Lecture note

Water user associations

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by

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Each note is intended as a quick introduction of a subject prepared for professional practitioners who are specialists in other subjects.

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Suggestions and comments are most welcome!

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Contents

Terminology

This note is about *'water user associations'* (WUAs), which are *'organizations of farmers established in order to own, operate and maintain the irrigation system and related infrastructure that serve the land that they cultivate'*.

(Sometimes, the WUA owns only the secondary or tertiary distribution network).

In this note, no distinction is made between WUAs, water user communities/committees (WUCs), water user societies (WUSs) and water user groups (WUGs). From case to case, however, these names may have different and specific meanings.

Tang Krasang Irrigation Project, Kampong Chhnang Province, Cambodia, was constructed in 1976 and rehabilitated in 2002-03. It is operated by a newly established Water User Community. The water fee is 5 USD/ha per crop, except for areas that require pumping, where the fee is 3.75 USD/ha per crop

1 Introduction

Participatory water management has several advantages and is for that reason widely promoted by authorities, development agencies and NGOs. Sometimes, the formation of a WUA is made a precondition for construction of a new irrigation scheme or rehabilitation of an existing one.

This note lists a number of aspects in connection with establishment and operation of WUAs.

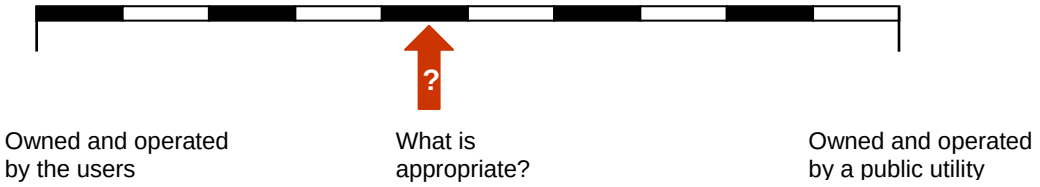
The note is largely based on experience from Cambodia. Please note that lessons learned at one place can be useful at a different time and place - provided that they be considered critically, as examples, rather than being copied to a context where they do not belong.

2 User participation in water management

2.1 General

In case of domestic water supply, it is often (but not always) seen that the users are 'passive buyers' of the supply, with little direct influence on service level and distribution. Industries that depend on their water supply may prefer to own and operate their own (private) supply, provided that the choice is open.

In case of irrigation water supply, different modalities exist - and sometimes side by side - with user-owned irrigation schemes located in between government-owned schemes, or irrigation systems owned partly by the public and partly by the users. For example, the government may own and operate large headworks, while the users may own and operate the distribution system.



The following aspects can from case to case indicate a preference with respect to ownership and control of operation & maintenance:

- General political and cultural preferences regarding the roles of the state and the private sector;
- water availability (demand satisfaction);
- water allocation (of a finite resource between different competing users): (1) Within an irrigation scheme; (2) between the scheme and the surrounding farmers outside the scheme; (3) with other irrigation schemes; and (4) with other countries;
- need of operational water sharing (of a finite resource between different competing users);
- income generated (farm level and national, respectively);
- whether public revenue generation or subsidizing is aimed at, or whether a neutral 'consumer pays' principle is preferred;
- the size of the irrigation system;
- complexity (technical and administrative) of operation and maintenance (depending for example on the canal network layout, and whether the topography is flat or uneven);
- management capacity & experience of water users; and
- land ownership: (1) Whether many or a few land owners share a scheme; (2) whether the sizes of holdings are fairly equal, or a mix of big and small ones; and (3) whether the land is owned or leased by the people who cultivate it.

These criteria are somewhat general. Their relevance and application depend on the circumstances. One criterion may point at a private scheme in one case, whereas the same criterion - at a different time or place - may indicate a public service.

Water fees (examples, paddy cultivation)

Cambodia

Komping Puoy, Battambang Province (visited in March and April 2003, JICA 2004 p. 51):

Yield	over 3 t/ha/crop	10 USD or 150 kg rice/ha/crop
	2-3 t/ha/crop	7.5 USD or 112 kg rice/ha/crop
	less than 2 t/ha/crop	5 USD or 75 kg rice/ha/crop
...	In some places no fee is charged; and often, the fee is not paid	

Tang Krasang, Kampong Chhnang Province (visited in December 2003):

Areas where water flow by gravity (1.6-3 t/ha/crop)	5 USD or 75 kg rice/ha/crop
Areas that required pumping (same yield)	3.75 USD or 56 kg rice/ha/crop

Prek Prasap, Prey Veng Province (Öjendal 2000 p. 257): 30-50 kg rice per ton harvested

Lao PDR (WUA of Ban Hat Hiene, Luang Prabang Province, visited in May 2002):

Wet season:	50 kg rice/ha/crop
Dry season:	100 kg rice/ha/crop

Thailand (2000):

Royal Irrigation Department can legally charge a fee to water users, but has refrained from doing so. Various farmer-operated WUAs ('farmers irrigation schemes') charge water user fees to cover operation and maintenance

