

Role of Ministry of Energy and Water in National IWRM Planning

*4th Beirut Water Week
Technological Tools and Financing Mechanisms for IWRM:
Complementing Hydro-diplomacy
&*

Climate Change Adaptation Efforts

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Notre Dame University-Louaize

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Overview

- **Water Resources Challenges in Lebanon**
- **Why IWRM Planning in Lebanon?**
- **Context for IWRM Plan**
- **The Planning Cycle**
- **MEW & IWRM Planning in Lebanon: Progress & Achievements**
- **IWRM Conceptual Framework**
- **Scope of the MEW DSS**
- **MEW Integrated DSS**
- **List of priorities for DSS**
- **List of priorities for IWRM**

Water Resources Challenges in Lebanon

Freshwater resources are under increasing pressures due to various factors, among which:

- **Water pollution (from point and non-point sources)**
 - Influences the quality of water downstream
 - Reduces water availability
 - Has impacts on human health
- **Recurring drought periods with varied severity and length**
 - Loss of agricultural productivity
 - Land degradation and desertification
- **High urban population concentration**
 - Increased pressure on water demand and water pollution
 - High population growth rate would amplify the problem
- **Competing uses of the resources from different activities**

Water Resources Management Challenges in Lebanon

- **Lack of reliable data on which Decision making should be based**
- **Overlapping responsibilities of institutions & stakeholders involved in water management**
- **Limited participatory approaches in decision making**
- **Competing uses of the resources from different activities**

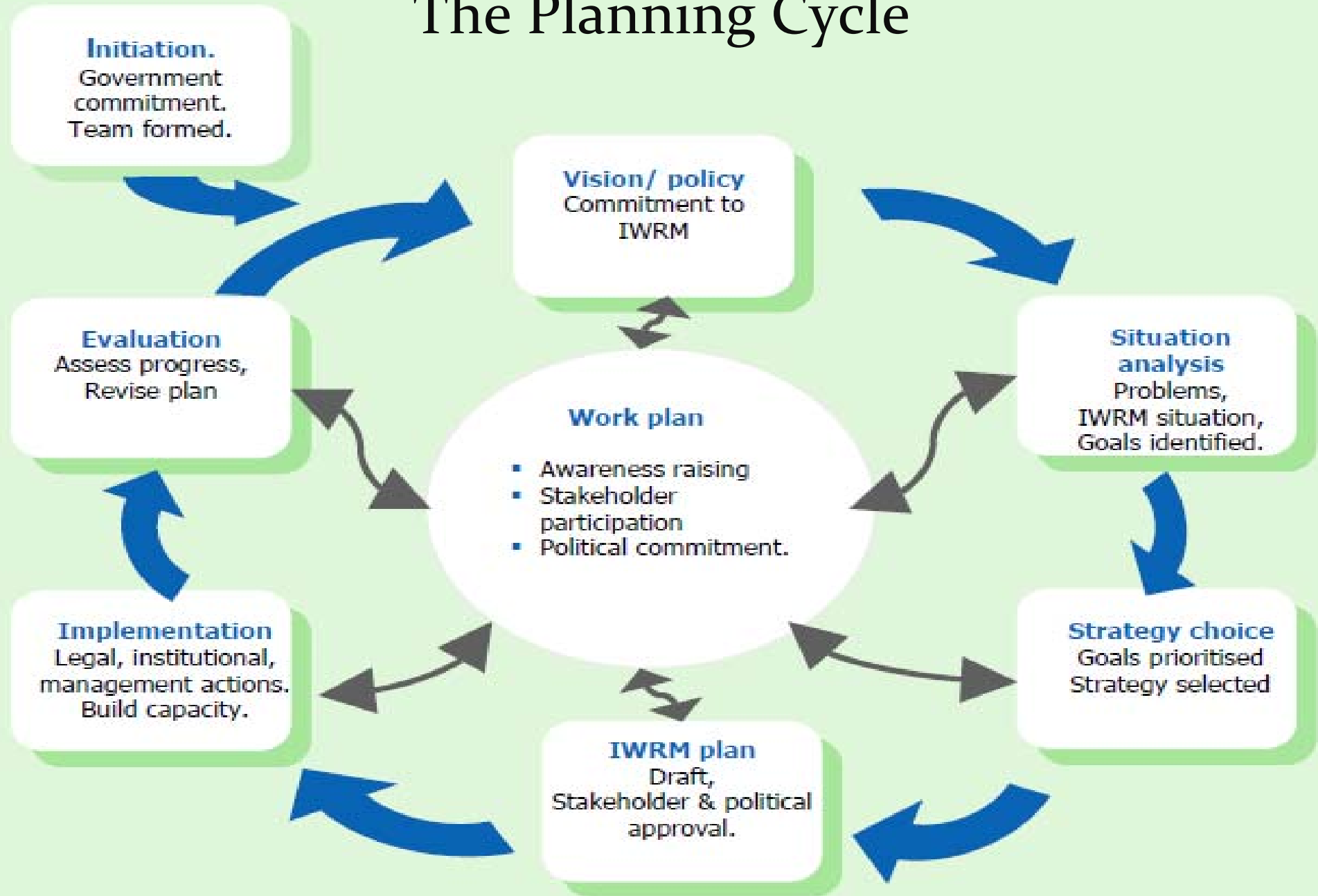
Why IWRM Planning in Lebanon?

