Plan for Water.
- 5-By the end of January 2008, invite a meeting in Lebanon to present the ToR and to re-launch the MED EUWI activities
- 6-The following should be secured at all stages:
- 7- Coordination with competent Lebanese authorities, agencies and key stakeholders
- 8- Information to and engagement of the EC Delegation in Lebanon and the competent EC DGs in Brussels
- 9- Close co-ordination with the on-going reconstruction process in the country.

- The key reforms that should be implemented in the coming 2-3 years can be summarized as follows:
 - Updating of the 10 year strategic plan endorsed by the Lebanese Government and the Lebanese Parliament along with preparing an integrated Water Sector strategy with a clear vision under the concept of the Law 221, its amendment and the By laws published in October 2005..
 - Preparing and approving a National Water Master Plan and a “Water Code”.
 - Improving the water sector governance by ensuring that all the necessary tools are put in place.
 - Strengthening the capacities of the MOEW and RWE to enable them to carry out in an efficient and optimal way the tasks entrusted to them.
 - Ensuring that Operations & Maintenance (O&M) of the water supply and sanitation services are contracted out to private operators and that the O&M of the irrigation small and medium schemes are gradually transferred to Water Users’ Associations WUA

- Adopting an adequate tariff structure that would be based on costs and volumetric consumption taking into consideration an equitable tariff for the needed population.
- Preparing a short and medium term investment plan for the water sector taking into account the priorities and available funds.

The water quality should be guaranteed by the measurement of 63 parameters defined by the Lebanese Ministry of Health in compliance with WHO standards.

Consumption of drinking water should be stable and the campaign against leaks (unaccounted for water) in network and the introduction of none effective household apparatus have to compensate for increasing demand resulting from demographic growth and improvement to people standard of living.

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- On the operational level, it would be advisable to draw a first outline of this water development action plan even if the required data is not completely available or dependable.

This would serve as a tool for taking some forthcoming decisions and determine the steps needed to enforce IWRM.

Progressively, this water action plan will be refined and at the same time allow to deal with the actual requirements in order to preserve the necessary water allocation to the Lebanese population.

- The table shows the details of the horizontal and vertical integration for IWRM implementation in the Water Sector for Lebanon.

Sector Reform Objectives	Completed Actions	Actions to be completed by June 30, 2007	Actions to be completed by December 31, 2007	Actions to be completed by December 31, 2008	Reform Outcome – by December 2008	Principal Responsibility
Integrated Water Sector Strategy & Policy.	<ul style="list-style-type: none"> - 10 Year Strategic Plan, Ministry of Energy and Water (MOEW) - CDR Development Programme 2006 – 2009. - EU Neighbourhood Policy. - Privatisation study « Société Générale », Rafik ElKhoury. - Report on Water Sector Policy and Action Plan, IPP Water. - Agriculture Sector Strategy (FAO/World Bank). - World Bank Water Sector Note. - World Bank Irrigation Sector Note. 	<ul style="list-style-type: none"> - Cabinet approval of “Water Code”. 	<ul style="list-style-type: none"> - Preparation of the national water sector strategy and a Water Master Plan that would take into account: availability of water resources (irrigation, domestic & industrial) and Institutional, regulatory, financial & environmental aspects. - Public Expenditure Review of the water sector. - Benchmarking study & performance indicators (Unaccounted for Water, Cost recovery, collection rate, etc.). - Complete a study of modernization of Irrigation with MOA. - Complete a survey of users’ satisfaction. 	<p>Government’s approval of Integrated Water Sector Strategy & Policy.</p>	<ul style="list-style-type: none"> - National Water Master Plan. - “Water Code”. 	<p>MOEW in association with CDR/RWA/ MOA/ MOEnv. / Donors.</p>
Improve Sector Governance.	<ul style="list-style-type: none"> - Law 221 and its amendments. - Decrees (By-Laws) October 2005. - Appointment of Boards and DGs for all the Water establishments. 	<ul style="list-style-type: none"> - Finalize model organization under Law 221 for MOEW. - Reactivate the National Water Council. 	<ul style="list-style-type: none"> - Cabinet decision to allow: <ul style="list-style-type: none"> * RWAs to recruit qualified staff. * Procure Works, Goods & Services with appropriate thresholds. * Management contracts with private operators. - Establish mechanisms for tariff adjustments and service standards. - Establish a review process to define the roles of each stakeholder. - Initiate the process of handing over the O&M of small/medium irrigation schemes to Water Users’ Associations. 	<ul style="list-style-type: none"> - Adopt mechanisms for tariff adjustments and service standards. - Complete the process of handing over the O&M of small/medium irrigation schemes to Water Users’ Associations. - Finalize MOEW organization under Law 221. - Update RWAs Business Plans. - Study & draft water sector regulatory framework. 	<ul style="list-style-type: none"> - Finalized regulatory Framework. - New organization of the MOEW set up. - Clear definition of roles & responsibilities of the various actors. - Establishment of Water Users Associations for irrigation. - Clear policy on cost recovery and subsidies for sector. 	<p>MOEW in association with CDR/ RWAs/Donors.</p>

