

# *Role of Ministry of Energy and Water in National IWRM Planning*

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

*Climate Change Adaptation Efforts*

*20-22 February, 2013*

*Notre Dame University-Louaize*

Presented by Eng. Mona Fakhri  
Water Director  
Ministry of Energy and Water

# 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**

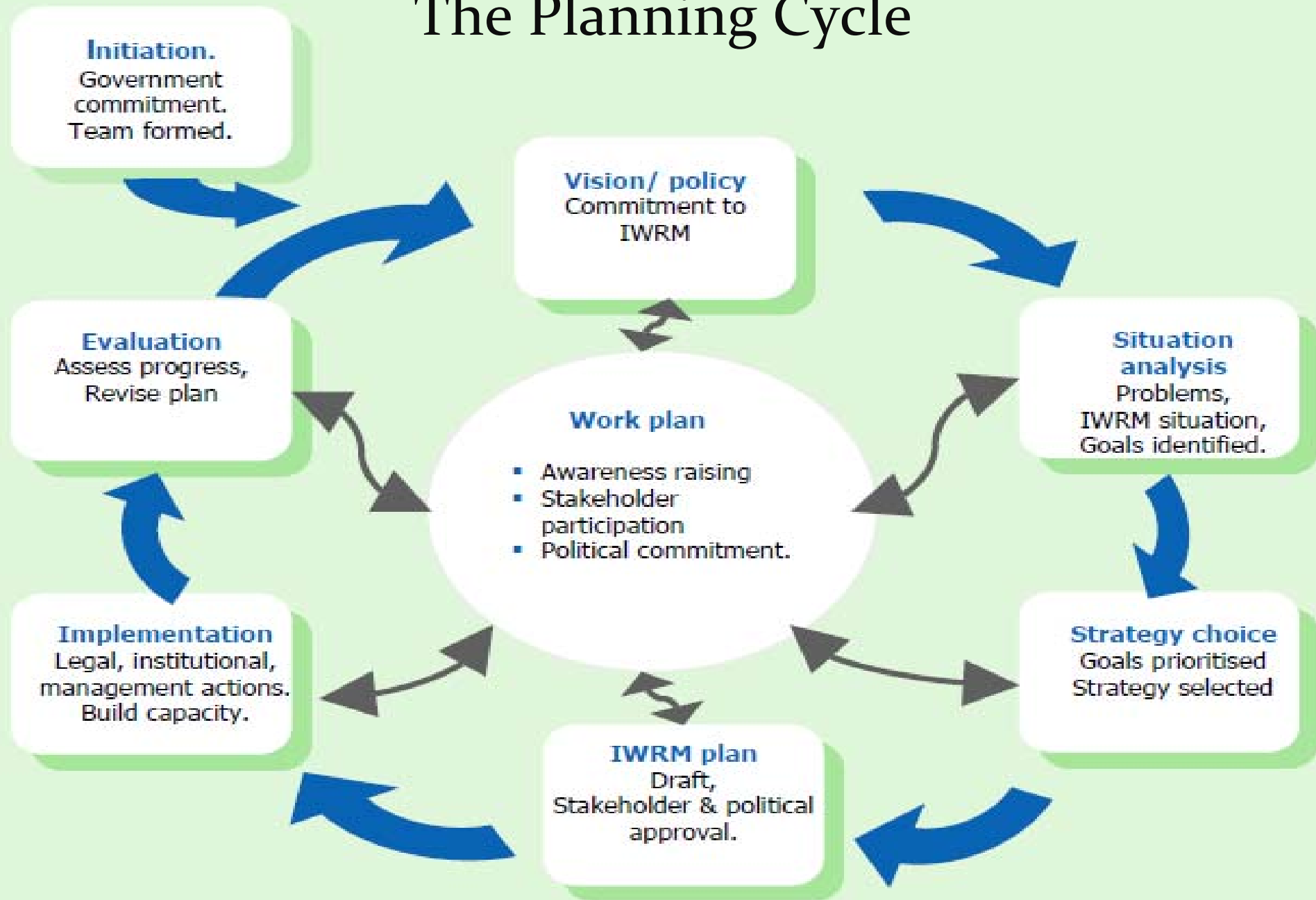
# Why IWRM Planning in Lebanon?

