IMIR – Intervention Methodologies for Irrigation Reform: IWE-31304

Lecture notes Block 2: `Local water management organisations'

FROM PARTICIPATION TO SELF-GOVERNANCE
Changing approaches to Water Users Associations in canal irrigation

By: Peter Mollinga (withVishal Narain)

Modified by Eva Jordans – December 2003

CONTENTS

0. INTRODUCTION

Water Users Associations (WUAs) are organisations of water users for irrigation management. We use the term WUA in a general sense. Such organisations are also known as Irrigation Associations, Water Users Co-operative Societies, Water Management Committees, and several other names. They can have or not have legal status, as societies, co-operatives or corporate bodies. They can be big or small in number of members and area of operation. They can be federated or independent, and have been initiated by water users themselves, government agencies or NGOs. They can be self-financing or depend on government subsidies. They may have democratically elected management committees, or be governed by other means. The exact institutional form and status of WUAs can thus vary widely.

Three questions are central to these lecture notes.

1) For which problem(s) are Water User Associations (WUAs) supposed to be a (policy) solution?
2) Under which conditions are WUAs successful?
3) What are the limitations of existing approaches regarding WUAs?

1. FOR WHICH PROBLEM(S) ARE WUAS SUPPOSED TO BE A (POLICY) SOLUTION?

From participation.....

WUAs have been part of the debate on irrigation/water resources development for some time now, but they have not always been part of it. The creation of local institutions and organisations for water management appeared as a policy issue in the 1970s and particularly the 1980s. Lowdermilk (1986) succinctly phrases the central idea of this period. "Without active participation of farmers, irrigation systems can never be efficient or cost effective." What were the sources of this attention for `organising the farmers'?

1) a) A source internal to the irrigation sector and the developments going on within it, was the performance problem, then called the under-utilisation problem, of newly created irrigation systems. The 1950s and 1960s saw enormous investment in the creation of irrigation. The planning was technocratic and top-down in nature and focussed on infrastructure only. The potential created was not fully utilised in practice (under-utilisation), while at the same time problems of unequal distribution and waterlogging and salinity occurred. An important response to this was: farmers have to be organised to use the irrigation system better. This is clear in the following quote from Wiener (1976) (cited in Lowdermilk 1986).

"Engineering is not the fundamental problem underlying irrigation development in the LDCs (less developed countries). Engineering principles are known and can be adapted, but the major problem, however, is to discover ways to utilise farmers more effectively in operations and maintenance and development programmes which will create rural transformation. Rural transformation essentially requires changes in farmers behaviour, motivations, and

expectations, which is hardly possible until institutions exist to provide them with improved production possibilities and incentives."

b) The idea that it would be possible to organise farmers in local organisations effectively was mainly derived from examples of small-scale irrigation organisation managed by farmers themselves. Descriptions of very sophisticated and effective systems of institutional arrangements in different parts of the world raised the question, and the hope, that such arrangements might also be possible in canal irrigation.

2) This attention for user or beneficiary organisation in government development programmes was not exclusive for the irrigation sector. It was rather the other way around. Within the irrigation sector ideas were picked up from a much broader debate on `participation in development'.

It was argued that the achievement of rural development required:
a) public investment in physical and social infrastructure,
b) a supportive policy environment,
c) suitable technologies, and
d) effective institutions.

The institutions were to be of three kinds:

i) networks of government agencies providing the public services,
ii) private enterprises and private voluntary organisations (who can do some of this)
iii) local institutions, particularly locally based membership organisations (co-operatives, farmers' associations, mothers clubs, health committees, water users' groups, and the like). (Esman and Uphoff, 1984:17-18)

Esman and Uphoff argued that the element of effective institutions and particularly the importance of local organisations had been overlooked in policy making, and that this had negatively affected rural development.

These local organisations were seen as *intermediaries* between government agencies (or private firms) and rural residents.

WUAs as understood in the 1980s were thus part of a more general idea of a rural development strategy in which local organisations played a key role. Esman and Uphoff summarise the objectives of such organisations, or the contributions they can make to rural development, under three headings:

1) efficiency
2) equity
3) empowerment

This list illustrates the mixed bag that the participation/local organisation approach actually is. As Esman and Uphoff note, the three objectives/contributions become more controversial going from 1 to 3. In concrete policy making the first objective, efficiency, is the one emphasised most strongly. Equity is mostly part of policy statements, but much less so of practice. It is advocated by those, like Esman and Uphoff, who emphasise poverty alleviation as the main objective of rural development strategies (*cf.* Chambers' contrast of `production thinking' *vs.* `livelihood thinking'). Empowerment is very seldom part of the government or donor development agenda (*cf.* Goldensohn, 1994). It is located mostly in small-scale projects and the NGO sector.

In practice then, in government and donor assisted development programmes local organisation and participation were conceived in the 1980s as an instrument to improve the effectiveness of conventional development planning. Though in theory the concept of local organisation and participation raises a lot of questions about how development should be done, in practice it became part of the normal top-down, prescriptive way of doing things.

