

# The First INECO Stakeholder Workshop

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# Water Quality Deterioration in Bahr Basandeila Canal, Dakahlia Governorate



***By:***

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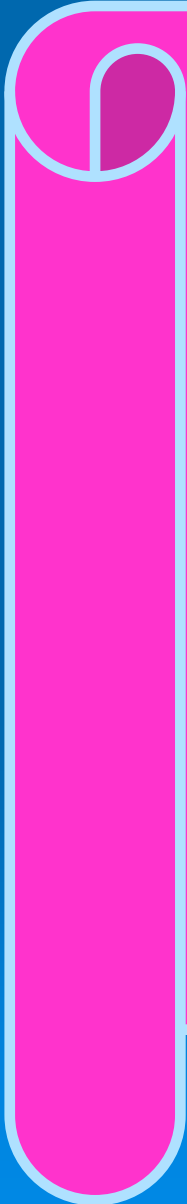
***Soils, Water and Environmental  
Research Institute; (SWERI),  
Agricultural Research  
Center,  
Ministry of Agriculture &  
Land Reclamation;  
(MALR)***

- ◆ Egypt is an arid country which depends almost entirely on the River Nile for its water supply.
- ◆ Despite the importance of water, the Nile water distribution network is subject to contamination by disposed wastes and encroachment on the right-of-way.

- ◆ **Open waterways, especially the drains, act as the repository and conveyance for liquid wastes.**
- ◆ **Heavy use of pesticides, inadequate sewage disposal, and uncontrolled industrial effluents have created major water pollution problems.**

- ◆ Furthermore, the increased demand for both domestic and irrigation purposes requires the implementation of concerted efforts to rationalize water use and increase awareness among end-users and stakeholders.





# **The Institutional Framework of Water Quality Management**

# Water Quality Management

## Legal Aspects

**Laws:**  
 MWRI (Law 48/1982)  
 MoHUUD (Law 93/1969)  
 EEAA (Law 4/1994)

**Standards:**  
 Inland Water: MWRI  
 Drinking Water: MoHP  
 Coastal Water: EEAA

**Enforcement:**  
 MWRI  
 Ministry of Interior; (MoI)  
 EEAA

## Monitoring

**Ambient Water:**  
 Inland: NWRC & EHD  
 Coastal: EEAA  
 NRC/NIOF (specific projects)

**Effluent:**  
 Compliance: MoHP

## Pollution Control

**Prevention:**  
 Agro-chemicals: MALR  
 Licensing: MWRI  
 Env. Action Plan: EEAA

**Treatment:**  
 Municipal: NOPWASD/  
 HCWW/GOSD/AGOSD/  
 Governorates  
 Industrial: GOFI/facilities

**Distribution/Reuse:**  
 MWRI





# **The Legislations of Water Quality Management**

- ◆ **There are numerous laws and rules prohibiting certain water use and abuse activities.**
- ◆ **Yet enforcement remains weak.**
- ◆ **This is a principal institutional constraint to improved water management.**

- ◆ **MWRI derives its legal mandate as the lead governmental body for the water sector from Law 12/1984 on Water Management (primarily dealing with water for agriculture) and Law 48/1982 on Protection of the River Nile and its Waterways from Pollution.**

- ◆ **Ministry of State for Environmental Affairs and its subsidiary body the EEAA also exert considerable influence over water quality management through authorities vested through Law 4/1994 on Environmental Protection.**

- ◆ **The following are some of the principal laws governing water quality management in Egypt:**



## **Water Resources Management:**



Law 12/1984 and its supplementary Law 213/1994 provide the basic legal structure for water quantity issues

## **Nature Protection:**



Law 102/1983 delineates nature protection areas, forbids actions that lead to destruction of the natural environment

## **Water Resources and Wastewater Treatment:**



Law 27/1978 regulates public sources of drinking water

## **Wastewater Discharges:**



Law 93/1962 establishes the standards for wastewater discharge into the sewerage systems

## **Nile Protection:**



Law 48/1982 regulates the discharge of wastes & wastewater into the Nile & its waterways and sets the standards of effluents quality

