

Irrigation Management Transfer (IMT) in Vietnam

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PART I: BRIEF INTRODUCTION TO RELATED AGRO-CLIMATIC CONDITIONS AND IRRIGATED AGRICULTURE

Natural Conditions

VIETNAM LIES IN the tropical monsoon region. Its territory is narrow but stretches over from 12° to 23° latitude N, thus, being affected by diverse climatic regimes. There are 2 distinct seasons: the dry season is from November to April and the wet season from May to October. Annual temperature is 23° C. Rainfall is abundant, ranging from 1,800 to 200 mm/year, but uneven in distribution. The rainy season rainfall accounts for 70-80 percent of the total amount, and it is concentrated in July, August and September in the North and August, September and October in the Central and Southern parts.

Typhoons occur from July to October, frequently bringing heavy rain causing river floods and waterlogging.

The country has a dense river and stream network with 25 rivers systems. Total run-off is approximately 300 km³ (excluding runoff from outside) of which 70-80 percent is concentrated on 6 months of the rainy season. In the dry season, rivers runoff is little and water level low causing difficulties in irrigation.

Generally speaking, the agro-climatic condition in our country is good for agricultural development.

South Vietnam with a moderate climatic regime, high temperature, abundant sunshine and a small disparity in temperature, is suitable for cultivating crops year round; North Vietnam has a climatic regime which is relatively severe, as the country is affected by cold wind and low temperature in the dry season and high floods and typhoons in the rainy season; also, cultivation is possible year round but needs a more serious farming.

Development of Irrigated Agriculture

Agricultural Development

- * Vietnam is an agricultural country with approximately 70 percent of its population still engaged agricultural production. Rice is a traditional cropping and the staple food. In addition, there are subsidiary food crops such as maize, potato, sweet potato, beans, vegetables, cassava, etc.

Arable land area is 11 M ha, while the present cultivated area is 7 M ha, of which rice crop land is approximately 4.0 M ha.

- * Great efforts have been given to agricultural development, especially to irrigated agriculture with emphasis placed on both horizontal and vertical expansion, i.e., extending the newly cultivated area on the one hand, promoting intensive farming and multi-cropping in irrigated areas on the other.

In the last five years, owing to the reforms in government policy and institutions for agricultural development, such as the introduction of the responsibility system in cultivation, the allocation of land, allowing farmers a choice in input supplies and enabling some improvement in security of land tenure, etc. Agriculture has had a marked progress. Annual cropped area has increased from 5.6 M ha in 1986 to 6.02 M ha in 1990 and 6.4 M ha in 1993; average rice yield increased from 2.81 T/ha in 1986 to 3.19 T/ha in 1990 and to nearly 3.49 T/ha in 1993.

Total food production in rice of 18.0 M tons in 1986 has increased to 21.4 M tons in 1990 and to 24.1 M tons in 1993.

Generally, the cropping pattern is: rice, rice, dry crop.

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* Agricultural cooperatives have been established with various forms and levels.

Size of a Cooperative is about 300-400 ha depending on specific circumstances. Landholding size averages 0.4-0.5 ha/household, in South Vietnam it is as large as or more than in North Vietnam.

Recently, the introduction of the responsibility system and in particular, the long-term land-use right promulgated by the government has encouraged farmers to invest their inputs for production. According to the figures collected from 4 typical provinces,¹ farmers' additional inputs, including seed, fertilizer, pesticide and labor, approximate 26 percent of the production value [input provided by Cooperative in responsibility system, that had been used is 15.7 percent].

Nowadays, the household actually becomes a production unit. The Cooperative undertakes inputs services and controls only the crop grown.

Irrigation Development

Vietnam has a traditional saying on the role of agricultural inputs : "First water, second fertilizer, third care, fourth seed." Nowadays, with progress in biological technology of agriculture, the role of inputs changes but water remains in the first place. Up to 1990, nearly 300 irrigation systems, including 700 electric pumping stations with more than 10,000 pump units (excluding about 8,000 small electric pumps managed by farmers) and a dense canal network (70-120 m/ha) were completed, creating an irrigation potential of 2.49 M. ha. The total asset is valued at more than 20,000 billion VN\$; approximately, US\$1,000 ha.² In addition, farmers' contribution in labor is about 30 percent of the total asset value.

Table 1. The growth of rice and annually irrigated area in '000 ha.