- A **systematic process** that considers together all different uses of water resources and allows to take decisions related to water allocation and management considering the effects of each use on the others.
- A strategic statement that details a country's actions toward to sustainable management of its water resources
- A **process** leading to a National IWRM plan elaborated, endorsed and implemented by all stakeholders (a participative process)

Context for IWRM Plan

- Link to other strategies and plans:
 - Other existing national plans/strategies
 - National MDG Strategies
 - National poverty reduction strategies
 - National 5 years plans
 - National sustainable development strategies
 - National biodiversity strategy and action plan

The Planning Cycle



MEW & IWRM Planning in Lebanon

Progress & achievements

~ 15 years inspiring IWRM concepts and approaches:

- **Preparation of the National 10-year Strategy Plan** for the Water Sector by GDHER / MEW (2000-2009)
- **Revision of water Legislation** (2000)
- **The National Water Sector Strategy (NWSS)** (2012)
- **MED EUWI Country Policy Dialogue on IWRM in Lebanon**
 - Phase I (concluded in 2009)
 - Phase II (2010 - ongoing)

MEW & IWRM Planning in Lebanon

Progress & achievements

- The **Water Code** - a cooperation programme between the Lebanese and the French Government - aims to tackle within a comprehensive and integrated framework governance, institutional and management issues and recommends provisions for the implementation of sustainable management of water resources;
- The Water Code has been submitted to the Council of Ministers for approval.