## **Environmental Protection:**



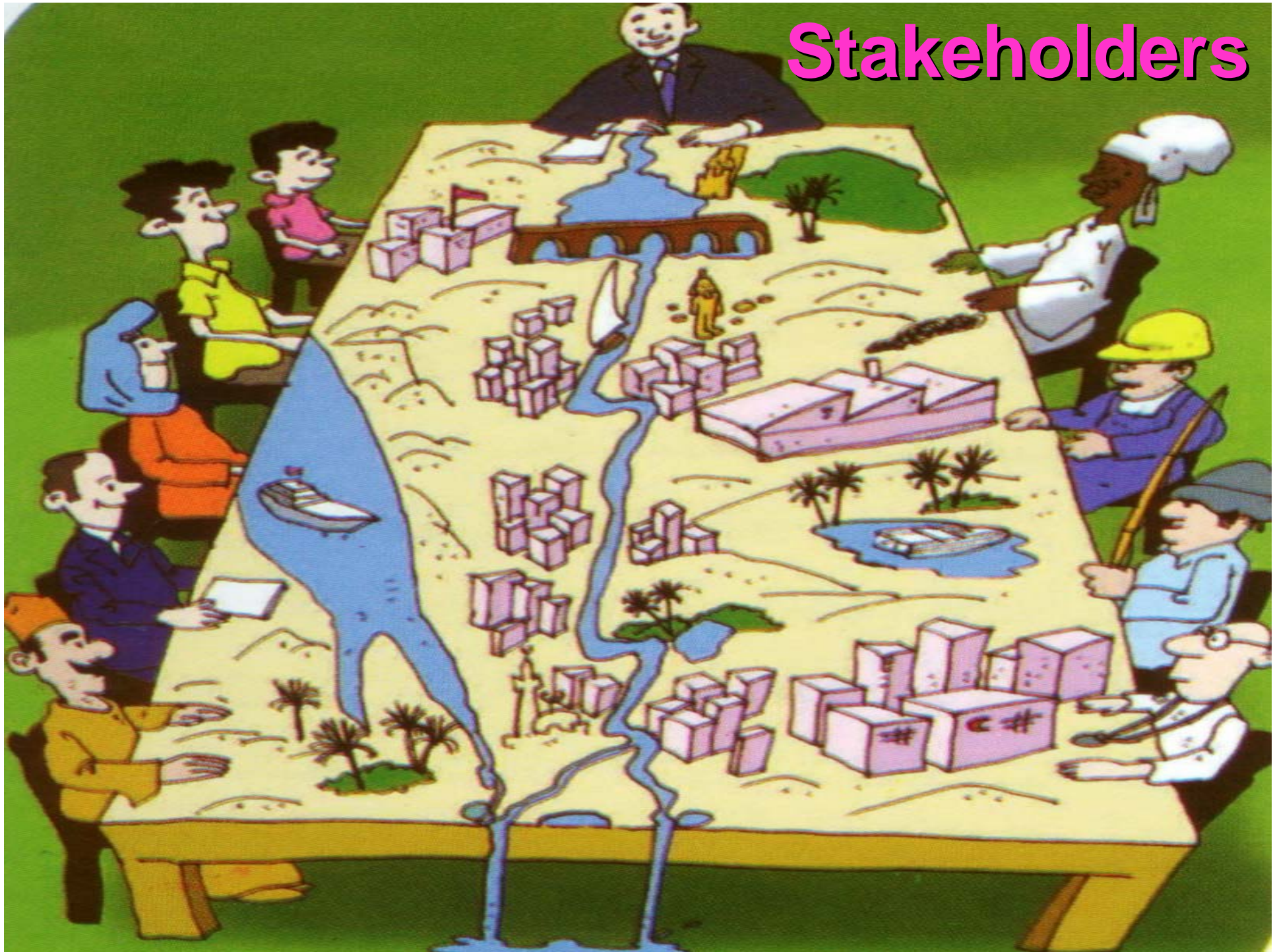
Law 4/1994 authorizes use of incentives for managing the environment & supports Law 48 on water resources management



# **The Stakeholders**



# Stakeholders





# Ministerial Stakeholders:

- ◆ Ministry of Water Resources and Irrigation; (**MWRI**)
- ◆ Ministry of Agriculture & Land Reclamation; (**MALR**)
- ◆ Ministry of State for Environmental Affairs; (**MoSEA**)
- ◆ Ministry of Health & Population; (**MoHP**)
- ◆ Ministry of Trade & Industry; (**MoTI**)
- ◆ Ministry of Housing, Utilities & Urban Development; (**MHUUD**)
- ◆ Ministry of Higher Education & the State for Scientific Research
- ◆ Ministry of Electricity & Energy; (**MEE**)
- ◆ Ministry of Transportation
- ◆ Ministry of Tourism
- ◆ Ministry of Interior; (**Mol**)

## **Non-ministerial Stakeholders:**

- ◆ **Farmers (tenants/owners) and farmer organizations, namely WUAs and Water Boards, participate in O&M of the irrigation system at the mesqa and secondary-canal levels.**
- ◆ **Private sector companies (contractors, suppliers and Egyptian and International consultancy firms) carries out services via service contracts with the MWRI.**

# Non-ministerial Stakeholders:

- ◆ Public sector companies, or holding companies, owned by the Government, but operate as the private sector (e.g., the two holding companies set up for the management of mega projects in Southern Valley & West Delta and in North Sinai, and the WS&S holding company, subsuming 14 subsidiary companies nationwide).

