Geophysical Research Abstracts
Vol. 15, EGU2013-10647-1, 2013
EGU General Assembly 2013

Assessment and management of water resources in Egypt to face drought and water scarcity

Wouter Wolters (1), Samia El Guindy (2), Magdy Salah El Deen (2), Koen Roest (1), Robert Smit (1), and Jochen Froebrich (1)

(1) Alterra, Wageningen UR, Team ESS-CALM, Wageningen, Netherlands (wouter.wolters@wur.nl), (2) National Water Research Center, Ministry of Water Resources and Irrigation, Egypt

Egypt is one of the countries hardest hit by global and climate change. Challenges include population growth; increased demands for food, water, and energy; as well as changing land use patterns and urbanization. Egypt's part of the Mediterranean is characterized by a very complex hydrological system, as it lacks rainfall (Cairo average 30 mm/year) and it is completely dependent on the Nile river flow.

The growth of the Egyptian population and its economy in the near future leads to an increase in the demand for water and the overall water allocation priority basically is: first drinking water, then industry, and whatever is remaining will be available for agriculture and nature. Because the agricultural sector uses more than 80 per cent of available water, the main option available to reduce water scarcity in the priority sectors of the economy is to allocate less to the agriculture sector. Scientifically based advances in facing future drought and water scarcity through innovations increasing yields and food security by measures leading to "more crop per drop" are required.

New and modern large- and medium-scale agriculture is being developed in desert areas with participation of the private sector for investments. To prepare the farming community and others elsewhere, for the future situation of water shortages, a paradigm shift is needed. New farming systems under tight water supply conditions are in development to prepare for a future with less water. Egyptian farming systems need a major transition to prevent further marginalization of agriculture, which would also have a major impact on food security. Central to this transition should be the increase of value generated per volume available water, also referred to as "more crop per drop" or "more cash per splash". There is room for the urgently required improvement: the present return on water in agriculture in Egypt is about US$ 0.25 /m3, where values of over US$ 1 /m3 are "easily" reached elsewhere. Moreover, innovations on resource efficiency enabling use of rest and by-products of one agricultural activity as an input for another one will be profitable for the food producers and will also be better for the environment.

The creative design process to reach the required technological and policy innovations contributes to the developed adaptation strategy to face drought and water scarcity. Results will incorporate some previously un-thought of options.

The issues of water scarcity and drought have consequences and implications that can no longer be adequately addressed by any one of the Ministries alone. Many other government departments and agencies must be involved and decisions will have to be made at the highest political level. All policies in Egypt must be conscious of the limitations in water availability, and water policies need to address technological developments as well as the full range of other issues, including: macro-economic factors, economic issues that influence farm-level decisions, development of human capital, governance, and financial risk management.