- 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.

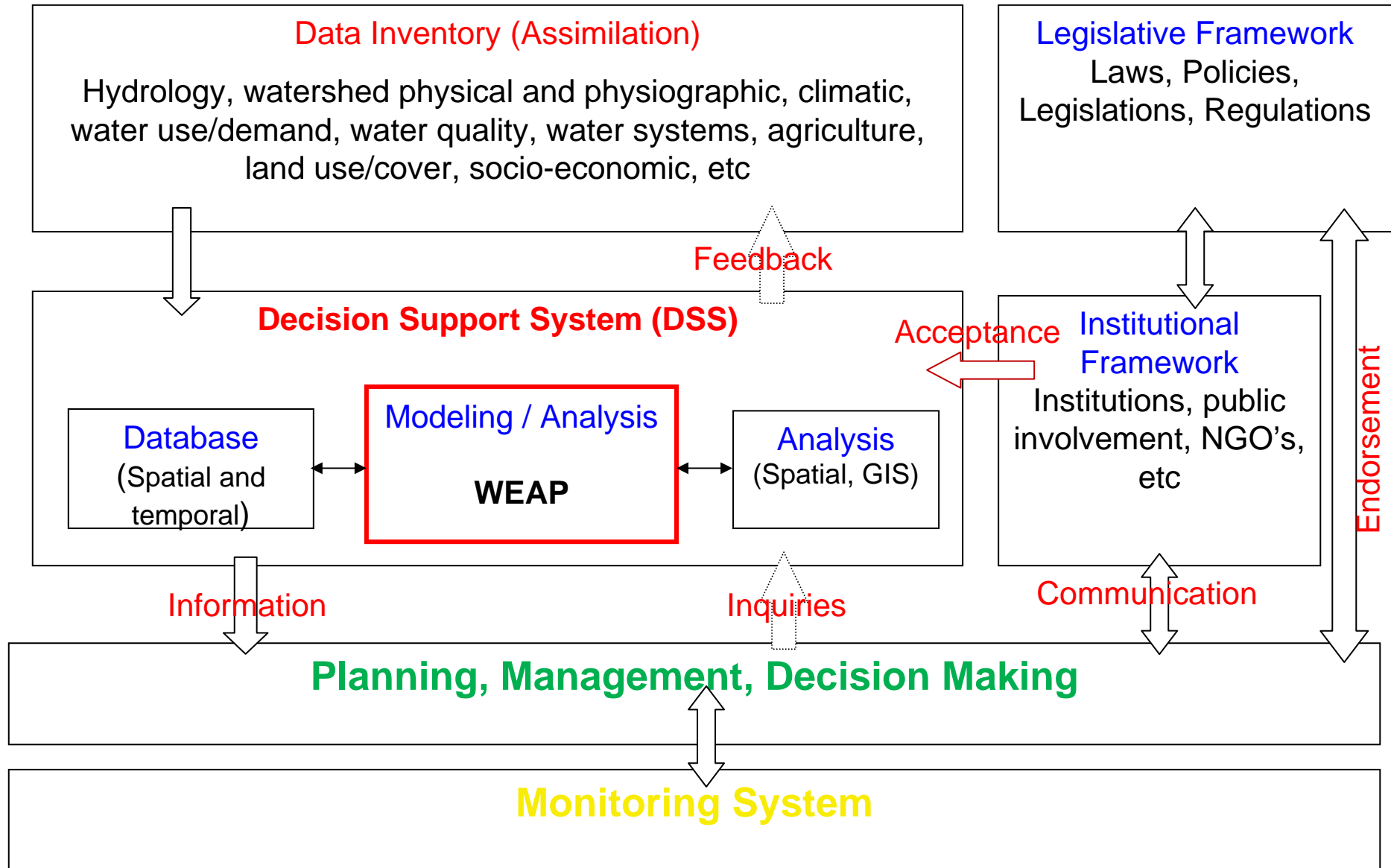


# MEW & IWRM Planning in Lebanon

## Progress & achievements

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

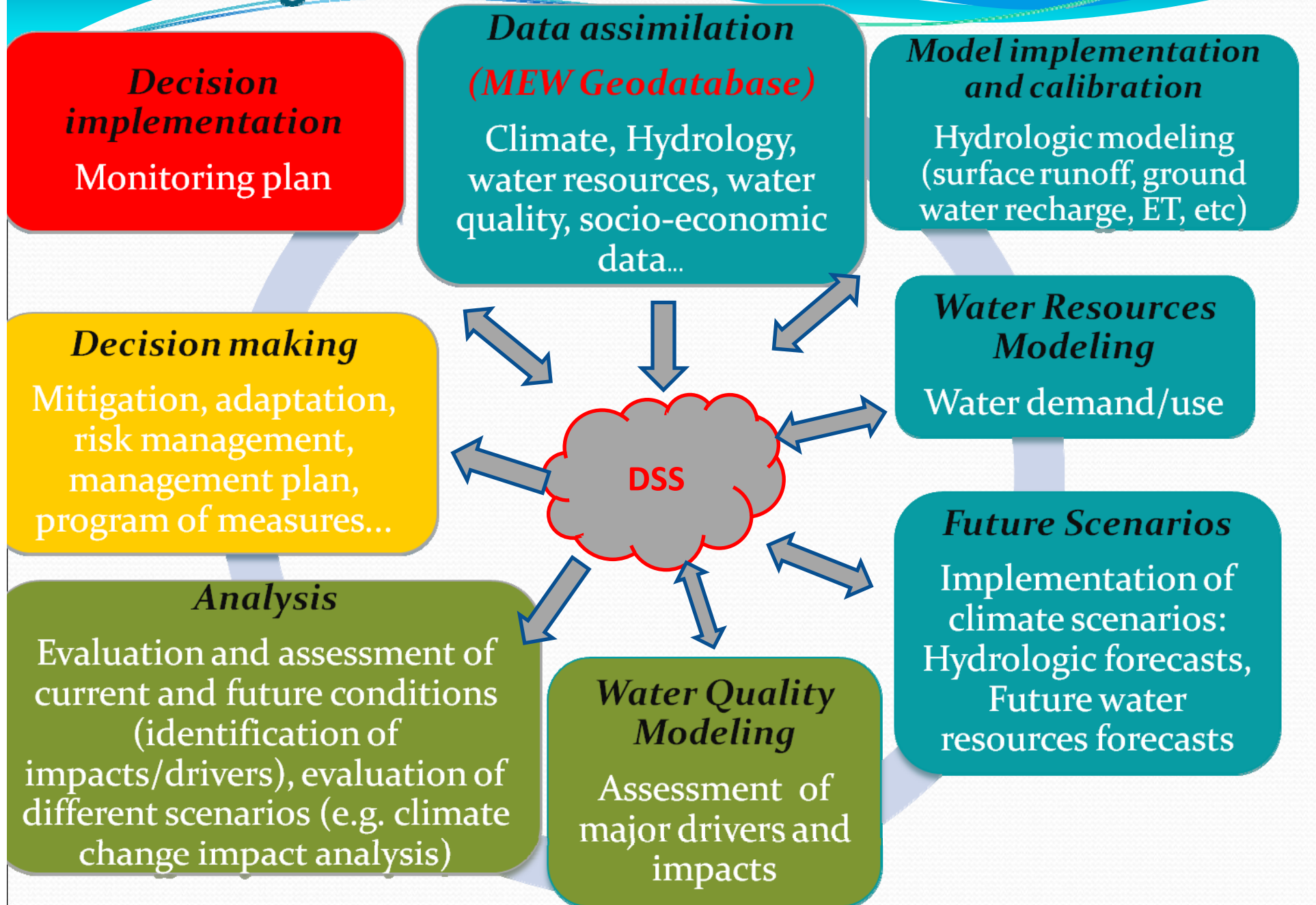
