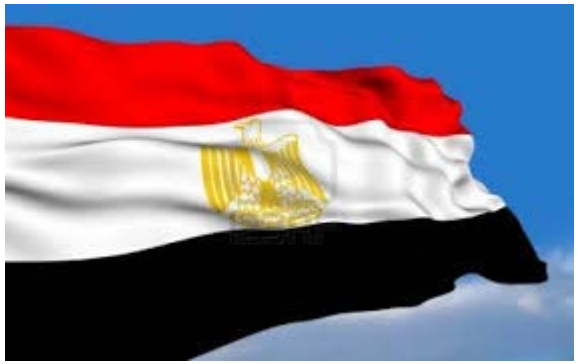

New Reclamation Mega Projects and Increasing the Pressure on Water System in the Nile Valley and Delta in Egypt

Dr. Mohamed A. Dawoud

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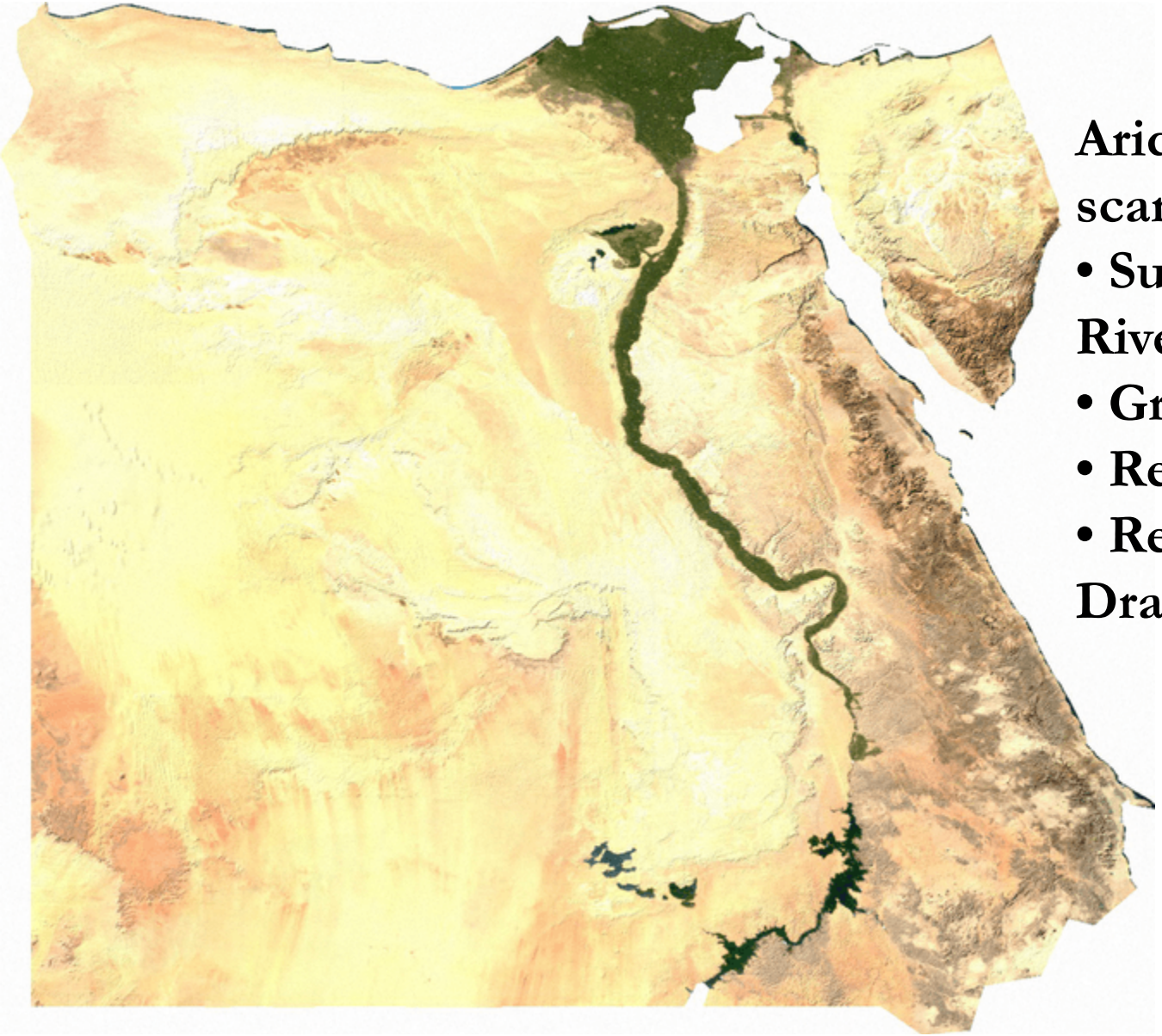
Environment Agency – Abu Dhabi

