



NATIONAL WATER RESEARCH CENTER (NWRC)

**MINISTRY OF WATER RESOURCES AND
IRRIGATION, EGYPT**

ABOUT NWRC

- The National Water Research Center NWRC is the research arm of the Ministry of Water Resources and Irrigation of Egypt.
- Established in 1975 such that each institute is twinning with a sister Department / authority in the MWRI.



NWRC Institutes



NWRC HQ

NWRC Mission

NWRC is a center of excellence that possesses the knowledge and expertise in water resources, dedicated to conduct applied research at the highest water policy-making level.



NWRC Mandate

- ✦ **Conduct applied research vital to the management, development and protection of Egypt's water resources.**
- ✦ **Produce scientific knowledge needed by policy makers and public & private sectors.**
- ✦ **Conduct investigations and research related to the extension of agriculture lands.**
- ✦ **Lead the way in monitoring and assessing the status of water quantity and quality.**
- ✦ **Find the proper and economic design for water structures.**



National Water Research Center



Water Management Research Institute (WMRI)



Drainage Research Institute (DRI)



Water Resources Research Institute (WRI)



Nile Research Institute (NRI)



Hydraulics Research Institute (HRI)



Channel Maintenance Research Institute (CMRI)



Research Institute for Groundwater (RIGW)



Construction Research Institute (CRI)



Mechanical & Electrical Research Institute (MERI)



Survey Research Institute (SRI)



Coastal Research Institute (CoRI)



Environmental & Climate Research Institute (ECRI)

Research Fields

- **Water Resources Management and Protection**
- **Modern Irrigation Techniques**
- **Hydraulic physical and mathematical modeling**
- **Water Quality Monitoring and Assessment**
- **Assessment & design of different types of water structure**
- **Utilization of Nano technology**
- **Rain harvesting and flash flood management**
- **Hydropower and solar energy technology**
- **Sediment transport assessment**
- **Navigation channels assessment**
- **Channel's weeds control and management**
- **Integrated Coastal zone management**
- **Climate change studies**
- **Desalination technology, suitability, and sustainability**
- **Drainage systems and drainage water re-use**



Research Facilities



Central Laboratory for Environmental Quality Monitoring

LEQM

- A modern central lab with advanced equipment operated by highly qualified staff under total quality management program to combine efficiency and precision
- **THE CERTIFICATE OF LABORATORY PROFICIENCY by the Canadian Association for Environmental Analytical Laboratories awarded in 2004 & updated each year (registration No. 3409)**



Currently Approved to be Category-2 center under UNESCO

Main Departments at CLEQM:

- Inorganic Chemistry Dept.
- Organic Chemistry Dept.
- Microbiological Dept.
- Virology Dept.
- Soil Analysis Dept.

Training Center

CLEQM offers an impressive number of courses across a broad range of subjects

THEORITICAL



- Water treatment
- EIA
- Laws & Regulations
- Design of Monitoring network

PRACTICAL TRAINING



- Analyses of all Environmental matrices (Water, Soil , Plant and aquatic organism)

