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Hamdy A. (ed.), Tüzün M. (ed.), Lamaddalena N. (ed.), Todorovic M. (ed.), Bogliotti C. (ed.).
Participatory water saving management and water cultural heritage

Bari : CIHEAM
Options Méditerranéennes : Série B. Etudes et Recherches; n. 48

2004
pages 297-303

PARTICIPATORY IRRIGATION MANAGEMENT: A SOCIO-ANTHROPOLOGICAL PERSPECTIVE

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SUMMARY – Participatory Irrigation Management schemes may superficially appear to be simple administrative measures but can in fact prove to be complex operations with far-reaching social consequences. They must therefore be tailor-made for each situation and to ensure success, the social and cultural background of the population involved have to be considered. The paper gives a brief overview of some social and anthropological aspects of water usage in agriculture in order to understand how local communities look upon and react to the changes brought about by a reduction in the government's role of irrigation management and a consequent increase in their own responsibilities. It is not a description of a specific regional or national situation – though some references to particular Mediterranean characteristics are included - but a general discussion about some socio-anthropological principles relevant to the privatisation process of irrigation networks. The respective advantages to governments and farmers are outlined, as are some problems and misunderstandings that may arise. The paper finally concludes that the correct approach should be a combination of methods that satisfy the basic needs – political, cultural and social - of all stakeholders while optimizing the economic returns. There is no single ideal or universal structure which is best for all circumstances.

Key words: PIM; social anthropology; irrigation systems.

INTRODUCTION

The management of water resources in agriculture is often considered as the exclusive domain of engineering, agronomy and economics. However, we must not overlook the socio-cultural and anthropological aspects of the practice, especially considering that water has great practical and symbolic value in most cultures. These aspects can play a vital part in ensuring the success or failure of initiatives meant to modify the structures of rural water services. As Bottrall (1981) points out "it is essential that specialist knowledge of management and technique should be supplanted and influenced by detailed local knowledge and by insights from other relevant disciplines including sociology, social anthropology and/or political science". It is well-known that, besides being engineering ventures, irrigation schemes can also be considered as complex 'socio-technical systems' (Trist, 1981). Thus, radical changes in the way that such schemes are managed and run will necessarily have social implications, especially if these changes also involve a transfer of control and responsibility. Efforts to pass on to the local communities the duty of administering irrigation systems may sometimes fail, not so much because of any technical difficulties, but rather because the way that such policies are developed and implemented does not take into account the point of view of the local farmers and therefore does not manage to mobilize their support (Vermillion and Brewer, 1996).

For this reason it is indispensable that when the transfer of irrigation management is being planned, all stakeholders – especially local communities – must be involved from the earliest stages. The importance of such involvement in a process of change has already been affirmed by Korten (1980): the local community must not feel that a decision has been taken over their heads but that they are being empowered by the proposed changes and that their way of life will not have to be transformed because of external factors. This is the best way to obtain consensus, ensure support for the changes and, incidentally, to identify the best solutions both from a social and perhaps even a technical angle.

This presentation gives a brief overview of some social and anthropological aspects of water usage in agriculture in order to understand how local communities look upon and react to the changes brought about by a reduction in the government's role of irrigation management and a consequent

increase in their own responsibilities. It is not an attempt to describe a specific regional or national situation – though some references to particular Mediterranean characteristics is included - but is intended to be a general discussion about some socio-anthropological principles relevant to the privatisation process of irrigation networks. This will hopefully make the presentation relevant to the different situations found in countries around the Mediterranean.

HISTORICAL ASPECTS OF WATER-MANAGEMENT IN AGRICULTURE

In order to better appreciate what social changes can be expected to occur with the implementation of policies to transfer the running of irrigation schemes to local communities one has to trace the historical development of water management in agriculture.

There are three basic ways of obtaining water supplies and using them for cultivation, each of which has given rise to a particular type of farming. According to a well-known anthropological theory (Wittfogel, 1956), entire civilizations have been built and organised according to the relationship between water and agriculture.