This is particularly clear in the irrigation sector. The example of the implementation of a WUA programme in Pakistan illustrates this. It is based on an evaluation study for the World Bank done by Kerry J. Byrnes. In Pakistan, the World Bank during the 1980s financed a programme for watercourse improvement (lining, cleaning) with a strong WUA component. Farmers were organised in groups to contribute to the improvement of their watercourses, and to maintain them afterwards. Byrnes found that the WUAs were capable of mobilising the resources for the concrete improvement activities, but after that remained very weak organisations.

> *The underlying reason for this problem lies in the failure of the design of Bank-assisted irrigation projects to include an effective strategy, and to provide the necessary resources to implement that strategy, for WUAs to function as the farmers' own vehicle for investing and sharing in the benefits of development. Much work remains if WUAs are to evolve from short-lived `paper' organisations for improving W/Cs to self-sustaining organisations active in promoting agricultural and rural development.* (Byrnes, 1992: xv)

Byrnes argues that in the programme the WUAs were seen as a `temporary project implementation vehicle'. He argues for a change in perspective: "Using W/C improvement as one of the means to build viable WUAs, rather than organising WUAs as a means to improve W/Cs." (p.xvi)

Here we have an unfortunately very common phenomenon: WUAs are only seen in an instrumental fashion by government and donor `developers'. The same story could be told about India's Command Area Development programme for example. Byrnes evaluation of the Pakistan experience illustrates a few other things.[1)]

1) The controversial nature of `empowerment' and also `equity' as objectives is illustrated by the way the Provincial Governments in Pakistan formulated the Ordinances that regulated the establishment of WUAs. For example in Punjab Province the idea of federation of WUAs at higher levels of the system was taken out. In Sindh Province tenants were not allowed to become members, but only landowners, who were often landlords.
2) More in general, WUA programmes of the 1980s almost exclusively focused on the outlet/tertiary unit level. Partly by choice, partly because Irrigation Departments effectively relegated the activities to the level `below the outlet', that is outside their

[1)] The Pakistan, India and Sri Lanka cases are particularly well documented with regard to the developments in the 1980s. Goldensohn (1994) is a study of WUA programmes in six countries. It is the only real comparative study that I know of. It is very critical of government WUA programmes (see discussion below).

domain. Within this there was an emphasis on physical works, rather than organisational or institutional development as such. The dependence on main system management of tertiary level organisation was however also `discovered' in the 1980s.

3) There was a philosophy in principle that WUAs should be not only doing irrigation related activities, but become a base for agricultural development in a much broader sense (see the box below from Byrnes, 1992: xviii as an example). However, in practice WUA programmes almost exclusively focused on direct irrigation matters.

A Potential Sequence for Development of WUAs in Pakistan

- WUA is formed to improve and maintain W/C and improve operation of the water management system (e.g. an improved *warabandi* schedule to provide more timely delivery of water to meet crop requirements for moisture);
- WUA participates in an ungoing on-W/C adaptive research and extension program;
- WUA reorganizes into a Water Users' Cooperative Society, with eligibility for the Society to receive a group loan;
- WUA invests own/borrowed capital in revenue-generating or possibly `no profit/no loss' ventures (e.g. installing and operating a W/C tubewell or a holding reservoir);
- WUAs along a distributary and/or canal join in a federation to undertake group action to clean and maintain distributaries;
- WUAs in a region join into a Regional Water Users' Cooperative Marketing Societyt to pool farmer produce and capture scale benefits in marketing selected agricultural commodities; and
- Regional Water Users' Cooperative Society begins wholesaling agricultural inputs (e.g. fertilizers) to member Water Users' Cooperative Societies who, in turn, retail the inputs to member farmers.

4) The programmes were very prescriptive in nature. This is very evident in the formulation of standard bye-laws for WUAs. These are often extremely detailed and drawn of by lawyers of the Co-operative of other government departments. WUAs often had government officials on their Boards, and therefore were not real farmers organisations.

5) Training was always a very heavy component of the WUA programmes. One could say that the programmes were very much `extension driven'. This is another illustration of the prescriptive orientation in development policy. It must be feared that Byrnes' conclusion with regard to training in Pakistan carries some general relevance.

> *Although there are exceptions, the concept of training that prevails does not go beyond traditional, and all to frequently ineffective, classroom-type approaches where farmers are brought together at some site to receive the information set forth in a pre-defined lesson plan, with supporting overhead visuals and take-home `memory cards'.* (Byrnes, 1992:68)

These few points should be sufficient to illustrate the characteristics of the WUA approach as we find it in practice (in the 1980s, but continuing till today). With hindsight it is perhaps no surprise that these programmes were highly unsuccessful (*cf.* Goldensohn, 1994). That lack of

surprise lies in the strong instrumentality with which WUA establishment programmes were designed. They are based on a strong belief in the possibility of `social engineering'.

