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IRRIGATION SERVICE FEES IN ASIA

Leslie Small

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IRRIGATION SERVICE FEES IN ASIA

Leslie E. Small

In 1985 IIMI conducted a Regional Study on Irrigation Service Fees with support from a Technical Assistance Grant from the Asian Development Bank (ADB). The primary objectives of the study were (1) to develop a conceptual framework for evaluating irrigation financing policies and (2) to review the procedures and rationale for irrigation financing mechanisms in five Asian countries: Indonesia, Korea, Nepal, the Philippines and Thailand. The study also included a literature review of conditions in other parts of the region. Emphasis was placed on examining mechanisms for financing recurrent expenses of operation and maintenance (O&M), and their relationship to the quality of irrigation performance. The study was discussed at a Regional Seminar in Manila, in July 1986.

1. GENERAL CONCLUSIONS

- A. Irrigation services can be financed by a wide variety of mechanisms: water pricing, based on demand-determined consumption; irrigation service fees assessed with reference to irrigated area; general taxes levied without specific reference to irrigation services; implicit taxation through control over prices of inputs and regulation of the market sector; and supplemental income to an irrigation agency through other revenue generating activities.

- B. Mobilizing resources through irrigation service fees and other mechanisms involving direct or indirect payments by water users or other beneficiaries is not an end in itself, but is only important:

first, in so far as it results in improved irrigation performance through:

- (a) more efficient O&M of irrigation facilities (by improving O&M funding; by improving the accountability of irrigation managers to water users; and by encouraging greater cooperation and involvement of water users in O&M); and
- (b) more efficient use of water by farmers; and

second, in so much as it promotes other objectives of government by:

- (a) leading to better investment decisions;
- (b) easing the government's fiscal burden; and
- (c) resulting in a more equitable distribution of income;

The effects of alternative resource mobilization mechanisms in relation to various government objectives are summarized in Table 1.

- C. The effects of irrigation service fees on irrigation performance and on investment decisions depends on the institutional framework of the irrigation agency. In particular, it depends on whether the agency has a significant degree of financial autonomy or is financially dependent on the central government (see Table 1). The key elements of financial autonomy are (a) that the irrigation agency must rely on user charges for a significant portion of the resources used for O&M, and (b) that the agency have expenditure control over the use of the funds generated from these charges.
- D. Financial autonomy is the more appropriate institutional framework to obtain improvements in irrigation performance. The fact that the autonomous agency must be able to collect direct payments for irrigation services is likely to lead to greater involvement of farmers in decisions regarding actual expenditures on O&M, including staffing levels. Furthermore, if farmers are expected to repay some capital costs, then there is a rationale for increasing their involvement in decision-making processes during planning and construction as well as in regular operation and maintenance.

Table 1. Summary of Potential Consequences of Irrigation Financing Mechanisms in Relation to Financing Objectives

Financing Objectives	Institutional Context and Financing Mechanisms							
	Financial Autonomy: Funds controlled by irrigation agency			Financial Dependence: Funds controlled by non-irrigation agency; irrigation agency financially dependent on government budget allocation				
	Irrigation Service Fees	Water Prices	Secondary Income	Irrigation Service Fees	Water Prices	Taxes	Implicit Taxation	
1. Improve Irrigation Performance								
a. More efficient operation of irrigation facilities								
- Improve funding of O&M	yes	yes	yes	no	no	no	no	
- Improve managerial and financial accountability	yes	yes	no	no	no	no	no	
- Improve involvement of water users	yes	yes	no	no	no	no	no	
b. More efficient utilisation of water	no	yes	no	no	yes	no	no	
2. Improve Irrigation Investment Decisions	?	?	no	no	no	no	no	
3. Improve Fiscal Position of Government	yes	yes	?	yes	yes	yes	yes	
4. More equitable income distribution	?	?	?	?	?	?	?	