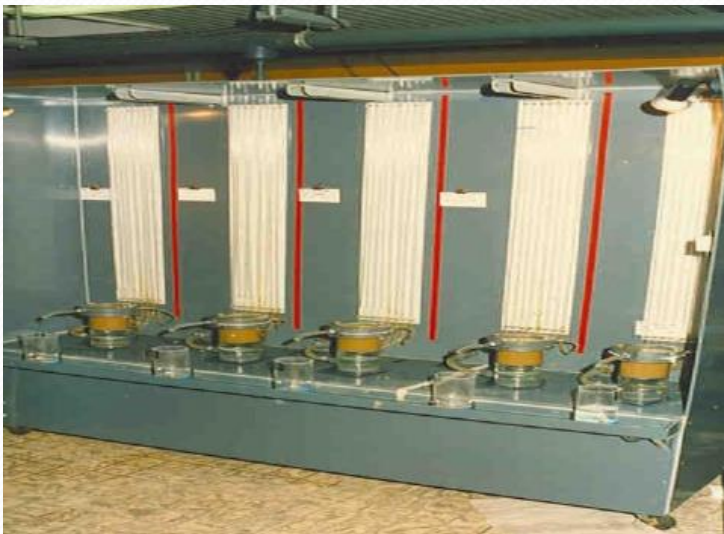
Specialized Laboratories at NWRC



Hydraulic Physical Models Lab. - HRI



Soil Mechanics Lab. - CRI

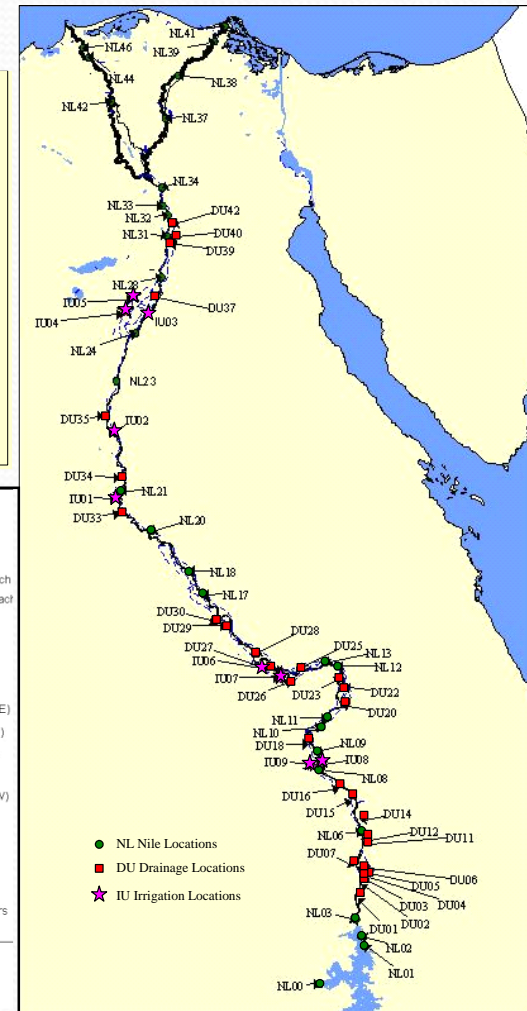
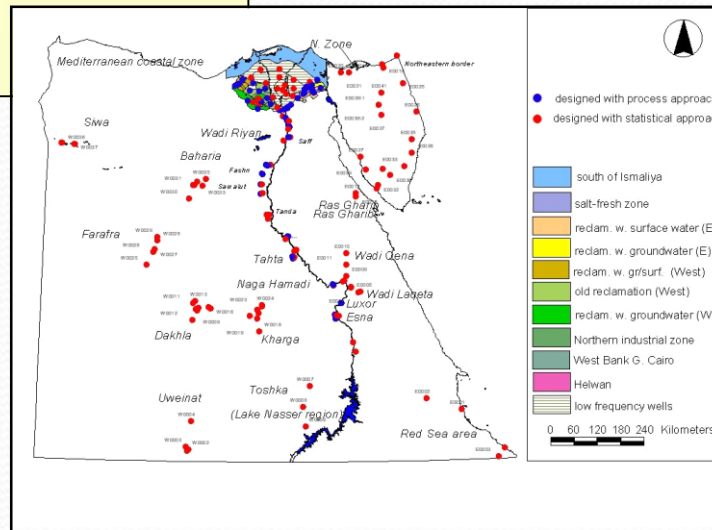
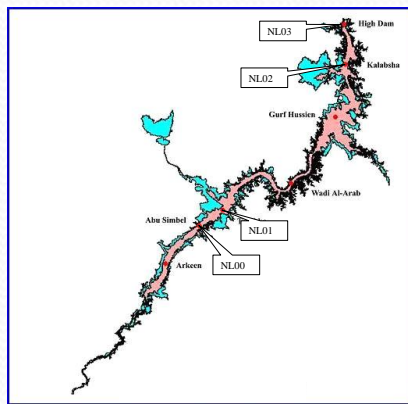
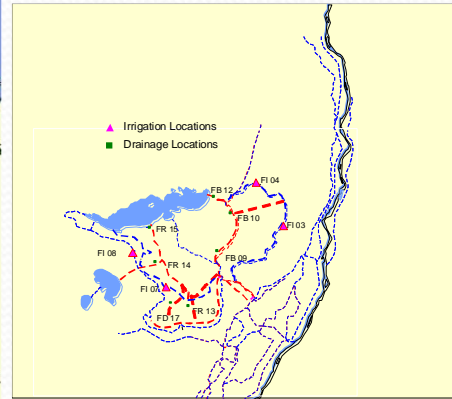
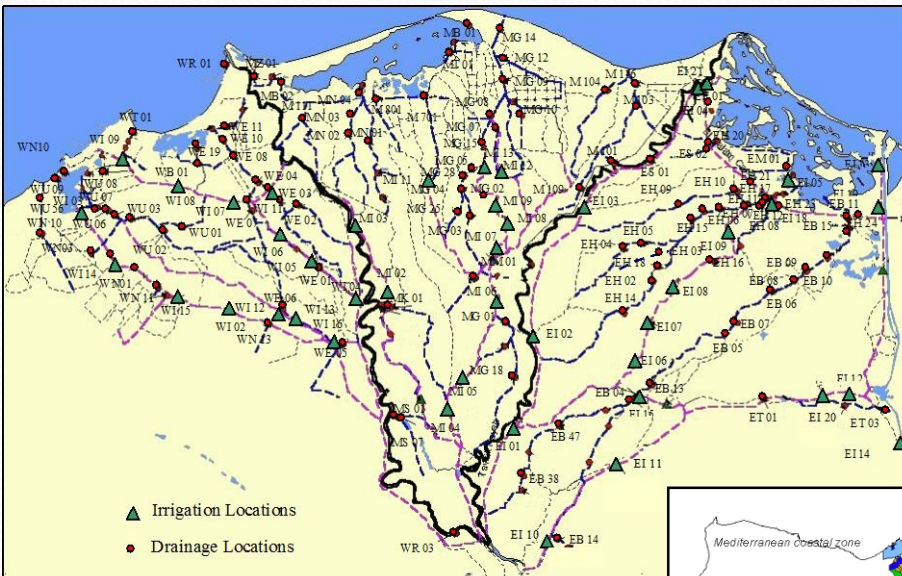


Drainage Material Lab. - DRI



Wave Flume - CoRI

Water Quality Monitoring Network (435 Monitoring Locations)



