Drainage Water Reuse Strategic Options and Measures to Alleviate Risk of Failure, Egypt

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Needs for Reuse
Needs for Reuse

- Water resources in Egypt are limited
- A gap between supply and demand already exists over 6 BCM/year.
- Possibility of increasing water resources from conventional sources is doubtful.
- Potential reduction of Egyptian Water Quota
Drainage Patterns of Egypt
Drainage Water Reuse Practice in Egypt
Drainage Water Reuse Practice: 15 BCM year

Drainage Outflow 14 BCM

7.5 - 10.0 BCM

1.0 - 1.5 BCM

3.5 - 4.0 BCM
Management of Drainage Water Reuse Regulations & Legislation (MWRI)

- Water quality standards are specified in the implementing decree for Law 48/82 (Decree 8/1983 rev 2013)
- Law 12 (1984), for Irrigation and Drainage, gives the authority of licensing any drainage water reuse to the Drainage Research Institute. All guidelines for mixing drainage water with fresh water and suitable cropping pattern are provided.
Water Quality Monitoring Network

Monitoring locations in Nile Delta

Monitoring Locations in Nile River and its branches
Institutional Set Up (Key players)

**MWRI**

- **Office of the Minister**
  - Units in the Office of the Minister
    - Institutional Reform Unit
    - Communication Unit
    - Water Quality Unit
  - National Water Research Centre
  - Training Centre

**Service and Specialised Entities**

- Planning Sector
- Administration & Finance
- Central Irrigation Directorates
- Survey Authority
- National Water Research Centre
- South Valley/West Delta Holding Co.

**Major Departmental & Authority Activities to be Integrated**

- Irrigation Department
  - Dams & Large Barrages Sector
  - Irrigation Sector
  - Mechanical & Electrical Department
  - Drainage Authority
- Horizontal Expansion & Projects Sector
- Irrigation Improvement Sector
- Central Unit for ILIMP
- Groundwater Sector
- Nile Protection Sector
- Administration & Finance
Drainage Water Reuse Issues

Conflict & impact of Some Polices

- Irrigation Improvement Program:

  includes the improvement of water delivery system and on farm-water management
Conflict & impact of Some Polices

- **Rice Reduction:**
  Upper Egypt and South of Nile Delta

- **New Reclamation Projects (Toshka Project):**
  The project will withdraw 4 BCM/yr of water from Lake Nasser.

- **Polices to mitigation potential stress on water resources**
Drainage Water Reuse Issues

- Lack of communication and coordination is revealed in:
  - Allocation of WWTPs & WTPs ...(MWRI, MHUUD)
  - Reuse is carried out at different management levels ...
    (Irrigation Sector, Irrigation District)
  - Prioritization of Water Quality Improvement ...(WWTPs)
Drainage Water Reuse Issues

- Pollution Hazards (Shutdown and at Risk)

Pollution levels in the Nile Delta
Lack of Research Studies

- Maximum drainage water reuse ??

Considering requirements for ecological and socioeconomic activities
Measures to Alleviate Risk of Failure

1. Review the Reuse Practices at Hydrological Drainage Catchment

2. Define Drainage water availability for reuse Scheme (Present and Future)

3. Study the impact of implemented and proposed policies on drainage water availability and quality.
There are several Ministries involved in water resources operation and interventions. So, there is a need to clarify the objective uses and function of water ways in Egypt including irrigation and drainage.
4. Develop National Water Atlas (WTPs)
## Develop National Water Atlas

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<th>Water Usage</th>
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<tr>
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<td>Ministry of Water Resources and Irrigation</td>
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</tbody>
</table>
5. Locate Drainage water reuse, Waste Influent and Water Effluents in Coordination with MWRI & MOHUUC
6. Define Priorities for Water Quality Improvement Interventions

Legend

- Low unofficial reuse
- Low unofficial reuse and official reuse
- Medium unofficial reuse
- Medium unofficial reuse and official reuse
- High unofficial reuse
- High unofficial reuse and official reuse

Catchments in the Nile Delta with Official and Unofficial Reuse
7. Conduct Needed Research Studies

- Maximum drainage water reuse
  
  Considering requirements for ecological, salt balance in the Nile Delta and socioeconomic activities

- What is the impact of sea water intrusion on the quantity and quality of drainage water

- What is the impact on reducing the fresh water on the drainage water availability and quality
Thank You