.....to self-governance

In the 1990s a shift has become noticeable both in the policies for local organisation in water management, and in the conceptual frameworks underlying the models of WUAs.

In development policy the neo-liberal agenda has become very influential. In the approaches of the 1970s and the 1980s the role of the state/government in stimulating development was hardly questioned. The problem was how to improve the implementation of state/government policies. Starting in the 1980s but very prominently in the 1990s the role of the state in development is being questioned. For example Shah (1996) draws our attention to the abysmal performance of irrigation co-operatives in Gujarat and Maharashtra (India), ascribing it to the fact that they serve the agenda of the government rather that that of the farmers.

First and foremost this critique comes from neo-liberal economic approaches favouring the market as the best mechanism to allocate resources efficiently and arguing for a withdrawal of the state (deregulation, decentralisation, a facilitating role, combating rent-seeking, etc.). Structural Adjustment Policy (SAP) is the expression of this framework, or more generally, liberalisation. It has taken some time for this debate to enter irrigation also, but we now have serious discussion on water markets for example, and most prominently `turnover' of irrigation management.

However, support for turnover/decentralisation does not come from neo-liberal economists only. Like the participation bandwagon in the 1970s and 1980s, the group of supporters of turnover/decentralisation is very diverse.

Problems in irrigation management have persisted, and the enthusiasm about turnover/decentralisation is partly a result of the failure of participation approaches of the 1980s, and the critiques of it indicated above. In the debate `efficiency' is now discussed under the heading of `performance', and the mechanisms to achieve it are largely sought in (financial) relations of accountability both within the government agency, within the user groups, and in the relations between them. It is also argued that the success of farmer-managed irrigation is due to the absence of direct government interference. It is therefore considered advisable to make units within larger government systems as autonomous as possible. So partly the shift in perspective is taking the previous approach to its logical conclusion. The major reason for advocating decentralisation and turnover is probably the financial problems that governments have in funding O&M costs of irrigation systems, and construction and rehabilitation activities. An important reason for governments to establish WUAs now is to reduce costs and increase fee income (*cf.* Vermillion, 1996).

There is also a more political kind of support for irrigation management turnover by those who see it as a form of political decentralisation, allowing the empowerment of local groups. Or yet another argument is that it is necessary for ecologically sustainable resource use.

In short, for different reasons the emphasis now lies on `self-governance' by water users, or `self-reliant management'. State/government management at too low levels of the system is seen as a problem, and more autonomous WUAs, having more explicit, business-like contracts with the state/government as a solution for that problem. The problems that WUAs are supposed to solve have thus shifted. The shift in paradigm is nicely summarised by Ambler (1994) when he discusses the `semantic impediments' to a more farmer-based and farmer-oriented irrigation reform process. He proposes the following shifts in vocabulary.

From	To
Farmers participation	Farmer management or Government participation in farmers' programmes or Joint management
Beneficiaries	Partners
Sense of ownership	Real ownership
Forming WUAs	Catalysing WUAs
Motivating farmers	Creating motivating conditions

Accompanying this shift in perspective on local organisation/WUAs, and partly informing it, is a different understanding of the dynamics of local organisation in irrigation, and irrigation organisation more generally. As in the case of the `participation approach' of the 1980s, the new approach is largely a translation of more general ideas to the irrigation sector. At the conceptual level the following contributions have been important.

1) The debate on Common Property and Common Pool Resources (CPRs). In this questions are asked about the way natural resources are successfully managed by communities of users (grazing land, forest, fishing grounds, and other resources). New is the emphasis on property relations, and their regulating effect. In irrigation studies the concept of `hydraulic property' was developed, particularly by Coward (see Coward, 1983, 1986a,b). Concepts of rights give a deeper understanding of the dynamics of allocation and distribution.
2) Partly overlapping the former are theories of collective action, asking the question why people co-operate. There are several strands in this.
   a) Wade and others have developed an approach in which water scarcity is seen as the major factor to explain the existence of collective action (that is corporate organisation by water users) (see Wade, 1987; Uphoff, Wickramasinghe and Wijayaratna, 1990). The relationship between physical scarcity and level of participation is understood as being akin to an inverted U-shaped curve, peaking at some medium level of scarcity. This point is endorsed by Meizen-Dick (1996). Water must be scarce enough to induce collective action.
   Wade (1995) presents another variant of the `ecological basis for organisation' argument. He argues that the form a canal irrigation institution takes is determined,

in large parts, by the dictates of ecological considerations. These factors include the size of river basins, potential evapotranspiration, crop water requirements, and population density. An important error made by social scientists in advocating new institutional forms lies, according to Wade, in ignoring their fit with the agro-ecological environment.

b) More dominant are game-theoretical approaches to the explanation of collective action, as in the work of Ostrom (see Ostrom, 1990). She tries to develop a kind of `third way' between state and market, by identifying the economic conditions under which user groups make rules for (sustainable) resource use. Farmer managed irrigation is one of her important cases. The application of this approach to collective action in natural resource management is as follows. Rational individuals will try to maximise their gains from the use of common pool resources. Given the subtractibility of the resource and the difficulty of exclusion, common pool resources will be over-exploited in the absence of effective institutions. Institutions or rules structuring human interaction are needed to curb opportunistic behaviour (rent-seeking, corruption or free-riding). Game theory that under certain conditions the `tragedy of the commons' does not have to occur and collective action provides higher benefits. Individuals' preferences in their choice-making behaviour, and the transaction costs of co-operation/joint decision-making and management are two central concepts in the approach. (See also below for more on the central activity of rule making.)