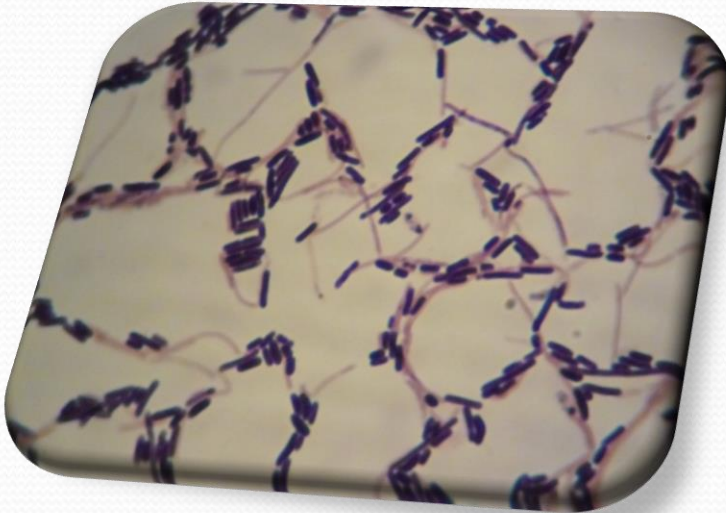
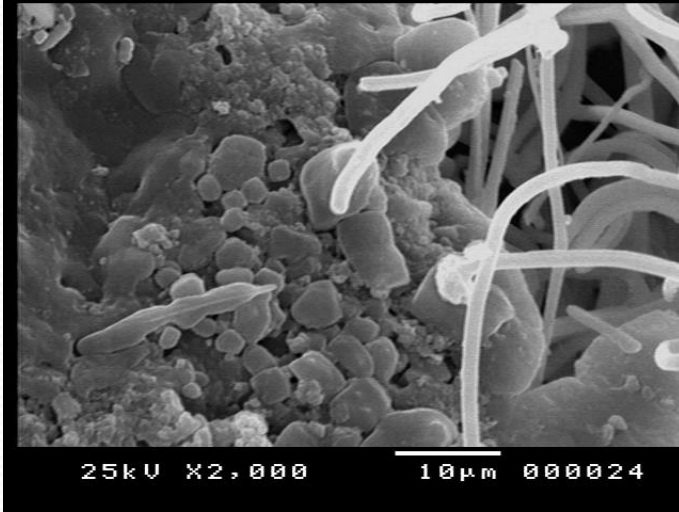


Distinguished Research

الأهرام الرقمي

2013/5/4

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الأهرام الرقمي

الصفحة الرئيسية | الإصدارات | كتاب الأهرام | عذسة الأهرام | الأعداد الت

مجتمع

بكتيريا بديلة للأسمنت

المصدر: الأهرام اليومي

بقلم: إسلام أحمد فرحات

4

إسلام

الدكتور أيمن يوسف إبراهيم في المعمل

فيما يمثل ابتكاراً ثورياً قد يغير أسلوب البناء والتشييد في مصر، ويُلغى الاعتماد على الأسمنت مستقبلاً. توصلت مجموعة من العلماء والباحثين بالمركز القومي لبحوث المياه إلى استحداث طريقة لتحسين خواص التربة باستخدام بعض أنواع البكتيريا الموجودة طبيعياً في التربة المحلية والتي تقوم بنفس دور الأسمنت. تنتج هذه الأنواع من البكتيريا، بعد إضافتها إلى خليط مواد البناء، أنزيم البوريا الذي يعمل على تصلب التربة وزيادة كفاءتها طبيعياً بتكوين كريستالات كربونات الكالسيوم.

يقول الدكتور أيمن يوسف إبراهيم رئيس وحدة البكتريولوجي بالمعامل المركزية للرصد البيئي إنه تم بالفعل اكتشاف أربعة فصائل بكتيرية بعد عزلها معملياً، أظهرت تلك البكتيريا قدرتها العالية جداً على القيام بدور الأسمنت ويجري الآن تجربتها معملياً لتحسين خواص التربة الرملية، مؤكداً أن هذا العمل يعد الأول من نوعه على مستوى مصر والعالم العربي وإفريقيا.

يعمل الآن فريق من الباحثين على إجراء بعض التجارب المهمة لمحاولة عزل مزيد من أنواع البكتيريا القادرة على القيام بهذه الخاصية من التربة المصرية الموجودة بالمحافظات المختلفة لتوفير زكبر قدر ممكن من أنواعها لاختيار أفضلها وتحديد أنسب الطرق لاكتثارها وذلك نظراً بسوق البناء والتشييد في أقرب وقت ممكن سعياً من الباحثين الوطنيين لتلافي صيوب استخدام كميات هائلة من المواد الأسمنتية في البناء ومبته من أضرار بالبيئة بالإضافة إلى التكلفة الاقتصادية المرتفعة.

Developing Bacteria as an alternative for cement

Samples of innovative gates cross sections from sand & fiber glass – lighter weight & less cost by 40%-50%



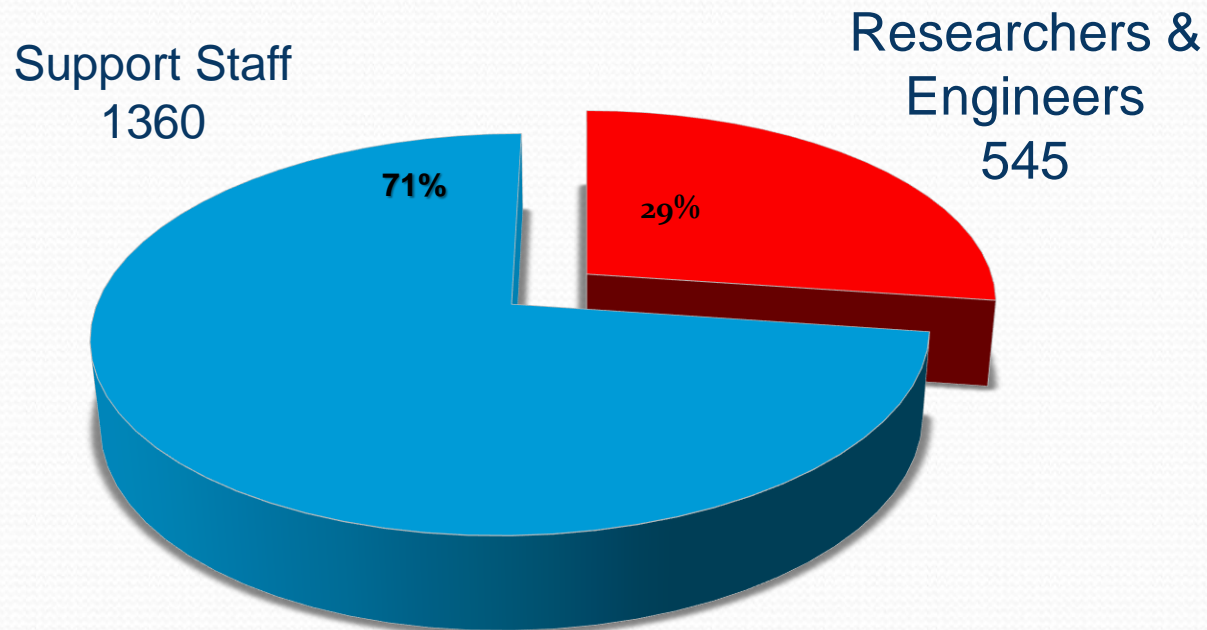
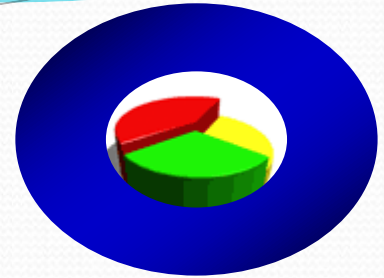
**Type-2 for
branch canals**