Year	Irrigated area	of which		
		Spring crops	Autumn crops	Summer crops
1955	1,043 (*)	488		555
1976	3,251	1,203	317	1,731
1980	3,736	1,582	437	1,717
1985	4,472	1,689	791	1,992
1990	5,045	2,011	1,127	1,907
1993	5,400	2,320	1,340	1,740

Source: M.W.R. * Northern provinces

In order to manage irrigation systems, 300 irrigation management institutions staffing 16,000 people were established. In average, a person is responsible for 180 ha; where there is proper management, the responsibility is for 100-120 ha per person.

Irrigation management institution at system level is a production and service-oriented enterprise, named the Irrigation Corporation (IC). Its activities are based on the decree enacted by the government in June 1963. Water service fee is the main source of income of the IC. Presently, water service fee collection has reached 180 kg/ha per crop, and even 300 kg/ha per crop in some provinces. However, fee collection efficiency is only 70-80 percent. The amount of money collected covers 30 percent of the costs for O&M of pump irrigation system and 50-60 percent of the gravity irrigation system. The IC still depends on subsidy from the government to cover its shortages. The problem the Irrigation Management at system level is facing is the degradation of physical facilities because of the deficiency in finance. Thus, an improved policy of water service fee collection is being prepared by the Ministry of Water Resources for Government approval so as to promote farmers' and other beneficiaries' further involvement in irrigation management.

PART II: IRRIGATION MANAGEMENT TRANSFER

In this context, Vietnam has a saying: "The Nation takes people as its base" or "Things ten times easy without people we cannot do; things ten times difficult, with people it is O.K." Starting from this view, and facing the demand for irrigated agricultural development while the country economy has been in difficulties, irrigation transfer at farm level has been soon considered by the Government as a policy and has been legislated in the decree, titled "Decree on irrigation system management, exploitation and protection." The managerial sector, institutions as well as the responsibility of the Government and the farmers in irrigation development and management have been defined in the Decree, such as:

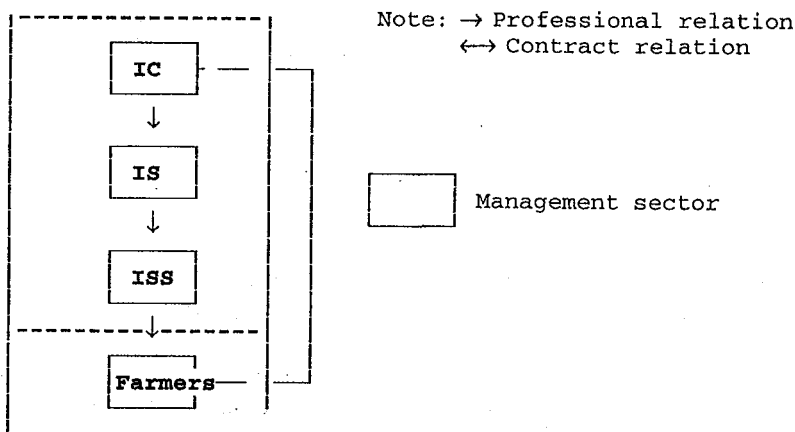
"The local authority has to rapidly involve farmers/Cooperatives to construct field canal networks and ancillary facilities based on system irrigation planning in order to make local irrigation profitable" (No.5).

"Costs for O&M small-medium and small-scale structures serving irrigation for one Cooperative or more are paid by the Cooperative and the individual farmers themselves. On-farm irrigation management is organized by the Cooperative and the individual farmers" (No.6, 16).

As such, two managerial sectors have been formed in an irrigation system:

- * The government sector, including headworks, the conveyance canal system and ancillary structures, is managed by the government IC.
- * Grassroot, i.e., the farmer sector, including field distribution canal system and ancillary structures, is managed by the Irrigation Team organized by the farmers themselves under assistance of the System IC.

The form of irrigation system management organization can be generalized as follows:



ON-FARM LEVEL IRRIGATION TRANSFER

Transfer Contents

The transfer is to be carried out right after the formation of the irrigation system. It includes transferring of responsibility and authority to collective farmers to construct and manage on-farm irrigation facilities, including the following:

- * to construct field canal network and ancillary structures,
- * to maintain and repair field canals and structures, and
- * to distribute water to field plots and manage water application.

As such, within the farmers' sector, i.e., the Cooperative sector, farmers by themselves contribute capital investment for field physical facilities construction and pay for O&M costs as well as organizing their own water management institution—the Cooperative Irrigation Team (CIT).

The Cooperative Irrigation Team

The establishment of CIT has been legislated by a regulation promulgated by the Inter-ministries Agriculture and Water Resources in 1977.