Professor, National Water Research Center, Egypt

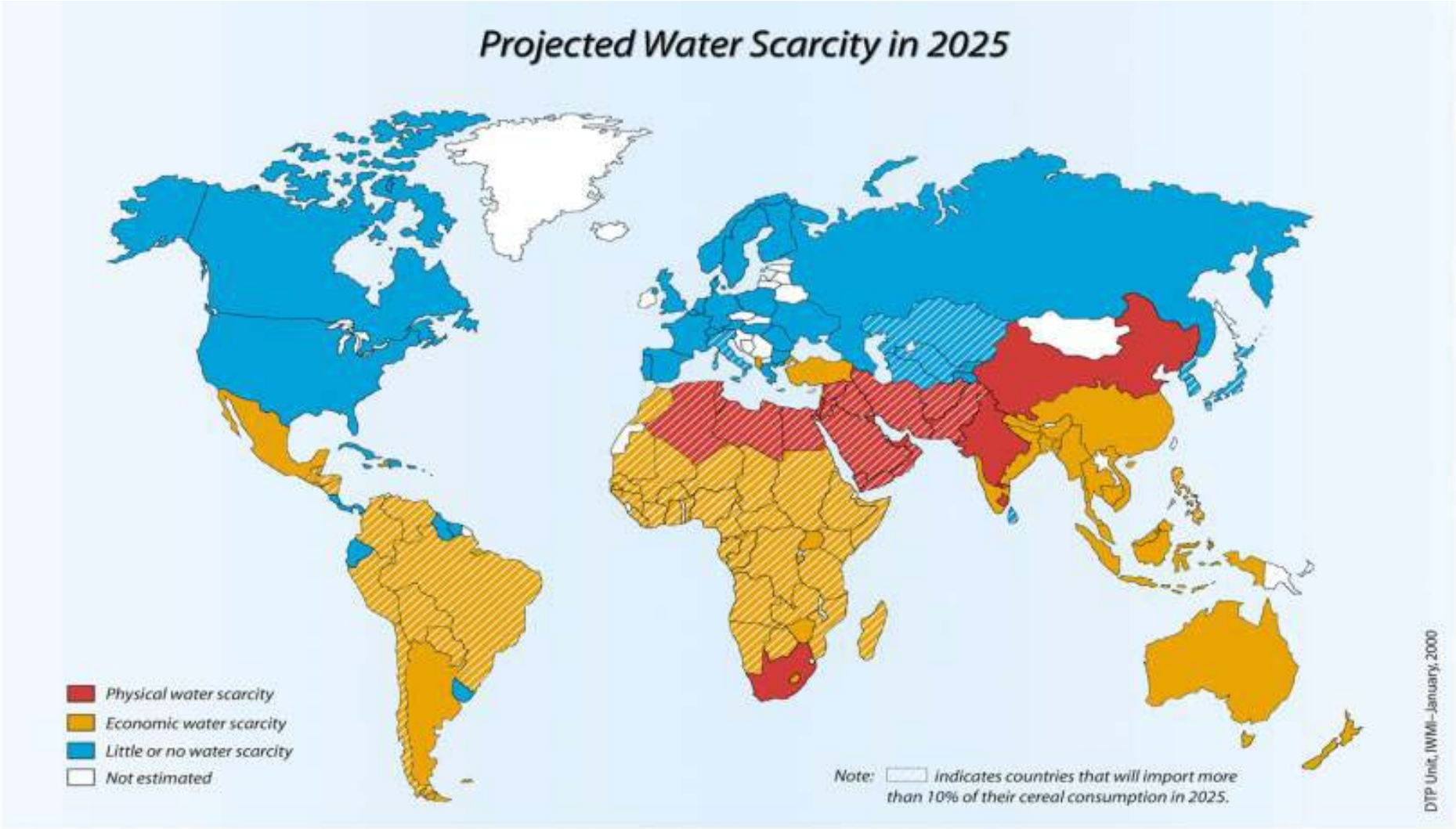
Egypt from the Space



Arid with limited and scarce water resources:

- Surface Water (Nile River
- Groundwater
- Reuse of TSE
- Reuse of Agr. Drainage Water

Water Scarcity

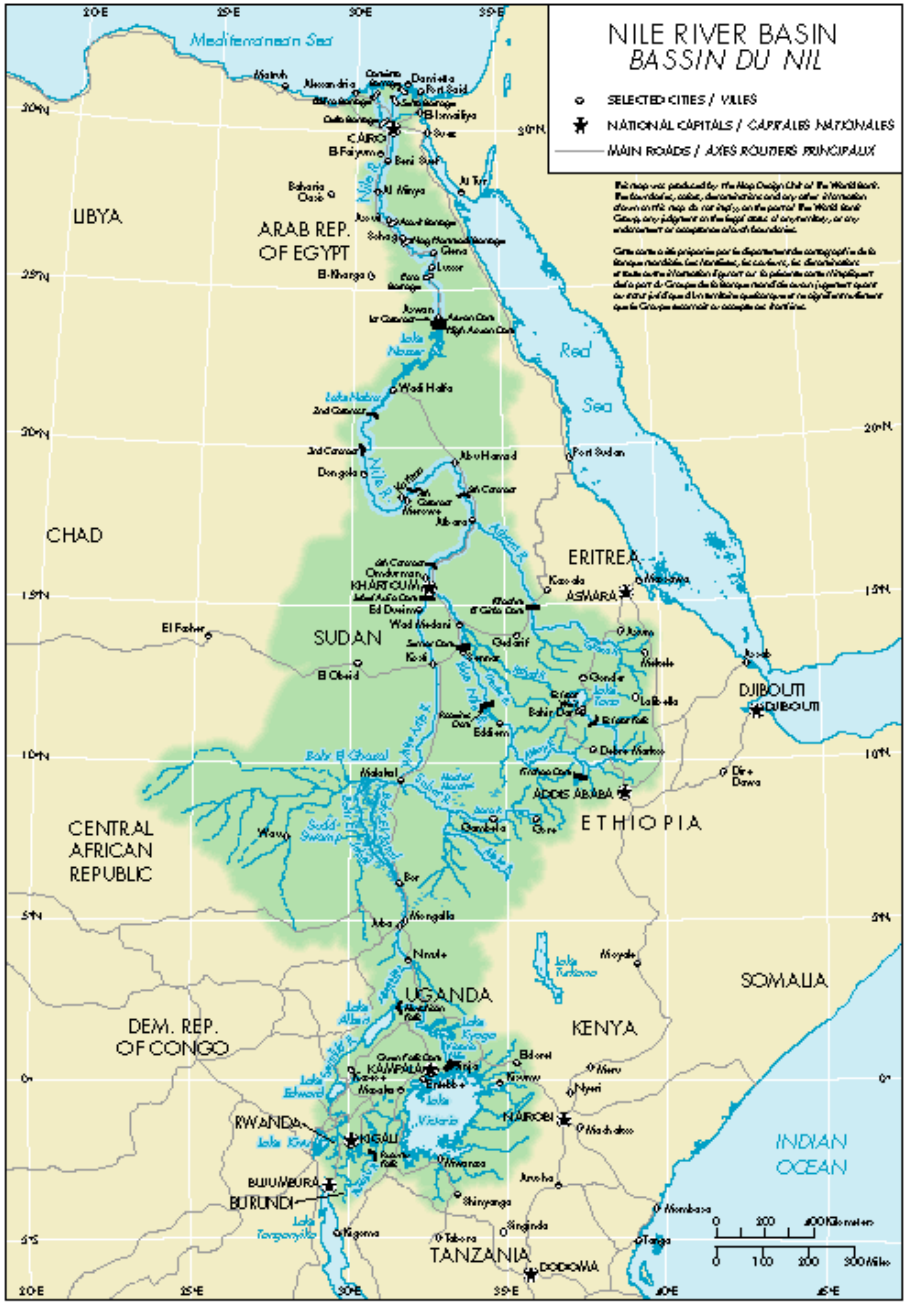


IWMI INTERNATIONAL WATER MANAGEMENT INSTITUTE

Prepared by IWMI as input for the World Water Vision, The Hague, March, 2000.