3) Discussion on (financial) accountability in organisations and between organisations and their `clients', induced by rent-seeking analysis, have provided an alternative understanding of bureaucracies and other organisations as compared to public administration. A seminal paper is Wade (1982) on the `system of administrative and political corruption' in a South Indian state. Among other things, this paper shows that WUAs not only or even primarily perform functions like water allocation and distribution, canal maintenance and fee collection. A very important reason for their existence, and a function to perform, is exerting pressure on the government agency and local politicians, and the collection and payment of bribes to government officials to influence water distribution. In a more positive vein, the importance of `financially autonomous agencies' has been emphasised as a means to achieve greater accountability, between water users and irrigation agencies, and within these groups. This issue is discussed in more detail in the part on `bureaucratic reform'.

Within irrigation studies there has been a definite shift from descriptive analysis of (local) organisation, to more conceptual and dynamic understanding. There is by no means a single approach to the issue, as indicated above, but there seems to be some consensus on the importance of themes like property rights, rent-seeking, and the like.

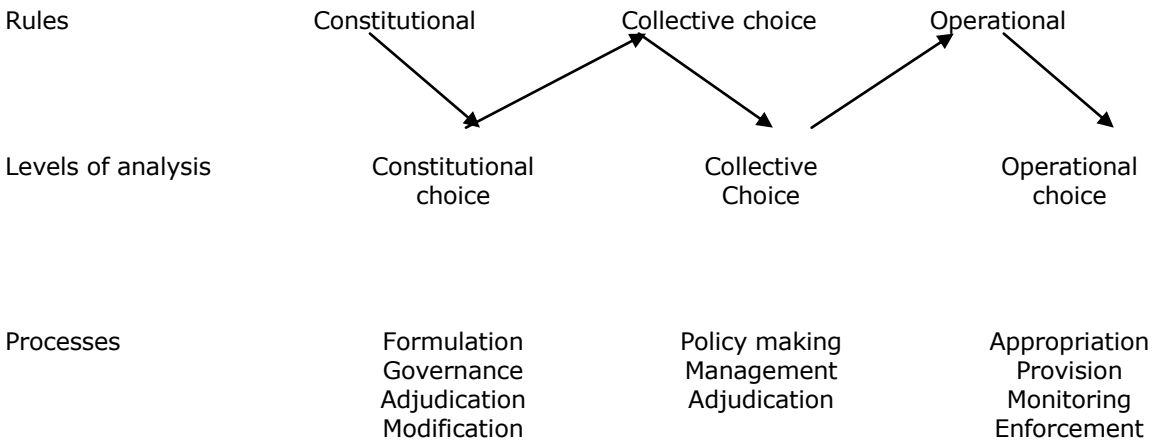
What this has resulted in, in terms of guidelines for intervention, is a more theoretically informed list of `conditions for success' of WUAs. A number of those lists now exist, referring to `internal' as well as `external' conditions for success.

2. UNDER WHICH CONDITIONS ARE WUAS SUCCESSFUL?

Ostrom has made important contributions to the understanding of the effectiveness and sustainability of local organisations in irrigation. Her focus is that of `institutions as rules-in-use'. The creation and reproduction of water users associations is seen as a process of rule making, implementation and adaptation. The emphasis is on process and underlying principles, rather than observable characteristics of organisations. As she shows by many examples, the empirical features of irrigation organisations can be extremely diverse. And she argues that "Efforts to classify systems for the purpose of devising standard rules for use on all systems in a particular category have not proved useful, nor will they." (Ostrom, 1992:48). She is thus arguing for a situation-specific approach to irrigation organisation ("matching rules to local circumstances", 1992:81).

Ostrom distinguishes three types/layers of rules: operational rules (these serve as a guide to day-to-day activities), collective-choice rules (these regulate decision-making and conflict resolution processes), and constitutional-choice rules (these regulate membership and define user rights).

Figure 2 Linkages among Rules and Levels of Analysis



Source: Elinor Ostrom, *Governing the Commons: The Evolution of Institutions for Collective Action* (New York: Cambridge University Press, 1990), p.53

These rules can be considered as the `social capital' of a group of users.