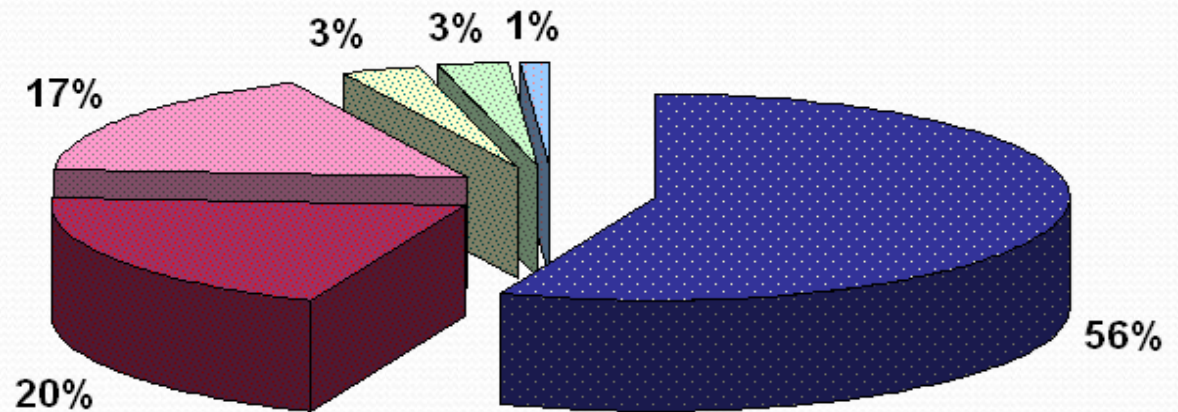
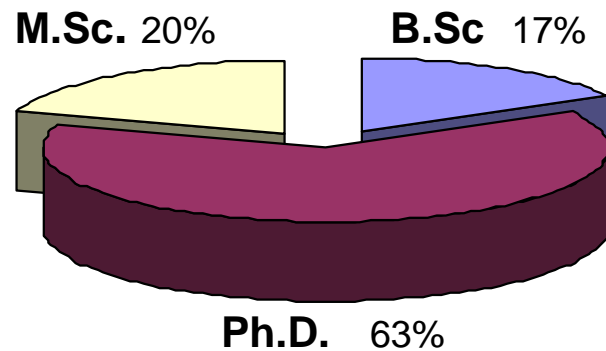
**Type-1 for
main canals
& Rayahat**