http://iwmi.org

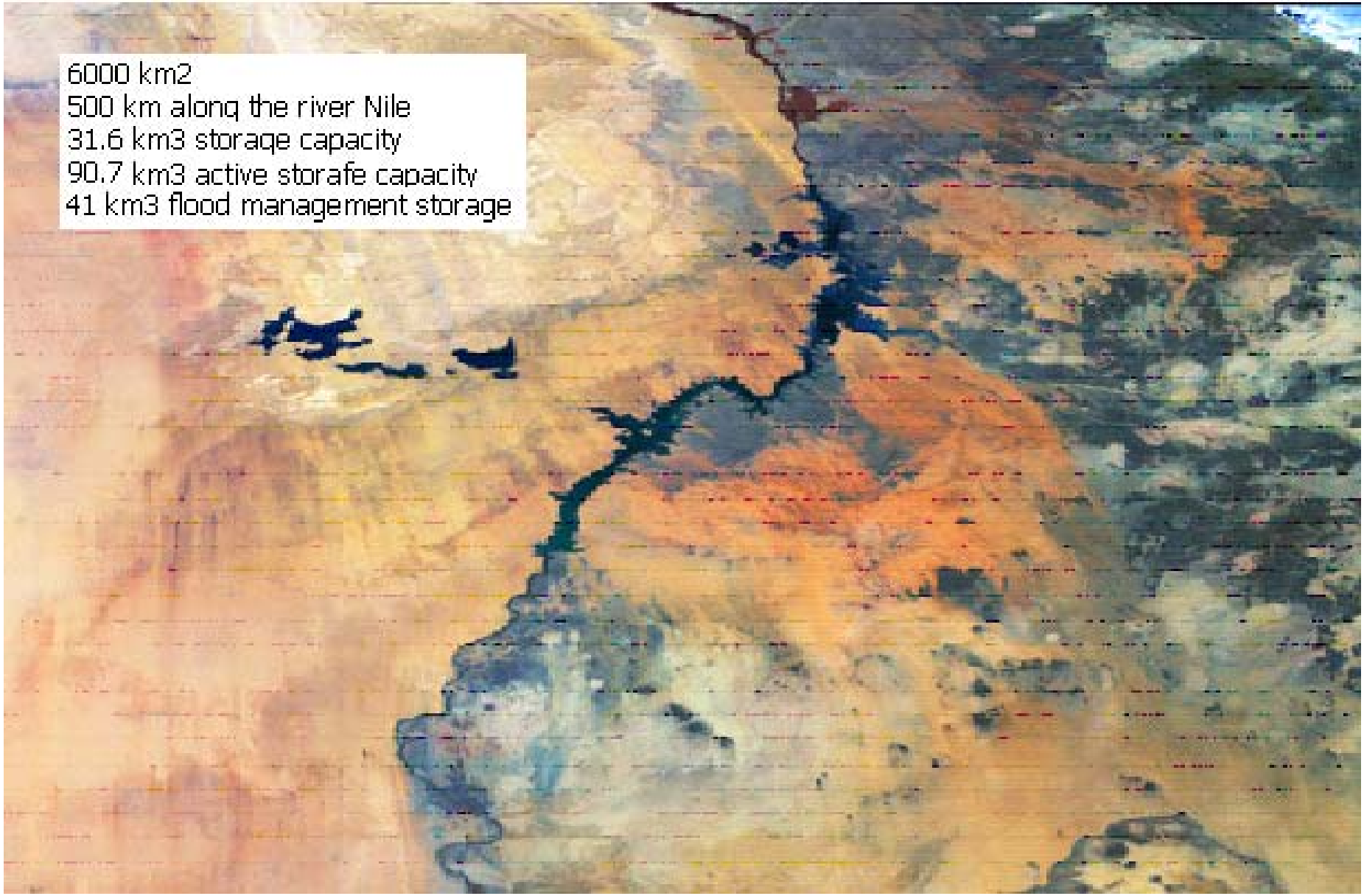
River Nile



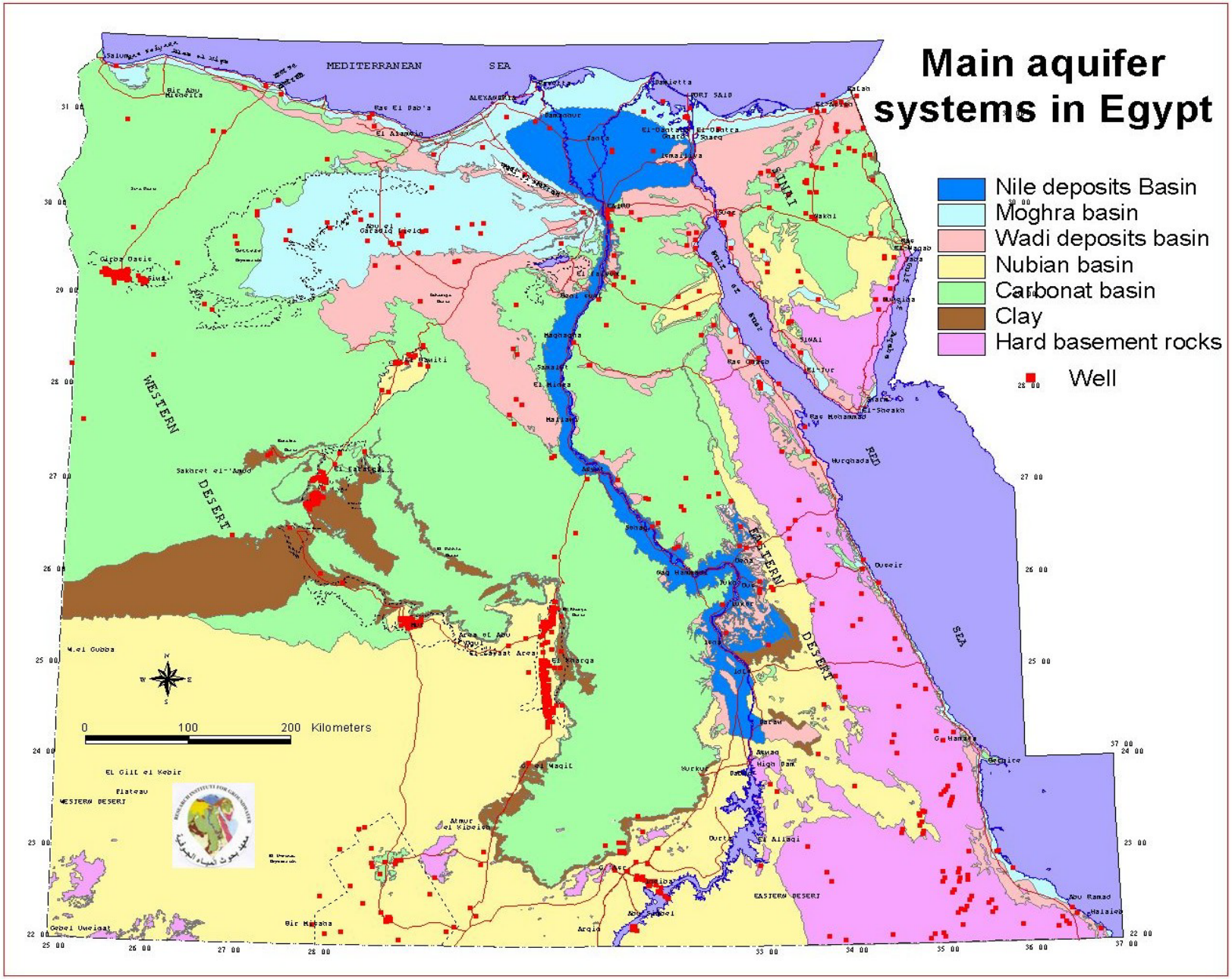
Main Source of Fresh Water

55.5 BCM/year

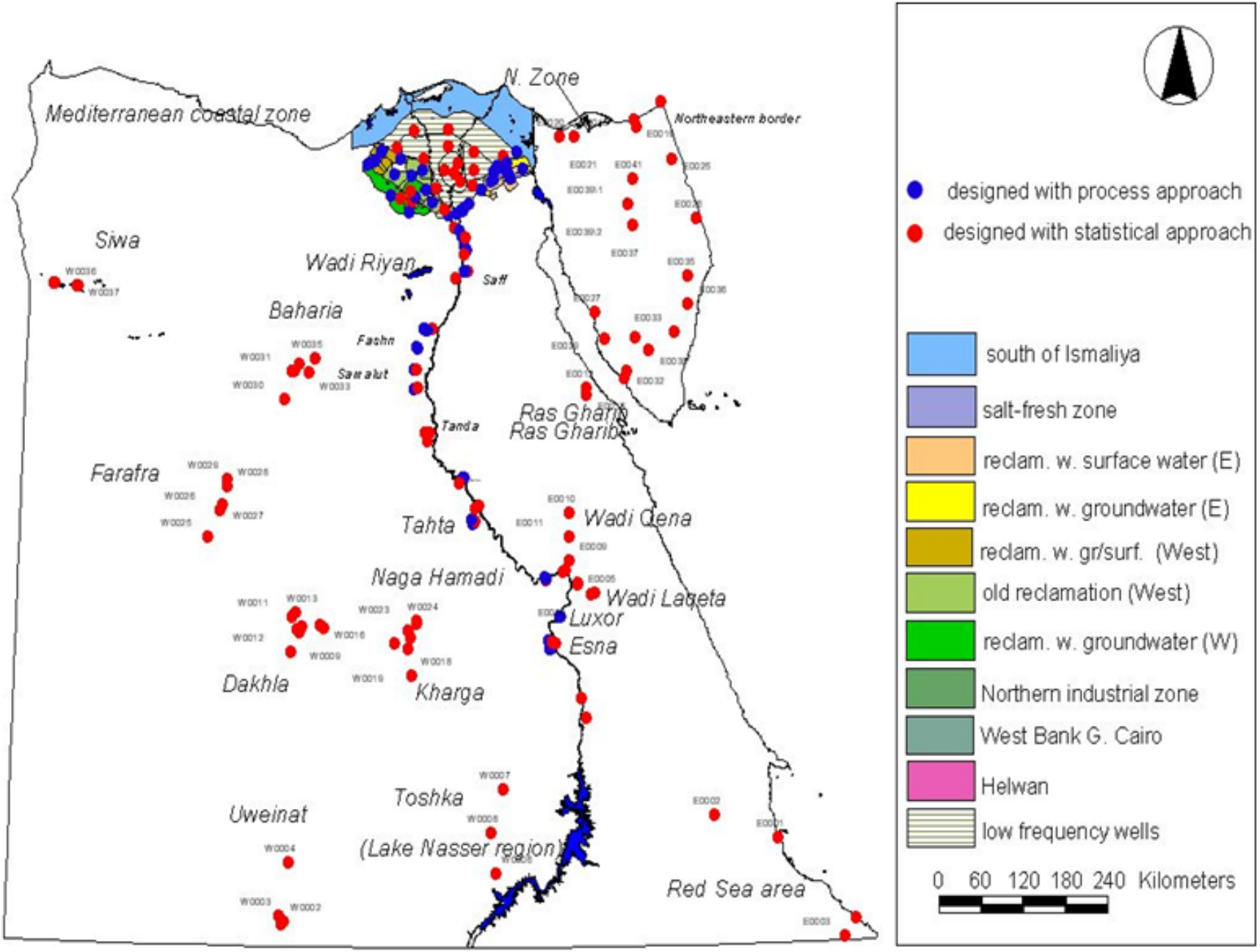
Naser Lake (National Strategic Reserve)