## Non-ministerial Stakeholders:

- ◆ Several other holding companies owned by the MWRI and MALR for construction of irrigation systems, drilling of groundwater wells, land reclamation, etc., and now being transferred to the ownership of investors and private-sector companies.
- ◆ Representatives from key industrial sectors disposing effluents (tanneries, textile, food, refineries, metal).

## **Non-ministerial Stakeholders:**

- ◆ The NGOs form an integral part of local communities' development programs in the rural areas (e.g., Shorouq programs overseen by MoLD). Their roles include hygiene promotion and protection of the public health and the environment, improved water supply intakes and sanitation conditions, manual channel maintenance, drinking water saving campaigns, and public awareness.

# Non-ministerial Stakeholders:

- ◆ Environmental NGOs, i.e. Wafaa El-Nil Association.
- ◆ Farmer co-operatives.
- ◆ Investors' associations.
- ◆ Women unions.
- ◆ Hospitals.
- ◆ schools.

The image features a vibrant blue background with a pattern of white and light blue concentric circles at the bottom, resembling water ripples. A large, bright pink scroll is unrolled across the center, with its edges curled up at the top and bottom. The scroll is outlined in white. Centered on the pink surface of the scroll is the text "Basandeila" and "Region" in a bold, white, sans-serif font.

# **Basandeila**

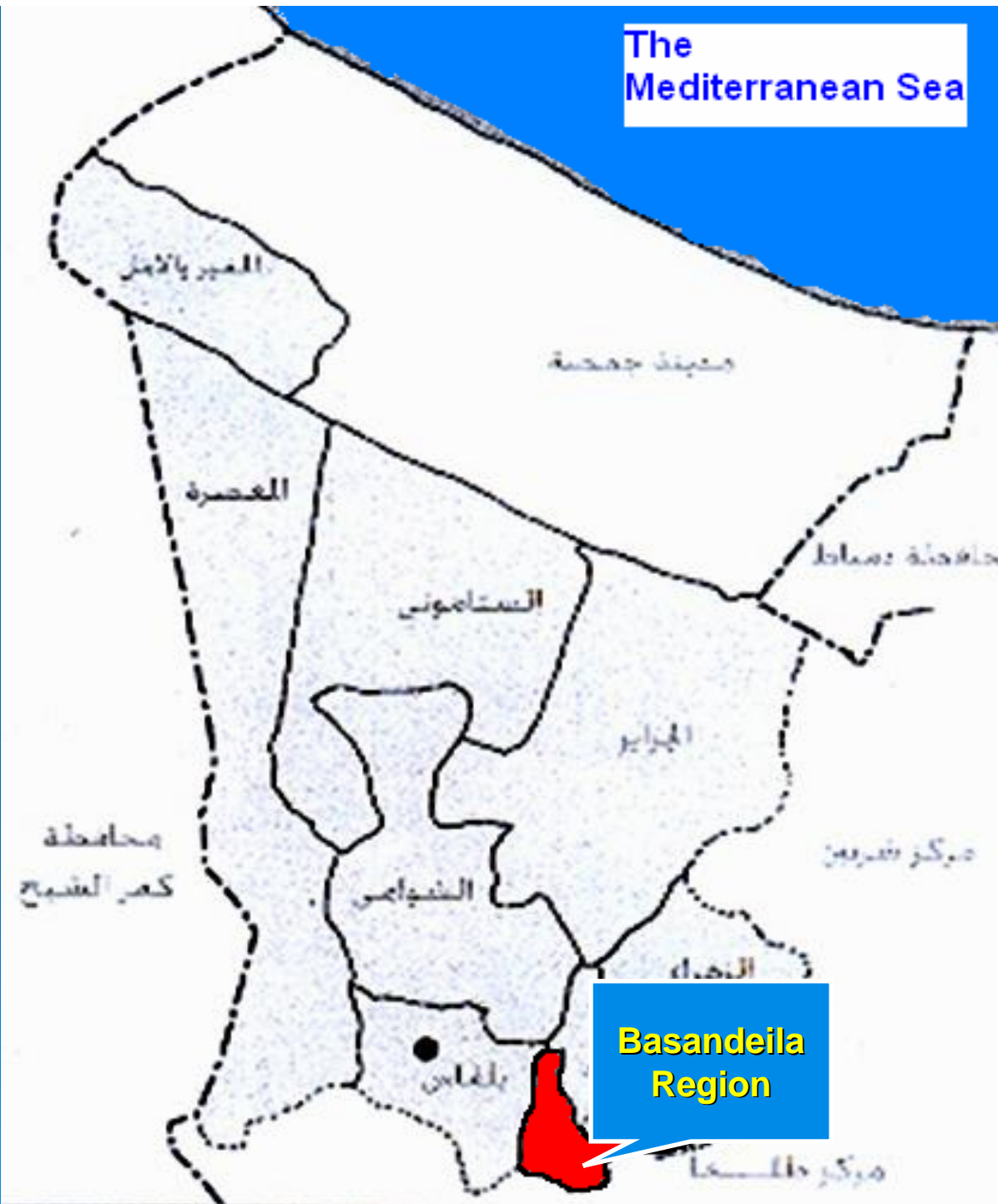
## **Region**

- ◆ **Basandeila Region includes three Villages; Basandeila (the main village), Damallash and El Gawadia besides 16 small villages.**
- ◆ **Basandeila Region reported a population estimated at 45000 inhabitants, of which 25000 inhabitants in Basandeila Village.**





The  
Mediterranean Sea



- ◆ **The total area of Basandeila Region is estimated at 5739 acres.**
- ◆ **The cultivated area in this Region is about 5524 acres, representing 96.3% of the total area.**
- ◆ **The total length of water canal network that covers the Region from Bahr Basandeila Canal is 12 km.**
- ◆ **The length of drains network in this Region is estimated at 8 km.**