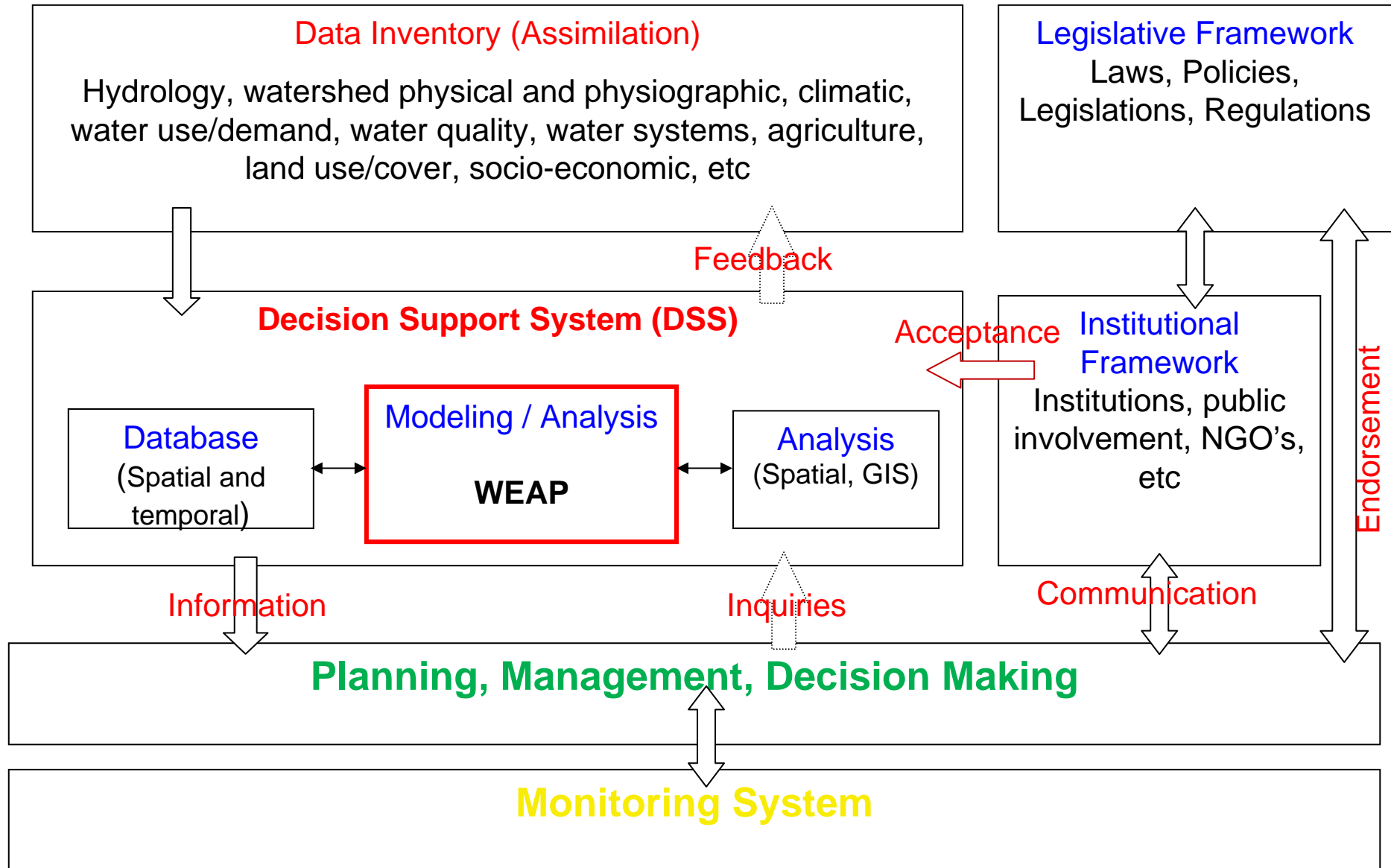


MEW & IWRM Planning in Lebanon

Progress & achievements

- Gathering **political will** and support for IWRM and the planning process;
- A **framework for broad stakeholder participation** is being created;