> *Over the next several decades, the most important consideration in irrigation development will be that of institutional design- the process of developing a set of rules that participants in a process understand, agree upon, and are willing to follow. An embedded institutional design is a form of social capital, defined by James Coleman (1988) as the aspects of the structure of relationships between individuals that enable them to create new values. Physical capital is embodied in tools, machines, and physical works that enable individuals to produce goods and services. Human capital is created by "changes in persons that broing abour skills and capabilities that make them able to act in new ways." Social*

capital, on the other hand, is created "through changes in the relations between persons that facilitate action."

The process of establishing or strengthening water users associations is thus a process of `crafting institutions'. There is an emphasis on sound social engineering along with technical engineering (Cernea and Meinzen-Dick 1994). Though generalisation at the level of the rules themselves is impossible, it is possible, according to Ostrom, at the level of the *design principles* underlying these rules. "A design principle is an element or condition that helps to account for the success of institutions in sustaining the physical works and gaining the compliance of generations of users to the rules-in-use." (Ostrom, 1992:68) The explanatory power of these principles is located in the way they affect the incentives of users of organisation. The principles are listed below.

Ostrom's design principles of long-enduring, self-organised irrigation systems (Ostrom, 1992:67-79)

1: Both the boundaries of the service area and the individuals or households with rights to use water from an irrigation system are clearly defined.
2: Rules specifying the amount of water that an irrigator is allocated are related to local conditions and to rules requiring labor, materials, and/or money inputs.
3: Most individuals affected by operational rules are included in the group that can modify these rules.
4: Monitors, who actively audit physical conditions and irrigator behavior, are accountable to the users and/or are the users themselves.
5: Users who violate operational rules are likely to receive graduated sanctions (depending on the seriousness and context of the offense) from other users, from officials accountable to these users, or both.
6: Users and their officials have rapid access to low-cost local arenas to resolve conflict between users or between users and officials.
7: The rights of users to devise their own institutions are not challenged by external governmental authorities.
8: Appropriation, provision, monitoring, enforcement, conflict resolution, and governance activities are organised in multiple layers of nested enterprises.

Tang and Ostrom (1993) further argue that it is important to involve the farmers in crafting their own operational and collective choice rules. Without considerable confidence about the ability to affect outcomes, farmers will have little incentive to participate in collective efforts. On similar lines, Cernea and Meinzen-Dick (1994) argue that rule setting should be the domain of users and not just government alone. Herein lies the shift from participation to self-governance.

Ostrom's discussion is mainly concerned with farmer managed irrigation systems (her `self-governed' systems). Ostrom notes that "crafting improved institutions on [large government-owned] systems is significantly more difficult than improving the operation of existing farmer-organized systems" (Ostrom, 1992:82). The situation in large, jointly managed systems is inherently more complex, because more parties are involved, and there are multiple layers in the systems. Ostrom, with many others, locates the main problem however in the financial incentives for organisation. She argues that these systems have been highly subsidised, leading to rent-seeking practices of different kinds. "Those who try to reform systems that generate

substantial rents for powerful and well-organized interests must recognize that those rents will be used to avoid reform." (Ostrom, 1992:94)

A conclusion that can be drawn from this is that a number of external conditions have to be changed first before internal attempts at institutional change have any chance of being successful. However, it may also be argued that some internal organisation and change is necessary to create pressure for change in the external conditions. In any case, it is necessary to specify a set of external conditions that would allow constructive institutional change in system management. Meinzen-Dick *et al.* (1994) specify these external conditions under the following headings.

Physical and technical factors
- water scarcity
- technology and infrastructure

Social and economic factors
- local social organisation
- market penentration
- farmer incentives
- financial viability

Policy and governance factors
- policy environment
- legal framework
- agency structure and incentives

According to Vermillion (1994) for IMT (Irrigation Management Transfer) to succeed the following five conditions should be met.

1) A clear and sustainable water right.
2) Irrigation infrastructure compatible with the water right and local management responsibilities.
3) Clear and recognised management responsibilities and authorities.
4) Adequate financial and human resources for management.
5) Supporting accountability and incentives for managing entities.

Regarding the modalities of the relationship between water users groups and the government system management (as regulated by policy and governance factors) there is a strong argument in the contemporary international policy debate for some degree of autonomy of user groups towards the system management, and clear accountability relationships between them, as a necessary condition for improved management and sustainable WUAs. Accompanying this is an argument for the (financial) autonomy of the irrigation agency already referred to above. Crudely put, the argument is that when those involved in irrigation, be it farmers or irrigation officials, are left to their own devices, they will effectively organise irrigation management when irrigation is important/attractive for them, and when they are allowed or forced to enter

into contracts and agreements. This philosophy can be distinguished in the three different types of reforms that are being implemented in different parts of the world.

1.	Volumetric water pricing and water markets
2.	Financially autonomous irrigation agencies
3.	Self-governance and turnover

There is no dearth of lists of factors that influence the `success' or `failure' of WUAs. They provide useful checklists and lists of questions to ask in concrete intervention situations.

