

# Foreword

## Background

Fresh groundwater in arid regions is characterized by a limited natural recharge. Development of groundwater in these regions has, accordingly, a high priority particularly for agricultural and domestic purposes. Proper developments of groundwater in arid regions dictate a specific approach in the planning, design and management of the groundwater systems.

The Research Institute for Groundwater (RIGW) of the Water Research Center (WRC), Ministry of Public Works and Water Resources (MPWWR) is the responsible agency for the development of groundwater resources in Egypt. The RIGW has been working with Dutch Consultants for Water and Environment (IWACO B.V.) since 1983 in several projects related to groundwater development. The project activities have been shifted gradually from the Nile floodplain to the desert fringes. Although close to the Nile floodplain, these desert fringes reflect all the features of an arid environment.

On the occasion of their eight years' cooperation in 1991, the RIGW and IWACO took the initiative to call an international meeting with representatives of the surrounding countries in order to:

- exchange ideas and experiences between professionals from different countries about groundwater development in arid zones with special attention to planning which minimizes the constraints and optimizes the use of this limited resource;
- discuss future cooperation between the participating countries on specific topics and in the field of international training in water resources management;
- present the main results of the RIGW/IWACO projects to an international forum.

The objective of the meeting was to establish a planning approach for sustainable development of groundwater resources in arid regions. Long-term planning, in which both quantity and quality of the resource are considered, is essential for the overall long-term success of groundwater development in arid regions.

The meeting was structured around a proposed planning procedure. The respective sessions coincided with the respective steps of the planning procedure. The planning procedure is based on three main concepts:

- water resources are limited; hence, the first step is the assessment of the water resources and water demands;
- the planning process should be step-wise rather than a multicriteria analysis (technical evaluation), followed by environmental and economic assessments;
- feedback is essential to eliminate errors that might be introduced by the step-wise approach, being essential also during implementation and operation of groundwater schemes.

The Round Table meeting was held in Cairo from 5–9 October 1991 and was attended by representatives of the following countries: Bahrain, Botswana, Chad, Egypt, Jordan, Libya, Netherlands, Pakistan, Saudi Arabia, Sudan, United Arab Emirates, Yemen.

Addresses of HE the Minister of Public Works and Water Resources and HE the Ambassador of the Kingdom of the Netherlands in Cairo were delivered at the opening session in the Training Center of the MPWWR in Shubra on 5 October. The meeting was introduced with a technical field visit to the Western Nile Delta region, where extensive groundwater development is taking place for irrigation of desert areas. The technical sessions were introduced by a keynote paper and followed by country presentations. The subsequent discussions proved to be very fruitful and have led to a number of recommendations and conclusions. These recommendations were summarized and discussed during the closing ceremony and presented in 'Guidelines for development and management of groundwater resources in arid & semi-arid regions'. A special session was devoted to the topic of future cooperation and continuation of the international exchange of experiences. All participants agreed about the necessity for and effectiveness

of continuing communication in the coming years and a recommendation to this effect has been formulated as part of the guidelines. The RIGW will investigate the ways and means to materialize this recommendation.

In this special issue of *Water Resources Development*, a selection of the papers is presented along with the guidelines that were jointly formulated during the closing session.

The guest editors are grateful to the Ministry of Public Works and Water Resources and the Netherlands Directorate General for International Cooperation for providing the facilities to convene the meeting and publish the proceedings. The proceedings are available from the RIGW, Water Research Center Building, El Kanater El Khairiya, Egypt or from IWACO B.V., PO Box 8520, 3009, AM Rotterdam, The Netherlands.

We would like to express our gratitude to Dr Abu Zeid, Chairman of the Water Research Center and to all participants and organizers who contributed to make the Round Table Meeting such a successful event. Special thanks go to the Organizing Committee and Steering Committee in which staff members of the WRC, RIGW and IWACO worked closely together during most of 1991, namely Dr Samir Farid, Dr Fatma Attia, Dr Joseph Khalil, Dr Taher Hassan, Eng Madiha M. Hassan and Eng Donia Ahmed Attia (RIGW); Mr Farouk Abdel Al (WRC); Mr Ad Zevenbergen, Mr Wim Lindeijer and Ruud Platenburg (IWACO).

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