CIT is an organization of Cooperative farmers. It is established and paid for by farmers themselves. Its tasks are:

- * To formulate a seasonal irrigation schedule prior to start of the crop season and water delivery calendar for each irrigation; to receive water released from the main system and distribute water to field plots.
- * To maintain and operate on-farm irrigation facilities, including:
 - Removing obstructions in canal,
 - Undertaking structures' small repairs,
 - Protecting and preventing structures from damages made by people, and
 - Maintaining and operating diesel pumps.

The responsibility system introduced is based on the following:

- * Area to be irrigated and water supply quality
- * Canals and structures to be maintained according to length of canal and amount of field intake, offtake. For success of on-farm irrigation management each member of CIT should be responsible for 18-20 ha with high-level farming and for 30-40 ha with low-level farming and poor physical conditions.

Support from the Government for On-Farm Irrigation Transfer

In line with instructions and the organization of on-farm irrigation management, the following activities of the government have been undertaken:

- * Partly provide funding for construction of on-farm irrigation physical facilities. The support has been carried out annually with the State budget, depending on the economic status of the specific location.
- * Provide cement, iron and construction materials at a low price for construction of field structures. In recent years there has been no provision of construction materials, and farmers can buy them at the market.
- * Such assistance in training to improve farmers' knowledge of irrigation management and agriculture and improving their skills in irrigated agricultural practices as:
 - The IC has organized and provided part funding for training courses.
 - The Irrigation Department (ID) has organized training courses for IC-selected staff as source trainers for local farmers' training. There have been skilled farmers attending the courses.
 - Assigned staff to interact with farmers to provide them with technical assistance in irrigation planning and management. Salaries of staff assigned by the IC or the ID have been paid by the IC or the ID.

Programs such as completion of irrigation systems, land reclamation and upgradation of irrigation systems, etc., have been initiated and directed by the Government and the Ministry of Water Resources in the 1970s. Later, programs on land consolidation and land reclamation have been initiated and conducted by many provinces.

Funding for implementation of the programs has been provided mainly by Cooperative farmers and partly by the local budget.

Support mentioned above and benefits from irrigation development have encouraged farmers to get involved in irrigation development at farm level.

Results Obtained from On-Farm Irrigation Transfer

The involvement of farmers in irrigation development and management has been maintained.

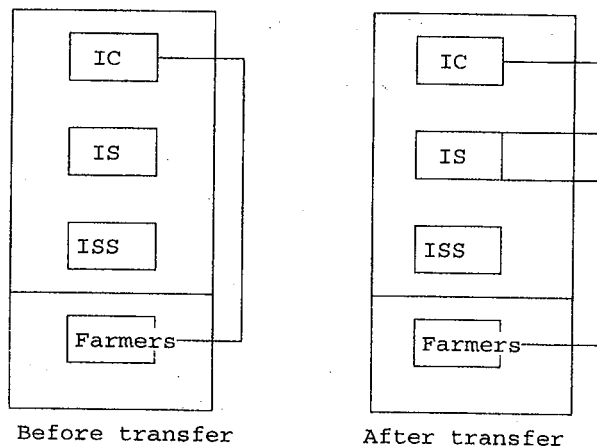
According to the figures collected from some selected Cooperatives, the amount the farmers have paid for on-farm irrigation physical facilities, with earth canal density 100-120 m/ha, has been US\$10-120 ha; for O&M, US\$ 5-7 ha per crop in cash at current prices, i.e., 2.5 percent of the actual production collected. Of this US\$1 ha per crop has been paid for CIT, the rest for maintenance of structures and repair and pumping of power consumption. In the last 2 years, incentives given by the land allocation policy and market economy have prompted farmers in many irrigation systems to give their own money for canal lining to save land and irrigation water. The cost for canal lining has been US\$8-10 per km at current prices [land saving 34 percent of land used for earth canal; water saving 40 percent].⁴

The IMT combined with irrigation technology transfer (ITT) at farm/cooperative level has given encouraging results.

- * The figures collected in the medium-sized pumping station studied in the Red River Delta in the early years of IMT [5] have revealed that:
- * Irrigated area has increased from 934 ha to 1,600 ha after 4 years, i.e., irrigated efficiency has increased from 50 percent to 81 percent due to proper management of irrigation.
- * Water consumption has been reduced from 8,000 m³/ha down to 5,120 m³/ha, saving 36 percent.
- * Costs for producing 1.0 ton of paddy reduced to 50 percent.
- * Cropping intensity has increased from 1.7 to 2.5. Besides, there have been viable sources of finance to sustain on-farm/Cooperative irrigation facilities; reduction of structures' damages and disputations in irrigation among farmers.

