

# **VIET NAM: CREATING CONDITIONS FOR IMPROVED IRRIGATION SERVICE DELIVERY — THE CASE OF THE PHUOC HOA WATER RESOURCES PROJECT<sup>1</sup>**

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## **ABSTRACT**

About one third of the Vietnamese population live below the poverty line, of whom 85% live in rural areas, and 70% of the labor force depends on agriculture. To help improve rural incomes, the Government of Viet Nam continues to place high priority on investments in water resource infrastructure to increase agricultural productivity and reduce rural poverty.

At present, more than 2.6 million ha of agricultural land in Viet Nam are irrigated through 75 large and medium-scales schemes and thousands of small-scale systems. These systems are managed by state-owned Irrigation Management Companies (IMCs) and thousands of agricultural cooperatives and water user groups (WUGs). The country's irrigation systems realize only about 50-60% of the design targets as a result of a number of constraints that limit performance.

The Government has recognized that a new strategy is needed to improve system performance in Viet Nam. Hence, policies on water service delivery have shifted to a more decentralized and participatory approach. Government policy now promotes autonomy for the IMCs and establishing/ strengthening of WUGs at the local level. Under the Phuoc Hoa Water Resources Project, an irrigation project recently initiated by the Ministry of Agriculture and Rural Development, it is intended to operationalize the Government's new approach. This project offers a

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<sup>1</sup> The views expressed in this paper are those expressed by the authors and do not necessarily reflect the official positions of ADB, AFD and MARD.

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unique opportunity to do this as local irrigation institutions are still to be developed. A "road map" for achieving sustainable management of the project's irrigation system is presented.

### **SETTING THE SCENE: SECTOR BACKGROUND**

About one third of the Vietnamese population live below the poverty line, of whom 85% live in rural areas, while 70% of the country's labor force depends on agriculture. In line with the Government's Comprehensive Poverty Reduction and Growth Strategy adopted in 2003, the Government continues to emphasize the importance of rural development in reducing poverty. Investments in water resource infrastructure to increase agricultural productivity are an integral part of this strategy.

At present, more than 2.6 million ha of agricultural land in Viet Nam are irrigated through 75 large and medium-scales schemes and thousands of small-scale systems. These systems are managed by 130 public sector Irrigation Management Companies (IMCs) and more than 10,000 agricultural cooperatives and local water users organizations. The IMCs, established at the end of the 1980s manage headworks and main outfall structures and the main and secondary canal and drainage systems. The IMC managed systems cover about 70 percent of the country's irrigated areas. Within the IMC managed systems, agricultural cooperatives, associations and groups providing water services at the lower system level. In some provinces, Irrigation Management Enterprises (IME) manage the secondary system with the IMC managing the main system. IMCs are usually established on the basis of hydraulic boundaries whereas IMEs and local-level irrigation institutions within IMC managed systems are usually based on administrative (district and commune) boundaries.

Irrigation service fees are high in Viet Nam compared with the other countries in the region. However, IMCs continue to receive subsidies from the central and provincial governments for operation and maintenance (O&M) as they do not generate sufficient revenue from the irrigation fees while they have many internal inefficiencies. Typically, irrigation fees cover about 50% of the routine O&M costs. Being public sector companies, IMCs have little incentive to improve their financial and operational performance.

The Ministry of Agriculture and Rural Development (MARD) – the Government agency responsible for irrigation and drainage at the central level - estimates that the country's irrigation systems realize only about 50-60% of the design targets. Factors that contribute to this state of affairs include (i) incomplete or degraded infrastructure (especially at the farm level), (ii) underfunding of O&M, (iii) poor system management and unauthorized interference by farmers, (iv) an institutional framework that is not conducive for financial and management accountability, (v) a complex legal framework based on contradicting policies and

strategies in a number of areas, (vi) the mismatch between hydraulic boundaries and the system management institutions at the lower level which continues to be based on administrative boundaries, and (vii) weak integration of water services with other agriculture-related support services.

Realizing the generally poor system performance, MARD with the assistance of external financing agencies and Non Governmental Organizations (NGOs), initiated a series of pilot projects for participatory irrigation management (PIM) since the mid-1990s. Results from these pilots suggest that PIM "works", i.e. that local water users groups (WUGs) can undertake O&M of tertiary canals within larger irrigation schemes and the O&M of small-scale stand-alone systems. These pilots also have demonstrated that WUGs based on hydraulic boundaries can effectively undertake tertiary system level management.