Viet Nam

Pe Luong, Lai Chau province (visited in June 2002):	160 kg rice/ha/year
3 schemes in Tuyen Quang Province (12-13 t/ha/year) (Das Gupta et al. 2003)	749 kg rice/ha/year
3 schemes in Thai Nguyen Province (7-9 t/ha/year) (Das Gupta et al. 2003)	120 kg rice/ha/year

Pak Pa irrigation and micro-hydropower scheme, Luang Prabang Province, Lao PDR. Benefits and maintenance are evenly shared between two groups of the 261 households covered by the scheme: The irrigation water users and the hydropower users. In the dry season, water is used for irrigation during daytime, but is diverted for hydropower production during the night

2.2 Advantages and risks

Advantages

There are strong potential advantages of user-operation of irrigation schemes. They comprise:

- A functional water allocation and water utilization, including good demand management (if needed), based on the specific competence and the specific circumstances in the irrigation area;
- improved prospects for cost recovery (and hereby financial sustainability);
- a potential for 'technical rationality' in connection with amicable settling of water allocation disputes within the community. (On the other hand, the stronger dependency between the beneficiaries of a new irrigation scheme can increase the risk of disputes);
- improved prospects for enforcement of various restrictions; and
- less workload for the public administrative system in connection with operation and maintenance.

Risks and impediments

Risks and impediments can be general (and difficult to control by the participants); or site-specific (within the influence of the participants). Some risks are related to the design and structural features of the irrigation scheme, while others are related to the institutional context (including the WUA) and the management modality. Some of the risks relate mainly to the construction phase and the initial operation of a new irrigation scheme.

Examples of risks are:

- Actual lack of technical performance of the irrigation system (for many reasons) (JICA 2004 p. 45); the reasons can comprise faulty design (over-all layout and/or detailed design), construction faults, and water shortage (foreseeable or unforeseeable);
- perceived lack of technical performance (or perceived lack of value added) of the irrigation system - often related to lack of knowledge and/or communication, typically during the initial years of a WUA (JICA 2004 p. 53). A water fee of a few percent of the added value, paid as bags of rice at harvest time, should be fully acceptable to the rational farmer;
- traditional orientation towards (and economic networking within) the village community and village authority rather than towards the WUA (JICA 2004 p. 44);
- lack of (actual or perceived) ownership of the irrigation system (JICA 2004 p. 49);
- lack of transparency in the financial management of the WUA (JICA 2004 p. 46 + p. 53), possibly due to inadequate information flow;
- inadequate income of farmers (for example due to low yield, lack of good seeds and other inputs, disasters, market access, or market failure) (occurring in connection with traditional, uneconomical paddy cultivation, or - at the other extreme - in connection with new risky cash crops) (cf. Öjendal 2000 p. 235);
- unsupportive or overly complicated WUA statutes (Marcella Nanni April 2001, Annex IV, p. 1-2);

- lack of managerial capacity (and of support to the management); WUA members and managers misunderstanding their own and each other's roles and responsibilities; lack of planning (JICA 2004 p. 55-56);
- general lack of willingness or ability to collaborate, possibly due to an absence of tradition for collaborating and agreeing on operational water management (Öjendal 2000 p. 236-40);
- general lack of willingness to pay WUA fees (Am Norin 2003 p. 1), also among the wealthier WUA members (Öjendal 2000 p. 257-258);
- conflicts of interest among the WUA members, for example related to different interests in access to water, or different benefits of the irrigation scheme, its actual operation, different cropping cycles, and the imposed extent and timing of maintenance requirements. This can in turn be related to the size of land, the location of land, ownership, preferred crops and cultivation technology, and traditional upstream/downstream conflicts of interest (MOWRAM March 2002 p. 11-12);
- conflicts of interest can emerge already in the construction stage about land allocation for reservoirs and canals, and the location of distribution canals (Öjendal 2000 p. 234-35, p. 250);
- conflicts of interest between core water users (and WUA members) and surrounding marginal water users, who receive a less reliable supply and who are not WUA members (Öjendal 2000 p. 245 note 42);
- undue interference in WUA operation by unrelated politics/party politics (Öjendal 2000 p. 237);
- lack of coordination between maintenance of distribution canals (by the WUAs) and maintenance of the headworks (by the authorities); without one, the other one is pointless (Öjendal 2000 p. 235);
- lack of access to technical and managerial assistance and extension services; and
- the possibility of adverse social impacts, if landless and other underprivileged people are harmed by construction and operation of an irrigation scheme.

A different type of risk is *land value escalation* that puts land ownership under pressure, potentially undermining a supportive land ownership structure - as it would be the case if irrigated land is bought for investment and left uncultivated. This risk can be met by various measures, such as ownership restrictions and taxation of idle agricultural land.

