

## Environment and Irrigation: FMIS Issues

Is irrigation harmful to the environment? Landslides, siltation, waterlogging and salinization are some of the effects commonly attributed to irrigation. But careful irrigation development, especially that emphasizing small-scale systems characteristic of the FMIS sector, can also enhance the stability and productivity of local environments.

The current interest in "sustainable" development which the Brundtland Commission report, Our Common Future, helped spark, has many implications for irrigation professionals.

Sustainability is not a new concept for professionals working on development projects in the FMIS sector. Indeed, the FMIS Network was established in response to the common dilemma of providing assistance to farmer-managed systems without creating a non-sustainable dependency on outside help. The concern was, and is, the sustainability of farmer management, not as a goal in itself, but in recognition of the fact that government agencies generally cannot manage a large number of small-scale indigenous irrigation systems.

What is the connection between "sustainable" farmer-managed irrigation systems and environmental sustainability? One connection that becomes evident when standing in farmers' fields is that the command area and the irrigation system itself are part of a local watershed.

When interviewing a farmer about his landholdings, he may point to the surrounding hills and explain that, in addition to his irrigated fields, he also cultivates a few unirrigated plots "up there". And over there (pointing to a different spot) is where his wife gathers grass for their livestock; and over there (a wide sweeping motion of his arm) is where his wife searches for fuelwood.

### In This Issue

Environment & Irrigation	1
Network Changes - New Coordinator	3
Editor's Note	4
Professional Development Interchange Program	5
Irrigation in India and the Philippines	6
The Philippine Approach to FMIS Development	8
Federations in Northern Thailand	10
Weir Systems in Northeast Thailand	13
News and Notes	15
Hill Irrigation in Himachal Pradesh, India	20
Navajo Irrigation	25

Farmers are usually very much aware that the health of their watershed is linked to the yield of water captured by their irrigation system, particularly where the water source is a very small stream. Yet short-term individual need takes precedence over the long-term general good, resulting in the familiar sequence of environmental degradation known as the tragedy of the global commons.

Diminished and erratic supplies of irrigation water, flash floods, and heavy loads of silt that clog the canals are symptoms of deeper problems which, unfortunately, do not lie neatly within the responsibilities of any single government agency.

One of the most promising approaches to the watershed-irrigation link is through local farmer organizations whose members have a stake in both the watershed and the irrigation system. Depending upon the relative sizes of the watershed and the irrigation systems, such organizations may be system specific, or may involve a number of systems.

In the Sukhomajri project near Chandigarh, India, for example, a small reservoir provides water to a single irrigation system. A single association of farmers manages watershed utilization and irrigation. Since all farmers have an interest in keeping siltation to a minimum, there is an incentive to adhere to the rules for grass cutting, grazing, and wood gathering in the watershed. The problem of landless residents who were especially dependent upon the watershed for herding was solved by granting water rights on a household basis, rather than on a land basis. Since landless families can sell or trade their water rights, they too have a vested interest in the sustainability of the irrigation system.

In the IFAD-supported Mae Lai project in northern Thailand, a large  
(continued on page 4)

watershed feeds a number of small irrigation systems. The Royal Forestry Department and the Royal Irrigation Department are working together to strengthen the indigenous irrigation associations at the system level and establish a new federated level of organization combining the system-level associations within the watershed.

The functions of the new federation will be to distribute water to the member systems from a reservoir that is being built in the upper watershed, and to regulate utilization of the watershed above the reservoir. The problem of landless groups residing in the watershed is being met by providing new land within the watershed, but downstream from the reservoir.

In both examples, environmental sustainability and irrigation management are addressed together through the mechanism of farmer organizations at the local level. Local farmers have a vested interest in the watershed as a whole, and particularly in their irrigation system.

The process of designing and constructing a new irrigation system, or rehabilitating an existing system, is another context in which good irrigation management has environmental benefits, and vice versa. The participation of farmers at the initial design stage is a fundamental guideline in any irrigation system that is or will become farmer managed.

Environmental considerations underscore the importance of tapping the knowledge of local farmers about bedrock and soil conditions, stream flow patterns, and construction techniques. And farmers' full support for the new design of the new system helps ensure effective labor mobilization to meet emergencies of landslides or leaks, should they occur. Irrigation development can and should go hand in hand with environmental sustainability. The water productivity of irrigation

systems, and the crop productivity of irrigated agriculture, depend upon the long-term health of local watersheds. Creative approaches to irrigation development in the FMIS sector can build upon these links to the mutual benefit of local farmers and national governments.

- David Groenfeldt

## Editor's Note

Several articles in this issue deal with aspects of *sustainable* irrigation development. The lead article on Environment and Irrigation discusses ways that improving FMISs can be integrated with better management of the watershed. Local participation is just as important to watershed management as it is to irrigation management. Combining both functions in a single organization is a promising approach which is being tried in several countries.

Irrigation system design is another issue that has environmental overtones. In his article on Hill Irrigation in Himachal Pradesh, Ramchand Oad discusses design options that can result in more manageable and durable systems. An intake that protects the canal from damaging flows also minimizes the danger of hillside erosion.

Several reports from the IIMI-UNDP Professional Development Interchange Program last year provide international perspectives on particular country approaches to FMIS assistance. The article on Irrigation in India and the Philippines compares the roles of the government and farmers in establishing the operational rules for managing river pump systems. The Philippine Approach to FMIS Development: A Nepal Perspective draws lessons about farmer participation that have relevance to Nepal. However,