In order to improve the performance of public sector managed irrigation systems, the Government's strategy related to irrigation services has shifted to a more decentralized and participatory approach. This is fully in line with the Government's overall policy to encourage grassroots democracy. The approach also promotes autonomy for the IMCs and establishment and strengthening of local level water users organizations. In this context, one recent initiative taken by MARD is the finalization of its strategy to operationalize participatory irrigation management. This new approach towards irrigation services has been incorporated in the design of the Phuoc Hoa Water Resources Project, a large-scale \$164.6 million multipurpose water infrastructure project recently initiated by MARD with financial assistance from the Asian Development Bank (ADB) and the Agence Francaise de Developpement (AFD).

## PROJECT BACKGROUND

The Project is located in the Dong Nai river basin in South Viet Nam, see map. Dong Nai basin,<sup>6</sup> the third largest in Viet Nam, consists of four major subbasins: the Dong Nai, Be, Saigon, and Vam Co Dong rivers covering 10 provinces including Ho Chi Minh City (HCMC).<sup>7</sup> The basin contains the country's largest urban and industrial development areas that are fast expanding, and water demands have increased and will continue to increase. While there has been recent development of the water resources in the Dong Nai and Be river basins through construction of reservoirs, shortages in the Saigon and Vam Co Dong river basins have become more critical over recent years. It has already reached a stage where municipal water supply authorities of HCMC are experiencing unacceptable salinity levels at proposed intakes for new urban water supplies. With higher priority given to supplying water for urban and industrial uses in line with the 1998 Law on Water Resources, the current situation rules out the

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<sup>6</sup> The Dong Nai river has a catchment area of 47,300 square kilometers (km<sup>2</sup>).

<sup>7</sup> HCMC was formerly known as Saigon.

potential for further agricultural development in rural provinces surrounding HCMC. Without the Phuoc Hoa Water Resources Project, further irrigation development would not proceed due to lack of fresh water.

To address the issue of increasing water demands in the Dong Nai basin, the Government adopted a holistic three-pronged strategy. Taking a basin perspective, it identified the key water-related issues constraining development of urban and industrial areas, and considered various options to transfer water from the Be subbasin to the Saigon subbasin. The basin approach is further strengthened through the Dong Nai river basin organization recently set up to coordinate and improve river basin planning and management. The second element of the strategy is the improvement of the efficiency of existing water resource systems. As part of this process, the Dau Tieng irrigation system (DTIS) will be upgraded and modernized with World Bank financial assistance to optimize water use and secure its dam safety. The third strategic element is the further regulation of the Be river and the transfer of water to the Saigon river to control salinity intrusion and provide water for urban, industrial, and agricultural uses. This will be achieved through the Phuoc Hoa Water Resources Project.

The Phuoc Hoa Water Resources Project (the Project) will develop water resources infrastructure comprising basin transfer facilities and provide irrigation systems for 48,130 ha of agricultural land, most of which is rainfed at present. Water from the Be river will be conveyed to the Dau Tieng reservoir on the neighboring Saigon river, see map. From there, releases will be controlled to supply water for various purposes. These include (i) releases to the Saigon river for water supply intakes and salinity control in the lower reaches; (ii) releases to the Vam Co Dong river via the existing DTIS canals and drains for salinity control; and (iii) releases for irrigation in DTIS and the new areas to be developed under the Project. The Project will be implemented over a 6.5-year period starting in early 2005.

While the Project's infrastructure provides the means for supplying additional water, it is recognized that the most challenging requirement for successful implementation of the Project and realization of the benefits is an integrated approach to develop institutional capacity for sustainable management of one of the country's most complex irrigation systems. In terms of system management, there will be three levels of O&M responsibility: national, provincial, and farm levels. The national level covers the interprovincial facilities (barrage and transfer canal, and main canals for each of the irrigation subsystems). These will be managed by MARD through the already existing Dau Tieng IMC. At the provincial level, provincial IMCs will manage the primary and secondary canals. Canals serving less than 150 ha, generally the tertiary units and lower, will be managed by local WUGs. The three-tiered system management is in line with the 2001 Ordinance on Exploitation and Protection of Hydraulic Works and the 2003 Decree No. 143. The Ordinance and the Decree provide the overall regulatory

framework for O&M of IMC managed irrigation systems. Provinces have developed further guidelines for the implementation of these two legal instruments to suite local conditions and specific system requirements.

The current irrigation fee (IF) structure set by various government regulations is generally adequate to cover O&M costs. IFs are usually equivalent to 5-8 % of the value of agriculture crop production. The critical issue, however, is to ensure that the fees are collected and used effectively. Experience in Viet Nam shows that IFs can be readily collected if service delivery is satisfactory, which places the onus on the Project to ensure that the systems are operated properly and will be well managed. The Project aims to achieve this by emphasizing establishment of institutional arrangements that promote participation of the end-users in decision making during preparation and implementation.

