



**ROUND TABLE ON WATER FOR AGRICULTURE IN AFRICA,  
THE NEAR EAST AND THE SMALL ISLAND DEVELOPING  
STATES**

**Tuesday, 22 November 2005**

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## I. Introduction

1. Productivity from irrigated land is approximately three times higher than that from rain-fed land. Beyond this global fact, there are many more reasons for highlighting the role of water control in agriculture. Investing in irrigation development provides insurance against erratic rainfall and stabilises agricultural output, boosting crop productivity and allowing farmers to diversify. This translates into increased and less volatile farm incomes. In turn, a predictable and stable production system has a positive effect on service providers to the sector, increasing the non-farm multiplier effect of the investment. In addition, investment in water development appreciates the value of land. Small-scale water collection, irrigation and drainage works implemented with local labour are economically viable, and once the basic infrastructure has been put in place with public funding, further private investment also becomes viable. Additional indirect effects of investing in water development include: improved nutrition throughout the year, a more active market in rural labour; reduced out-migration, and reduced agricultural pressure on marginal land.

## II. Regional perspectives

2. The issues and challenges faced by water control in agriculture vary from one region to another according to socio-economic and agro-climatic conditions. Below we look at three regions of the world where agricultural water control has been critical and briefly consider the prospects.

### A. AFRICA

3. Sustainable social and economic development in Africa is necessarily based on the development of its agricultural sector, on which some 70 percent of its population and 80 percent of its poor depend. Yet, only 7 percent of Africa's arable land area is irrigated – down to 4 percent in Sub-Saharan Africa. In contrast, irrigated land accounts for 38 percent of arable land in Asia. As a result sub-Saharan Africa uses less than 3 percent of its water resources compared to 20 percent in Asia. Given that one third of the population of Sub-Saharan Africa is undernourished and that its current population of 700 million is expected to reach 1.2 billion in 2030, the opportunities to improve the livelihoods of rural communities through water control are clear.

4. Despite the need for higher investment in rural infrastructure and agricultural services in Sub-Saharan Africa, key constraints need to be overcome. The current cost of transportation remains prohibitive in most of the region; the network of rural roads is inadequate, which means access to markets for agricultural products remains difficult for most farmers. The decline in multi-lateral lending for irrigation and drainage investments since the late 1970s has constrained the growth of domestic staple production and resulted in increased food import bills.

5. The New Partnership for Africa's Development (NEPAD) has identified water control as the first pillar to sustain development in the context of the Comprehensive Africa Agriculture Development Programme (CAADP), with which FAO is closely associated, and has identified investment in water programmes as a priority. The CAADP has estimated that as part of a wider set of measures to promote agricultural and rural development, an annual investment of around US\$2 billion would be needed to boost irrigated agriculture in Africa.

6. In the recent report "Our Common Interest" of the Commission for Africa, the importance of investing in water control and management is also recognised, a view that is strongly subscribed to by the African Union. To complement these initiatives, the African Development Bank and the European Union have launched water facility funding mechanisms to increase investment in rural water management.

## **B. THE NEAR EAST**

7. In the Near East, 65 percent of population is food insecure. It is the world's driest region and acute water scarcity and shortage are wide spread. The region has the lowest per capita water endowment in the world with 16 countries below the threshold of 500 m<sup>3</sup>/pers.year compared to a global average of more than 7000 m<sup>3</sup>/pers.year. Given the arid and semi-arid climates of the region, irrigation has always been the mainstay of the agricultural sector and high temperatures combined with low pest infestation have favoured the production of irrigated crops. However, as the use of the limited renewable water resources and the non-renewable groundwater resources of the region has reached technical and natural limits, new challenges arise for irrigated agriculture in the region.

8. Strategic options for the Near East with regard to improved water use in the agricultural sector include: investing in highly water-efficient irrigation technologies including, drip and sub-surface application, enhancing water conservation and productivity through modernisation of irrigated systems and promoting the use of non conventional water resources including treated wastewater.

## **C. THE SMALL ISLAND DEVELOPING STATES**

9. Also the Small Island Developing States face serious water management challenges. Many islands have very limited surface water catchments and vulnerable aquifer systems. The latter are prone to over-exploitation and saline intrusion. Population pressure on these limited resources is such that extreme measures are required to conserve what viable groundwater resources remain in place for critical human needs and food production. Improved assessment and monitoring of available resources will be vital along with enhanced institutional capacities to micro-manage strategic aquifer reserves and surface water catchments.

10. But the nature of the agriculture sector in many Small Island Developing States also poses problems. Agriculture is characterised by a dual system with typically large estate commercial plantations contrasted with poorly organised smallholders occupying more marginal areas with inherently lower productivity. Typically, these small island states need investment in rehabilitation of on-farm and small scale irrigation schemes, including adoption of localised irrigation technologies for high value produce.

