

**Egyptian National Committee of the International Hydrological Program (IHP)
National Report for the period September 2004 to June 2006
To be presented at 17th Session of the IHP Intergovernmental Council**

1. Activities Undertaken in the period September 2004-June 2006

1.1 Meetings of the IHP National committee

1.1.1 Decisions regarding the composition of the IHP National Committee

Formation for the Egyptian National Committee of the international hydrological programs (ENCIHP) was issued by the Ministerial Decree No. 48 dated 9/2/1998. The formation consists of twenty members. They are carefully selected from different disciplines and form a very specialized team.

The members of the committee are as follows:

1. Dr. M. B. A. Saad Vice President, Senior Under Secretary,
Head of Irrigation Department, Ministry of Water Resources and Irrigation
(MWRI).
2. Prof. Abel Wahab Amer Member, Professor, Hydraulic and Irrigation
Department, Faculty of Engineering, Cairo University.
3. Dr. Mohamed El Moattassem Member, Nile Research Institute, National
Water Research Center (NWRC).
4. Dr. Ahmed Rashad Khater Member, Director of the Research Institute
for Groundwater, (NWRC).
5. Dr. Mouhamed Abd Elmoutaleb Member, Director of the
Water Resources Research Institute, (NWRC).
6. Prof. Emad Hussny Hamdy Member, Professor, Head of Hydraulic and
Irrigation Department, Faculty of Engineering, Cairo University.
7. Prof. Moustafa Solieman Member, Professor, Hydraulic and Irrigation
Department, Faculty of Engineering, Ain Shams University.
8. Dr. Mohamed Ibrahim Member, consultant at Egyptian
Environmental Affairs Agency (EEAA).
9. Dr. Abel Fataah Motawa Member, Head of Nile Water Sector,
MWRI.
10. Eng. Refky el Bendary Member, Head, Irrigation Sector,
MWRI.
11. Eng. Fawzy Al Mohammady Member, Chairman, Nile Controls
Inspectorate, MWRI.
12. Eng. Helmi Mahmoud Member, Consultant
13. Eng. Ali Abu El Suaod Member, General Secretary of ENC
for Hydrology, Irrigation and Drainage, and Mapping
14. Dr. Mouhamed Dawood Member, the Meteorological Department
of Egypt.
15. Dr. Karima Attia Member, Researcher, Nile Research
Institute, National Water Research Center (NWRC).
16. Mr. Mouhamed Safwat Salem Member, Secretary General of

year 2005-2006 and made comparison with the previous flood feature to determine the lessons to be learned.

- The committee gives a great contribution and attention to the project “Controlling the Evaporation Losses at Lake Nasser” sponsored by Egyptian National Academy of Science and conducted by the Nile Research Institute (NRI). The project includes as well importance of protecting the lake from different sources of pollution.
- Continues support for the regional networks, which related to Wadi Hydrology and Groundwater Protection.
- Participation at related internal or external conferences and workshops.
- Participation at the Project entitled National Water Quality and Availability Management (NAWQM) which is carried by the NWRC.
- Dissemination of training courses and fellowships to other partners and provide recommendations to participants.
- Contributing to the study of groundwater potential in Siwa Oases and the MWRI plan for the development and the management of the existing water resources.
- Study, translates and summarizes reports to the which have been delivered to the Egyptian national committee for IHP such as World Water for Development, Urban Ground water Pollution, Groundwater Pollution, and new World Water Advancing Technology to secure supply and sub grade the environment.
- Discussing the proposed regional initiatives.
- Present and discuss the activity done by other Egyptian committees
- Discussing method and techniques used for flood forecasting of the River Nile.
- Identify the gaps and give recommendations to IHP VI
- Discussing the training needs for developing of African countries and determining the role of Egypt
- Discussing the different projects proposed under the umbrella of the Nile Basin Initiatives and identifying the role of Egypt