3. WHAT ARE THE LIMITATIONS OF EXISTING APPROACHES TO WUAS

The discussion above has not questioned the overall necessity and usefulness of WUAs. It has been mainly concerned with the question what makes them work, and is a short and select summary of the `mainstream' international debate on Water Users Associations. However, there are also more critical perspectives on WUAs. Their conception as sustainable water management organisations can be put into question, and there are limitations to perspectives that make them the centrepiece of irrigation reform programmes. These two critiques are discussed in this section.

The WUAs as failure argument

The publication by Max D. Goldensohn entitled *Participation and empowerment. An assessment of Water Users Associations in Asia and Egypt* (ISPAN, 1994) is a comparative study of WUA programmes in six countries: India, Pakistan, Nepal, Sri Lanka, Philippines, Indonesia and Egypt. This publication challenges both approaches sketched above, and argues that a major limitation of all WUA programmes so far has been that they focus on the organisation of water users for irrigation management only. In other words, WUAs have consistently been defined from a sector (irrigation) perspective, while farmers work from a different perspective.

Goldensohn questions the usefulness of the three assumptions that in his view underlie the concept of WUAs in intervention programmes (1994:8)

1) Water is the unifying element.
2) WUAs are institutions and thus should last indefinitely, i.e. should be sustainable.
3) The primary purpose of a WUA is the management of an irrigation system.

Instead of creating WUAs he argues for establishing or strengthening Farmer Organisations (FOs), aiming to improve agricultural production in the widest sense of the term, starting from farmers' concerns. The second major point he makes is that farmers should have real control over the resource (clear property rights in land, water and technology for example). When these

two conditions are not met, and governments do not want to share power, WUAs wither away and become `just-enough' organisations that only do the minimum when it's really necessary. In contrast to Byrnes, Goldensohn does not want WUAs to be the beginning of a future multi-purpose organisation, but that orientation should be the beginning of the whole exercise. This analysis forces us to rethink the concept of WUAs fundamentally.

TRIP: blind spots in irrigation reform processes[2]

In this section the major weaknesses, in the sense of missing elements or blind spots, in canal irrigation reform processes to date are listed. We suggest that there are four of them, together forming the acronym TRIP: technology, rights, integrated water resources management and politics. The focus is South Asia.

1. Technology

The first blind spot is that of technology. In summary, the technology issue has the following four dimensions (see Mollinga 1998a for more detailed discussion).

a) The rehabilitation of infrastructure that is part of most PIM/IMT programmes[3] usually boils down, at least in South Asia, to bringing a system back to its original design state. The fact that many systems were designed decades (or even longer) ago for very different farming systems, agrarian economies and socio-political conditions, seems to bother very few people. Institutional reform also requires infrastructural reform, that is re-thinking of the design features of the infrastructure, as every design creates demands and constraints for management (institutional decentralisation requires hydraulic decentralisation).
b) This argument gets amplified considerably when irrigation systems would be designed from an integrated water resources management perspective (see below). This creates a whole series of new technical challenges (like for example intermediate storage to increase management flexibility and to decentralise storage, linking of canal water supply with watershed protection and water conservation infrastructure, *et cetera*).
c) As of now methodologies for participatory technology development are hardly used in canal irrigation reform processes, that is, farmers/water users play hardly any role in conception and decision-making of/on infrastructural change.
d) One of the few ways that irrigation reform processes may be made attractive to engineers is by making clear that such processes provide professional challenges.

2. Rights

The issue of water rights (and related other rights, like land rights) is a very new issue in the canal irrigation discussion in South Asia (but not so in other parts of the world, like Mexico). The relevance of the rights issue for canal irrigation reform can be understood at the following three levels.

a) At the level of the WUA and the individual farmers within it. Taking the Andhra Pradesh state (India) case as an example, it can be argued that the Act adopted in 1997 as the basis

---

2) This sub-section is extracted from a paper published by IndiaNPIM in 2001: Peter P. Mollinga Power in motion. A critical assessment of canal irrigation reform, with a focus on India.

3) In the Indian context the prevalent policy concept is PIM (Participatory Irrigation Management) rather than IMT (Irriigation Management Transfer).

of the irrigation reform process, effectively consolidates the water rights of those within the command area, and excludes all others from access. This reservation of water coming into an area for the irrigators may be questioned. When the systems were designed the command areas were determined on topographical and soil quality grounds mainly, and the inhabitants of the areas concerned had very little say in it, if they were aware of it at all. Whatever position one may take on who has a right to the water coming into an area through a canal (landholders, tenants, landless, men, women, farmers (irrigated and rainfed), domestic users, industries, *et cetera)*, and the benefits generated by that water, the point is that such issues are not part of the discussions on canal irrigation reform.