Sector Reform Objectives	Completed Actions	Actions to be completed by June 30, 2007	Actions to be completed by December 31, 2007	Actions to be completed by December 31, 2008	Reform Outcome – by December 2008	Principal Responsibility
Capacity Building.	Law 221 and its amendments.	<ul style="list-style-type: none"> - Finalize training program for the RWAs staff with KfW, EU & WBI. - Prepare a detailed plan aimed at reinforcing MOEW, RWAs and LRA staffing & logistics. 	<ul style="list-style-type: none"> - MOEW and RWAs to set measures to optimise O&M of water and wastewater facilities. - Bylaws of Law 221 fully implemented by RWAs. - Complete MIS in all RWAs. - Install an integrated financial & accounting system in RWAs. 	<ul style="list-style-type: none"> - Recruitment of qualified staff in MOEW, RWAs and LRA. 	<ul style="list-style-type: none"> - Completion of water establishments staffing plans, management and equipment tools. 	Government, MOEW & RWAs /LRA.
PPP & Private Sector Participation.	<ul style="list-style-type: none"> - Tripoli Water Authority Management contract. - Baalbeck-Nabi Chit Service Contract (O&M). - O&M contracts for wastewater treatment plants under construction. - LWPP. - Consultant appointed to study PPP options for North Lebanon. 	<ul style="list-style-type: none"> - Assess Tripoli management contract by independent party. - Study PSP possibilities in Irrigation with Litani River Authority (LRA). 	<ul style="list-style-type: none"> - Prepare a regulatory framework which includes dispute resolution. - Appoint a consultant to MOEW, CDR and RWAs to develop model Tender and Contract Documents for service, Management Contracts (with WB assistance) and Model Contracts for Regulation (GTZ). 	<ul style="list-style-type: none"> - Set up of a regulatory body for the water sector. - Establish a regulatory framework which includes dispute resolution. 	<ul style="list-style-type: none"> - Model Tenders for RWAs. - Service Contract launched for RWAs. - Regulatory body in place. 	CDR in association with MOF, MOEW, RWAs
Sustainable Use of Water Resources.	MOEW 10 Year Programme: <ul style="list-style-type: none"> - Shabrouh Dam - Brissa Dam - Extension of Dbayeh Water Treatment Plant. 	Finalizing the evaluation of tenders for Canal 800.	<ul style="list-style-type: none"> - Appointment of consultant to update the studies relating to Awali-Beirut Conveyor, Bisri Dam. - Appointment of a committee of experts to recommend guidelines for re-use of treated wastewater. 	Secure finance for: <ul style="list-style-type: none"> - Boqaata, Assi, Nahr Ibrahim, Nahr El Bared & Bisri Dams. - Awali-Beirut Conveyor. - WSS O&M (South & Bekaa regions) for RWAs. 	Start construction of the Dams and the conveyor.	MOEW & CDR in association of MOF & MOA.
Strategy for Sanitation, and Targeting the Poor.		<ul style="list-style-type: none"> - Apply for GPOBA funding for targeted subsidies to low income communities. - Apply for BNWPP. 	<ul style="list-style-type: none"> - Complete GPOBA study. 	<ul style="list-style-type: none"> - Implement GPOBA. - Secure Donor funding for implementing recommendations of the feasibility studies for sanitation. 	<ul style="list-style-type: none"> - GPOBA report and launching implementation. 	MOEW in association with MOF/ CDR& RWAs.

IV- ACTION PLAN FOR IWRM ENFORCEMENT IN LEBANON

1- Main Topics for a National Action Plan

- Monitoring and Data Collection
- Strengthen, optimize or put in place the measurement networks necessary for a better knowledge of water resources (hydrometry, piezometry, water quality, ...)
- Better evaluate the water resources both underground and surface; particularly determine the limits of exploitation of aquifers during the drought period.
- Carry out an assessment of water withdrawal for different purposes and particularly, irrigation and potable use; engage in putting in place metering device systems.
- Develop an **efficient system for data collection and management** concerning resources, demands, and all parameters affecting the balance directly or indirectly.

Technico-Economic studies:

- Continue with **the studies of dam sites** and hill lakes;
- Assess the possibility of captage of **submarine springs** even though this solution is highly expensive due to energy cost needed for pumping;
- Establish a list of **equipments** needed to supply the various geographical regions: wells, river intakes, basin to basin conveyance; and verify their feasibility.

A more accurate water balance (demands v/s resources):

- Determine the water balance (demands v/s resources) for each geographic unit as far as new data is available, particularly, refine information related to the resource and include elements of sector policies that induce water demands.
- Alert persons in charge of these sector policies on the actual situation in the water sector in general and for irrigation in particular.