- Discussing, contributing, and observing evaporation control and the sedimentation process at rivers and at storage lakes with focusing on Lake Nasser.
- Study the cooperation between different Egyptian committees of UNESCO Programs and some projects related to Ecohydrology.
- Preparation and contribute to World Water Day Calibration. The celebration of this year was titled Water & Culture which organized and held in the MWRI building's.
- Discussion on “constraints for the development of Lake Nasser”
- Discuss and present the application of isotopes in hydrology (evaporation from lake Nasser, groundwater seepage, recharge to groundwater from adjacent aquifer, sedimentation at lakes)
- Discussion and presentation of the water annual report for the period (2000-2003) which prepared by central directorate for Nile control, Nile Water Sector, Ministry of Water Resources and Irrigation.
- Presentation and discussion with committee staff on the application and the use of isotopes at the water resources and sedimentation assessment.
- Discussion and comments at the proposal of UNESCO plan for year 2006-2007 which contains projects and budget.
- Presentation on application of the isotope to estimate evaporation losses from Nasser Lake.
- Discussion and presentation of proposals prepared considering minimizing decrease evaporation rate at Nasser Lake and irrigation networks.
- Proposals for several seminars and workshops to be organized by the committee. Many participants are usually invited including other committees members, researchers from the NWRC and MWRI in addition to universities staff.
- Revision and comments on IHP VII themes (2008-2014).
- Dr Bahaa presented article “Integrated Urban Water Management” at workshop “Integrated Water Management in Arid and semi Arid regions” 8-14/5/2004.
- Books received by EIHP
 1. fresh water sustainability within uncertainty.

2. submarine groundwater discharge-management implications, measurement and effects.
3. water resources in the OOS countries-evaluation use and management
 - a- friend 2000-2003
 - b- friend phase # 2000-2003
 - c- groundwater contamination
 - d- groundwater resources of the world
 - e- groundwater studies
 - f- integrated watershed management

1.1.2 Status of IHP-VI (2002-2007) activities

1.1.3a Decisions regarding contribution to/participation in IHP-VI

The Egyptian national committee evaluated the IHP VI Projects under Different Themes by using some indicators to measure the program themes from different points: - relevance, effectiveness, efficiency, and sustainability.

1.1.3b Decisions regarding contribution to/participation in IHP-VII

Comments on proposed themes and suggested area of interested for the Arab region

1.2 Activities at a national level in the framework of the IHP

1.2.1 National/local scientific and technical meetings

Water Resources Protection Workshop was organized within the celebration of Suez Canal University by the water world day. The event took place at Ismailia, Egypt, on 22 March 2005. More than 50 Egyptian participants attended this workshop. Technical papers on the application of new technologies for water resources management in Wadi Systems and Groundwater Protection were presented and discussed. The application of new techniques of Integrated Water Resources Management in Wadi Hydrology was highly recommended.

The celebration of the world water day which was titled “Water and Disaster”

The Celebration was held at the MWRI conferences room at year 2005. About 200 researchers and engineers from the MWRI and the NWRC attended the seminar. Preparation and contribution to annual World Water Day Calibration titled Water & Culture which held in the MWRI on 18th June 2006.

1.2.2 Participation in IHP Steering Committees/ Working Groups

One day seminar was held at Nile Water Sector of MWRI on the 10th of May 2006. It was entitled “Evaporation from Surface Water Body”. About 50 participants attended from

the committee, other Egyptian committees and the NWRC& MWRI. Four presentations were made, the first on ‘Water Policy of Egypt for the Coming 50 Years’, the second presentation was on “Evaluation of Different Alternatives for Controlling Evaporation Rate from Nasser Lake, Irrigation Networks, and River and its branches”, the third was on “Application of Isotope Hydrology in Measuring Evaporation from Nasser Lake”, and the fourth was on “Construction of a New Dam at Lake Nasser in Egypt Boundary and the Impact on the Evaporation Rate from Nasser Lake and the Groundwater Aquifer”.

It was clearly that one day for the seminar was not enough to discuss such important issue. The discussion and the recommendations on the Water Policy of Egypt for the Coming 50 Years are taken into considerations.

Accordingly, a second seminar is proposed and will be held in August 2006. It will be entitled “Different methods for Prediction of Nile river flow”, and covered the rest of presentation of the first seminar.