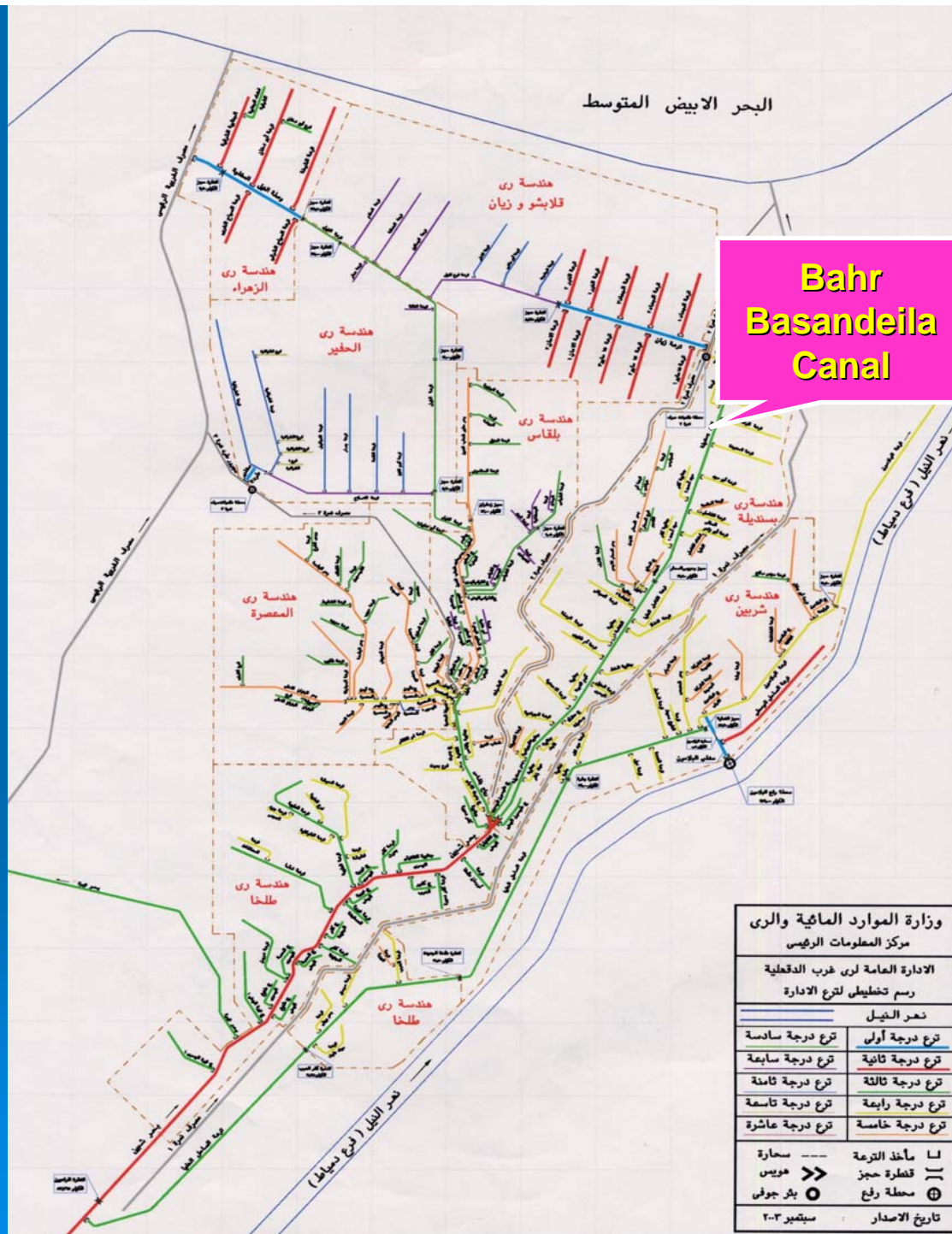


**Bahr  
Basandeila  
Canal**

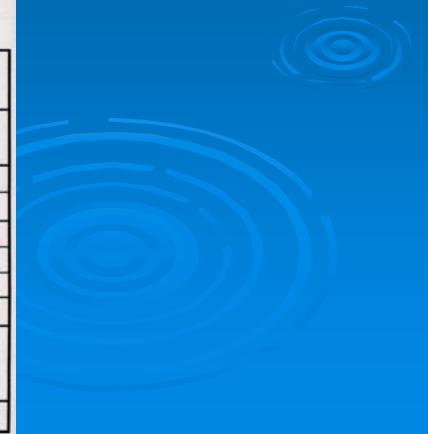
- **Bahr Basandeila Canal is the only water resource for Basandeila Region, which receives its water from Bahr Shibir, from El Rayah El Abbassy Canal, from Damietta Branch of the River Nile.**
- **Bahr Basandeila Canal is located at the end of Bahr Shibir Canal.**

- **Bahr Basandeila Canal irrigates a cultivated area estimated at 60000 acres in the Nile Delta.**
- **Bahr Basandeila Canal irrigates a cultivated area estimated at 5524 acres in Basandeila Region.**
- **Bahr Basandeila Canal irrigates a cultivated area estimated at about 3000 acres in Basandeila Village.**





**Bahr  
Basandeila  
Canal**



# Problem Analysis

The background of the slide is a solid blue color. At the bottom, there are several concentric circles of varying sizes and opacities, resembling ripples on water, in a lighter shade of blue.

- ◆ **Symptoms of serious water quality problems are manifested salinity of the Nile branches; spreading of algae in surface waters; rising concentrations of iron, managanses, and nitrates in ground waters; and the presence of micropollutants in some contaminated water supplies.**



- ◆ Large amounts of wastewater (domestic, industrial, and agricultural) are discharged to land, Bahr Shibin Canal (a third-level canal), Bahr Basandeila Canal (a fourth-level canal), from El Rayah El Abbassy Canal (a second-level canal) and at last Damietta Branch of the River Nile, resulting in water quality deterioration.