Apart from the question who constitutes the community of water users/right holders, there is the question which rights these right holders hold: rights to water or also rights to participation in decision making, and which obligations come with the rights?

b) At the intra-system level. Within the community of irrigators, the issue of head-enders *versus* tail-enders has very much to do with the question how enforceable water rights for tail-enders can be created. Depending on the size of the system the head/tail problem occurs at any number of levels within the system. In India different systems for rationing of scarce water in canal irrigation systems have been created in different regions (*warabandi* in the north, block system/*sjeh pali* in the west, and localisation in the south), with different degrees of effectiveness, constituting different types of water rights. Practice often diverges from these formal systems, and constitutes actual, negotiated water rights.
c) At the inter-system or regional level. Along a river where different types of extraction take place at different locations, a head/tail issue also occurs, particularly with increasing water scarcity. To resolve such issues rights to water need to be defined.

At all these levels the emphasis in India has been on bureaucratic allocation (legal and administrative decisions reserving X, Y and Z quantities of water for different (sub-) systems and sectors). Allocation does not straightforwardly translate into distribution, and allocation mechanisms have given very little protection to tail-enders. More generally, they are not very helpful when disputes arise: when use patterns change, scarcity increases or for other reasons. These disputes are often about the space and time details of distribution, and the quality of the water involved. For resolution the *process* of dispute management is also very important. None of these aspects are part of overall quantitative allocations. Workable rights, that is, rights that are enforceable and able to deal with real situations, are largely absent in the canal irrigation sector.[4]

3. IWRM

Integrated water resources management is the new buzzword in the international and many national debates on water resources management. The concept has a very fundamental logic. Water is part of a cyclical system, organised in basins as far as the on-the-ground part is concerned. Therefore its management should take hydro-geographical units as its starting point, and aim for sustainable resource use to maintain the cycle over time. At this level of

[4] Outside the scope of this paper is a discussion of why this is so. The fact that governments are the owners of the canal systems, and hold the right to the water flowing through them, is obviously one important factor. However, this does not explain why governments should design rules and procedures that are impractical, to say the least, for the implementation of official allocations.

abstraction nobody can object to the need for IWRM. At the more concrete level it means that the interaction of irrigation with other water use practices and flows should be taken into consideration. The linkages between irrigation, rainfed agriculture/watershed development, drinking water and sanitation, industrial use of water, and water use for ecological protection need to be problematised. The concept has been put forward very strongly by the Global Water Partnership (GWP) over the past years, but incorporation in the irrigation sector remains a major challenge.

4. Politics

The fourth blind spot is that politics, in the sense of the negotiation of interests/balances of power by different interest groups (and not just in the form of official, state and party politics) is at the heart of irrigation reform policies, but this goes unacknowledged. The issue of rights discussed above is a highly political issue, as rights define the claims that people have on available (scarce) resources and their relationship with other rights holders. Participatory technology development is a political issue because it proposes to change the decision-making structure on infrastructure design. Rethinking the relationship and interactions between different sub-sectors in water resources management is a political issue because it involves a realignment of vested professional, institutional, economic and other interests. And so forth. And at all stages these processes are political: they are conceived in political arenas, their implementation is a political process, and they have political implications.

The practical relevance of giving the political dimension centre-stage, lies in its implications for how reform processes are induced and conducted. There is an almost universal exclusion of farmers/water users from the policy formulation process in Indian canal irrigation, and probably elsewhere too. In political terms this means that opportunities for alignment of interests regarding reform are missed, and that serious doubt is cast on how genuine the usage of the notion of participation is in the PIM discourse. More systematic analysis of the political dimensions of irrigation reform can and should inform strategic action to strengthen reform programmes.

4. EXPANDING THE SCOPE OF INSTITUTIONAL OPTIONS

The most recent development tn the thinking on Water Users Associations looks at a larger set of options for local organisation, and relationships between user organisations and government agencies, beyond the concept of WUAs as conventionally understood. It takes an open mind to the way water users might organise among themselves, what kind of agreements exist between the users groups and the water supply agency, and who provides which service. This perspective makes the important point that one needs to distinguish between `governance' and `management'. Governance is about making the rules, being in control of the water system. Management is about doing the service provision (water distribution, maintenance, dee collection, *et cetera*).

An important point made in this perspective is that the 'governance' and the 'management' of irrigation systems need to be clearly distinguished. Governance is about making the rules holding rights, and having control of a system. Management is about performing the service provision tasks (water distribution, maintenance, fee collection etc.). A critique of earlier approaches to WUA formation in canal irrigation systems would be that these approaches

usually only invited water users to particpate in the management of the systems, but not in their governance. That is, water users did not acquire real control over the system, and thus often quickly loist interest in particpation without having real powers. Another point that can be derived from this perspective is that water users who govern a system do not necessarily have to perform the management functions themselves. Implicit in many approaches to WUA formation is self-management: water users performing management tasks. But, it is argued, contractual forms of management sub-contracting management tasks to private parties, give better incentives for effective and efficient performance, and reduce transactions costs for water users.

In the context of the discussion of WUAs the point is that there is a series of institutional options regarding the involvement of water users in governance and management of irrigation systems. In each context it has to be assessed which option(s) are desirable and feasible.