### **ROADMAP FOR SUSTAINABLE SYSTEM MANAGEMENT: CREATING CONDITIONS FOR IMPROVED IRRIGATION SERVICE DELIVERY**

Because local irrigation institutions do not yet exist in the area covered by the Project, it offers a unique opportunity to start with a clean slate to implement the Government's current sector strategy. Many system and institutional shortcomings prevailing in the existing systems can be avoided by creating the right conditions while the Project is being implemented. Recognizing this opportunity, MARD and the two external financiers, have agreed to a roadmap for "*sustainable system management*".<sup>8</sup> "*Sustainable*" system management is defined as:

*IMCs and water user groups (WUGs) providing reliable water delivery services against agreed performance indicators to all users without having to resort to major rehabilitation interventions.*

The Project includes the following two important features that will facilitate the implementation of the roadmap.

#### **(i) Provision of a Complete Irrigation System from Headworks to Tertiary Canals**

- *Many public sector irrigation systems are only partly developed. Government financing is usually limited to the headworks and the main canal system. The development of the lower level system is left to generally fund-strapped provincial agencies and farmers. As a result, full irrigation services are usually possible for 50-60 % of the designed service area.*

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<sup>8</sup> System management includes O&M of the infrastructure and the associated financial and human resources.

- To ensure that full irrigation services can be delivered, the Project will provide a complete system including main canals, secondary and tertiary canals designed for full irrigation service in the entire Project area.

**(ii) Creation of "upfront" Ownership**

- *Irrigation development financed by government agencies has traditionally been planned, designed and implemented with limited local level involvement. As a result, there is limited ownership among farmers in terms of the irrigation infrastructure and its upkeep.*
- Under the Project, a comprehensive network of WUGs will be established from an early stage to enable farmers to participate in the local-level design process. Organizations such as social science institutes or nongovernment organizations (NGOs) will be contracted to provide the necessary community mobilization and social intermediation services. Tertiary facilities will be designed in a participatory manner involving farmer review of tertiary unit layouts prepared by engineers. Farmers will be mobilized to contribute to the construction of the tertiary units, mainly through labor for earthworks. During community mobilization and the formation of WUGs, the farmers will be informed about their responsibilities, the arrangements for the management of the tertiary system through their WUG, the design irrigation supply, the IF structure, and the principles of the service contract between the WUG and the IMC.

**The Road Map**

The roadmap includes measures to address current policy and legal issues, outlines specific actions related to systems to be managed by the IMCs and WUGs, and the management arrangements between them. It covers the period up to 2008 when the Project's irrigation system is expected to be fully commissioned.

**Policy and Legal Management Aspects:**

**(i) Review and adjustment of current policies and legal framework**

- *The irrigation sector and its institutions are governed by several ordinances, decrees, decisions and regulations reflecting various sector and sector-related Government policies and strategies. The current policy and legal framework is therefore complex. On the one hand it contains inconsistencies while on the other hand still provides insufficient guidance on how to actually implement the sector policies and strategies. This situation makes it difficult for central and provincial authorities to provide clear guidance to IMCs, the WUGs and the district and commune authorities.*

- To address the complex policy and legal framework, current central and provincial level policies, strategies, and regulations relating to irrigation services will be reviewed early on during project implementation. The views of stakeholders within MARD, the provinces, and other ministries will be sought and the review will be lead by a high-level Task Force chaired by the vice-minister of MARD responsible for irrigation service delivery. The review is expected to recommend adjustments to the legal framework which will then be introduced according to an agreed time table.

#### Management of Systems under IMC responsibility:

##### **(ii) Setting clear objectives for system management**

- *Most large-scale public sector managed irrigation systems do not have specific management objectives. The management objectives of the IMCs are generally described as: (i) providing water for irrigation purposes for specific areas and (ii) ensure the functionality of the main and secondary drainage systems. These objectives, apart from being general, do not establish a clear linkage between irrigation service and agriculture and other income and livelihood providing sectors (like aquaculture). The current lack of system specific management objectives makes system performance assessment and monitoring virtually impossible.*
- To provide a clear benchmark to assess management services by the IMCs, the system's overall management objectives will be clearly defined early during project implementation with the participation of representatives of all stakeholders. The objectives will take into account the multipurpose nature of the Phuoc Hoa – Dau Tieng (PH-DT) system. The main objectives will therefore relate to agriculture production; domestic and industrial water supply; and environmental releases. In view of the highly dynamic character of the economic development in the Dong Nai basin and also in PH-DT service area, it is essential to review the performance objectives on a regular (perhaps five-year) basis. This review will be done in consultation with all stakeholders at the basin level through the Dong Nai River Basin Organization and the stakeholders at the system level.