# Problem Tree



Loss of Biodiversity & Fisheries

Reduction of Agricultural Productivity

Threats for Aquatic Ecosystem

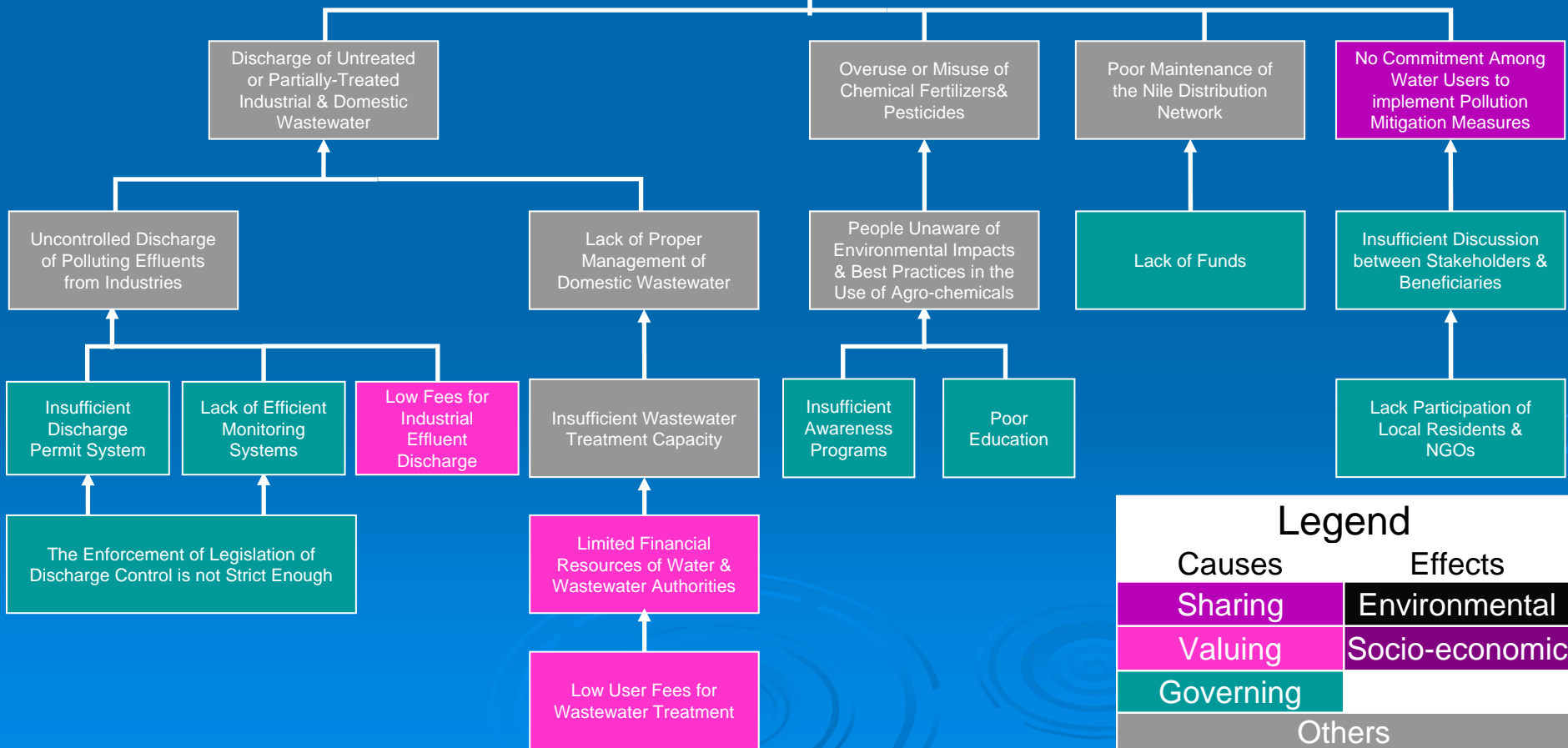
Groundwater Contamination

Increase of Serious Health & Quality of Life Problems