A. In the so-called Rainfall Agriculture, cultivation depends only on natural precipitation and little or no effort is made to supplement this water supply with irrigation.
B. In Hydroagriculture the members of a community resort to irrigation mainly because of the relative lack of available water. However, because of limitations due to natural causes, irrigation is carried out only on a small-scale and this is reflected in the relatively modest scope and essential local character of irrigation schemes. These small irrigation schemes can be controlled by local or tribal authorities and exist independently of similar schemes in adjoining territories.
C. Hydraulic Agriculture is the most advanced in this respect. In such types of civilizations (such as in Mesopotamia, Egypt, China and Central America) the plentiful supply of water – usually connected to a large river system – allows the development of irrigation on a large scale and over vast areas. This, in turn leads to the construction of engineering works which have to be managed by a central authority. According to Wittfogel it is this need to control the water supply and its irrigation networks over large territories that originally gave rise to governments with authority over large “states”.

One must say that Wittfogel’s theories are not as popular today as they used to be in the past and many anthropologists now think that his attempt to place water-resource management at the base of all political systems seems rather over-stretched (Clough, 2003). However this is not to say that there is no grain of truth in his observations. By their very nature, large irrigation schemes have historically given rise to centralised agencies which could administer them. This exists even today: in many developing countries one can see that practically all the rural development projects of a certain size – especially where water is involved – are initiated and often run by the central government.

Now, in order for these tasks to be delegated to a local community, it may become necessary to either scale down the extent of irrigation works or, when it is essential for such projects to be carried out on a large-scale, envisage them as an inter-connected series of smaller projects each of which is manageable by the territorially-limited influence of a local organization. In Wittfogel’s terms this method can be expressed as a process of transforming “Hydraulic Agriculture” back into a “Hydroagricultural” system.

Another issue that must be included in this discussion regards the concept of division of labour which is found in industry and which incidentally also characterizes Hydraulic Agriculture. In industrial production there is a distinction between the preparatory work of getting ready the raw materials and tools for production and the actual manufacturing process by the ultimate producer who utilizes these tools and combines them with the raw materials to make the end-product. Wittfogel points out that this distinction is also present in Hydraulic Agriculture where the central authority has the job of extracting, collecting, storing and transporting the water supply on a large scale while the farmer is concerned solely with the strictly localised use of that water for field irrigation. The author himself has often encountered this mental attitude on the part of farmers where their concern does not go beyond the boundary walls of their individual fields.

Participatory irrigation management upsets this traditional organization of responsibilities in

agriculture and places upon the farmer the burden of being in charge not only of the cultivation and production on a local level but also of the provision and supply of one of the major raw materials necessary for such practices. It is becoming clear that the division of labour between state agencies and farmers in irrigation management needs to be reconsidered and reorganized (Bruns, 2003).This implies a change in the way that farmers see themselves and widens their responsibility.

Wittfogel's theory could be applied to most regions of the world and he cites the examples of Mesopotamia, China, Egypt and Central America. In the Mediterranean itself, however, the historical development of agriculture has been described in a rather different way. Horden and Purcell (2000) state that "rather than the megalomaniac dream of kings, Mediterranean water management, in its local complexity, has been linked to co-operative social institutions" and again "the opportunity to irrigate promotes a co-operative social response which is an axiom of the study of Mediterranean water systems". They mention the case of the Spanish *huerta* and the piedmont spring-belt of Morocco to illustrate their point. The authors also explain that one of the characteristics of Mediterranean agriculture, due in part to the way that irrigation is organised, is the fragmentation of production and that, typically, water-systems have been associated with a peasant-type of subsistence farming carried out on smallholdings rather than a market-oriented large-scale production on large estates. However, they also state that the organization of Mediterranean irrigated agriculture has not been as egalitarian as might appear. Historically there has always been "a hierarchy of control". Shared economic interest in a water resource does not automatically resolve disputes and outside authority is necessary to promote and assure co-operation. Thus, they do not discount the continuing need and scope for a central authority to oversee irrigation works over a wide area, a view that is shared by specialised studies such as Bottrall (1981)

AGRICULTURE IN DEVELOPING COUNTRIES TODAY

The historical background has some relevance to the present-day situation but, obviously, more recent events have had a greater impact on how modern agricultural resources are planned and managed today.

Disenchantment with 'blue-print' or 'top-down' models of development pursued during the 1960s and 1970s was followed in the 1980s by a surge in 'participatory' strategies for rural development (O DI, 1989; Uphoff, 1986). These strategies refer of course to different aspects of development but include obviously those relating to the use of water and the way that irrigation schemes are planned, maintained and managed. There is now a widespread tendency for government agencies in many countries to turn over the planning and running of these schemes to local farmer organizations. All authors generally agree that this trend is not only beneficial but necessary for agricultural progress and the improvement in the standard of living of farmers. However there are different views as to the significance of participatory policies and the methodologies used to implement them.