##### **(iii) Setting clear irrigation service delivery standards**

- *Most IMC managed irrigation systems do not have clear service delivery standards. The service standards are usually loosely defined as providing "full" irrigation delivery to the entire service area. IMCs do not have an incentive to specify the service delivery standards as they operate as public sector companies with no formal accountability towards the end-users. IMCs therefore perceive end-users as customers under a monopolistic situation.*

- Once the performance objectives for the PH-DT have been defined, service delivery standards and associated indicators will be developed for the main system and subsystems with participation of all stakeholders. MARD, the provinces and other stakeholders will jointly develop the standards and indicators such as seasonal deliveries to primary canals and bulk water users (a delivery standard), and areas under irrigation contracts (an indicator). The standards will be adjusted regularly in line with the review of the system's performance objectives (see (ii) above).

**(iv) Developing a system management plan**

- *Most IMCs do not have a fully developed management plan with operational rules for various supply scenarios. In terms of the system's organization, standard norms are usually applied for management staff at different level with little regard for the actual requirements. Furthermore, most IMCs lack a systematic asset management system. Under the present situation of a paucity of maintenance funds, IMCs do not have an incentive to use such a system.*
- Considering the size and complexity of the PH-DT system, a comprehensive management plan is needed to ensure that the system will meet the agreed service delivery standard under different supply conditions, i.e. full "design" supply and various level of partial supply depending on crop water requirements and water availability. The management plan will include various operational rules for major structures and define the major O&M tasks and requirements (routine, annual, and replacement) for the main system and the subsystems. The management plan will need to be adjusted based on actual experience in managing the system.

**(v) Developing a clear financing plan**

- *In principle, IMCs have financial autonomy and are to be self-financing but with an entitlement for subsidies in case of extreme weather conditions. For most IMCs, however, various government policies make it difficult for them to become financially autonomous and reach self-financing. Provincial governments set guidelines for the IF structure based on the government's overall socio-economic development strategy with little regard for system's specific financing plans. As a result, IMCs are usually dependent to a substantially degree on government subsidies to finance their budget. Unfortunately, there are ambiguities in the subsidy entitlements and the subsidies therefore are unpredictable. Furthermore, the IMCs are usually not sure when they will receive the subsidies. The financial statements of many IMCs are incomplete as they do not provide all required accounting information based on the accounting standards for public sector service companies.*

- Based on the management plan (see (iv) above), MARD and the Provincial authorities in consultation with the IMCs, will prepare and reach an agreement on the system's financing plan. The plan will identify the various financing sources which include expected revenues generated from IFs; bulk water sale for domestic, urban and industrial use; reservoir releases for salinity control; and the subsidies eligible under the current government policies. Regarding the subsidy entitlements of the PH - DT system, MARD will remove the current ambiguities related to these entitlements. Furthermore, meeting system performance standards will be considered as an eligibility criterion for certain entitlements.
- Once the rehabilitation, modernization and expansion of the PH-DT system are complete (by 2008), the roadmap envisages that government subsidies will be minimized. The Project IMCs should then be in a position to generate sufficient revenues from IFs, bulk water sales and releases for environmental flows to fully finance the management plan.
- For efficient implementation of the management plan, the following systems will be developed and operationalized during the next two years: (i) a transparent accounting system using acceptable standards for public sector enterprises; (ii) an asset management and monitoring system (to keep track of maintenance and replacement works and their expenditures); (iii) human resource development system; and (iv) seasonal and annual reporting on system performance against the agreed performance standards and criteria; these reports will be made public.

#### Management of Lower-Level Systems by WUGs

##### **(vi) Establishment of WUGs based on hydraulic boundaries**

- *In most IMC managed irrigation systems, tertiary system management is undertaken through commune-level agricultural cooperatives. These cooperatives are part of the overall administrative system at the commune level. As a result, the service area of one tertiary canal typically belongs to more than one cooperative with two or more separate irrigation teams managing a relatively small canal. This situation of tertiary system management based on administrative boundaries and not on hydraulic boundaries makes efficient irrigation distribution and delivery virtually impossible.*
- In the Project area WUGs will be established for each tertiary canal on the basis of the hydraulic boundaries. MARD and the provinces have already provided the legal basis for this. The WUGs will be responsible for distribution of irrigation supplies delivered by the IMC at the tertiary canal outlet structure. Members of the WUG will elect their own management

committee. They may seek the assistance of commune authorities or the local judiciary in case individual members refuse to comply with WUG regulations. MARD and the provinces will develop model regulations for the management of the tertiary canal system for adoption by WUGs. The role of the commune authorities and the judiciary for dispute resolution among WUG members will also be defined.