# IWRM Conceptual Framework - Lebanon



# Scope of the MEW DSS

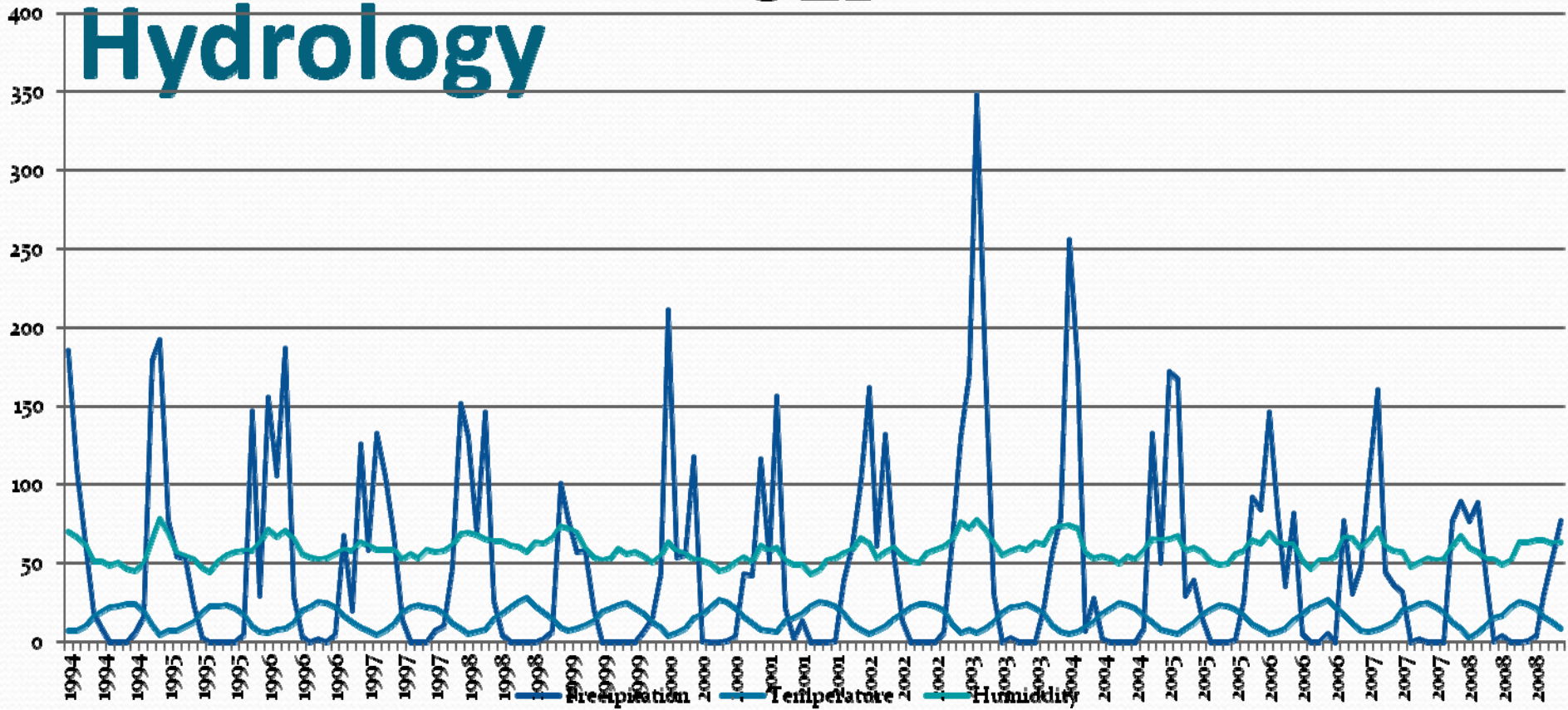
- Lebanon has 40 rivers and main water courses
  - 17 main river basins with a total area of around 8000 Km<sup>2</sup>
  - ~75% of the country's total area.
  - Develop an integrated DSS model for major river basins (We have run the model for six basins: Hasbani, Orontes, Elkabir, Aljawz. Upper litani 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