1.2.3 Research/applied projects supported or sponsored

The following list presents the projects and topics performed and participated by the Egyptian National Committee:

- Monitoring and evaluation of the sedimentation in Nasser Lake upstream of High Aswan Dam.
- Studying the fluvial characteristics and hydraulics of the River Nile.
- Development of technologies for river bank protection and river front improvement for rural, urban and tourist areas.
- Monitoring of water quality in the channel and influent drains for chemical, physical and biological characteristics.
- Monitoring of groundwater quality.
- Groundwater assessment and development.
- Hydraulic studies on the river Nile and its structures.
- Reuse of drainage water with considering environmental concerns.
- Integrated water management.
- Pollution Control.
- Wadi Hydrology.
- Weed control and waterways maintenance.
- Assessment of environmental impact of the national projects
- Scour around bridges piers.
- Groundwater protection.
- Hydrological code and formula for Wadi Feiran, Sinai, Egypt- case study.
- Legend and framework to construct a hydrological map for Egypt.

1.2.4 Collaboration with other national and international organization/programs

The Egyptian IHP committee being composed of several Government Officials,

University staff, and Research Institution members are taken part in joint work with many international organizations and programs. Among those are the following:

NWRC (Egypt)- Agriculture Research Center (ARC) (Egypt)- National Academy of Science (Egypt)- CEDARS- LTNDP-WMO- TECCONILE- CIDA- DANEDA- ICID- IWRA- IAHR and many others.

1.2.5 Other initiatives

- Reviewing the UNESCO program and budget for years 2006-2007.
- The Regional Center for Water Studies and Training at 6th October City of MWRI and the Universities of Egypt are willing to train researchers and technicians of the third World Countries.
- Egypt is supporting and contributing the joint activities between IHP and MAB programs.
- Egypt is willing to have one of the pilot projects that can be applied at coastal zone within the frame of the Ocean Monitoring (GOOS). Proposed topics for a training program to be organized at the training center of MWRI at 6th of October city.
- Training program is being executed with the cooperation between Hydraulics Research Institute and IHE of Netherlands.

Future activities:

- * Careful plan for the activities and outputs of the focal area at themes of IHP-VII is being considered.
- * Updating the Selby's of the specific courses which organize by the committee.
- * Strengthen the cooperation with other national committee.
- * Increase participation of new disciplines to the committee.

1.3 Educational and Training courses

1.3.1 Contribution to IHP courses (courses supervised by the regional training center)

No.	Program	Partners	No of Participants	Foreign Share US\$	Year
1	Workshop: Syrian-Egyptian Meeting for Cooperation	MWRI + RCTWS + UNESCO	8	8000	2004
2	Course: Reuse of Treated Drainage Water in Irrigation Syrian participants	RCTWS + UNESCO	14	15000	2004
3	Course: Geographic Information System" GIS " Kuwait	RCTWS + UNESCO	5	7000	2004
4	UNESCO Workshop for Cooperation	RCTWS + UNESCO	7	6000	2004
5	Course: Geographic Information System" GIS " -Kuwait	RCTWS + UNESCO	10	6000	2004
6	Syrian-Egyptian Workshop to Sign Agreements to Apply The Syrian-Egyptian High Committee Decisions & Discuss The Future Cooperation	MWRI + RCTWS + UNESCO	8	2000	2004
7	Iraqi-Egyptian Workshop for Cooperation	MWRI + RCTWS	5	2,500	2004
8	Workshop: "Crops' Water Requirements & Water Strategies" (ICID)	ICID+INCID+RCTWS	12	15,000	2004
9	Course: " On Farm Water Management Drainage for Agriculture Lands" (Nile Basin Countries)	JICA+EFTECA+UNESCO+RCTWS	19	24,000	2004
10	Workshop: Knowledge Mapping	ESCWA+ UNESCO+ RCTWS	17	3,000	2004

No.	Program	Partners	No of Participants	Foreign Share US\$	Year
11	First African Regional Conference for Drainage (ARCOD) (African & Other Countries)	ICID+INCID+RCTWS	400	10,000	2004
12	Workshop: "Reuse of Treated Water in Irrigation Purposes" (Bari Institute, Italy)	Bari Institute+ RCTWS	42	25,000	2004
13	Workshop: " Non-Conventional Water Use" (Bari Institute, Italy)	Bari Institute+ RCTWS	30	22.000	2004
14	Workshop: " Applied Training Project" (Nile Basin Countries)	NBI/ATP + RCTWS	10	2000	2005
15	Course: " Numerical 3D Groundwater Solute Transport Modeling "(Iraq)	UNESCO+RCTWS	16	5100	2005
16	Course: " Procurement Training" (East Nile Countries)	NBI/ATP+RCTWS	19	6000	2005
17	National Workshop: NBI/ATP Awareness & Training Needs Assessment for Egypt	NBI/ATP+ RCTWS	45	4500	2005
18	Workshop: International Water's Negotiation & Dispute Resolution.	RCTWS + RCWE	47	6000	2005