**(vii) Mobilizing resources for system management**

- *In IMC managed irrigation systems, IMCs usually receive the IF payments from the agriculture cooperative while the cooperative collect the IF payment from the farmers. The IMC and the agriculture cooperatives negotiate the IF amount to be paid by the cooperative. This negotiation is undertaken on the basis of the IF structure approved by the province, the service area within the commune receiving irrigation supplies through the system managed by the IMC and the level of service, i.e. full or partial service. With service standards not well defined and the inability to monitor irrigation delivery to the cooperatives because of the mismatch between the hydraulic and administrative boundaries, "bargaining" takes place in these negotiations and IMC are not in a position to fully capture the potential IF revenue.*
- *At the agriculture cooperative level, IFs are normally combined with other taxes levied by the commune authorities on the farmers. The cooperatives usually retain a certain percentage of the amount of IF collected to cover collection expenditures. Many cooperatives add an additional fee to recover the cost incurred by them in the operation of the tertiary systems and the O&M of other irrigation facilities managed by them such as local pump stations that recycle drainage water. In many areas under IMC management, the total annual tax payment by the farmers can reach the equivalent of 50 % of the value of the agriculture crop production. But farmers do usually not know which part of their tax payment is for irrigation service and for other services. As IFs are not separated from other tax revenues, there is no link between irrigation service delivery and IFs and between IFs and O&M expenditures at the cooperative level. In contrast to the IMCs, many cooperatives are able to balance their accounts.*
- Under the Project, WUGs will establish their own regulations and arrangements for mobilizing the resources for the O&M of their tertiary canals. WUG members could contribute labor for works like desilting of and weed removal from the tertiary canal. WUGs could receive government subsidies (such as subsidy for canal lining under the current government policy) but these subsidies should not replace regular maintenance.
- The IFs for the financing of the O&M of the higher level systems will be collected through the WUGs. The IF will be assessed jointly by the IMC and

the WUG for each season taking into account the land use in the service area (in case the IF is differentiated between crops), and the use of groundwater by the WUG members. Commune authorities could pay IFs on behalf of farmer families recognized within the commune as poor. MARD will provide the legal basis for IF payment through WUGs.

- End-users are generally willing to pay IFs if they have confidence that the IFs collected are utilized efficiently for the O&M of the canal system delivering their irrigation supplies. The management plan will therefore include mechanisms for involvement of the WUGs in setting priorities for the maintenance of secondary and primary canals.

#### IMC and WUGs Interaction:

#### **(viii) Service contract with IMC**

- *MCs normally enter into seasonal contracts with the agriculture cooperatives. The main objective of these contracts is to agree on the seasonal IF amount to be paid by the cooperative to the IMC. As mentioned above, the amount is arrived at through negotiations between the two parties. Because irrigation deliveries can not be monitored, the contracts can not specify seasonal irrigation supplies in an enforceable way. As such, the contracts are not "service delivery" contracts.*
- With WUGs to be established on the basis of hydraulic boundaries with the tertiary turnout being the delivery transaction point between the IMC and the WUG, an opportunity will be created for a quasi "service delivery" contract.<sup>9</sup> These contracts will include a schedule of irrigation supplies to be delivered by the IMC to the WUGs. The contract will also include the amount of IF to be paid by the WUG and rebates in IF payment in case of failure by the IMC to adhere to the irrigation schedule. A dispute resolution mechanism will need to be developed to deal with disputes about the compliance with the service contract (including default in ISF payment by the WUG). This may require the involvement of commune, district, and provincial authorities, and the judiciary. MARD and the provinces will develop a "model" service contract to be adopted by the IMCs, and agree on dispute resolution mechanisms.

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<sup>9</sup> This contract can not be treated as a full service contract as actual discharges into the tertiary canals will not be measured.

### CONCLUDING COMMENTS

The roadmap described above is an indicative one because it will be further developed during the next three years in accordance with Viet Nam's national policies for management of water resources infrastructure with participation of central, provincial and local stakeholders.

The roadmap's further development and subsequent implementation will be a challenge as it requires a departure from the system management approach presently prevailing in most public sector managed irrigation system. However, the roadmap's direction is fully in line with the Government's policy towards greater participation by the end-users in irrigation system management and greater management and financial autonomy for public sector irrigation institutions.