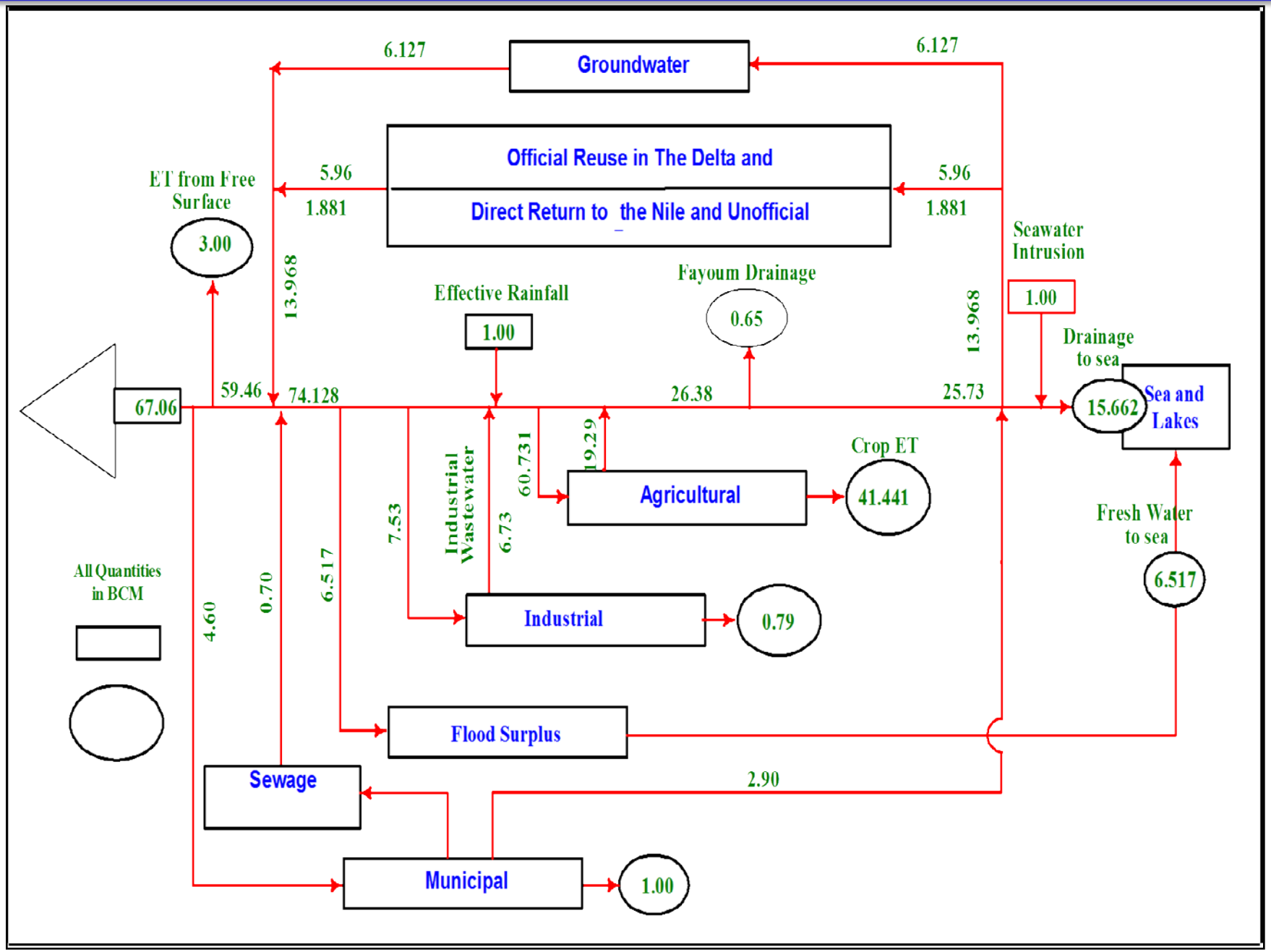
Groundwater



Groundwater Monitoring



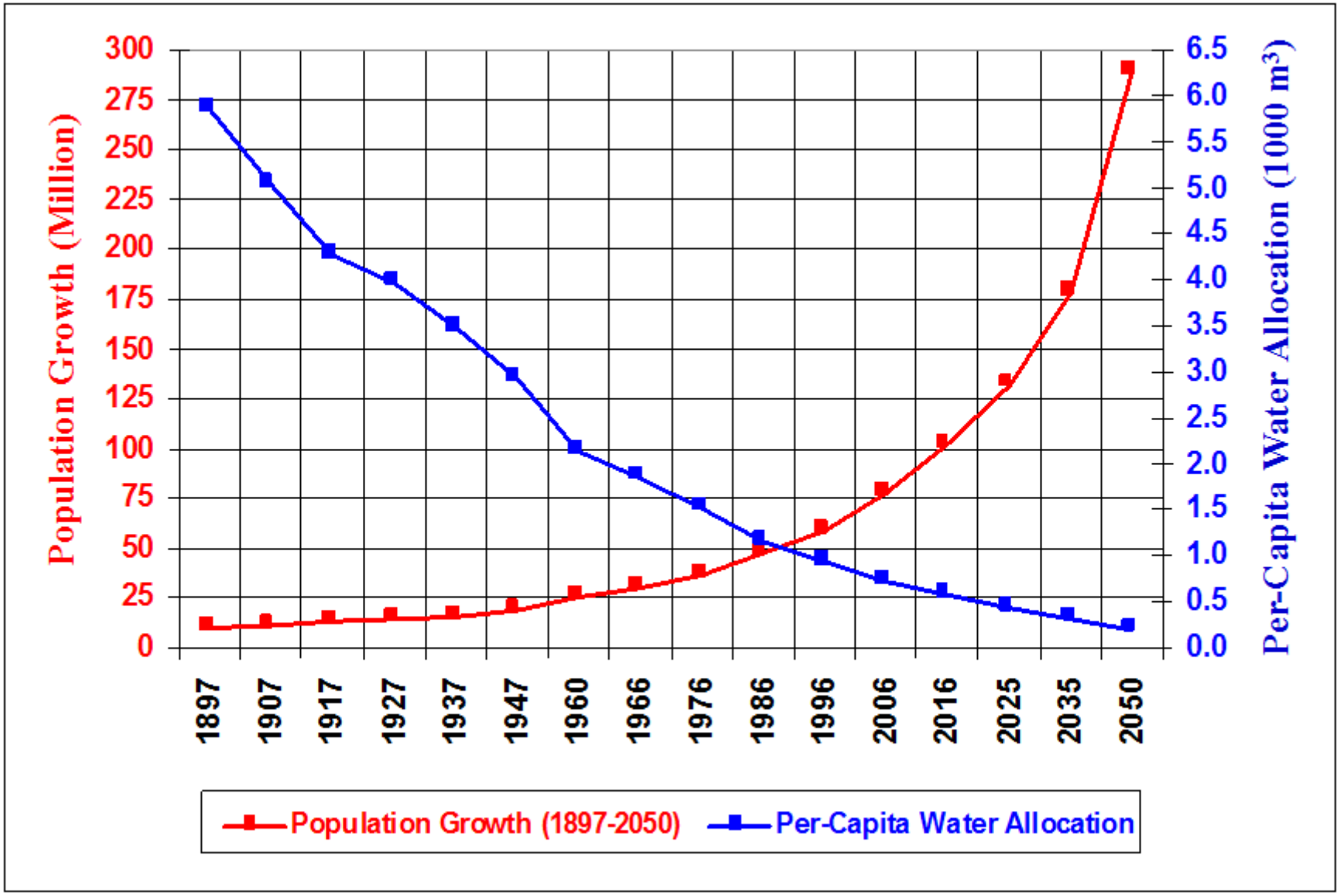
Water Closed System



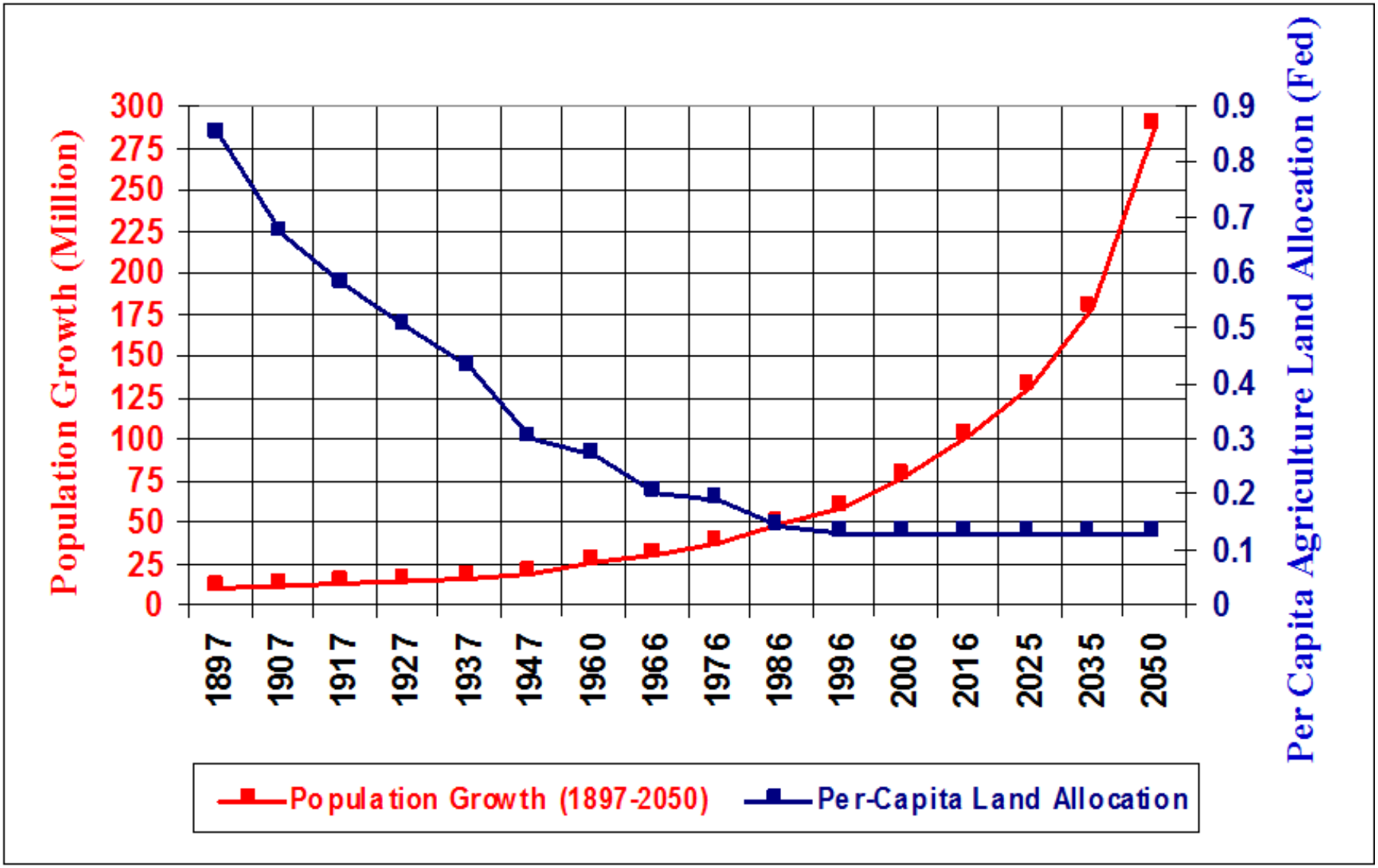
Egyptian Water Management Deriving forces

- Population growth; → Ever-increasing Population Led to Increasing Pressure on Water & Land Resources
- Water Scarcity; → Limited Conventional Resources and Non-conventional Ones, while increasing Demand
- Sectors competition; → Increasing Sectors Demand (Irrigation, Drinking, Industry, …etc.)
- Food security; → Rural Poor need to withstand the limited food availability which is mainly a water dependent issue
- Pollution & emission. → Ever-increasing water and environment pollutants destroy the main elements in the food-chain
- Cost of new resources; → Lack of available financial resources required for new resources investments.