No.	Program	Partners	No of Participants	Foreign Share US\$	Year
19	Workshop on: "Urban Water Modeling in Specific Climates". (Regional Countries)	RCTWS+UNESCO	11	15000	2005
20	Evaluation Workshop: "Sustainable Water and Wastewater Management Project". (Regional Countries)	RCTWS+InWEnt	22	15000	2005
21	Course: " On Farm Water Management " Irrigation & Drainage (Nile Basin Countries)	JICA+EFTECA+UNESCO+RCTWS	21	35000	2005
22	Course: Groundwater Protection. (Regional Countries)	RCTWS+ UNESCO	21	5000	2005

1.3.2 Organization of specific courses

Training workshop on “Integrated Groundwater Resources Management in Arid Region” was jointly organized with WMO. The training workshop aimed at improving governance and groundwater management within the context of IWRM in arid and semi-arid countries; thus enhancing the utilization of such a resource and strengthen the capacity of professionals in this field. The workshop was held in Cairo, Egypt 4-7 April 2005. More than 70 participants attended in these training activities and they were from most of the Arab countries, Africa and Europe. There were case studies presented to improve capacity building and increase knowledge dissemination on the integrated groundwater resources management in the Arab region.

25th International Post Graduate Training Course on "Environmental Hydrology for Arid and Semi-Arid Regions" aimed at training the participants on the principle of environmental Hydrology and to provide sufficient competences in the collection, analysis and use of metrological and hydrological data for IWR planning, focusing on water and ecosystems. The event was held in Cairo, Egypt, May- June 2005. More than 20 participants were involved in this training course from the Arab and Nile basin countries. The course enhanced capacity building on environmental hydrology methodologies. The recommendations stated that applying more studies on environmental hydrology is needed.

26th International Post Graduate Training Course on "Environmental Hydrology for Arid and Semi-Arid Regions" (on-going) aimed at training the participants on the principle of environmental Hydrology and to provide sufficient competences in the collection, analysis and use of metrological and hydrological data for IWR planning, focusing on water and ecosystems. The event was held in Cairo, Egypt, May- June 2006. More than 20 participants were involved in this training course from the Arab and Nile basin countries. The course enhanced capacity building on environmental hydrology methodologies.

The 8th Regional Training Course on Groundwater Protection (GWP) and the 8th Steering Committee Meeting have a long term objective which is to contribute to rational development and management of Ground Water resources leading ultimately to sustainable socio-economic development and to promote national, sub-regional and regional cooperation in Ground Water studies and Capacity Building with ALECSO and ISESCO. The venue and date for these meetings were in Cairo, Egypt, 25th November – 2nd December 2005 with the participation of 29 Participants from most of the Arab Countries, ISESCO, GWPN and ALECSO. The meeting resulted in the enhancement of methodologies of groundwater management and development of training material on Groundwater management in the Arab region. At the end of the meeting, it was recommended to conduct annual training on GWP and priorities on regional Groundwater issues were identified

- Training Workshop on Groundwater Modeling, Cairo, Egypt; 14-24 December 2004.
- Training Course on Groundwater Solute and Transport Modeling, Cairo, Egypt 23-31 March 2005.

- Training Course on Rainfall-Runoff Analysis Modeling Using the Watershed Modeling System Package, Cairo, Egypt; 9-16 April 2005.

- FRIEND/Nile Technical Tour, Cairo, Egypt 12-19 May 2005.

The 7th Regional Training Course on Groundwater Protection, Cairo, Egypt 17-24 December 2004. UNESCO Cairo Office organized this meeting jointly with the Research Institute for Groundwater (RIGW), IHP – Network on Groundwater Protection in the Arab region. The main aim of the training course was to bring together professionals to discuss and understand issues facing the region with respect to groundwater sustainability and to assist in strengthening and coordinating research activities in related areas within the Arab region.