NWRC Work-team



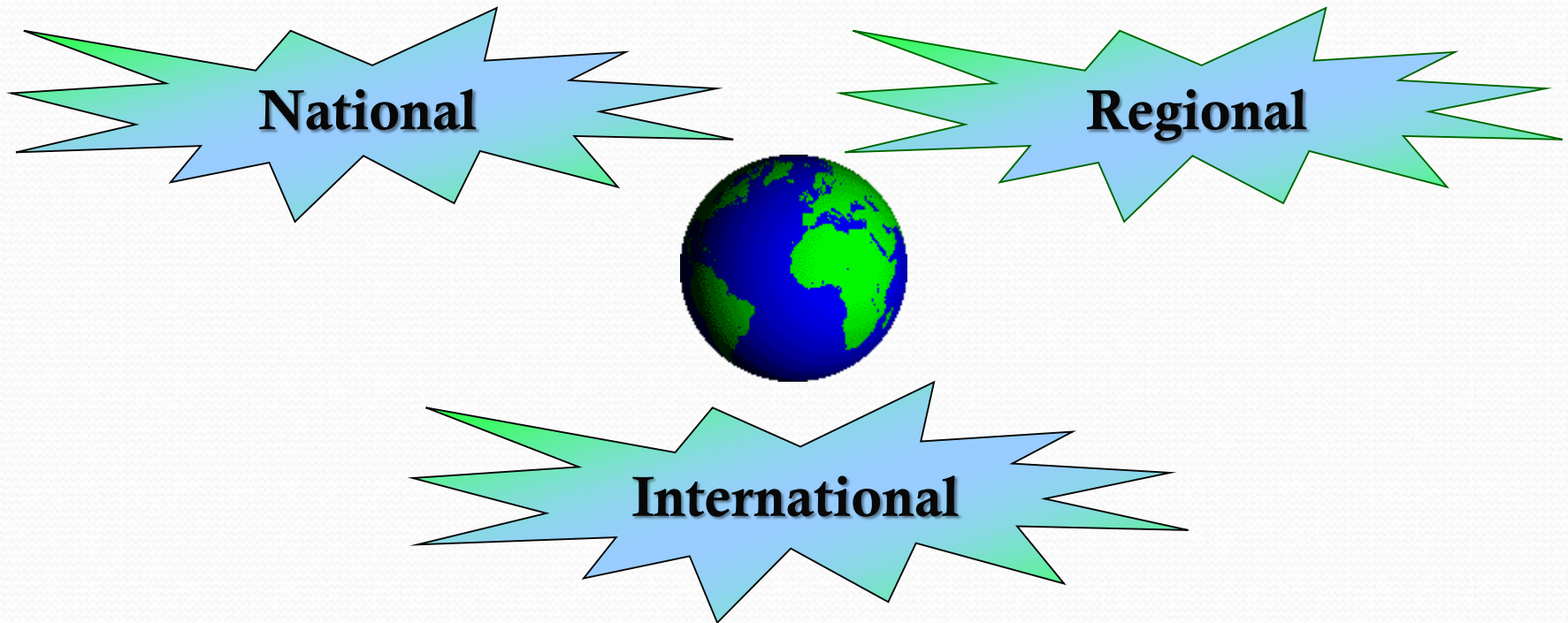
Diversity of NWRC Researchers



- Engineers
- Scientists
- Agronomists
- Geologists
- Socio economists
- Environmentalists

NWRC Role

NWRC plays a role on the levels of

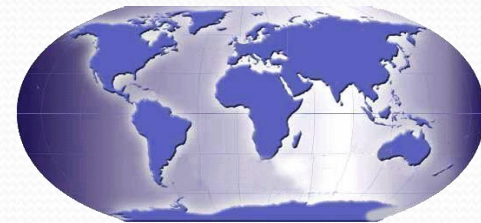
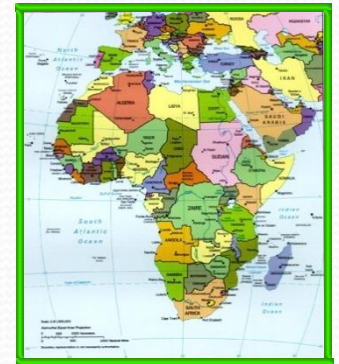


NWRC Activities at all Levels

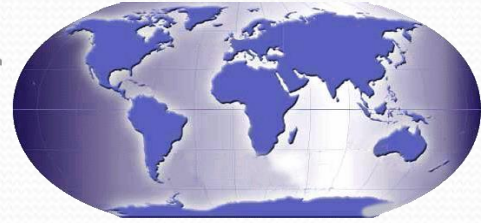
- Technological Research cooperation through different mechanisms

- Capacity building programs with different clusters (**acquiring** & **providing**)

