

Drain for Gain: Agricultural Drainage for Sustainable Development



The session was convened by (1) Egyptian National Committee on Irrigation and Drainage (ENCID), (2) The Arab Water Council (AWC) and (3) Working Group on Drainage (WG-DRG) of ICID. Three local actions in agricultural drainage development in Australia, Egypt and Mexico were presented during the session to share experience, lessons and success stories with the global community. The Keynote Speakers were Mr. Peter Sutherland / Shahbaz Khan (Australia), Dr. Safwat Abdel-Dayem (Egypt), and Ms. Angulo Alvarez Maria Del Rosario (Mexico).

Irrigation practices in arid and semi-arid regions are often associated with rising water table and salt accumulation in the root zone. Globally, about one third of the irrigated 270 million hectares, producing 40% of the world's food, are affected by waterlogging and salinity. It is estimated that about 30 millions hectares are severely affected and have become unproductive. Irrigation induced salinity is a global threat to agricultural productivity and a cause of land degradation in arid and semi-arid regions. The world loses about 0.5-1.0 million ha of productive land annually due to salinization. Agricultural drainage is practiced as a means of control and defence against waterlogging and salinization. In recent years, reuse of drainage water in irrigation is increasing and augmenting scarce resources and reducing environmental problems in the downstream reaches of river basins. Agricultural drainage has proved to be extremely useful in controlling waterlogging and salinity and enhancing crop productivity.

In Australia, Egypt, and Mexico, where drainage and drainage water reuse are practiced in different physical, social and economical contexts, provided many useful lessons as follows:

- Implementing land drainage for sustainable development requires a vision and long-term commitment at the policy and decision making levels. Government's support could include soft loans recovered over an

extended period of time and subsidies for improvement of irrigation practices, installation of surface and subsurface drainage and education and training programs for irrigators.

- Drainage and drainage water reuse should be planned and managed from an integrated perspective to achieve an optimal mix of economic and social benefits while safeguarding key ecological functions.
- An institutional setup with a first order mandate towards drainage and addressing its multifunctional aspects with the involvement of all stakeholders in planning and management is a key to achieve the goals of integrated resource management.
- Continuous capacity building and training of government and contractor's staff as well as relevant water users on the different functions of drainage is necessary to cope with the developments in technology and management. A local industry for producing drainage materials and capacity to implement and maintain drainage systems is required. The private sector could be instrumental in taking this role.
- The financial sustainability of drainage projects requires an affordable and easy to implement cost recovery system.



Dr. Safwat Abdel-Dayem (Egypt) - Speaking in the session

and adaptive research provide strong base for drainage development and drainage water reuse on technically effective and economically sound basis.

- Governments and developing agencies should give attention to investments in land drainage. A long-term commitment to the development and maintenance of drainage scheme should be among the priorities.

National Drainage Program, Egypt

The construction of the Aswan High Dam (AHD) on the Nile River enabled perennial irrigation in the Nile Delta and Valley. This led to a potential risk of water logging and salinity. The Govt. of Egypt in 1970, launched a program to provide all the irrigated lands with drainage infrastructure. This enhanced crop productivity and increased crop yields significantly. Implementation of such a large scale program imposed huge financial, institutional and technical challenges. Institutional capacity has been developed at the national and local level to operate and maintain a complex on-farm and main drainage infrastructure. Presently, about 2.1 million hectares have been provided with subsurface drainage. Provision of drainage has improved health conditions, sanitation, and safety of buildings. However, the impacts of drainage on environment were mixed. The historical development of drainage in Egypt provides many lessons that can be shared with the global community.

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Governments and donor agencies should give attention to investments in land drainage (Photo: Editor)

- Reuse of drainage water can close the gap between escalating water demand and available water resources for irrigated agriculture. It also helps reducing contamination of the lower reaches of rivers. Applied