Untreated Water Becomes Available for Irrigation

Lower Income from Tourism due to poor Water Quality

# Water Quality Degradation in Bahr Basandeila Canal

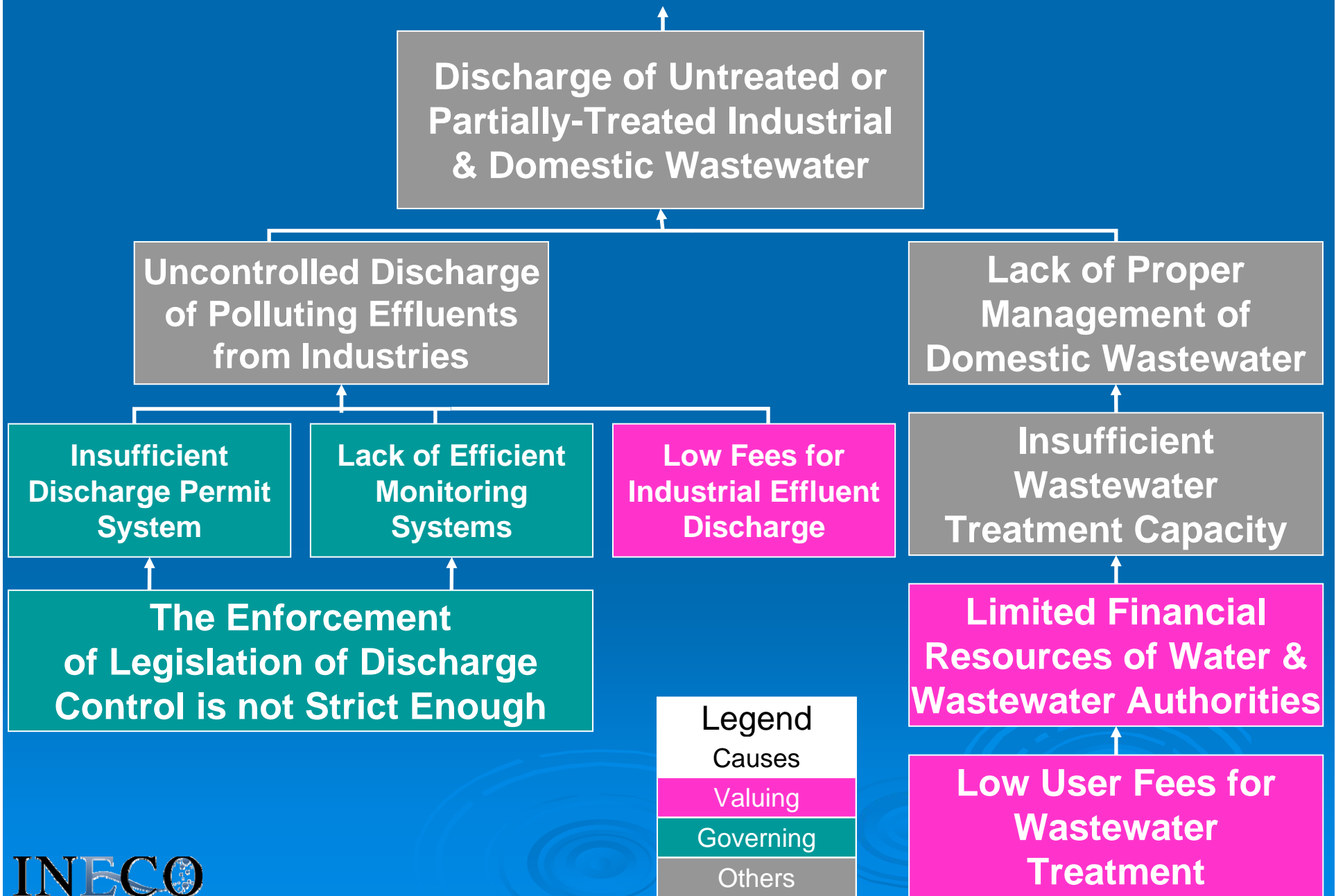


Legend	
Causes	Effects
Sharing	Environmental
Valuing	Socio-economic
Governing	
Others	