- Cooperation in projects' implementation



NWRC on the International Level



Long prestigious cooperation with Netherlands since 1976



Submerged Vanes in De Waal River
of the Netherlands

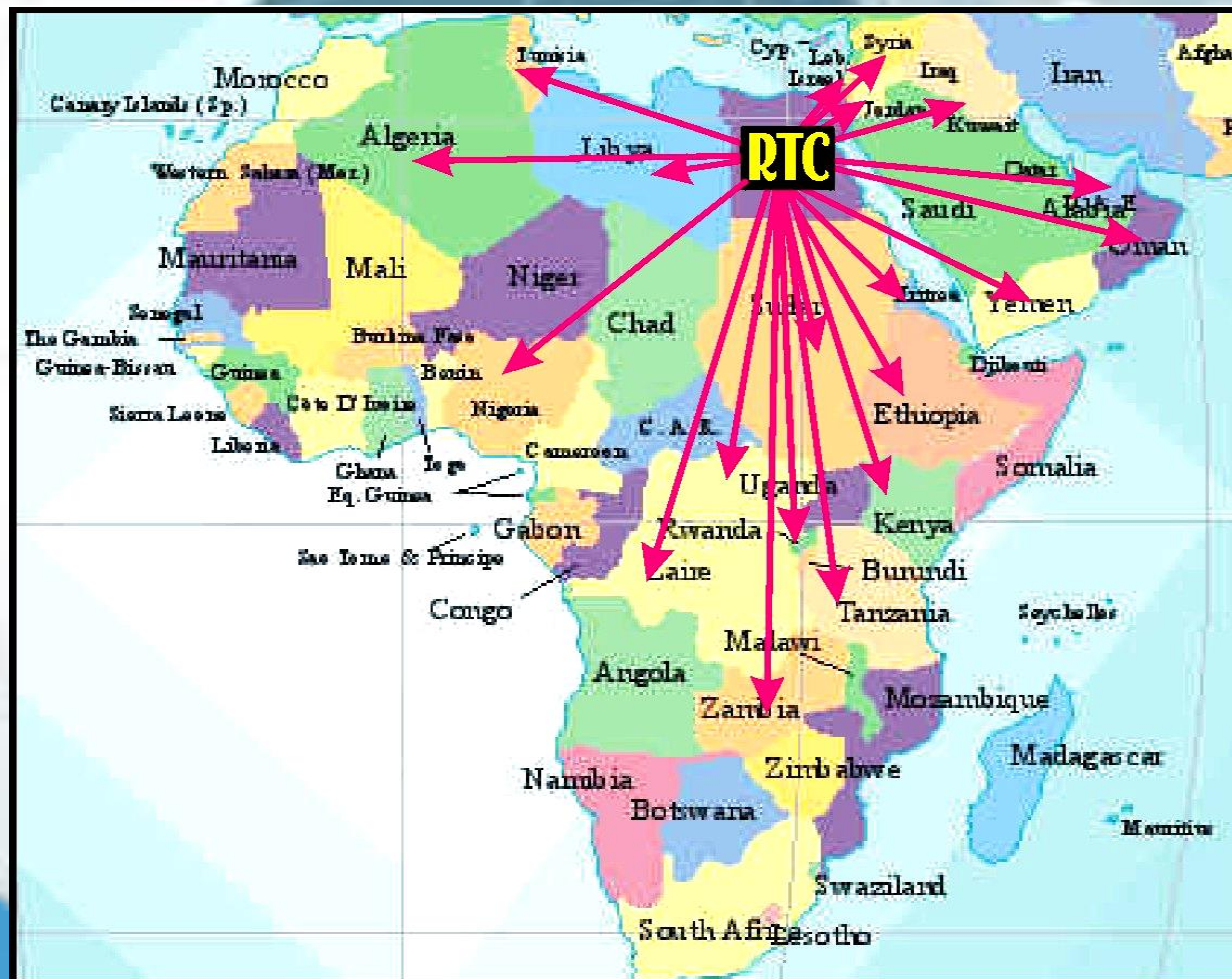
HRI-Experimental Station



Technical Support  Partnership

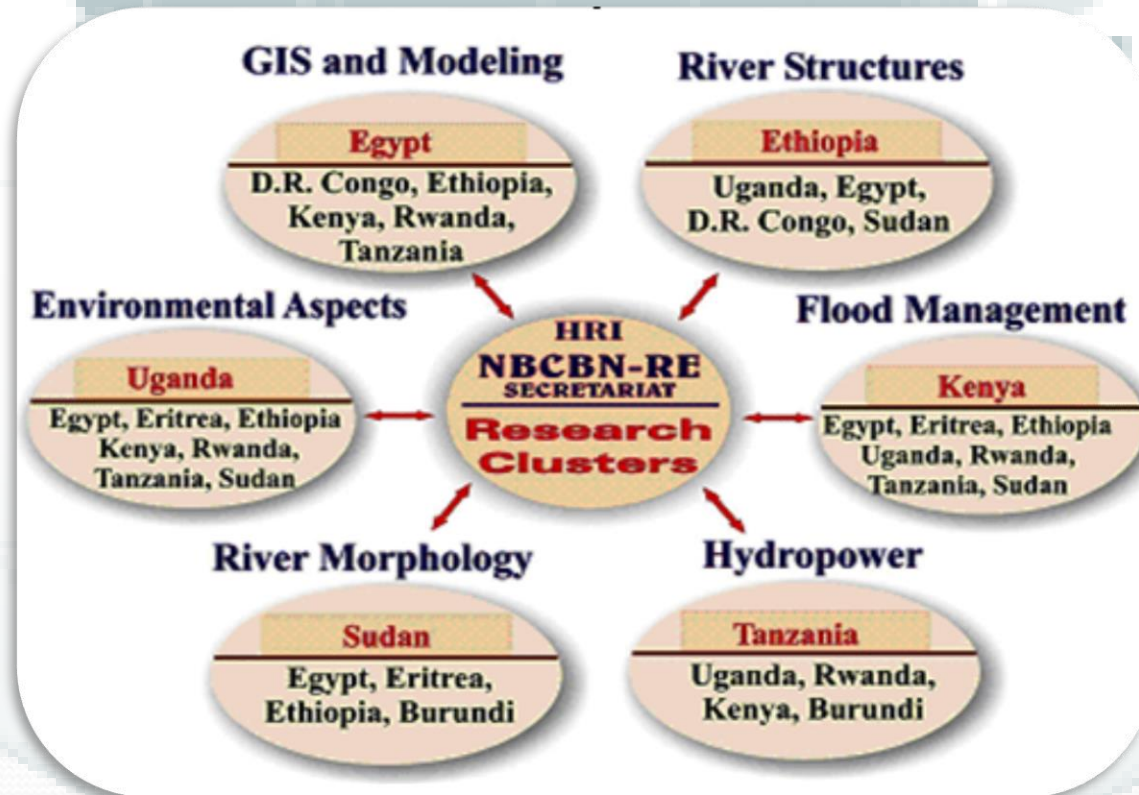
Current Cooperation with African Countries

Countries Received Training in the Regional Training Center (RTC)