Population Growth and Per Capita Water Allocation (1897 - 2050



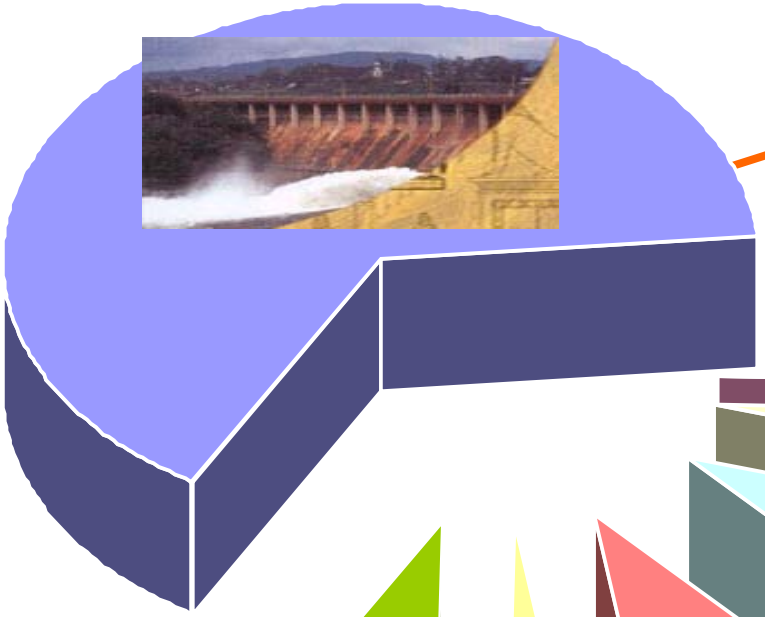
Population Growth and Per Capita Land Allocation (1897 - 2050



Current and Future Water Availability

Demand: **Agriculture (84.5%)** **Dinking (6%)** **Industry (9.5%)**

Resources:



Nile Water
57.5 - **55.5**

Rains and Floods
1.5 – 1.0

GW (Deserts&Sinai)
3.5 - 1.0

GW (Valley&Delta)
8.0 – 6.5

Agr. Dr. Reuse
8.5 - 5.0

Wastewater
2.0 - 0.7

Crop Pattern&IIP
4.0 + 3.0

Current (BCM)
Future 2017

Current and Future Water Availability

Source	2001	2017
The Nile	52.5*	55.5**
Renewable ground water	4.8	7.5
Agricultural drainage water	4.5	8.4
Treated domestic waste water	0.7	2.5
Treated industrial waste water	6.7	6.7
Desert aquifers	0.57	3.77
Rainfall and flush harvesting	-	1.5
Saving from management	-	1.5
Total	69.77	87.37

Opportunities and Major Tasks

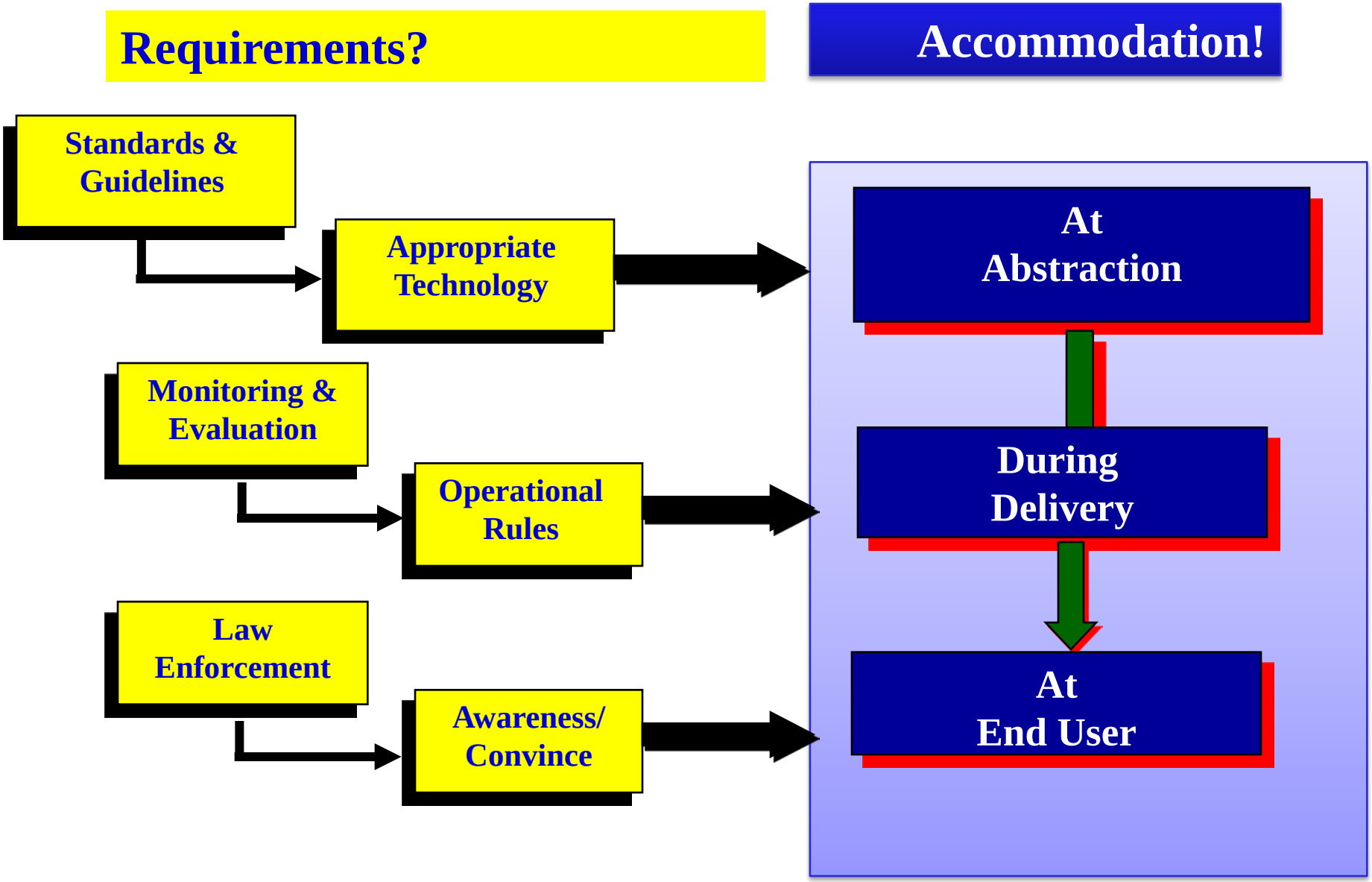
Opportunities

- Availability;
- Technology;
- ± ve Impact on:
  - -Natural resources;
  - -Environment;
  - -Public health.
- Sustainability.