LOCAL MANAGEMENT TRANSFER

In response to the need for strengthening "district level" irrigation systems, local management transfer has been carried out since the late 1970s. A partial or complete management including responsibility and authority have been transferred to the district level, that means to an institution whose irrigation performance is placed under district authorization. System assets and institutions remain in the hands of the government ownership, management organization is also still in the hands of the governmental but is separated from the IC organization structures. For instance, in the Red River Delta of Vietnam, of the 14 interprovinces and interdistrict systems there were 5 which, prior to transfer, have been managed by 6 ICs; at present, the 6 ICs have been separated into 28 ICs of which 6 are managing head works and the main canal, and 24 district ICs (DIC) are managing lateral and sub-lateral canals and ancillary structures. The situation can be generalized by a chart as follows:



Note: → Professional relation
 ↔ Economic contract relation

□ Management sector

This has been really the transfer from this government institution to that government one but not turning over from the government to the water users. Facts have revealed that DIC have proved to be dynamic and that they have full capability to do well in O&M. Furthermore in case of difficulties, it makes full use of supports from the district authority in collecting irrigation service fees; mobilizing farmer labor forces for rescuing the structure from the damaged one when it is in danger and for dredging canals to ensure timeliness of farming.

However there also have been the following constraints:

- * In large irrigation systems many an IC is autonomous in finance and activities will be easy to bring about:
 - Disunity in system management and performance
 - Disputation in irrigation benefits between regions
 - Disorderliness in system planning due to local development
 - Gaps in system performance, resulting in low system efficiency and to a certain extent in uneconomic management
 - Disputes in water distribution between regions.

LESSONS DRAWN FROM IRRIGATION MANAGEMENT TRANSFER FROM THE GOVERNMENT TO THE FARMER AND THE LOCAL MANAGEMENT

1. In most cases, for on-farm, even independent small irrigation structures, the irrigation transfer from the government to the beneficiaries/farmers is essential so as to involve farmers in self-developing and management of irrigation at farm/cooperative level and at the same time to release the government's burden of investment in construction and management of on-farm physical facilities.
2. Farmers have proved to be entirely capable of doing well in O&M of on-farm irrigation facilities even in small-medium size projects once they receive education, training and support from the government.
3. Rehabilitation and improvement of physical facilities to be transferred and the promotion of community-based organization/CIT as well as farmers' understanding and willingness are prerequisite conditions to ensure success of irrigation management after transfer.
4. The transfer of responsibility and authority for irrigation management without transfer of irrigation and agriculture technology have not enabled the transfer to yield desirable success. The results obtained from the case study as mentioned above revealed that transfer of technology should be promoted just during and after transfer.
The extent and level of transfer should depend on the farmers' capability of shouldering the responsibility and on the economic status of the locality/the farmers.
5. For large irrigation systems, interprovinces and interdistricts, in the partial transfer, the IC retains management control of the water source and the main canal, and the DIC manages secondary canals and ancillary structures within its own sector; this will easily bring about loss of system unification in irrigation planning and in management and performance, and also making system operation less efficient. Therefore, the problem should be explored further.
6. The establishment of irrigation institutions as well as the irrigation transfer should be based on hydrologic locality and there must be a professional organization responsible for O&M activities.
7. The transfer of irrigation management in existing irrigation systems should be implemented step by step; first is to transfer responsibility in finance for O&M in the spirit of self-supporting; the transfer of authority and assets should be implemented later.

8. For large irrigation systems, the moving toward a full transfer of irrigation management, including transfer of responsibility and authority and assets in the spirit of "self-manage, self-support" to the farmers' community in order to replace the role of the government management organization, is considered by many scientists concerned as an orientation strategy to reduce the subsidy of the government and what is more important is to reach the sustainability of the irrigation systems. Naturally, the IC still exists as an essential body for irrigation system O&M in the market economy.

Data Sources:

- 1 Case study finding on "Strategy for creating Capital Investment" - Dr Tran Nhon, Vice Minister of M.W.R-1991.
- 2 Department of Irrigation Review 1990.
- 3 Case study finding (Dr Tran Nhon, Manh Ta - M.W.R).
- 4 Dan Hoai, Tu Liem, Song Chu ICs - 1993.
- 5 Case study finding on "Improvement of irrigation at farm-level" Manh Ta, Xuan Dao - Senior irrigation engineers - 1975-1980.