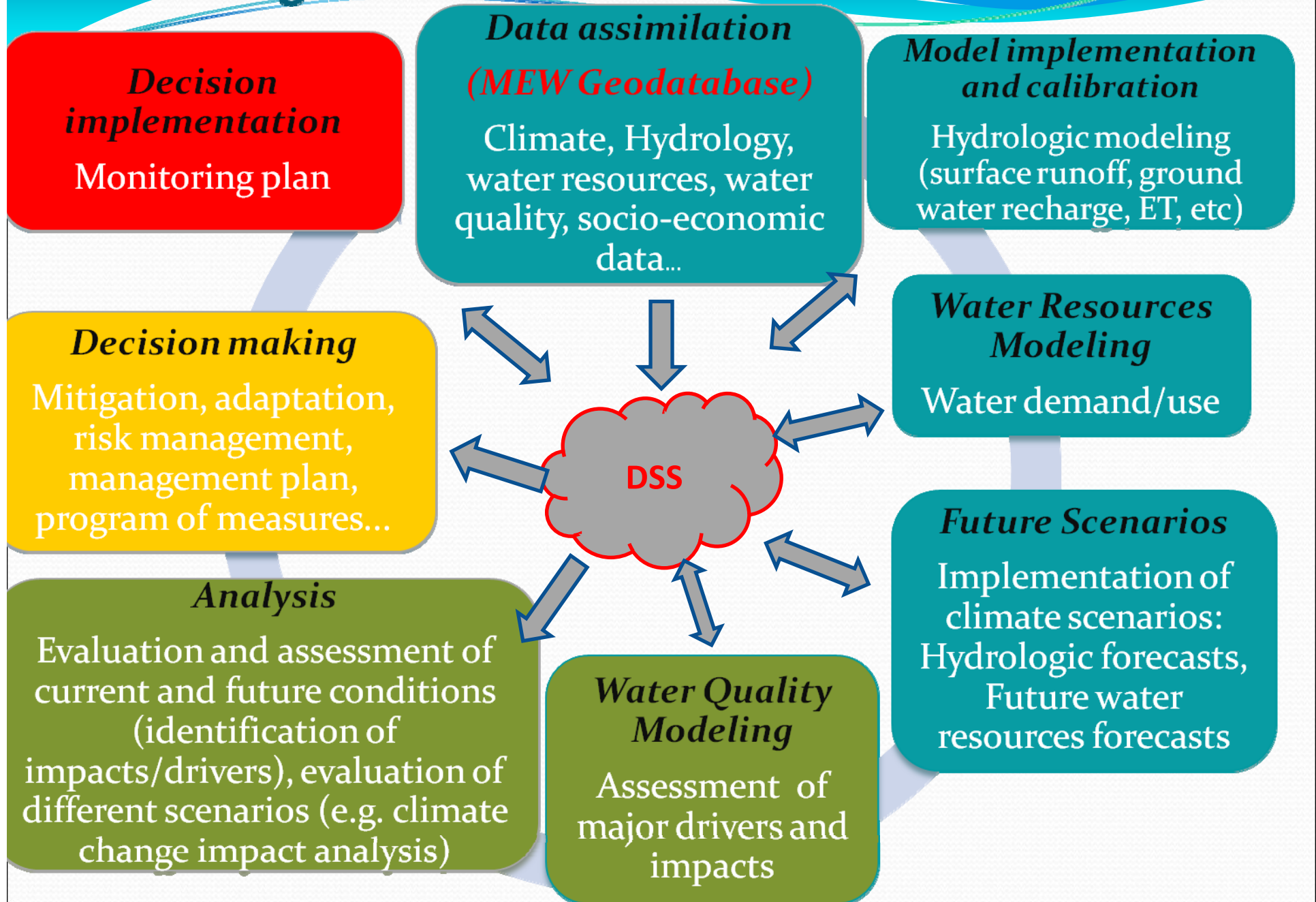
IWRM Conceptual Framework - Lebanon



Scope of the MEW DSS

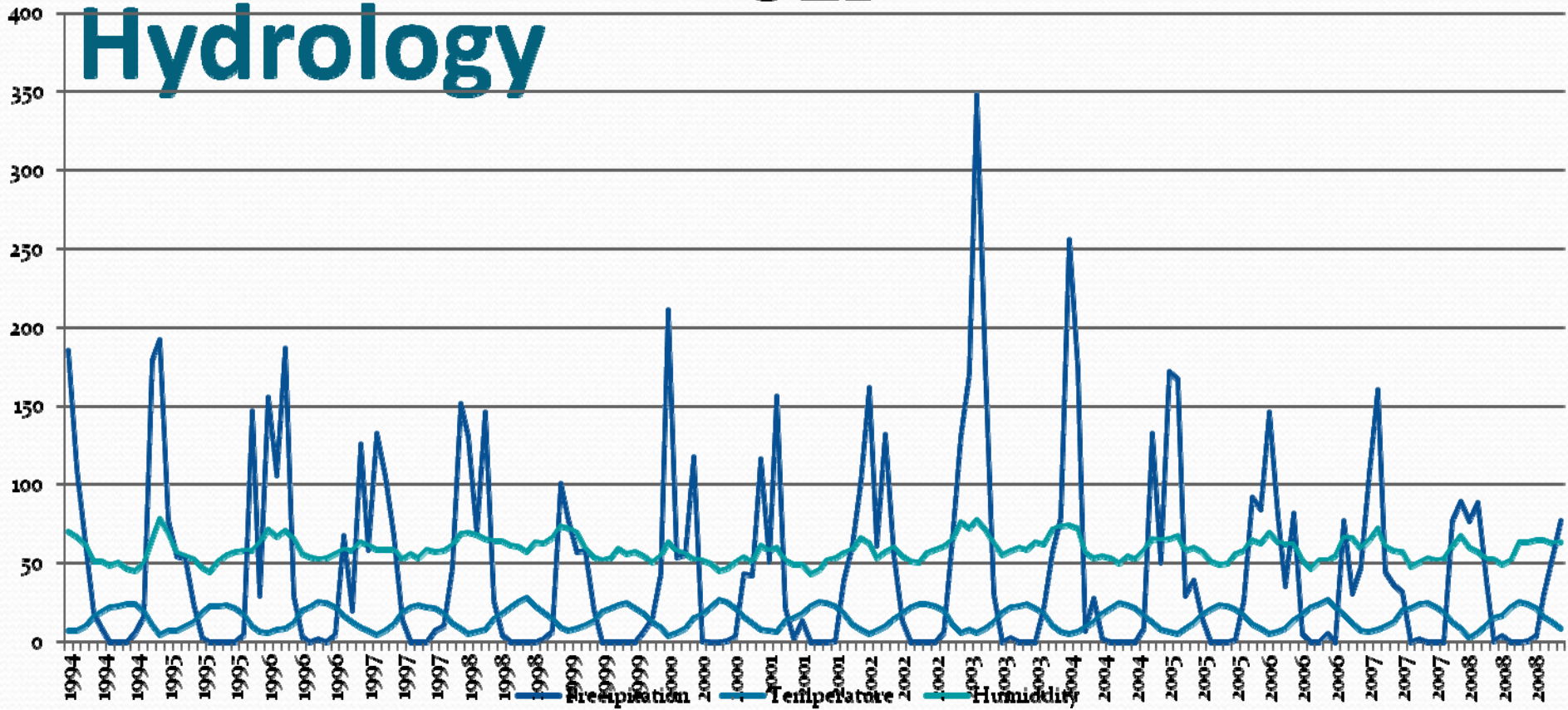
- Lebanon has 40 rivers and main water courses
 - 17 main river basins with a total area of around 8000 Km²
 - ~75% of the country's total area.
 - Develop an integrated DSS model for major river basins (We have run the model for six basins: Hasbani, Orontes, Elkabir, Aljawz. Upper litani basin, Abou ali, Naher Elkalb)
- The DSS is intended to establish an integrated modeling approach that supports:
 - hydrologic analysis
 - assessment of Water Resources Use/Demand
 - water resources management
 - water resources planning
 - scenario evaluation
 - analysis of Alternatives
 - integration of Future Projections
 - water Quality Modeling