- E. Irrigation agencies with a significant degree of financial autonomy are often able to reduce the amount of direct payment required from farmers through institutional arrangements whereby the agencies earn secondary income from sources other than charges on water users. Types of secondary income include interest on deposits, rental of assets owned by the irrigation agency, sale of water for non-agricultural purposes, and the sale of fishing rights in reservoirs.
- F. The impact of irrigation service fees and other resource mobilization measures on the government's fiscal burden and on the equity of income distribution depends on, and is generally dwarfed by, the effects of other agricultural sector policies (such as fertilizer subsidies, rice price controls and trade restrictions) designed to promote broad social objectives such as regional development, employment creation, rural-urban income parity and food self-sufficiency.
- G. Pricing water deliveries to individual farmers is likely to be prohibitively expensive in most gravity systems serving large numbers of small farms. The cost is not merely in terms of measurement of flows, itself a difficult task, but in the administration, reporting, billing and collection procedures. Pricing is only likely to be effective if groups of farmers, say at the tertiary level, can be served with a single bill.
- H. In the absence of a water-pricing mechanism, the argument that user charges for water will increase the efficiency of water use by the farmers loses most of its validity. Even if water pricing were possible, its benefit in terms of increased water use efficiency by farmers would be much less than is sometimes suggested. Much of the current "wastage" of water can be attributed to poor supply control rather than excessive demand in the absence of water prices. But effective supply control is a prerequisite for a system of water pricing. It is likely that once this prerequisite exists, the amount of "wastage" will be greatly reduced, thus lowering the potential efficiency gains from any subsequent attempt to introduce water pricing.

- I. Indirect benefits of irrigation are often quite large, and in some cases may even exceed the direct benefits. Although it is rare to find cases where indirect beneficiaries are directly assessed, they may be subject to indirect taxes that go to the central government.

2. COMPARATIVE EXPERIENCES IN ASIA

2.1 Pricing Policies

Within the five countries studied there are wide variations in policies and approaches towards mobilizing resources to finance irrigation services. Financial autonomy is found in Korea with decentralized Farmland Improvement Associations (¹), and in the Philippines with a centralized National Irrigation Administration. Decentralized financial autonomy is also found in the tertiary portions of systems in Indonesia, while financial dependence prevails at the main system level. The national irrigation agencies in Nepal and Thailand are also financially dependent on funds allocated by the central government.

In Korea, Nepal and the Philippines, and at the tertiary level in Indonesia, resources are mobilized from the water users through irrigation service fees. Fees are also being imposed in a few areas in Thailand that have undergone land consolidation. In all cases, these fees are assessed at a flat rate per hectare of irrigated land, but with some adjustments possible according to season and crop type. Because of the decentralized nature of the irrigation associations in Korea and at the tertiary levels in Indonesia, the rate per hectare in these countries can vary both within and among associations. By contrast, the centralized approach to the assessment of fees used in Nepal and the Philippines results in much greater uniformity of fees in these countries.

In addition to mobilizing resources directly from the water users, the financially autonomous irrigation agencies in Indonesia, Korea and the

¹ See ODI Network Paper 12d: K.S Park, Institutional aspects of operation and maintenance in Korea, November 1985.

Philippines also rely on secondary income as an important source of funding for irrigation services. In Korea the irrigation associations derive an average of 25% of their income from secondary revenue. In the Philippines secondary income is as much as 60% of actual O&M expenses; however, much of this is tied to the construction activities of the irrigation agency. The financially dependent irrigation agencies in Indonesia, Nepal and Thailand have no significant secondary income.

Other mechanisms to mobilize resources are also found in Indonesia, Nepal and Thailand. Taxation, in the form of a land tax, is used in both Indonesia and Nepal. Thailand relies on indirect taxation, primarily through the depressed price of rice resulting from its structure of rice export levies.

If irrigation service is satisfactory, then the benefits derived by farmers are more than adequate to cover O&M costs in all of the five countries, but they cannot cover more than a small portion of the capital investment (Table 2). In Korea there is a specifically defined portion of the fee set aside for capital recovery, even though total fees assessed and collected may not cover the full cost of O&M. In the other countries no separation of the fee is made.