1.3.3 Participation in IHP courses

8th International Training Workshop on Wadi Hydrology: Application Using Decision Support System (DSS) had a clear objective which is to receive an excellent training on DSS application on Wadi Hydrology with hands-on case studies. This activity was jointly with ALECSO and ISESCO in Amman, Jordan, 17 – 26 Jun. 2005. 20 participants from 11 Arab States attended this training workshop. The workshop improved capacity building and methodologies of Decision Support System tools within the application of integrated water resources management approach in the Arab Region. In the recommendations, it was mentioned that the 9th International Training workshop will be held in Jordan in July 2006 jointly with ALECSO, ISESCO and ACSAD.

1.4 Cooperation with the UNESCO &IHE institute for water education and/or international/ regional water centers under the auspices of UNESCO

- A. There is a unique cooperation with IHE which already existed long time ago. The IHE helps on promoting the profession career of the Egyptian Engineers. Many engineers attended the courses organized by IHE and many engineers obtained M.Sc and Ph.D with under supervision of IHE. This cooperation is being continued and will be continue in the future.
- B. There is a strong cooperation among the IHE and Hydraulics Research Institute, Regional Center for Water Studies and Training.
- C. There is a remarkable cooperation between the regional Center for Water Studies and Training with other Training Centers under the Auspice of UNESCO such as the training Centers in Iran and China.....

1.5 Publications

-Proceedings of the UNESCO - NWRC - ACSAD workshops on (Wadi hydrology) and (Groundwater protection).

-Impact of the proposed Naga Hamadi Barrage on groundwater and possible remedial

measures.

- Policy and strategies for the management of carbonates in Egypt
- Development of Siwa oasis
- Potentiality of aquifer in Saddat City for drinking water supply
- Hydrological condition on El Saff canal area
- Development of Groundwater protection criteria”
- IHP-Regional Network on Groundwater Protection in the Arab Region in co-operation with the Dutch Government: General Report on the Round Table Workshop on Groundwater Protection and Meeting of the Network (Cairo.6-10 September 1998). IHP-V, TDH, No4.

1.6 Participation in international scientific meetings

1.6.1 Meetings hosted by the country

The 9th International Water Technology Conference aimed at the identification of environmental problems and development of technologies to be used for their solution. The conference was held in Sharm El-Sheikh, Egypt, 16-20 Mar. 2005, with the presentation of more than 50 technical papers and about 100 key water experts in the field of water technology participated from most of Arab Countries in this conference to discuss and solve the environmental legislations. Research results and practical experience in the field of Water Technology was shared and exchanged among the participants. It was recommended to promote issues related to water resources quality and quantities in Integrated Water Resources Management.

The Workshop of Applicability of Climate Research and Information for Water Resource Management in the Semi-Arid and Arid Regions (G-Wadi) aimed at organizing a forum in which researchers of WRM in Arid Regions and climate observation and modeling can discuss together the various aspects of operational hydrology and water resources management in the semi-arid regions. The workshop took place in Cairo, Egypt from 18-22 April 2005. Thirty researchers attended in this workshop from most of the Arab Countries. The recommendations included the application of climate changes studies in the Arab Region.

4th International Symposium on River Engineering aimed at showing that civil Engineering is a global profession with a focus on economics and natural resources preservation and utilization. The Symposium took place in Cairo, Egypt, 7-9 Jun. 2005. More than 25 trainees attended this symposium from most of the Arab Countries. There was a clear impact that showed the enhanced methodologies for better Arab water resources assessment and management in addition to promoted hydrological techniques for research and development in the Arab region.

International Sedimentation Initiative (ISI): 4th Steering Committee and Workshop aimed to study the sedimentation problems in different basins all over the world and to discuss the issues of sediment, transport training and education, data collection, utilization and analysis. It was held in Sharm El-Sheikh, 9–11 November 2005. About 18 participants representing the Steering Committee members, UNESCO representatives,

Water experts and policy makers from the Egyptian Ministry of Water Resources and Irrigation of .Austria, Yugoslavia, Canada, China, England, France, Italy, Japan, Russia, Sudan, Swiss, USA and Egypt were involved. The issues of sediment transport training and education, data collection, utilization and analysis were thoroughly discussed. It was recommended to follow up on the implementation of the Steering Committee recommendations by the SC members. The Fifth Steering Committee Meeting will be held in Khartoum in November 2006 as a side activity of the International Sediment Conference.

