

Water Research in Water Resources Vision for 2050

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HISTORICAL BACKGROUND

- Water research is deeply rooted in the Ministry of Water Resources and Irrigation since its establishment in 1864
- The Survey Authority (established in 1878) performed hydrologic research and studies while experiments and field measurements were conducted by the different irrigation inspectorates
- In 1915, the Physical Department was established to carry out hydrologic and hydraulic research

HISTORICAL BACKGROUND (Cont.)

- El-Kanater Experimental Station (1918) served as a hydraulic laboratory dedicated for solving field problems faced by irrigation engineers
- The Experimental Station and the Physical Department were merged into the Water Research Inspectorate in 1951

HISTORICAL BACKGROUND (Cont.)

- The Ministry established the Water Research Center (WRC) in 1975 to respond to urgent problems and concerns associated with the construction and operation of the Aswan High Dam.
- In 1994, it was upgraded to be the National Water Research Center (NWRC)

Water Research in Universities and Other Research Institutions

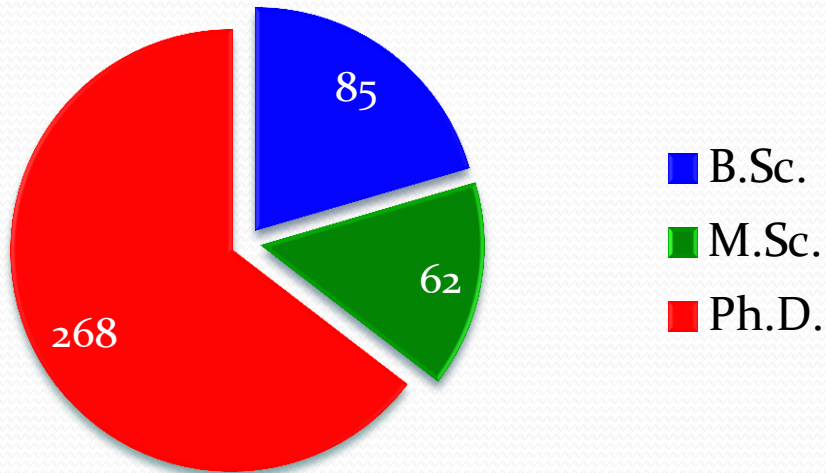
- In addition to NWRC, most **Egyptian universities** include water departments in faculties of engineering, agriculture and science
- The Holding Company for Drinking Water and Sanitation recently established a **Research and Development (R & D) Sector**

Water Research in Universities and Other Research Institutions (Cont.)

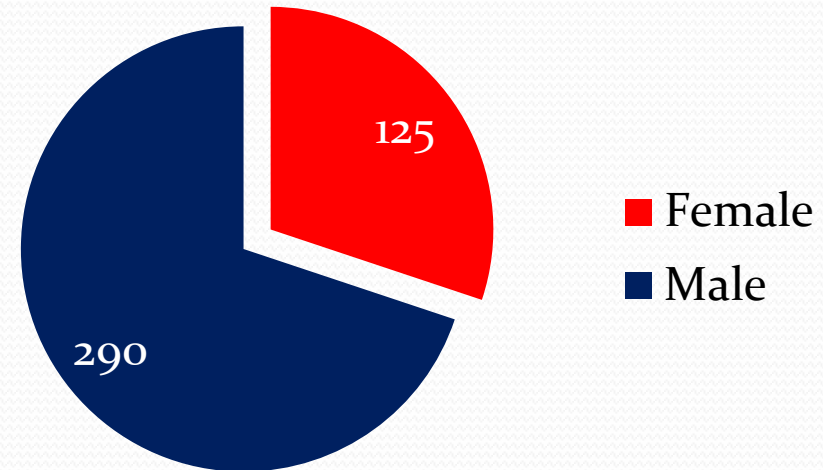
- The **National Research Center (NRC)** established in 1956, also comprises a department for water quality and wastewater treatment research
- The **Agriculture Research Center (ARC)** institutes are as well involved in water research