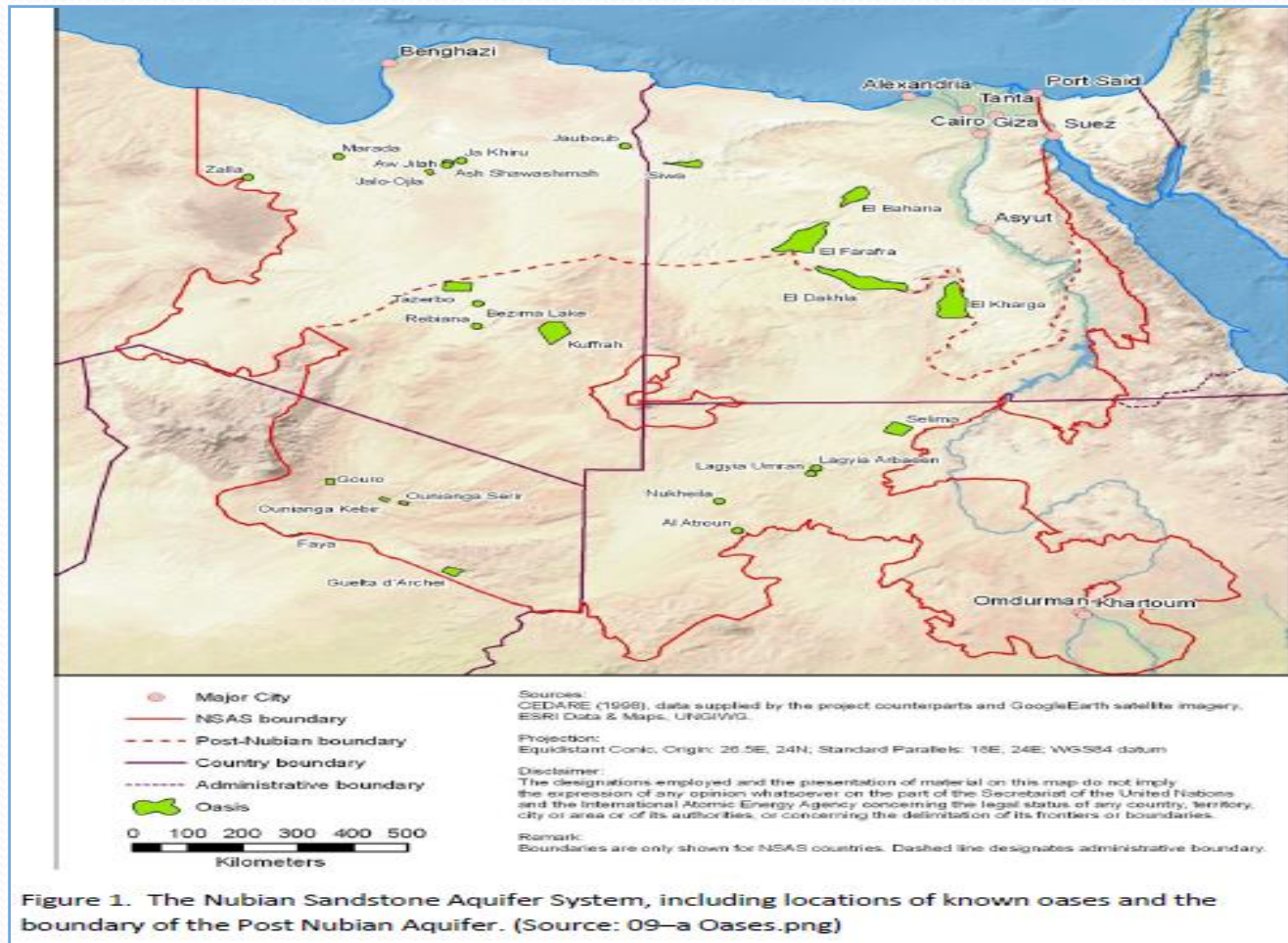


Current Cooperation with African Countries

NBCBN Research Clusters

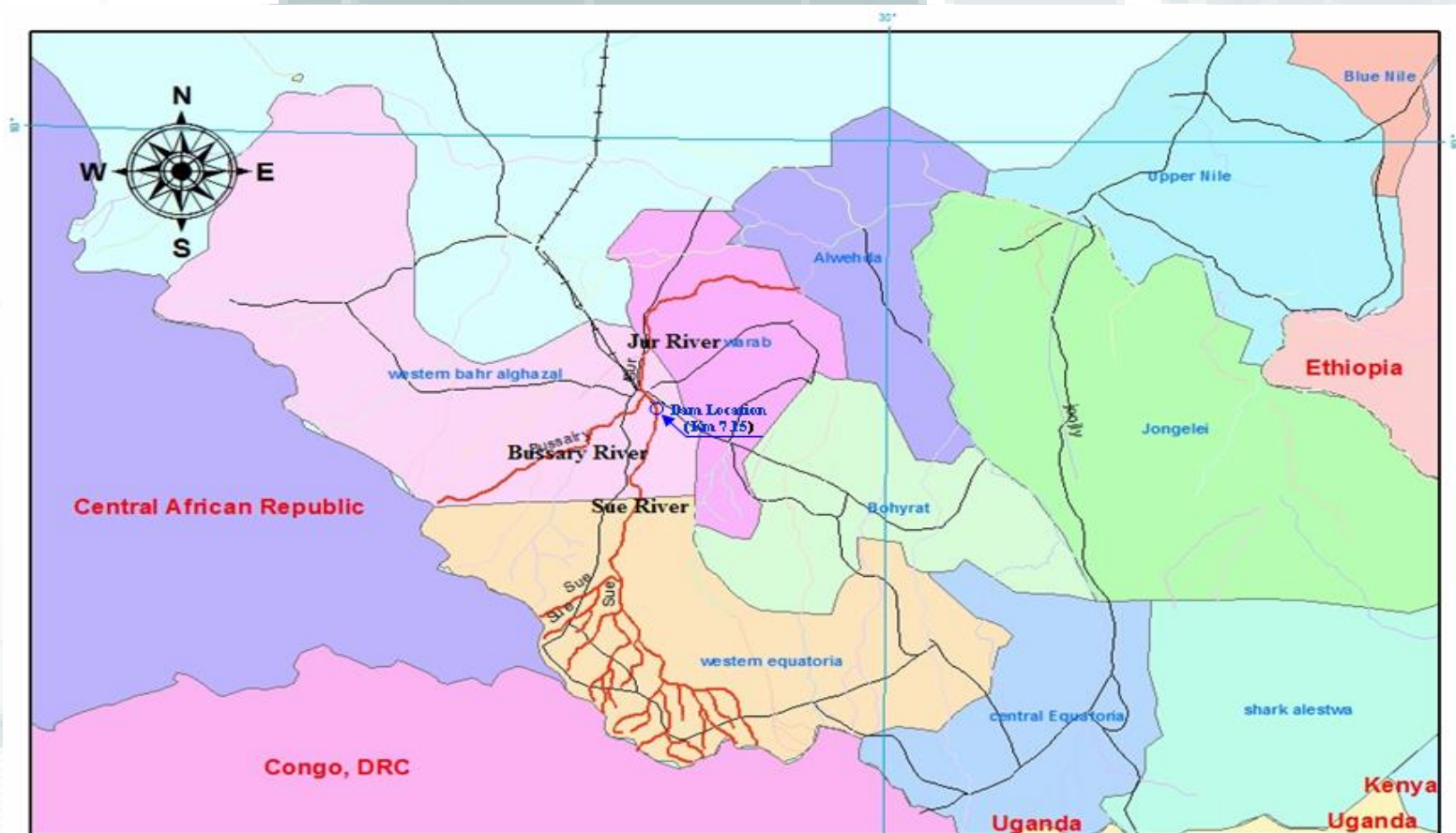


Current Cooperation with African Countries



Examples for Cooperation with Africa

Design of a multi-purpose dam on Sue River in South Sudan



HRI and CRI are involved in the study

Cooperation with Africa

Establishment of Central Laboratory for water quality in Juba

- **NWRC cooperated towards the establishment of Central Laboratory of the water quality in Juba - State of South Sudan in 2010. Chemical and Bacteriological labs**