# **III. Strategic issues for discussion**

## **A. COMPETITION FOR WATER AND THE ROLE OF AGRICULTURE**

11. In the absence of substantial claims for water from other sectors, and with little understanding about environmental impacts, irrigated agriculture has been able to capture large volumes of freshwater. Today, agriculture represents 69 percent of all water withdrawal in the world, and this percentage rises above 90 percent in some arid countries. As such, agriculture has acted as a residual user of freshwater. The situation is changing as population increases and more and more countries face water shortages. By 2030, over 60 percent of the population will live in urban areas, claiming an increasing share of water abstraction.

12. The availability of sufficient amounts of water of good quality is fundamental to all biological processes, for maintenance of biodiversity and ecosystems, for human health, and for primary and secondary production functions. Natural ecosystems and agriculture are by far the biggest consumers of the Earth's freshwater. Appropriations of water from ecosystems have intensified with human population growth, the expansion of agriculture and increasing pressure to transfer water from rural to urban areas, to the point where agriculture is often seen as jeopardizing ecosystem sustainability. But it is equally important to underline the fact that such

threatened ecosystems can no longer provide their water purifying and regulating services to sustain agricultural production and livelihoods.

13. There is an urgent need, therefore, to reconcile water demands for maintaining ecosystem functions and for producing food. Finding this balance is particularly important in developing countries, where agriculture and the natural environment are often the principle potential "growth engines", and the key to alleviating poverty and reducing hunger.

14. Of all freshwater use sectors, agriculture in most cases shows the lowest return on water in economic terms. As the stress on water resources increases, competition grows between agriculture fighting to retain its water allocations and cities needing to satisfy the needs of their rapidly growing populations. Water stress and the pressing need to renegotiate inter-sectoral allocations are usually factors that force changes in the way water is managed in agriculture. Declining water quality adds to the stress on supply. In developing countries, water diverted to cities is often released after use without adequate treatment. In arid areas, return flow from agriculture itself and multiple reuses of water lead to a rapid degradation in quality.

15. In many islands and coastal areas, the development of tourism puts additional burden on scarce water resources, but it also bring new market opportunities for diversified and high value production, including fresh vegetables and fruits.

16. The scope and need exist therefore for rapid increase in water productivity in agriculture. Carefully designed water management strategies, associated with programs aiming at improving the efficiency and productivity of water use need to be put in place. Pressurized irrigation conveyance systems, associated with localized irrigation technologies and the promotion of high return agricultural produces should be part of such strategy. Systematic collection, treatment and re-use of urban wastewater for agricultural production, associated with the development of enhanced monitoring, health protection and education programs for wastewater reuse in agriculture offer new opportunities for irrigation in conditions of water scarcity.

17. Issues for discussion include:

- *What role should agriculture play in the face of increasing competition for water from other sectors?*
- *What type of policy shifts and investment instruments are needed to enhance water conservation in agriculture?*
- *How can policy responses reconcile the requirements of ecosystems with the demands of agriculture under conditions of water scarcity?*

## **B. OPTIONS FOR POVERTY REDUCTION**

18. Irrigation impacts more on poverty in some settings than in others, depending on a number of conditioning factors, including the structure of land and water distribution, land tenure, the irrigation infrastructure and its management, the technologies in place, and access to support measures including information and marketing. Improved equity and security in access and rights to land and irrigation resources matter for larger poverty impacts: where land and water equity exists, irrigation has relatively larger poverty reducing impacts. Addressing gender equity in access to land and water, particularly women's rights to hold irrigated land and control the distribution of produce, have been shown to make significant differences in family's nutrition and income of female-headed households.

19. Evidence shows that the poverty-reducing impacts of irrigation-related interventions are larger when they are implemented in an integrated framework, e.g., integrated approaches for managing surface water and groundwater (conjunctive use); developing systems that allow multiple uses of irrigation water; for new investments in improving irrigation infrastructure and irrigation management; and service provision in agriculture (i.e. provision of inputs, technologies, information, finance and marketing).

20. Investments in irrigation improvement that allow for multiple uses, like domestic water supply, irrigation, and other farm and non-farm uses of water, may have higher benefits than separate investments. These multiple uses bring significant benefits and contributions to livelihoods, especially for poor households.

21. Where opportunities for irrigation with affordable technology exist, a priority option is private sector marketing of technologies. There is a range of irrigation application and resource conserving technologies, and improved production practices that offer promise for improving productivity and returns to farming by the poor. These include, for example, improved system of water delivery and control, micro irrigation systems, adapted water lifting technologies, and on-farm water conserving technologies like zero tillage, water harvesting, or runoff farming.

22. The potential benefits of these innovative systems and technologies to the poor can be enhanced through: initial targeted subsidy schemes for the poor; targeted training opportunities to enhance the skill and knowledge of water users; encouraging private participation in the supply chain of the needed inputs for the systems (e.g., machines, implements and tools); focus on developing low pay-back period technologies; and strengthened public research on the systems for further improvement.

23. Issues for discussion include:

- *What are appropriate policies and incentives to promote effective water control programmes for poverty reduction in rural areas?*
- *What are the constraints to further developments in water control for agriculture, in particular in Africa, the Near East and the Small Island Developing Countries?*
- *What can be done to mobilise the financial resources necessary for improved water control and management in the different region?*