NWRC HUMAN RESOURCES

Staff by Scientific Degree

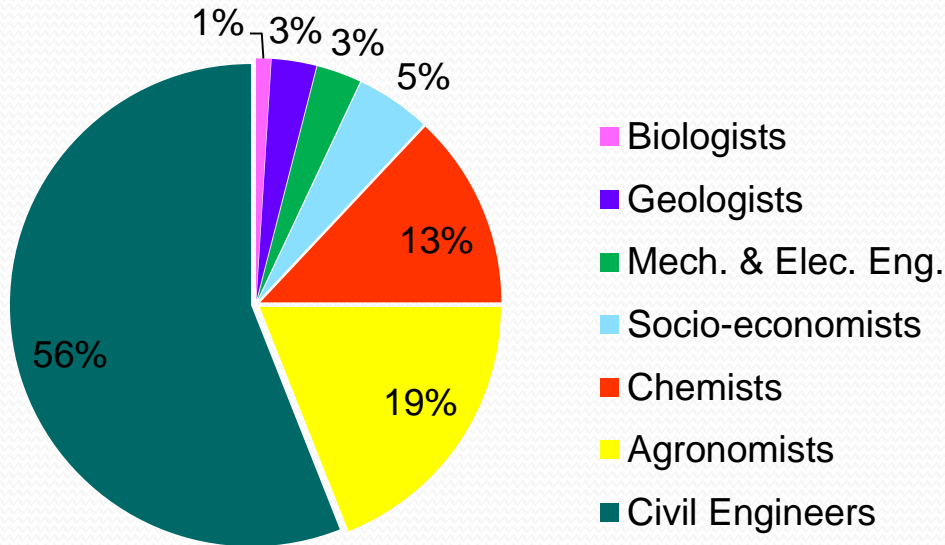


Staff by Gender

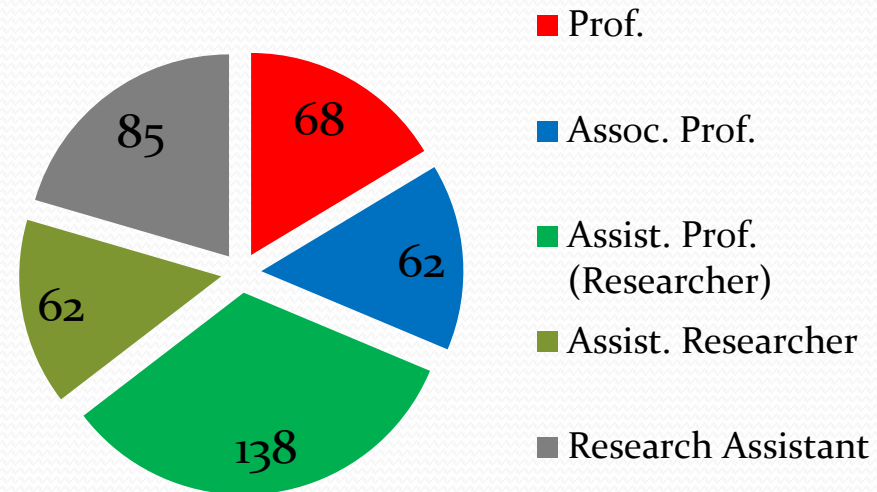


STAFF SPECIALIZATIONS AND EXPERIENCES

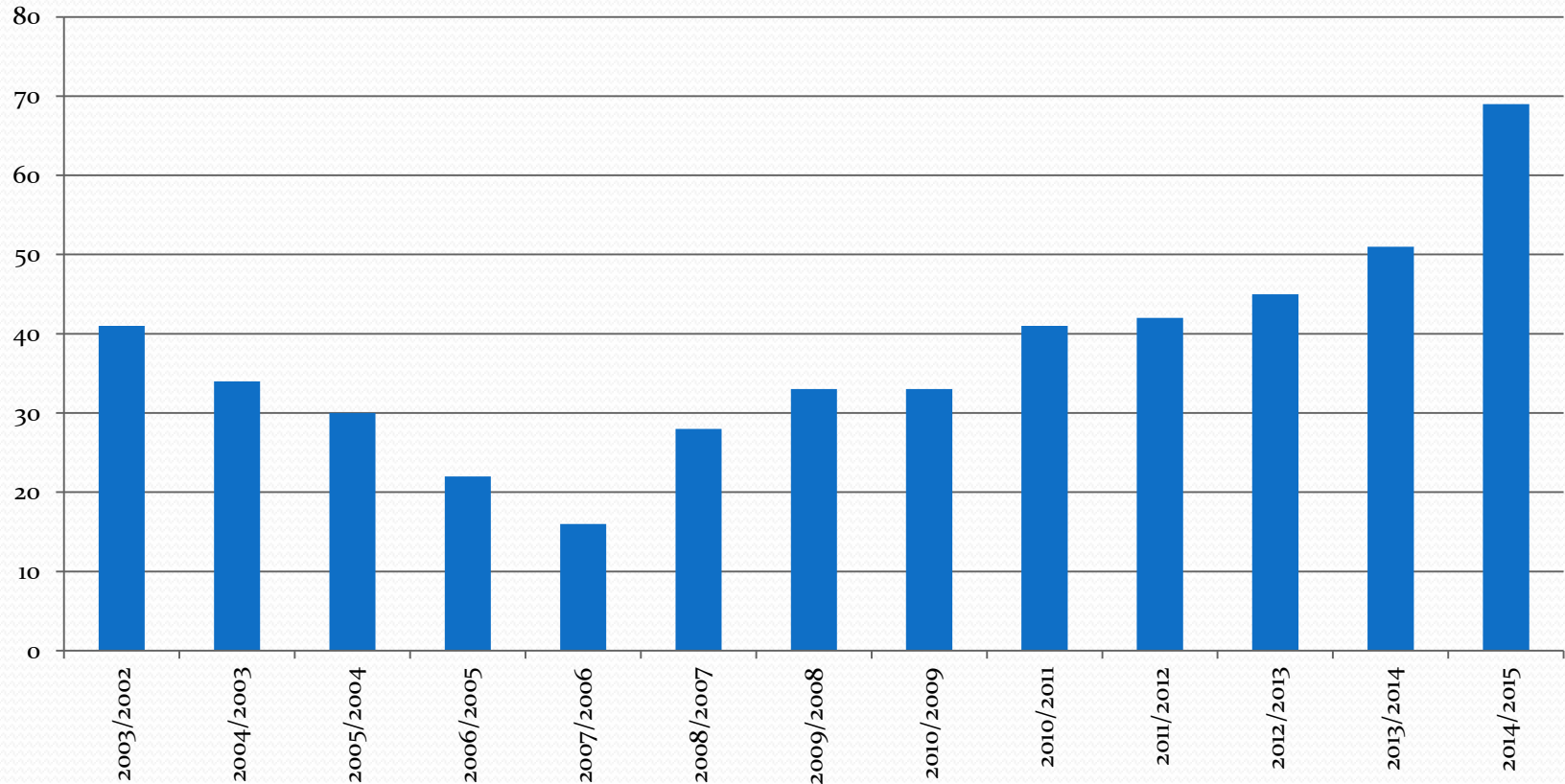
Staff Specializations



Staff Experience



GOVERNMENTAL RESEARCH FUNDS (MLE)



INFRA STRUCTURE AND FACILITIES

- More than 12 laboratories and experimental halls to support research in:
 - Channel hydraulics
 - Fish breeding
 - Soil analysis
 - Water quality, etc.
- Field equipment such as;
 - Mobile labs,
 - Satellite-based GPS and DGPS
 - Current meters
 - Tidal gauges and Echo-sounders, etc.
- Several tools have been adopted and utilized such as:
 - Remote sensing, GIS
 - Monitoring networks
 - Mathematical models



Egyptian Water Resources Vision 2050

Comprises **research** as a major **driver** for the development and management of **conventional** and **non-conventional** water resources, **conservation** of water **quality** as well as adaptation to expected **impacts** of **climate change**

MAIN WATER CHALLENGES

- Threats to Egypt's water quota/Reduced availability per capita
- Vulnerability of groundwater aquifers
- Deteriorated infrastructure and networks
- Escalating water pollution problems
- Mediterranean seawater intrusion and level rise
- Individualized cropping patterns; calling for more finely-tuned allocation and distribution

PROPOSED RESEARCH THEMES

- Water Resources Planning and Management
- Water and the Environment/Ecosystems
- Water Use and Wastewater
Reuse/Management
- Climate Change Impacts on Water
Resources Management



CROSSCUTTING RESEARCH LINES

- Water and the Society
- Water and the Economy
- Water and Health

DETAILED RESEARCH TOPICS

- **Impact of Upstream Storage Development (Upper Nile Basin)**
- **Climate Change Impact Assessment**
- **Reassessment of AHD Storage and Future Operation**
- **Groundwater (Potential-Vulnerability)**
- **Non-Conventional Water Resources**
- **Redesign of Drainage Reuse Scheme (Nile Delta)**

DETAILED RESEARCH TOPICS (cont.)

- **River Morphology**
- **River Engineering**
- **Design of Open Drains and Irrigation Channels**
- **Surface Water Quality Modeling**
- **Aquatic Weeds Management**
- **Technology Adaptation**
- **Coastal Areas and Northern Lakes**

Thank you