Current Cooperation with African Countries

Cooperation with Ethiopia

- ▶ NWRC is currently assisting and supporting the Ethiopian Government in setting up an experimental hall to conduct physical modeling studies.
- ▶ Training program is set up in HRI-NWRC to train Ethiopian engineers specifically on physical models

Current Cooperation with African Countries

Water Front in Southern Sudan & Uganda



Current Cooperation with African Countries

Construction and supervision of many Production Wells



NWRC on Regional & International Level

Membership & Memorandum of understandings

❑ Membership (Organizations)

WWC, AWC, GWP, IWRA, ICID, IPTRID, ICARDA, CIHEAM, ...

❑ Memorandum of understanding (institutions)

Tottori University-Japan

USU, SCSU, NCSU, and Iowa University-USA

Akhen university-Germany

International Center for Salty Agriculture-UAE

Federal Institute for Water Science-Switzerland

National Center for Scientific Research-Canada

Deltares-Netherlands

Bari Institute - Italy



Call for Papers

International Conference on Research and Technology Development for Sustainable Water Resources Management (REDWARM)

Organized by
National Water Research Center
EGYPT



4-6 December 2016
Cairo, EGYPT

Invitation Message by President of NWRC

Pressures from population growth, pollution, aging water infrastructure, and climate change are affecting our scarce water resources. Research and technology development is the key answer to address these challenges and to develop sustainable corrective actions while supporting economic growth. National Water Research Center (NWRC) in collaboration with the Ministry of Water Resources and Irrigation (MWRI) in Egypt and American Universities Partners in USA is organizing an international conference titled "Research and Technology Development for Sustainable Water Resources Management". This international conference is organized to provide a forum for researchers, academicians, and practitioners engaged in research, applied water technology, and water resources planning and management to share knowledge, experience, good practices, and research results. This event will offer an opportunity to catalyze and promote the use of advanced water technology to restore, protect and ensure sustainable management of scarce water resources. On behalf of NWRC, I cordially invite you to attend this international conference in Cairo in December 2016.




Prof. Mohammed Abdel-Motaleb
President, NWRC
Conference President

Conference main themes: Topics / Subtopics

Plenary sessions will include keynote presentations of general interest to a wider audience covering the following:

Geo-Measurement, Field Investigation, and Monitoring

This topic includes remote sensing and radar techniques as well as field measurement devices. It can comprise soil, geophysical and water quality and quantity monitoring and sampling equipment. Others include field climate and meteorological stations, and specialized laboratory instruments and devices as well as supporting computational facilities.

New Materials, Water Structures, and Machinery

This topic incorporates construction and protection materials, canal lining, and membrane technology. It is open to shore protection, canal maintenance, irrigation and drainage systems, installation and construction equipment and techniques.

Renewable Energy Utilization and Generation

Under this topic, not only utilization of renewable energy in water resources management is considered, but also its use in the desalination technologies is covered. It also includes new hydropower generation and storage, appropriate techniques and facilities, and energy control, automation, and distribution systems.

Control, Automation, and Distribution Schemes

The focus of this topic is utilization of ITC and mechatronics in controlling and distributing water via existing water infrastructure. This topic covers novel applications of existing methods and the development of new computational methods and efficient algorithms for hydraulics' software and mechanical engineering in control of water schemes.

Water Saving, Treatment, and Pollution Control

This topic includes technologies for water saving at all water management levels. Natural water treatment technologies, technological measures for water pollution control, and efficient water consumption for agriculture practices.

Special Sessions and Workshops

Based on demand, two-hour special sessions and workshops will be provided. These are designed to open the conference to a wider audience since new water5 technology trends and innovative management practices will be introduced by water technology developers and practitioners.

Abstract and Paper Submission

Experts and researchers are welcome to submit their abstracts that cover the different conference's themes. Submitted abstracts will be reviewed by the conference scientific committee. The abstracts should include the paper full title, author's names and affiliations, email addresses, relevant theme, and maximum of six keywords.

• Deadline for abstract and full paper submissions:

Abstract Submission	15 July 2016
Notification of Acceptance	15 August 2016
Submission of full Paper	1 October 2016
Notification for full paper Acceptance	15 October 2016

- **The abstract should not be more than 1000 words.**

- **Abstract and full paper submission should be sent to:**

sc@redwarm2016-eg.org

Registration Fees

Egyptian Participants:

	Full Registration	One-day Registration
Standard	1500 L.E.	600 L.E.
Young	1000 L.E.	400 L.E.
Professional		

Non-Egyptian Participants:

	Full Registration
Standard	500 US\$ (Registration Only)
Young	300 US\$ (Registration Only)
Professional and students	

Registration:

reg@redwarm2016-eg.org

Method of Payment

Bank Name: BANQUE MISR

Bank Country: Egypt, Giza, El Warrak Branch

Bank Account holder's Name: Egyptian Committee for: Hydrology – Water Resources Irrigation & Drainage Constructions – Survey & Maps

Account No USD 14812000000699

EUR 14813000000069

EGP 14800100002354

Swift Code BMISEG CX140

BMISEG CXA101

Exhibition

Exhibition provides opportunity for commercial vendors, designers, developers, and practitioners to demonstrate their new cost effective products and technologies. Flexible space will be assigned to each exhibiter upon request.

Conference Logistics

Information related conference venue, travel, accommodation, and visas will be provided in future announcements.

Partners of Success



Contact Information

Thank You



www.nwrc-egypt.org
nwrc@nwrc-egypt.org