Land price escalation (example)

In Battambang Province (Cambodia), the value of paddy land went up from 200 - 500 USD/ha to 1,000 USD/ha after the irrigation system was restored (JICA 2004 p.42, Am Norin 2003 p. 3)

3 Discussion

The farmer's confidence (and ability and willingness to invest) depends on

- reliability of the water supply;
- the value generated; and
- the risk and effects of 'social shocks' (caused by illness of family members, crop and livestock diseases, drought, floods, theft, or distribution and market failure);

... which in turn depend on

- availability and costs of land, water, labour, and various inputs (seeds, fertilisers, pesticides, vaccines, etc.);
- distribution (including storage and transport) and market prices;
- knowledge and technology;
- the soil suitability;
- the land ownership structure; and
- the occurrence of natural disasters (drought, floods, pests).

Another important factor is

- social security [1].

Between them, these considerations can point at a preference for paddy cultivation (which is regarded as 'safe', but which is mostly utterly unprofitable [2]).

Access to water is one among several development determinants that can interact positively with other factors, such as types of crops, technology, and market prices [3]. Sometimes, reliable and affordable access to water is the key determinant for improvement of the farmers' income.

Both the technical, social and institutional aspects are important to agricultural production in general and to the functioning of water user associations in particular. Öjendal (2000, p. 243) observes that *'participation and empowerment only works above a minimum level of poverty and with a certain support by local leaders'*.

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1 The relation between social security and agricultural productivity was exemplified during a case study of a newly established Farmer's Water User Community in Battambang Province, Cambodia. It was found that the some 10 percent of the farmers who did not own their land had in most cases lost it due to expenses caused by illness in the family. They continued to cultivate the land as sharecroppers, paying a lease of 0.6 - 1 t/ha/crop (Am Norin 2003 p. 3)

2 In NE Thailand (1996/97), the net income was estimated from -49 to 21 USD/ha/crop for irrigated HYV rice in the wet and dry season, respectively, and at -44 USD/ha/crop for the traditional wet season rainfed local variety rice (Nesbitt, July 2003). In Cambodia, the net income was estimated from 4-14 USD/ha/crop for rainfed wet season rice and 23 USD/ha/crop for irrigated dry season rice (MAFF 2002)

3 Labour shortage is sometimes mentioned as an important constraint (for Cambodia e.g. JICA 2004), but it may be speculated that labour would be amply available if the wages were increased - which would be feasible only if the value of the production is increased

The 4 major success criteria for water user associations are:

1 Adequate basic technical and financial feasibility ('sustainability') of the enterprise. A private scheme must be practical and profitable, otherwise it will fail - no matter how well it is managed;

2 roles understood and accepted by everyone involved. This requires in turn (i) that the roles are well-defined and transparent, and (ii) that the enterprise is supported by the stakeholders;

3 an adequate information flow - managerial, technical and financial - between the involved parties, so that good and timely decisions can be made; and

4 adequate managerial skills available as required with each decision-making body. This can be supported (i) by training; and (ii) by avoiding overly complicated management routines.

As a matter of curiosity, it can be noted that the requirement of financial sustainability is seldom fulfilled in case of paddy irrigation, if depreciation of construction costs are taken into account, due to the marginal added value.

A life-long education process of everybody involved can highly support a sustainable WUA operation.

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Appendix A: Regulation in Cambodia (example)

This appendix is based on Marcella Nanni (April 2001)

General

Cambodia's Ministry of Water Resources and Meteorology (MOWRAM) was established in 1998. A draft law on water resources was submitted to the Council of Ministers in March 2001, but has not yet been approved (as per May 2004).

In Cambodia, *'Water User Associations'* are called *'Farmers' Water User Communities'* (FWUCs). If so desired, they may be made up of two or more *'Water User Groups'* (WUGs).

Circular on implementation policy for sustainable irrigation systems (Prakas 307 of 20 July 2000)

MOWRAM is authorized to organize FWUCs. Standard statutes for FWUCs are given.

The standard statutes are criticized [4] for

- being very detailed and possibly unsuited for the specific requirements of each scheme;
- not covering procedural and certain legal requirements (such as the juridical personality and the legal capacity of the FWUCs to hold a water user licence, to sign contracts, to own assets, etc.);
- not being clear enough to be understood by the farmers; and
- pointing at water fees that are unaffordable by the farmers.

Draft sub-decree on Farmer Water User Communities, MOWRAM (April 2001)

According to this draft, FWUCs can be voluntary, established at the initiative of farmers representing 2/3 of the area to be covered; or they can be compulsory, established by MOWRAM' when the need to ensure the efficient operation and maintenance of a state-owned irrigation system so requires'. FWUCs are regarded as non-profit (and tax exempt).

The draft sub-decree provides

- procedures for establishment, formal approval and registration of FWUCs;
- minimum requirements to FWUC statutes;
- legal capacity and powers of the FWUCs;
- provisions for FWUC governance and decision-masking; and
- the role of MOWRAM (normally via its provincial departments): Support to establishment and transfer of management; over-all supervision, including performance monitoring and evaluation; technical assistance; and support to settlement of disputes.

Transfer of responsibility from MOWRAM to the FWUC can be complete or partial. Transfer is based or one or several successive Irrigation Management Transfer Agreements, prepared jointly by the two parties, and spelling out the extent and implications of the transfer.

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[4] By Marcella Nanni (April 2001) (and by many provincial officers and FWUC members)