MEW Integrated DSS



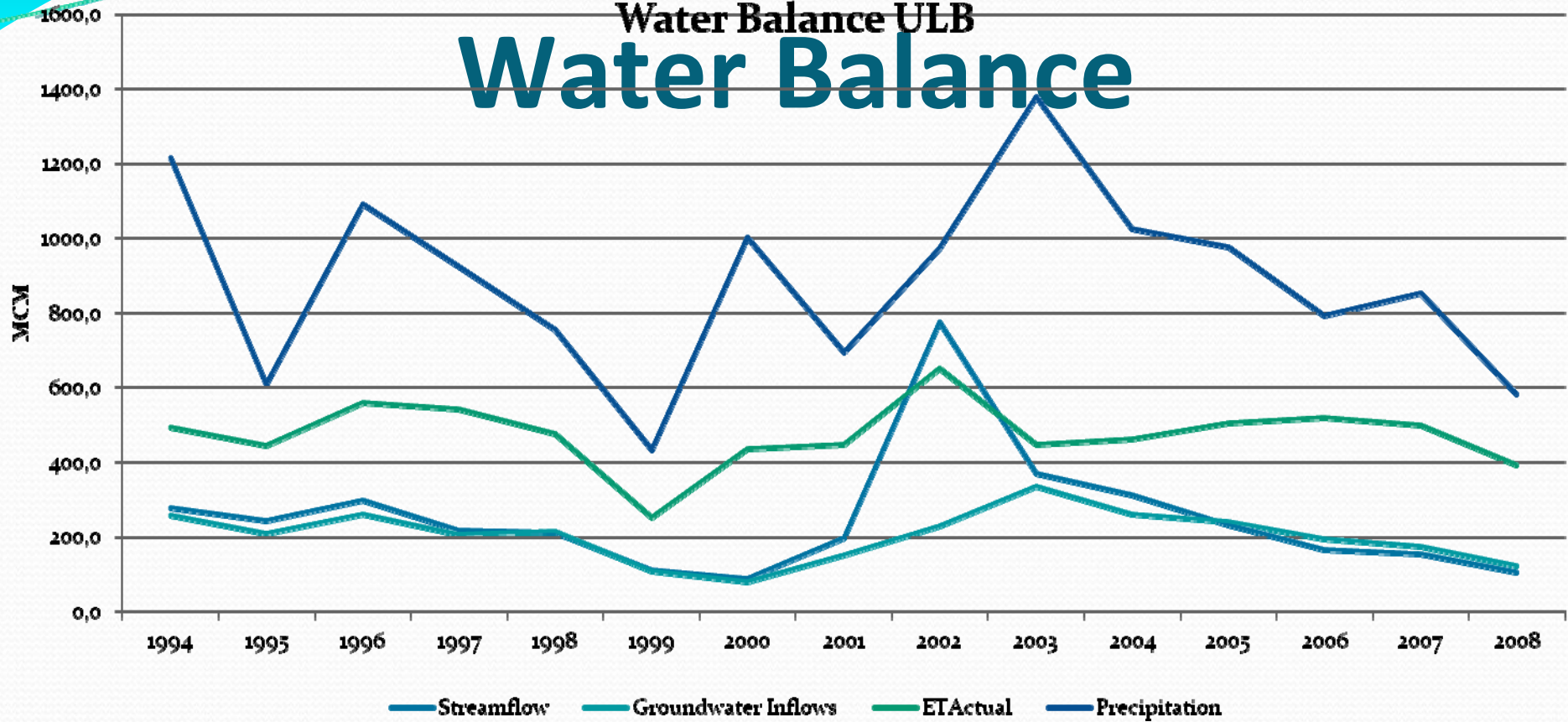
ULB

Hydrology



Water Balance ULB

Water Balance



DSS Outcomes

- Limitation of water resources,
 - Competition between users
- inadequacy in the water supply systems and water use
 - Deficiencies in the supply management, increased loss to the system
 - Deficiencies in irrigation practices (i.e. Surface irrigation/ cropping patterns)
 - increasing unmet demands by all sectors
- Lack of water reuse practices
 - Increased return flows (usually polluted)
- Future Projections
 - increased water demand by all sectors
 - Increased population, agriculture, and economical activities
 - Increased competition between users
 - Increased unmet demands by all sectors
 - Climate change projections
 - Recurring drought period with varied severity and length
 - Impacts agricultural practices in the inland areas and population demand in coastal zones
 - Increased urban population concentration
 - Increased pressure on water demand

List of priorities for DSS

- Major focus should be made on the analysis water demands and scenarios for all Lebanese Basins;
- In depth analysis of drivers/ impacts
 - Identification water resources problems (use/supply, water quantity/quality):
 - Population growth, Irrigation development, Ground water abstraction, Drought, Climate change, etc;
- Extend the DSS to accommodate:
 - Water quality and pollution tracking
 - Water socio-economy
- Formulation of IWRM program of measures and strategies.

List of priorities for DSS

- Hydrologic Analysis
- Assessment of Water Resources Use/Demand
- Water Planning and Management
- Evaluation of Scenarios
- Analysis of Alternatives
- Integration of Future Projections
- Water Quality Modeling

• completed

• Projected

List of priorities for DSS

- **Water planning:**
 - Population growth
 - Water scarcity and water allocation
 - Water supply (e.g. Urban, Irrigation)
 - Socio-economic considerations
 - Drought/ Climate Change
 - Depletion of water sources (e.g. aquifers)
- **Water management:**
 - Expansion/ change in agricultural practices
 - Decline of water quality (i.e. pollution)
 - Waste water management

MEW Data Sharing Insights

- IWRM, what about data sharing?
- Outputs from the DSS and processed Data from MEW database!
- The MEW (DSS) is sought to provide information in the following areas:
 - Water demand/ analysis
 - Hydrologic simulations (e.g. surface runoff, ground water recharge, ET, GW/SW interaction, etc)
 - Water demand/use and hydrologic forecasts
 - Climate change impact analysis

List of priorities for IWRM

- Involve stakeholder participation in decision making
- Develop of Water Resource Management Plan
- Develop a set of Program and Measures
- Develop a Comprehensive Monitoring Plan



Thank you