In the end, approaches to bureaucratic reform and water user particpation/self-governance merge in an analysis of institutional options for irrigation system governance and management.

5. CONCLUSION

These lecture notes have sketched the evolution of thinking on Water Users Associations. The main move has been from a discourse and practice focussed on `participation' to that of `self-governance'. Limitations of present approaches have also been indicated. Taking these critiques seriously implies questioning the concept of WUA. It is highly doubtful whether WUAs can be the organisational silver bullet able to remedy all the ills of irrigation management. The exclusive focus of intervention programmes by outside agencies on *water* and *system* management has also been questioned. WUAs need to be understood and, in Ambler's preferred language, catalysed in a particular socio-political, financial-economic, agro-ecological and technological environment. WUAs should be understood in the broader context of different institutional options for irrigation system governance and management. This makes the issue of local organisation for irrigation management more complex and complicated, but black-boxing process, context and farmers' agency does not help to build successful institutional transformation processes.

6. REFERENCES

Ambler, John
1994 `The language of farmer water users associations: rethinking irrigation organisation development in India'. In: M.V.K. Sivamohan and C.A. Scott (eds.) *India: Irrigation management partnerships*. Booklinks, Hyderabad, pp.15-33

Byrnes, Kerry J.
1992 *Water Users Associations in World Bank-assisted projects in Pakistan*. World Bank Technical Paper No.173. World Bank, Washington DC

Cernea, M.M. and Ruth Meinzen-Dick

1994 *Design for Water Users Associations: organisational characteristics.* ODI-Irrigation Management Network Paper

Coward, Walter E.
1983 *Property in action, alternatives for irrigation investment*, paper presented at Workshop on water management and policy, Khon Kaen University, Khon Kaen, Thailand, Sept. 1983, 28 pp.

Coward, Walter E.
1986a 'State and Locality in Asian Development: The Property Factor'. in Nobe and Sampath (eds.) *Irrigation Management in Developing Countries: Current Issues and Approaches*, Studies in Water Policy and Management No. 8, Boulder: Westview Press, pp.492-508.

Coward, Walter E.
1986b 'Direct or Indirect Alternatives for Irrigation Investment and the Creation of Property'. in Easter (ed.), *Irrigation Investment, Technology, and Management Strategies for Development*, Boulder: Westview Press, pp. 225-244.

Goldensohn, Max D.
1994 *Participation and empowerment. An assessment of Water Users Associations in Asia and Egypt*. Irrigation Support Project for Asia and the Near East (ISPAN), Arlington

Lowdermilk, Max K.
1986 *Improved irrigation management. Why involve farmers?* ODI/Irrigation Management Network Paper No.11c. ODI

Meinzen-Dick, Ruth, Meyra Mendoza, Loic Sadoulet, Ghada Abiad-Shields and Ashok Subramaniam
1994 *Sustainable water user associations: lessons from a literature review.* Paper prepared for the World Bank Water Resources Seminar, December 13-15, 1994

Meizen-Dick, Ruth
1995 *Policy trends in farmer participation.* Paper presented at the Workshop on institutional reform in Indian irrigation, NCAER, New Delhi, November

Ostrom, Elinor
1990 *Governing the commons. The evolution of institutions for collective action*. Cambridge University Press, Cambridge

Ostrom, Elinor
1992 *Crafting institutions for self-governing irrigation systems*. Institute for Contemporary Studies, San Francisco, USA, 111 pp.

Shah, Tushaar
1996 *Catalysing cooperation: design of self-governing organisations*. Sage, New Delhi

Shah, Tushaar

1997 *The deepening divide: diverse responses to the challenge of ground water depletion in Gujarat.* Paper presented at the IDPAD `Dealing with scarcity' conference, Amersfoort, the Netherlands, October

Tang, S.Y. and Elinor Ostrom
1993 *The governance and management of irrigation systems: an institutional perspective.* ODI Irrigation Management Network. ODI, London

Uphoff, N., M.L. Wickramasinghe and C.M. Wijayaratna
1990 `"Optimum" participation in irrigation management: issues and evidence from Sri Lanka' *Human Organization* Vol.49, No.1, pp.26-40

Vermillion, Douglas L. (ed.)
1996 *The privatization and self-management of irrigation. Final report*. IIMI/GTZ, Colombo

Wade, Robert
1982 "The system of administrative and political corruption: canal irrigation in South India". *Journal of Development Studies*, Vol. 18, No. 3, pp. 287-328

Wade, Robert
1987 *Village Republics. Economic Conditions for Collective Action in South India*, Cambridge South Asian Studies No.40, Cambridge University Press, Cambridge.

Wade, Robert
1995 "The ecological basis of irrigation institutions: East and South Asia". *World Development* Vol.23, No.12, pp.2041-2049

Wiener, Aaron
1976 "The world food situation and irrigation programmes". *ICID Bulletin* No.34, pp.21-25