2.2 Fee Collection

Korea obtains the highest rate of fee collection, over 98%, in part because great importance is attached by agency staff to meeting the 100% target. Considerable efforts are made in administering the fee collection process. In the Philippines, where the National Irrigation Administration has switched from a financially dependent to financial autonomous body only in the past few years, increased importance is now also being attached to fee administration and collection. Reflecting this change, collection rates have increased somewhat from past years, and are now about 60% of the amounts assessed. In contrast, Nepal collects only an estimated 20% of fees due. This reflects the lack of importance of fee collection to the irrigation agency, which is dependent on the central government for its entire budget.

Table 2. Estimated Benefit Recovery Ratios
Under Alternative Financing Policies (percent)¹

Country	P o l i c y			
	Actual	Actual Modified to Set Irrigation Service Fees Equal to O&M Costs	Actual Modified to Set Irrigation Service Fees Equal to O&M plus Full Recovery of Capital Costs	Actual Modified to Set Irrigation Service Fees Equal to O&M plus Full Recovery of Capital Costs
			Moderate Capital Cost	High Capital Cost
Indonesia				
low estimate ²	8	10	56	114
high estimate ²	21	27	154	313
Korea ³				
low estimate ²	26 (54)	27 (58)	141 (297)	203 (429)
high estimate ²	33 (70)	36 (75)	183 (387)	264 (557)
Nepal	5	10	74	122
Philippines	10	7	43	98
Thailand ⁴	9 (30)	31 (53)	155 (176)	279 (300)

¹ A benefit recovery ratio is the ratio of all increases in direct and indirect farmer payments for irrigation services to the incremental net farm income resulting from irrigation.

² Low and high estimates result from alternative estimates of the net benefits of irrigation.

³ Figures in parentheses represent the estimated benefit recovery ratios that would prevail if domestic prices of paddy were allowed to drop to a level consistent with 1983 world prices (estimated to be 239 won/kg paddy), while all other prices and input amounts remained constant.

⁴ Figures in parentheses represent the values that would apply if the implicit tax on the farmgate price of paddy were 22 percent, as estimated for the late 1970's in World Bank, "Thailand: Case Study of Agricultural Input and Output Pricing", Staff Working Paper No.385, 1980, p.50.

In Korea and Nepal irrigation fees are assessed in cash, although in Korea the maximum amounts which can be charged are established in terms of paddy. In the Philippines the fees are assessed in terms of paddy but can be paid in cash based on the official price. In Indonesia water user associations have both cash and in-kind contributions. The primary advantage of a crop-based assessment is that there is a built-in adjustment for inflation: if crop prices rise, or are increased by central government, the agency is able to increase its revenues without facing the political pressures associated with requesting an increase in fees.

The relationship between actual O&M costs and the rate set for irrigation service fees varies greatly among the five countries (Table 3). Only in the Philippines is the rate set higher than actual O&M costs; however, because collections are only about 60% the revenues actually collected are considerably less than total O&M costs

2.3 Cost Reduction

Although there is a tendency for agencies to try to raise fees if income falls below expenditure, there are also some efforts made in all countries to reduce costs. These may be dictated by central government, as is the case in Indonesia, Nepal and Thailand, because requests for annual appropriations are not fully met during budget allocations. In the Philippines the irrigation agency both prepares budgets and funds them. With lower than desired fee collection rates, secondary income has become a crucial source of financing O&M. Still, funds are limited, and efforts have been made to cut costs by reducing staffing levels. In Korea the decentralized water user associations generally earn adequate revenue to support O&M; however, the resulting levels of irrigation fees are quite high, and the associations' expenditure budgets are subject to strict government control.

3. DISCUSSIONS AT THE REGIONAL SEMINAR ON IRRIGATION SERVICE FEES

A Regional Seminar on Irrigation Service Fees, jointly sponsored by the Asian Development Bank (ADB) and IIMI, was held in Manila from 21-25 July 1986. Participants included 25 representatives from 13 of the Developing

Table 3. Estimates of Average Operation and Maintenance Costs, and of Revenues Collected by Irrigation organisations in Five Asian Countries

	Indonesia	Korea	Nepal	Philippines	Thailand
1. O&M Costs (\$/ha)	22	211	10	14	27
2. Irrigation Service Fees Assessed					
a) Amount per ha (\$)	⁵	196	6	17	0
b) % of O&M Costs	⁵	93	60	121	0
3. Approximate % of Fees which are collected	⁵	98	20	62	-
4. Revenues Collected from Irrigation Service Fees					
a) Amount per ha (\$)	15	192	1	10	0
b) % of O&M Costs	68	91	10	75	0
5. Revenues from Secondary Income (\$ per ha)	⁵	59	0	36 ⁶	0
6. Total Revenues					
a) Amount (\$ per ha)	15	251	1	46 ⁶	0
b) % of O&M Costs	68	119	10	329	0

⁵ Information not available.