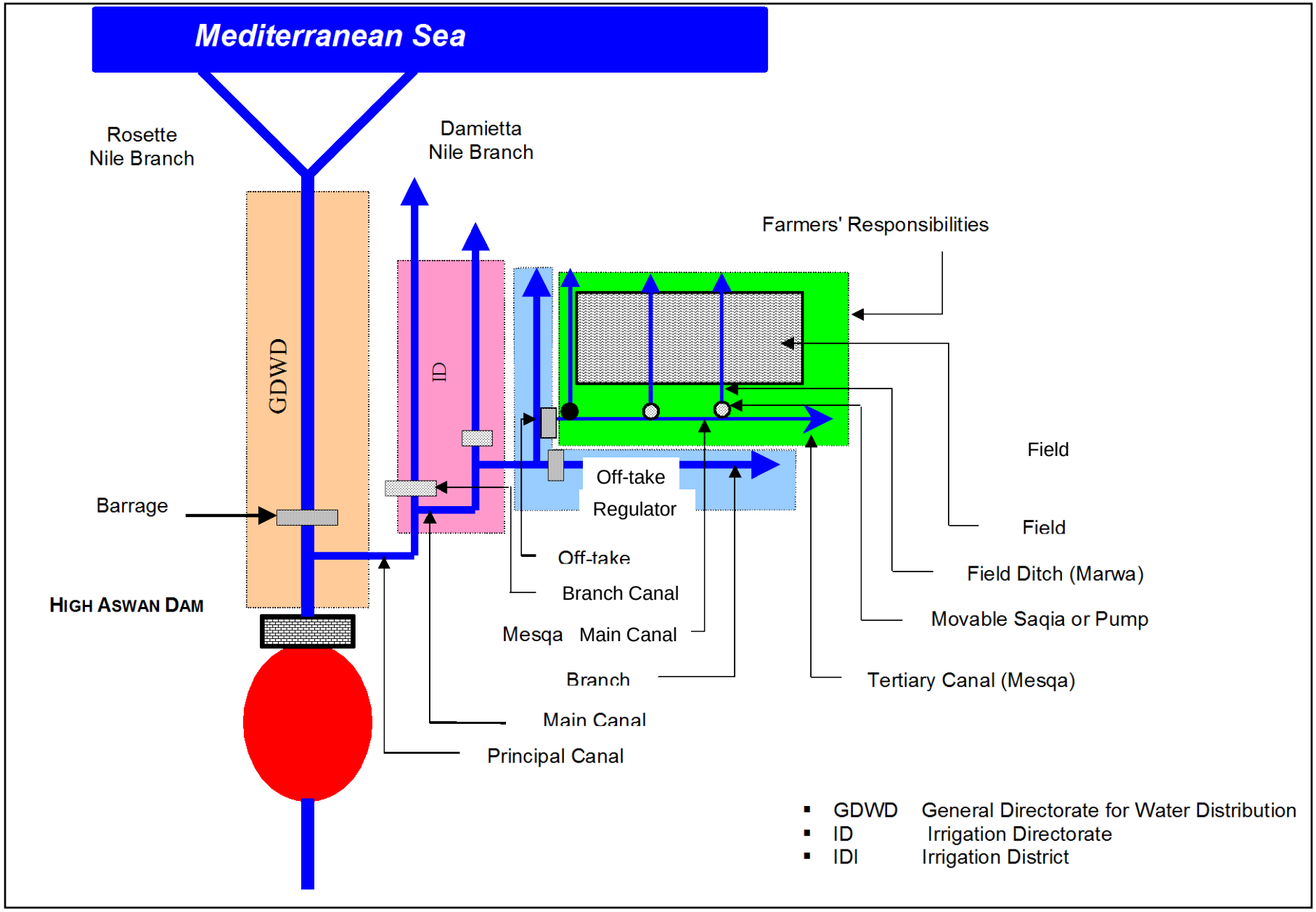
Major Country Strategy Tasks

- Regulatory & policy framework;
- Integrated Planning;
- Efficient Economic mechanisms;
- Introduction to PPP approach;
- Raising Awareness/Maintain convincing;
- Decentralization & Participation; and
- Bridging research and Practice.