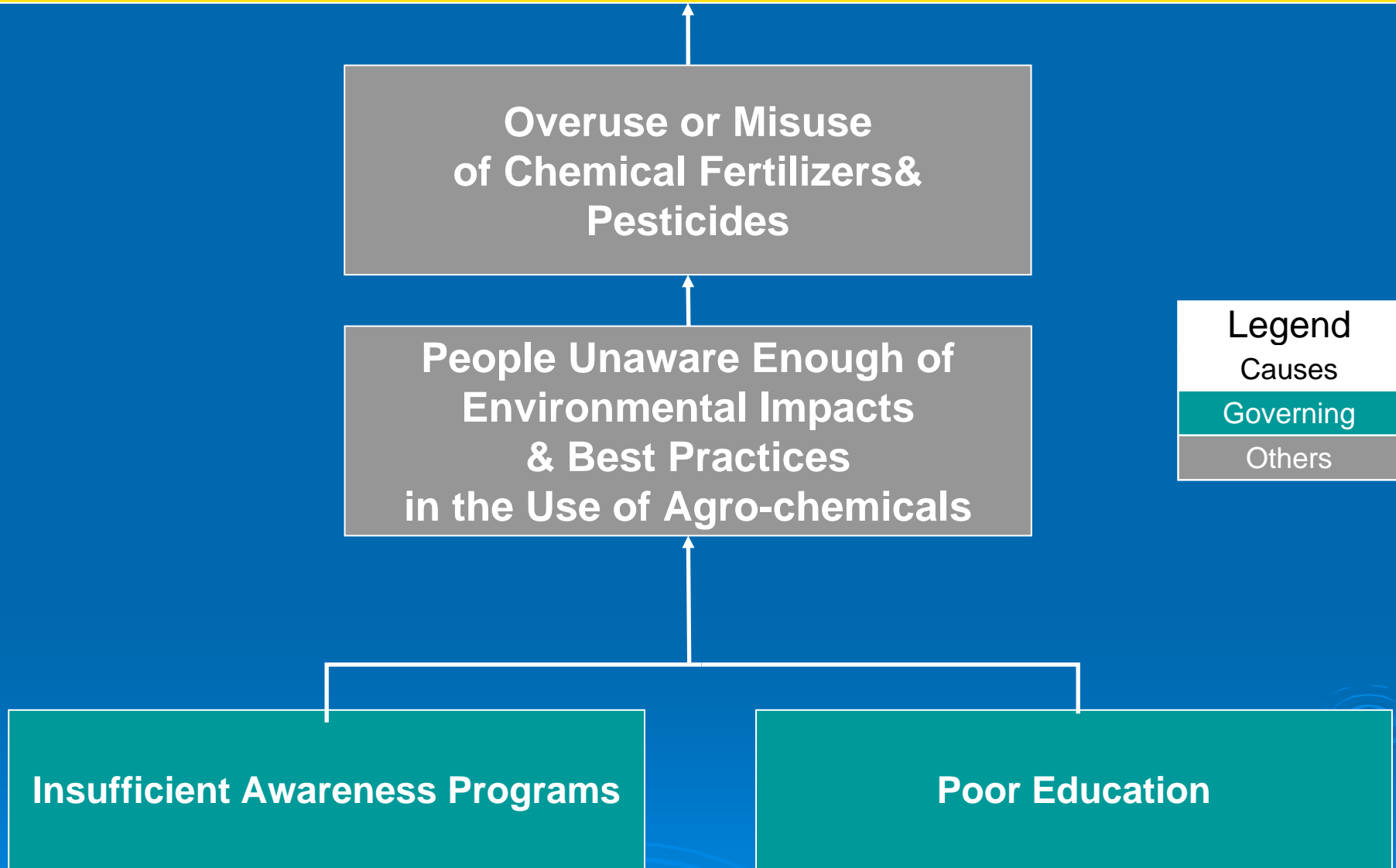
# Causes



# Water Quality Degradation in Bahr Basandeila Canal



# Water Quality Degradation in Bahr Basandeila Canal



# Water Quality Degradation in Bahr Basandeila Canal

Poor Maintenance  
of the Nile Distribution Network

Lack of Funds

Legend

Causes

Governing

Others

# Water Quality Degradation in Bahr Basandeila Canal

No Commitment Among Water Users to implement Pollution Mitigation Measures