An international conference for the FRIEND/Nile Project was organized during the period 12-14 November 2005 in Sharm El Shiekh, Egypt to present the obtained results and the implemented research activities of the project. Twenty-seven joint technical papers were prepared and presented by the research team of the project reflecting the remarkable achieved technical regional cooperation. About 120 participants from than 12 countries, comprising international and regional key-water experts, policy makers from the Nile countries, FRIEND/Nile researchers, Flemish counterparts, stakeholders and representatives of the ongoing Nile initiatives, attended and contributed to the deliberations of the conference. The recommendations included the extension of the project for another phase as a result of the achievements from the first phase and the promotion of the cooperative networking approach among the Nile countries.

The Fifth Project Management and Ninth Steering Committee Meetings of the FRIEND/Nile wanted to review the implementation of the overall project activities during year 2005. The meetings were in Sharm El Sheikh, 14-15 Nov. 2005. The participants of the meeting from Egypt, Sudan, Tanzania, Kenya, Ethiopia and Belgium reviewed and evaluated the implementation of the project activities during the last 4 years and expressed their satisfaction with the obtained results. The application of proposals presented to the European Union (EU) within the International Research Co-operation, 7th Research Framework Programme (FP 7) was highly stressed. In the recommendations, the participants stressed on the importance of the linkage of the project with Nile Basin Initiative (NBI) as a dissemination forum for the FRIEND/Nile research outputs

1.6.2 Participation in meetings abroad

Regional Seminar on Artificial Groundwater Recharge: A Step towards Water Security aimed at presenting and discussing activities pertaining to awareness increase on the advantages of artificial groundwater recharge with special reference to desalinated water in the GCC and the arid environments. The event was held in Kuwait, 14-17 Feb 2005, with the participation of 70 participants from most of the Arab Countries who discussed future regional activities related to Groundwater recharge activities. The activity enhanced institutional capacity building in the field of groundwater assessment and management with special focus on artificial groundwater recharge in the Arab region.

Therefore, the recommendations included that capacity building in artificial recharge using desalinated water needs to be increased.

Groundwater and Soil Resources Protection Workshop (ACSAD) aimed at promoting integrated groundwater management in the Arab Region and to focus on the integrated land-water management in the Arab Region. The workshop was held in Amman, Jordan, 27-30 June 2005. 30 trainees from most of the Arab Countries attended this training course. The workshop developed Groundwater Protection approach for integrated water resources management strategy. In the recommendations, both UNESCO Office in Cairo and ACSAD agreed to focus on the integrated land-water management in the Arab region.

The 11th Regional Meeting of the Arab IHP National Committees Meeting aimed at the establishment of an effective, sustained mechanism for IHP Governance and regional cooperation and capacity building in Hydrological Sciences and WRM in Arab Region. The meeting was in Damascus, Syria, 25-28 September 2005. 11th Regional Meeting of the Arab IHP National Committees and the Expert Group Meeting for the Arab Mapping Project were implemented successfully with 72 participants from 17 Arab States. The meeting led to the improvement of water resources policy and management techniques in the Arab Region. The recommendations included that the delegates authorized UNESCO take necessary actions to arrange the 12th IHP in UAE in October 2007 and that the UNESCO Office in Cairo will follow up on IHP priorities and recommendations.

The 3rd Wadi Hydrology Conference aimed at enhancing the state of knowledge for Arab experts, scientists, policy makers and planners in the area of IWR-Wadi Hydrology in the Arab region. The conference took place in Sana'a, Yemen, 12-14 December 2005. More than 100 key water resources experts and researchers and more than 60 technical papers focusing on the hydrological and water resources development and management aspects in arid and semi-arid regions were presented in the conference and more than 12 countries have participated in this conference. Enhanced methodologies and promoted relevant techniques for research and development in Wadi systems were stressed upon, in addition to fostered networking and exchange among Arab scientists and with their international counterpart on one hand and with policy makers on the other. The recommendations included the promotion of IWRM in arid region with more tours on Wadi Hydrology and the promotion of the concept of Echo-Hydrology in the arid and Semi-arid region was highly recommended with special focus on means of protection of echo systems through sustainable ecological management of Wadi systems.