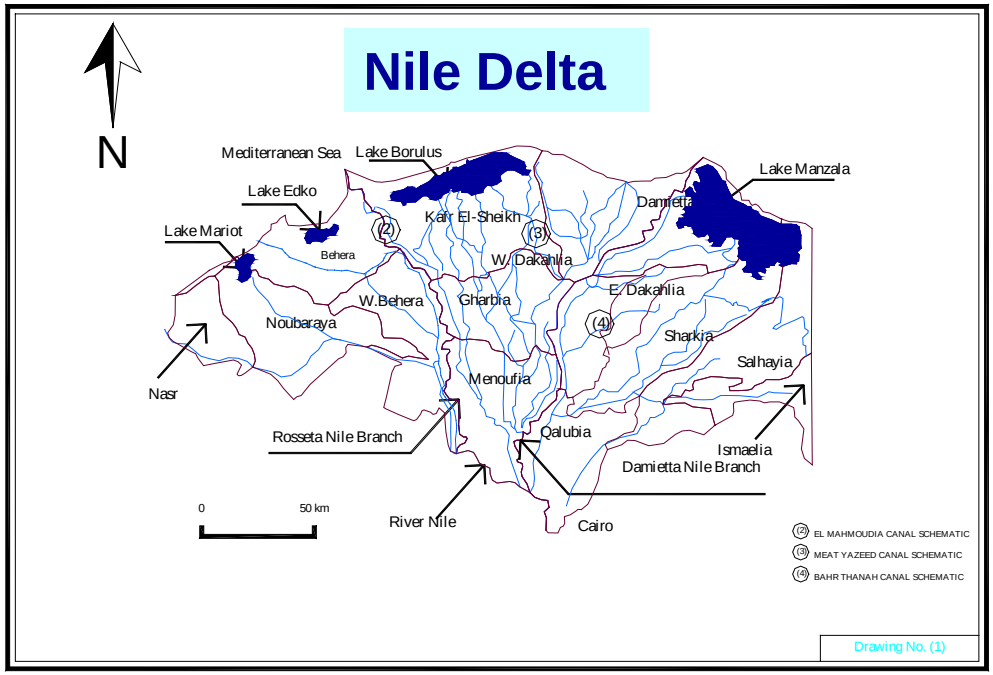
Sustainable Use

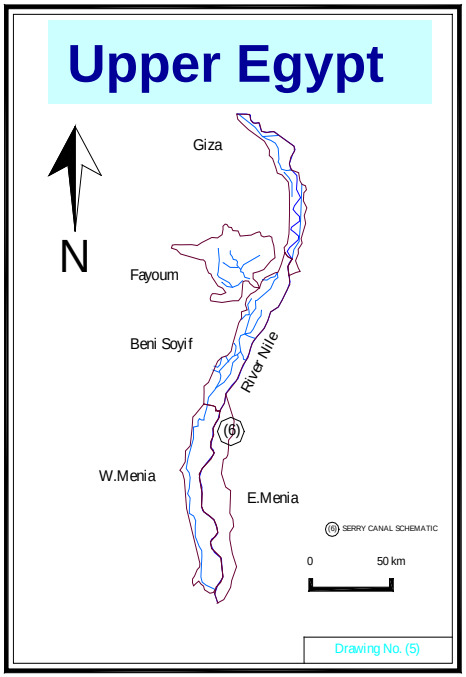


Irrigation System in Egypt

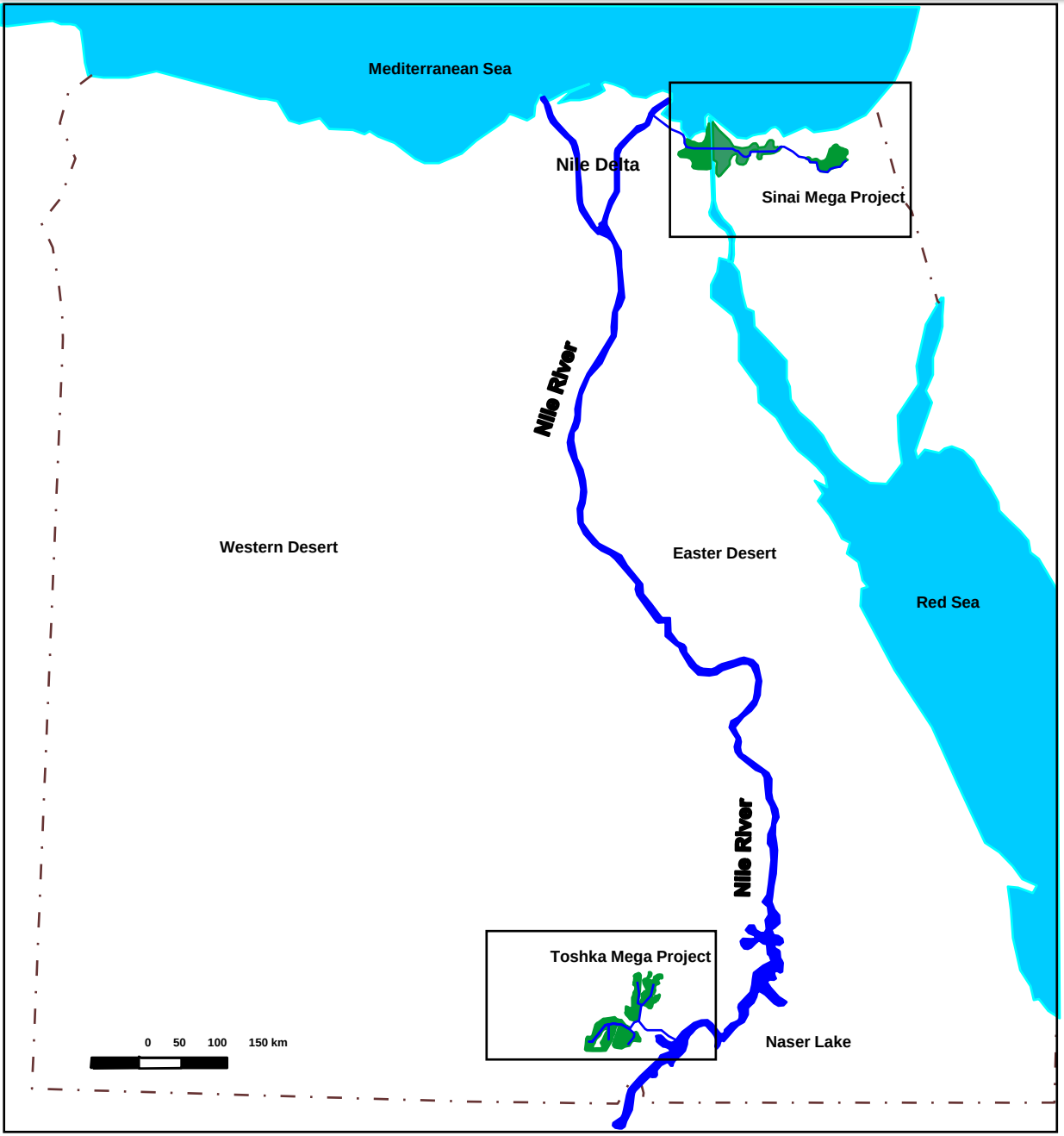


IRRIGATION DIRECTORATES





New Reclamation mega Projects



Irrigation Area depend on Nile Water (1997-2017)

Region	1997 (1000 feddans)	2017 (1000 feddans)
Upper Egypt	1307	1728
Middle Egypt	1093	10851
Fayoum	360	378
East Delta	2131	2,4461
Middle Delta	1551	1525
West Delta	1473	18861
Sinai (Surface Water)	0	620
Toshka (surface water)	0	540
Total	7915	10208

Irrigation Area depend on Nile Water (1997-20170

- Egypt lacks the necessary data in various sectors, especially water. The only measured resource is the Egypt Nile water quota downstream High Aswan Dam (HAD). There is no accurate measurement for either rainfall or flash floods. As for water quality measurements in Water courses, or for groundwater aquifers, they are very few, even along the Nile River and main canals. The available measurements are both limited and for only a few elements. There are also usually done on distant intervals.
- It is expected that the irrigation improvement and crop pattern projects will not be finalized to save about 7 BCM/Year for the mega projects in Toshka and Sinai, which cost a lot of money and investments, therefore the water requirement for those two projects may be deduced from the released water to the Nile Valley and the Delta, moreover, Egyptian currently facing a great challenge which represented in constructing a number of dams in Ethiopia, that is expected effect on Egypt's share of Nile water, however.

Irrigation Area depend on Nile Water (1997-20170

- Recent studies indicated that, the use of treated wastewater may not be possible, due to economic reasons, to provide sewerage facilities for all residents of rural and per urban areas, either now or in the near future. So, it should be considered an integral component in country‘s national water strategic plan.
- As a result, the focus of the field of wastewater management should change from the construction and management of regional sewerage systems to the construction and management of decentralized wastewater treatment facilities. Given the fact that in the near future, increasing demands are being made on freshwater supplies, it is clear that decentralized systems, will increase the opportunities for localized reclamation/reuse. Also, the use of anaerobic treatment as a first step offers good potentials for both on-site and off-site sanitation.
- The role of scientific research should take its place to develop new affordable water saving techniques. The same role is significant for introducing new agriculture technologies, seeds and breeds that have high productivity, high diseases resistance and low water consumption.

Paper Authors

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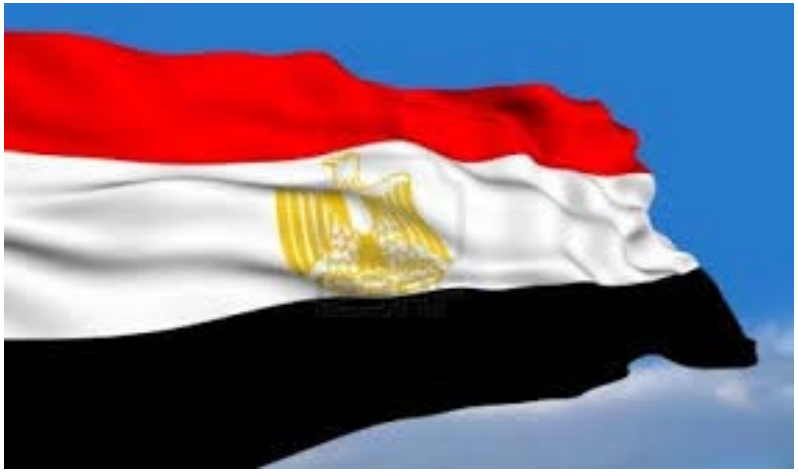

Thank You