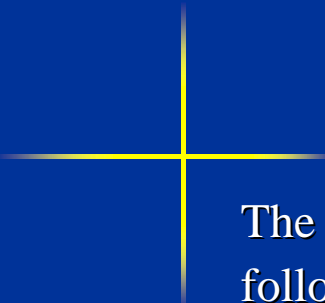
Efficient water management and protection:

- Find ways to **rationalize** and optimize water use in order to save this resource. Public awareness campaigns shall be set for that matter.
- Appreciate the **vulnerability** of the various water resources and put in place a strategy for protecting aquifers and rivers: wastewater collection and treatment, captage protection
- Study a reform of the water institutions and laws, aiming at reaching a better efficiency.

A water policy to be adjusted periodically:

- Establish an overall strategy, under the framework of a **water development and management plan**, incorporating all aspects mentioned above (in addition to others, such as flood prevention) in order to insure the consistency of the various actions and allow a maximum efficiency; put this plan in the frame of development master plan reflecting the national territorial development policy.

- Periodically adjust these various components (for example each 3-5 years), to take into account the effective growth of socio-economic characteristics of Lebanon and new objectives to reach. The following flow charts present the IWRM Enforcement plan to be carried out by MOEW and related GOL Institution



The master plan of water management in Lebanon should consider the following chart of actions to be implemented for IWRM enforcement. These are structured under major themes:

- Information System for the Water Sector
- Adaptation of the Institutions
- Economic Analysis
- Health and Environment
- International Basins
- Projects

ACTIONS**OBJECTIVES****Theme No.1: INFORMATION SYSTEM FOR THE WATER SECTOR****A- Reactivate measurement networks:**

- Flow measurement of water courses during the drought
- Validation of existing data
- concept and execution of networks:
 - flows (springs and rivers)
 - levels (aquifers)
 - water quality

1. Verify Balance in the actual situation
2. Upgrade the value of existing hydrologic data
3. Collect additional data concerning surface water resources, as well as the evolution of aquifers

B- Data base:

- management of hydrologic data
- Geographic Information System for the water

1. Facilitate the access and the updating of water related information
2. Edit plans to assist in decision making

C- Simulation models by watershed

- prediction of resources during the drought period
- simulation of the impact of water extraction

1. Anticipate drought situations
2. Assist in the evaluation of future water balance

D- Show information on aquifers (3 aquifers are concerned)

Evaluate the possibility of a more intensive use of aquifer water

General Study

Particular Study

ACTIONS

OBJECTIVES

Theme No.2: ADAPTATION OF THE INSTITUTIONS

A- Institutional study:

- Diagnosis of the actual situation
- propositions for the distribution of roles

1. Determine the role of the Government, the communities, the private sector, according to the projects importance (regulation, financing, execution and private

Theme No.3: ECONOMIC ANALYSIS

A- Economic value of water:

- Updating of the price for existing schemes
- impact of the structures on the water cost
- Principle of water tariffing in general

1. Set the permissible limits of projects costs
2. Propose a tariffing system that includes

B- Economic data for hydro agricultural projects

- National objectives for agricultural production
- Cost effectiveness of irrigation for the farmer
- Parameters for group productivity and impact on

Acquire basic elements for the economic evaluation of the projects case by case

C- Economic evaluation of urgent projects (Ex: North and South Lebanon and North

Check the projects economic feasibility for the community, the farmers and the management

General Study

Particular Study

ACTIONS

OBJECTIVES

Theme No.4: HEALTH AND ENVIRONMENT

A- Setting of sanitary and environmental objectives:

- Diagnosis of the actual situation
- Water quality objectives and criteria to be applied

1. Establish priorities for the elimination of pollution
2. Set objectives to reconquest rivers, aquifers and swimming places

B- Study of the protection of the main potable water intakes

- Actual chronic or accidental pollution
- Recommended measures

1. Identify proclaimed contaminations and risks
2. Protect water intake.

Theme No.5: INTERNATIONAL BASINS

H- Development of international rivers

- evaluation of resources from Lebanon
- Identification of projects of international use that could be executed in Lebanon

Already implemented with Syria for the Orontus and the Nahr el Kebir but still pending for the Jordan river.

General Study

Particular Study

ACTIONS

OBJECTIVES

Theme No.6: PROJECTS

I- Definition and programming of hydraulic development projects within the 10 year plan

- Updating of existing studies
- Master plan for water resources
- Hydro agricultural master plan:
- Water supply master plan for the coastal region

4. Allocate water resources according to location and usage.
5. Determine works and structure in a coherent approach
6. Establish a time frame for financing and execution
7. Undertake necessary studies when

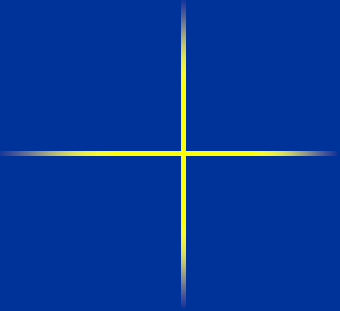
N- Feasibility studies for dams within the 10 year plan

- additional topographic, geologic and hydrologic studies
- additional concept studies
- Cost estimation

1. Amend existing studies to reach a homogeneous level of precision, thus allowing a rational decision making
2. Eliminate non feasible projects or structures.

General Study

Particular Study



■ **Thank you!**