to farmers the design details of the project. Surprisingly, the design prepared by the BIP was still based on the earlier lay-out of 514 ha rather than 344 ha. The farmers protested and the BIP promised to revise the design.

One important point the farmers rejected was the proportion of inlet of the division structures. The farmers requested that the design of the division structures should be based on the traditional tektek (system of water rights) rather than on the size of rice fields. Under the tektek basis of water allocation, water distribution may not reflect the size of land among farmers; one tektek shows high variation. A farmer having 0.30 ha of rice field may obtain one tektek of water while another farmer having land of say 0.65 ha may also obtain one tektek of water. Historical transactions of water rights among farmers through buying or selling, or exchange of land, as well as location of the rice fields and porosity of the rice field may underlie the present seemingly "unjust" distribution of water if we just look at the actual size of the farmers' rice fields. However, designing division structures within a particular subak simply on the basis of the actual size of the rice fields may result in conflict among farmers.

Since the action research is underway, I will end this brief report here. I hope this information will be useful to readers of this Newsletter and would welcome any comments.

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Resource Mobilization in Nepal

This short note presents some of the modes and methods of resource mobilization in FMIS in Nepal where more than 60% of the total irrigated area is under farmer managed systems. Resource mobilization modes and methods can be broadly characterized as internal or external.

Internal Resource Mobilization

Resources available to the farming community include labor, cash, materials and natural resources as well as enterprises run by the system. Such resources are mobilized from within the system.

Labor. The basis of labor mobilization varies among FMIS depending upon size of landholdings, household size, status of the farmers, and water shares. As a general rule, labor mobilization is not voluntary; it is in exchange for the utilization of water. If the user fails to contribute the labor assigned to him, he will be fined or he will be deprived of the irrigation water.

Cash. In lieu of labor, farmers in some FMIS collect cash to hire laborers from outside the system. Money is collected on the basis of land holding size, land quality, or water share. The cash might be used for physical construction, to pay royalty to the forest department to collect branches and logs for diversion weirs, or to pay salary to irrigation officials. Cash is also mobilized from the fines imposed on members of the irrigation system for not fulfilling their obligations.

Forest Products. FMIS usually have temporary structures made out of stones, boulders, tree branches, logs and bamboo. These materials are used for diversion dams, intakes, and check
dams for raising the water level. These materials are used in profuse quantities in large-scale farmer managed irrigation systems of the Tarai.

**Bullock Carts.** Where the construction materials for the diversion dam is distant from the dam site, bullock carts are mobilized to transport the rocks, bamboo, and branches needed. In large FMIS in the Tarai where very large diversion dams are constructed with materials imported considerable distances, bullock carts are a critical part of resource mobilization.

**Water Mills.** Constructing water mills along the irrigation canals can help pay for the cost of canal maintenance. In one case, the irrigation organization permitted a private party to use their irrigation water for a water mill. In return, the mill owner would maintain the canal from the intake to the mill site. With the introduction of electric mills, farmers in some irrigation systems are faced with additional maintenance work, since the water mill owners no longer maintain portions of the canal.

**Sale of water.** By increasing the volume of water in the system, extra water can be sold and resources (both cash and labor) mobilized for system improvement or community development. In one case, funds were raised for improving the community school. Water share transactions may take place among individual share holders as well. Such transactions have little impact on the overall resource mobilization of the system.

**Knowledge.** Mobilization of the knowledge of village elders is of particular importance in remote FMIS where the elders serve the function of libraries.

**External Resource Mobilization**

Resources tapped from outside of the community are an increasingly important component of FMIS dynamics, particularly for rehabilitation and maintenance of the system.

**Cash.** Mobilization of cash from the national, district, or village panchayat levels, voluntary organizations or from international agencies, is used for improvement or regular maintenance of the system. Chherlung system in Palpa District received a cash grant from the District Panchayat for one-time improvements; farmers in the Satamohane system near Pokhara mobilize resources from the Kaski District Panchayat for regular maintenance. Voluntary organizations give money for specific repairs (e.g., to repair a tunnel) or through regional programs. Government agencies (e.g., FIWUD) provide subsidies for irrigation rehabilitation.

**Construction Materials.** In addition to forest products, construction materials are mobilized from external organizations for those items which are not available locally. Gabion wire and cement are most common. Food assistance (from Food for Work) is also an important feature of the construction process.

**Technical Knowledge.** Generally, technical knowledge would be provided by the technical agencies of the government. However, there are also many examples of farmers' exchange of experience from one system to another.

**Supervision.** Supervision by outside experts of work done by local people is a form of managerial resource mobilization.
Machinery. Bulldozers or excavators are brought into the system for desilting in large FMIS such as Pithuwa, where regular desilting of the canal was needed after each flood, or in Chhatis Mauja for annual desilting.

Credit. The various forms of credit available for irrigation development include the ADB/Small Farmers Development Program, the shallow tube well program under ADB/N and the ADBN/CARE Nepal program. In this last program, ADBN/CARE provide a 50% subsidy with farmers providing the remainder, either through labor or loans.

Observations

The political strength of the irrigation organization is closely linked to its capacity to mobilize external resources. These issues need to be considered in the total political and economic policy of the government. Is the government prepared to take over all farmer managed systems or would it like to provide assistance only when it is really necessary?

Outside assistance programs need to consider the nature of farmers' resource mobilization and how the assistance will affect the pattern of resource mobilization. The strength of the irrigation organization of the systems is based on the nature of resource mobilization. Assistance programs should seek to strengthen that organization. A resource mobilization perspective can be used as a methodological tool to understand how the irrigation system works, and to identify priority areas for assistance.

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FMIS Network Meeting

A meeting of the FMIS Network Advisory Committee was held at the Winrock International office in Bangkok on 24–25 March 1988. Fourteen Network members attended and participated in wide-ranging discussions about the role of the network, while making plans for specific activities.

IIMI's Role in FMIS Research

The first session opened with a discussion of IIMI's overall strategy in relation to farmer-managed irrigation systems in general, and the FMIS Network in particular. Key points stressed were IIMI's client orientation, with implementing agencies being the clients, and a product orientation, keeping in view the interests of these clients. IIMI's research activities on FMIS are funded through a grant from IFAD and the West German government. Research locations include five countries where IFAD is financing FMIS assistance projects (Sri Lanka, Thailand, Bhutan, Bangladesh, and Pakistan). The client orientation of IIMI fits very well with IFAD's interests, since IFAD projects are implemented by the same agencies IIMI considers clients.

Agencies' Research Interests

There is an overlap of interests between researchers and donors or implementing agencies. In the case of the Peoples' Irrigation Project (PIP) in Chiang Mai, Thailand, the research issue of inter-system communication and management has become a critical issue of practical concern. The strategy taken by the Royal Irrigation Department (RID) to increase the density of irrigation systems in the Chiang Mai area means that inter-system issues are becoming increasingly important; there are greater interactive effects in any new development.