⁶ Includes \$28 of interest and management fees derived from and mostly utilised for construction activities.

Member Countries (DMCs) of the ADB, one observer each from the World Bank, the FAO and the United States Agency for International Development, three researchers from IIMI and 10 Bank staff. The primary purpose of the Seminar was to examine how national policies for internally generating funds for irrigation operation and maintenance (O&M) could help the DMCs achieve more cost-effective O&M of irrigation systems. The seminar discussions were organized around key findings of the IIMI study on Irrigation Service Fees described above. Country papers were presented from each of the DMCs.

As has been shown, a key conclusion of the IIMI report was that the potential effects on irrigation performance of a system of irrigation service fees depended on whether the irrigation agency possessed a significant degree of financial autonomy, or whether it was financially dependent on the government. The Country Papers presented at the Seminar indicated that agencies operating with partial financial autonomy exist in Fiji (for drainage projects), the Republic of Korea, the People's Republic of China, ⁽²⁾ the Philippines and Vietnam. Elements of financial autonomy are found in Water Users' Organizations at the tertiary level in Indonesia, in agencies responsible for lift irrigation in Karnataka in India, and in some irrigation projects in Sri Lanka. On the other hand, irrigation agencies operating within the context of financial dependence are found in Bangladesh, Fiji, Indonesia, Malaysia, Nepal, Pakistan, Sri Lanka and Thailand. In general, participants from countries where financial dependence prevails felt that administrative considerations would preclude any move toward financial autonomy. Some participants from these countries also expressed reservations about the desirability of financial autonomy. They were concerned that financially autonomous agencies, responding to user pressures to limit O&M costs, might fail to properly maintain the infrastructure of the main irrigation system.

The IIMI study concluded that in situations where the irrigation systems were functioning satisfactorily, farmers could pay for the full O&M costs from their incremental income. Although the Seminar participants were in

² See ODI-IIMI Irrigation Management Network Paper 86/3b: Xu Guohua, The Irrigation Water Charge in China, November 1986.

favour of recovering O&M costs from the farmer, they emphasized the need to monitor the magnitude of the benefits received by the farmers. Some participants felt that it was unlikely that the benefits would be great enough to permit the farmers to cover the full cost of O&M in the near future, and that some additional funds from the government budget would be necessary.

The IIMI study suggested that one approach to increasing the accountability of irrigation managers to water users would be to decentralize the administration of irrigation projects. One specific approach suggested is that of the bulk sale or "wholesaling" of water to decentralized Water Users Organisations (WUOs) which would then be responsible for the subsequent distribution and "retailing" of the water to individual farmers. Information from the Country Papers and from the Seminar discussions indicates that WUOs of various types exist in many of the DMCs, although their specific responsibilities and authority vary greatly. Arrangements for the bulk sale of water exist in the People's Republic of China and in Vietnam.

All but two of the countries represented at the Seminar use some form of irrigation service fees to mobilize resources for operation and maintenance of irrigation systems directly from the farmers who benefit from the projects. In nearly all cases the fee is an area-based charge, although there is considerable variation among the countries with respect to the details of how the fees are computed. Assessment and collection procedures also differ among countries. There are very few cases of fees based on water pricing. Thus the fees are generally used to recover the costs of irrigation services from farmers, but not as a means of allocating water.

Note: Previous Network papers on this subject were:

- 10f Introduction to Discussion on Water Rates
- 11e M Tiffen (ed). Cost Recovery and Water Tariffs: A discussion
- 86/1c I Carruthers. Irrigation Pricing and Management
- 86/2b M Svendsen. Meeting Irrigation System Recurrent Cost Obligations

These are still available at ODI.



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