FRIEND Nile Project management and Steering Committee aimed at reviewing the implementation of the project activities and to approve the future activities in addition to reviewing and endorsing the project document of the proposed second phase of the FRIEND/Nile project. The event was held in Addis Ababa, Dar Eslam 21-25 Feb. 2005, with the participation of 18 experts from Egypt, Sudan, Tanzania, Kenya, Ethiopia who reviewed the implementation of the project activities. They also approved the year 2005 work plan and allocated budget. The impact of the activity was very clear as the Steering Committee reviewed and fully endorsed the project document of the proposed second

stage of the FRIEND/Nile FUST project. The Steering Committee also approved the structure of the second stage of the FRIEND/Nile. Therefore, it was recommended that the Steering Committee stress on the importance of preparing quality technical papers as one of the important outputs of the project and it was agreed to support the organization of FRIEND/Nile international conference.

Four Concurrent FRIEND/Nile Workshops were held to review, discuss and finalize the FRIEND/Nile joint research activities and papers of the components of the projects. They were held in Khartoum, Sudan, 25-30 Jul. 2005. About twenty five key experts participated in these workshops representing the research teams of the FRIEND/Nile Project and showing the improvement in the preparation of the technical papers of the project that was recognized by all countries. Countries involved were Kenya, Tanzania, Sudan, Ethiopia and Egypt. The results of the workshops were the improvement of capacity building of the water institutions in the participating countries, and the fostered networking among the FRIEND/Nile themes researchers and the achieved mutual trust and confidence. The recommendations lay under finalizing the preparation of 27 joint technical papers as the research output of the project and continuing the fruitful cooperation and sustainable coordination among the FRIEND/Nile partners.

1.7 Other activities at a regional level

1.7.1 Institutional relation/co-operation

1.7.2 Completed and ongoing scientific projects

Completion of friend program

Completion of groundwater protection project

2)Future activities

2.1 Activities foreseen until December 2006: -

- a) Organizing the annual conference for the National Water Research Center of the Ministry of Water Resources and Irrigation.
- b) Dissemination of publications, posters, and all water awareness prepared by Water Awareness Unit of the Ministry of Water Resources and Irrigation of Egypt.
- c) Establishing a web site for Groundwater Protection Network in the Arab Region.
- d) Participation in the different themes of IHP-VI and publishing all technical reports among the other regional committees of IHP.
- e) Organizing yearly competitions among all water scientists on the following subjects:
 - Best research on river hydraulic engineering and hydraulic structure.
 - Best design of an irrigation project.
 - Water resources planning.
 - Water quality management.

- Water conservation projects.
- Best PhD theses from Egyptian Universities.
- Water control structures.
- Environment protection.
- Improve efficiency of water conveyance and distribution.
- Best engineer in water management.
- Best M.Sc or PhD theses on water economics.
- Best engineer in the field of irrigation improvement.
- Development of conventional and unconventional water resources.
- Best project of Horizontal Extension.
- Best research on integrated management of water resources.
- Best research on the field of survey engineering.
- Best student's project, final year, Hydraulic and Irrigation Departments at Faculty of Engineering, Egyptian Universities.

f- Completion of Wadi hydrology activity and protection of groundwater.

g- Execution of regular meeting of the Egyptian committee

h- Preparation of one day seminar or workshop to present the committee activity and technical issue to other committees

2.2 Activities foreseen for 2006-2007:-

Water Resources Assessment in Arid and Semi Arid Regions.

Groundwater Development.

Control of groundwater pollution.

Reservoir sediment.

Technology transfer.

2.3 Activities envisaged in the long term

Optimum use of limited water resources.

Updating the policy of water resources utilization.

- **Integrated water resource management at West Delta region and related problems**

Like any other development project, land reclamation projects have both positive and negative environmental impacts. For example land reclamation could provide better habitats for disease vectors and could contribute to consequent increase in diseases. Overuse of water, and/or improper drainage system could contribute to the water-logging and soil Salinization problems. Irrigation of lands at higher levels could contribute to water-logging

The objectives of this report are identification of prevailing problems that affect the sustainability of the aquifer at West Delta region and testing possible remedial measures.

Recommendations

Continues monitoring for the aquifer from the quality and quantity aspect, results should be evaluated technically and economically, taking into consideration the simplicity and applicability of the solutions. This will finally lead to the selection of most suitable

solutions. Updating the potentiality maps through a regular well inventory, and well licensing system is recommended.