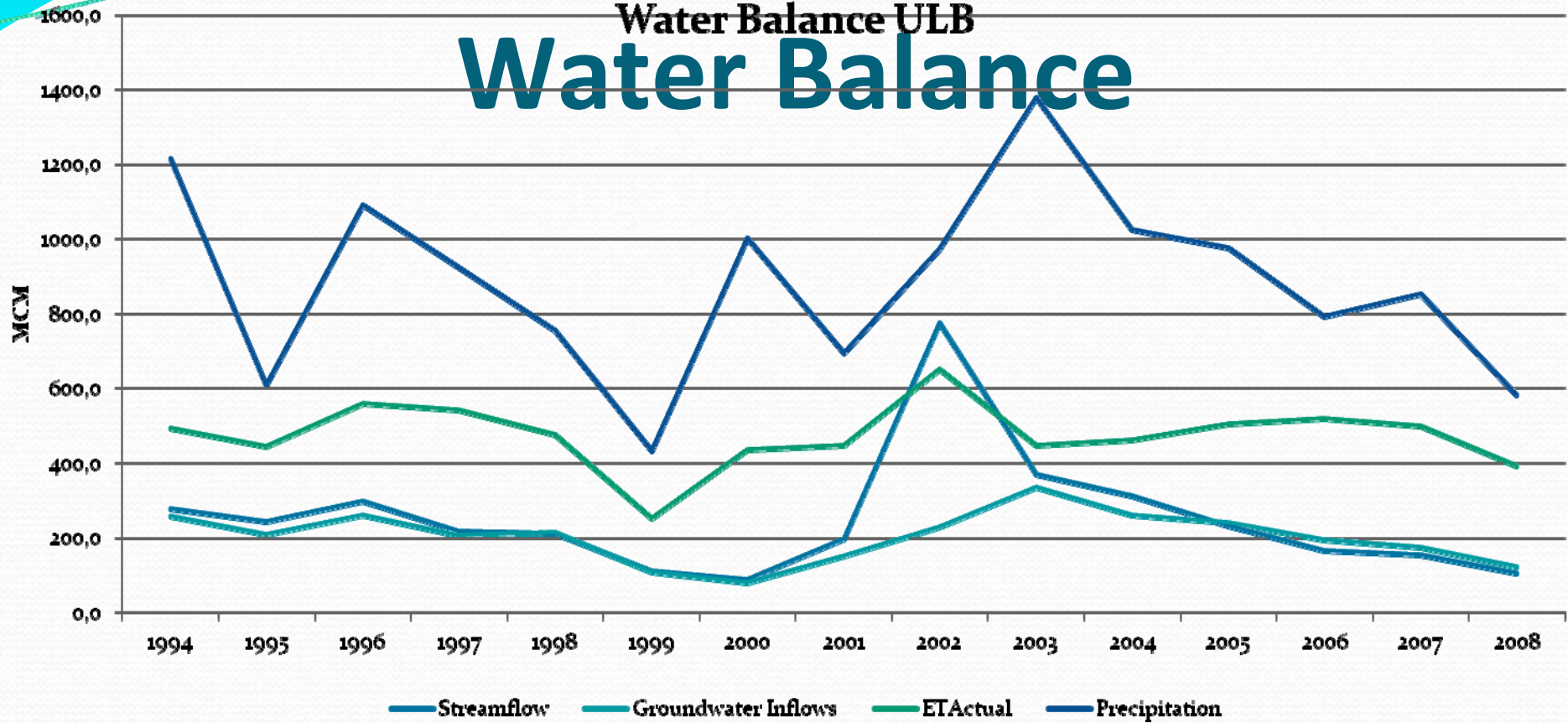
ULB

# 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