Insufficient Discussion between Stakeholders & Beneficiaries

Lack Participation of Local Residents & NGOs

Legend

Causes

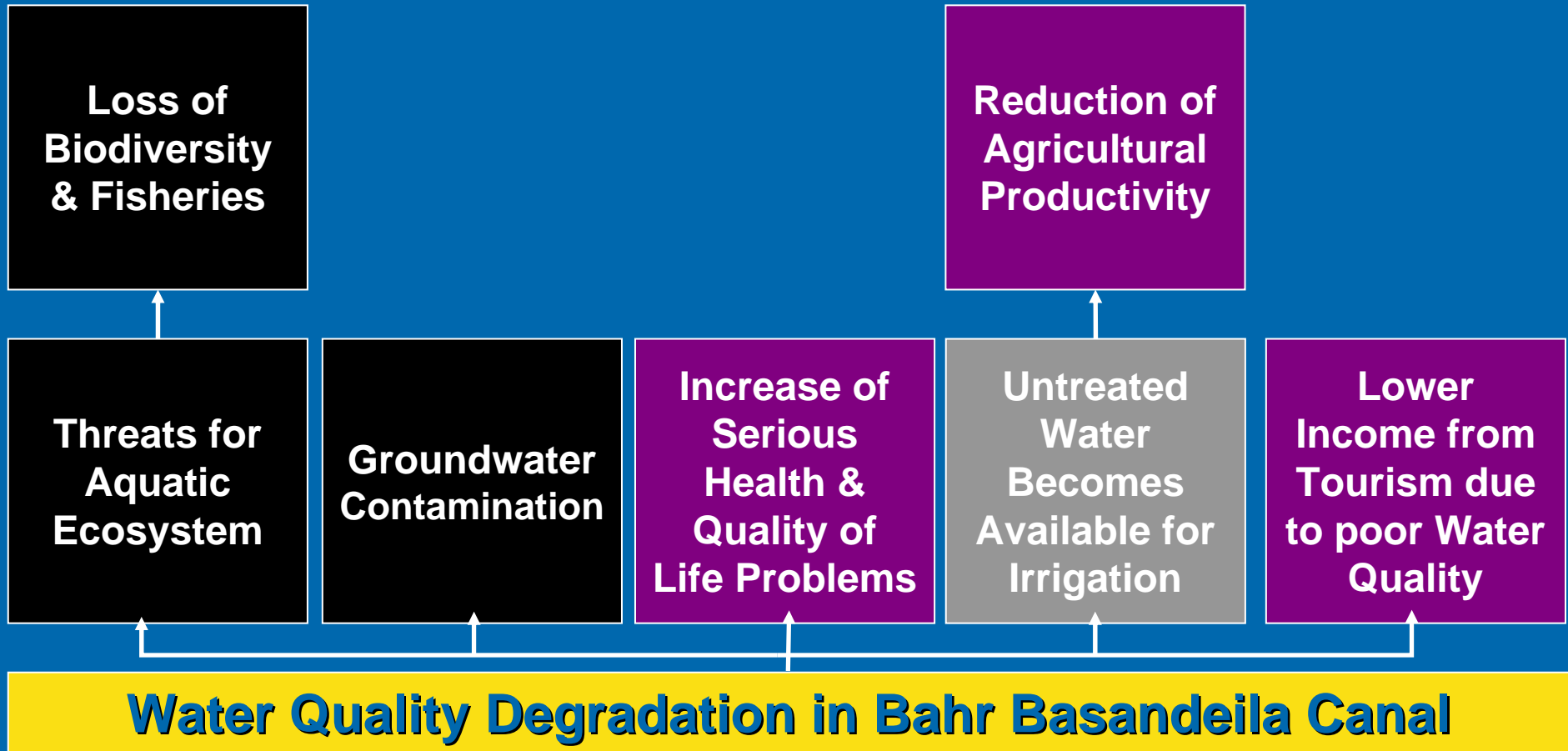
Sharing

Governing



# Effects





**Legend**

Effects
Environmental
Socio-economic
Others

**Thank You**  
**for Your Attention**

The background is a solid blue color with several faint, white, concentric circular ripples scattered across it, resembling water droplets or a ripple effect.