Integrated water resources management is highly recommended

- **Integration of Geographic Information System and Remote Sensing Technology for Studying the Land Reclamation Expansion At West Nile Delta Region**

The major issues concerning water development and management include water conservation and the efficiency of water use, cost recovery, social and environmental factors.

Ministry of Water Resources and Irrigation and the National Water Research Center are given more attention to the preparation of information bases such as hydrogeological, potential, land use, vulnerability and pollution risk maps.

Geographic information system (GIS) and remote sensing (RS) techniques are considered powerful, accurate and time saving in this respect. These techniques are widely used for illustrating and analyzing different phenomena, such as the new development in the desert (land reclamation), residential development (new communities), urbanization, industrial zones, disposal zones, etc....

Western Nile delta region is characterized by rapid development based on surface and groundwater. The increasing in groundwater extraction is accompanied by continuous lowering of water table, and that leads to depletion of the aquifers, increasing the groundwater salinity and also increasing of pumping costs.

In this project two land use maps for study area at two different dates (2/7/1987&30/6/1998) by using remote sensing technique. Also producing change detection map which reflect the changes in reclamation lands during the period from 1987 to 1998 for the selected area that depend on the groundwater by using different GIS analysis for the satellite images. Finally compare the result is compare with the increasing in the extraction rates and the salinity at the study area.

Recommendations

Applying different kinds of change detection technique on the study area and compare between results, continue the monitoring of the development by using satellite image is highly recommended also well, licensing system is recommended in order to avoid ground-water deterioration due to excessive pumping.

- **Environmental Impact Assessment for Drinking Water in Rural Areas: Assessment of Drinking Water Using Hand Pump System**

Project Objectives

The overall objective of the project is to develop means for the protection of shallow groundwater used by hand-pumps for drinking purposes in the rural areas.

The specific objectives of the project are:

- Investigation and identification of problems related to bad sanitary conditions around hand-pump used for domestic water supply in rural areas.
- Determination of the extent of shallow groundwater pollution and possible remediation and protection measures.

- Constructing the recommended hand-pump system on the selected sites.
- Design and implementing have related public awareness campaigns.
- Preparation of hand-pumps construction guidelines.

Specific conclusion and recommendation

- The project activities implemented achieved substantial progress towards the project specific objectives.
- Local authorities, representatives of inhabitants and community participation have been successfully involved in the project implementation.
- The selected site of Arab El Aiaida village at Qaliub district in the Qalubiya governorate and Meshrif village in Gharbiya have been proved to be successful for the implementation of the project activities as a full-scale demonstration
- **Environmental management of groundwater (south el their –west delta)**
Groundwater constitutes an important source of fresh water that represents 20% of the available fresh water resources of Egypt. However many worries are increasingly being voiced on the dangers that surround the groundwater.

The main elements of these worries are related to depletion as a result of over extraction activities and quality deterioration brought by many modes of pollution. Therefore, actions must be taken to protect groundwater from degradation; this calls for a simulation of groundwater flow and quality.

The area concerned in this report occupies South El Tahrir area, which is a part of West Tanta region. The study area is West Tanta. The northern boundary of the study area is Alexandria Governorate and the western south boundary is Wadi El Natrun. The study area covers an area of about 2600 Km². Rosetta Branch is passing through the area.

The project aims at simulating the present situation of the study area to enable forecasting future trends in the groundwater heads and quality in relation to over extraction activities. The groundwater suitability for drinking depends on the standards and limits of WHO guidelines of the various elements in groundwater. The study area suffers from increasing of Total Dissolved Solid (TDS), Iron (Fe) and Manganese (Mn) concentrations in the groundwater due to doubled extraction activities.

This work is done within the framework of the protocol done between RIGW (Research Institute for Groundwater) and Behera Drinking Water Company and Drainage (BWAD).

The conclusions that can be obtained from this work are:

- The maximum drawdown will be 20m and a decline of the aquifer storage will occur after 20 years.
- The present concentration of TDS, Fe and Mn are larger than the WHO limitations at some locations.
- The change in the concentration of TDS and Mn due to double extraction policy is smaller than the WHO limitations and there is no any change in Fe concentration.

In accordance with the above conclusion, and looking forward for the extended future research dealing with the subject matter, it is recommended to:

- Add local studies in the proposed sites for drilling well fields.
- study the environmental impact of all activities that involve changes of the groundwater's flow and quality.