



Water, food and ecosystems in Africa

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Advances in agriculture are often associated with disturbance of the natural environment. This is particularly true of agriculture's use of freshwater. Population growth and rising levels of per capita water consumption place increasing pressure on the availability and quality of water resources which, in turn, compromises ecosystems that are vital to water regulation, supply and purification.

In recent decades, numerous international agreements have called for action to harmonize the water requirements of agriculture and ecosystems. A major step in that direction is the FAO/Netherlands International Conference on Water for Food and Ecosystems, now under way in The Hague. The conference seeks to find new ways to reduce the negative impacts of water use in agriculture, with a double objective: to maintain ecosystem integrity and productivity, but also to sustain agriculture's crucial contribution to food security, poverty alleviation and economic growth.

The challenge of producing food and other products while delivering environmental services is particularly relevant in Africa, where food security and poverty reduction are pressing concerns. Recent research shows that growth in agriculture is the most beneficial for the poor: a one percent increase in yields results in a decrease of 0.6 to 1.2 percent in the number of people living on less than \$1 per day. Hence, Africa needs to continue to invest in unlocking the potential of its diversified rain-fed, irrigated and mixed agricultural systems.

The mobilization of water resources for agriculture in Africa is still well below the level of other regions. At present, only 5 percent of Africa's total renewable fresh water resources are being used, compared with 20 percent in Asia. Likewise, only 7 percent of total arable land is irrigated in Africa, compared with 42 percent in South-Asia and 36 percent in East and South-East Asia. There is, therefore, great potential to address the needs of Africa in terms of food, poverty reduction and ecosystems.



“Win-win” situation. The challenge facing African agriculture has local and global implications. Food production can be used locally or be traded; environmental services benefit local people as well as the global environment. Local and global developments need not be opposed but can be synergistic. We need to identify, therefore, win-win situations that link the local and the global levels through markets for agricultural products and environmental services. The recent New Partnership for Africa's Development initiative – which has chosen agriculture, infrastructure and markets to address the specific concerns of Africa – should help in meeting these challenges.

FAO's Agriculture Department is sharing with African countries its experience in developing an ecosystems approach to agriculture, and in applying a productive services approach to ecosystems. Our starting point is recognition that agriculture and ecosystems are inherently linked. Both use the same resources, land and water, and are based on the same biological processes, photosynthesis and biomass production. (In fact, agriculture is itself an ecosystem from which humans appropriate primary and secondary products, and the history of agriculture can be seen as the increasing control of biological processes for the purpose of increasing production.)

To exploit the opportunities for harmonizing food and ecosystems in future development initiatives, we will need to address three important issues:

- *Knowledge.* The interactions and interdependencies between agriculture and ecosystems are numerous, location specific and characterised by the complexity of their biophysical mechanisms. This requires us to acquire a broader knowledge of these interactions and processes.
- *Values.* In making strategic decisions for development and the use of natural resources such as water, we need to be guided by criteria that attribute the right value to food and environmental services, above all in water systems that serve multiple purposes. These values are in part, but not exclusively, economic.
- *Institutions.* We need an enabling environment to achieve coherence in national and international policies, as well as in local natural resources management arrangements. Local stakeholders — above all, farmers and resource users — and national governments need to be fully engaged.

Applying an ecosystems approach to agriculture means focusing on its optimization within its ecological surroundings, i.e. to regard the agricultural sub-system as a part of the wider ecosystem. The context of food production and ecosystems in Africa is characterized by its rich diversity. It is precisely this diversity that allows agricultural producers in Africa to increase productivity within the niches of their natural and socio-economic surroundings. Realizing this potential requires a stronger focus in research and development on the specificities and richness of Africa — for instance, by selecting and developing genetic traits in agricultural crops for the region's specific environmental and growing conditions.

Multiple services, uses. At FAO, we also foster an integrated approach to natural resources management that focuses on the

multiple services and uses derived from natural ecosystems. Integration means looking for mutual services across the “traditional” division of production and environment. This is what we have learnt since the 1992 Earth Summit — that agriculture and the environment must be synergistic. In our livestock programmes, for example, we look for interdependencies between livestock keepers and wildlife reserves. We also look at multi-service and multi-purpose natural resources management systems in collaboration with the International Water Management Institute (IWMI) and the World Conservation Union (IUCN). Inland wetlands in Africa represent rich ecosystems that can perform a multitude of services: promoting productive livelihoods through the cultivation of rice, inland fisheries, fibre and other resources, and pasture; environmental services in conservation of biodiversity and wildlife, and water regulation and purification. These services need to be optimized within the limits of each ecosystem's carrying capacity, while multiple users need to be brought together in a common management arrangement.

Of course, reality is often such that at the policy level the specific problems and opportunities of wetlands are either ignored or wetlands are designated as protected areas only. As farmers are already present in the wetlands, generally without the proper management arrangements, we lose the opportunity to reconcile the needs of food production and ecosystems. Coherence in our cross-sectoral policies is essential to support collaboration among stakeholders.

The need for coherence applies at national level, between ministries of agriculture and environment, water and natural resources, but also in donor policy, and not least between the international institutions, environmental Conventions, and UNEP and FAO. Similarly, at national level, cross-sectoral policies on environment and agriculture need to become visible in national plans, especially in Poverty Reduction Strategy Papers being prepared as part of policy dialogue with the World Bank and the IMF.