Among the many reasons usually brought forward to justify what is sometimes known as Irrigation Management Transfer one may find that such innovations (FAO, 1995):

- Improve the management performance and sustainability of irrigation systems
- Reduce the Operations and Maintenance costs
- Reallocate public funds to more technical or more inherently governmental functions such as regulating water use along river basins and addressing environmental and health concerns.

It is also often believed that, compared to governmental institutions, private organizations have a better structure of incentives to improve performance (FAO, 1995).

When one looks at the above reasons however, one notices that, at face value, almost all of them are of interest and to the advantage of the State rather than the farmer. For example, one of the driving forces behind irrigation policy reforms is the need to reduce government costs (WBI, 2003). This, together with a more efficient use of the limited water resources is often deemed to be a sufficient reason to justify the adoption of participatory policies. In fact what happens when there is participation of local farmers in irrigation schemes is that, not only do such schemes run more efficiently and cheaply but that most of the expenses which were previously sustained by the national agency will now have to be borne by the farmers who thus see their running costs increase. A

"transfer of costs", rather than a "transfer of authority", may well be the first impression that farmers get when participatory policies are introduced and explained to them. Such a perception may therefore create lack of interest or even resistance on the part of smallholders and the preliminary stages of the transfer process are the most critical. It might in fact be useful for the government to subsidise farmers at least temporarily (Perry *at al*., 1997) as this will convince them that the whole point of the exercise is not to unload costs from the public to the private sector.

It is however, often argued (WBI, 2003) that there are also advantages for the farmers themselves and most authors do agree that this is ultimately the case. For example, it is held that, since irrigation schemes administered under Participatory Irrigation Management are run by people who are permanently based in the area and know well their fellow irrigators, it will be easier to avoid serious problems and disputes as well respecting local customs and the social structure of the community. Farmers also have the direct incentives to manage irrigation water in a productive and sustainable manner and another advantage often quoted is that farmers can contribute with their ideas - based on a sound knowledge of the terrain and climate - and their involvement in the design process will later enable them to manage and maintain the system better. Moreover, knowing how the system is constructed will help in repairs later on (WBI, 2003). Even in previously un-irrigated areas, farmers have detailed knowledge of property rights, stream-flows, cropping patterns and other factors, all of which are important in planning irrigation schemes. Thus, participatory approaches offer an opportunity to combine this knowledge with the technical and financial resources of the national irrigation agency.

Another advantage, and a very important one in some situations, that participatory schemes may bring to farmers is not often mentioned in reports. In many countries, the public sector is rife with corruption and incompetence and this is reflected in the failure to manage and allocate water resources properly (Perry at al., 1997). The drive towards privatising irrigation systems stems also from this fact (Seckler, 1993) and this also helps to explain why farmer-managed systems are more cost-efficient. In short, both governments and farmers stand to gain from the new arrangement.

In theory, the fact that local communities are given the authority to manage the irrigation systems on which their food production depends should give them some degree of empowerment but, as we shall see later on, there are certain conditions which have to be satisfied for this to happen.

CULTURAL ASPECTS OF WATER MANAGEMENT AND IRRIGATION PRACTICES

Most national agencies have been set up according to Western-style professional management criteria or, at least, try to achieve such a status. There are two basic assumptions that dictate how such organizations usually set their priorities (Belshaw, 1967) :

- any action has to maximise the achievement of a goal;
- any decision has to be based on a rational calculation of economic advantages and costs

Accordingly, all types of behaviour or perceptions which do not meet these two conditions are dismissed as irrational and of little practical value. One has to say that, originally, these assumptions were part of an abstract model devised to explain the stimuli that trigger human behaviour. However, as they were applied to practical situations by Western theorists, they became influenced by a Western way – one might say an industrial way - of conceiving the environment and valid only in industrial-type situations. Anthropologists found that this was a serious limitation to the potential universality of the model because research has shown that the aspirations and needs of many rural communities – even around the Mediterranean - do not fall within such boundaries (Belshaw, 1967).

Moreover, one must not assume that the priorities and goals of national policy-makers are necessarily the same as those of local farmers. National policy-makers often base their decisions on strict economic calculations while local communities may and often do have other concerns and values. In order for a Participatory Irrigation Scheme to be successful, it is necessary for the goals of national policy-makers and those of local communities to coincide or, at least, be not too distant from each other.

It will therefore be useful, when considering the transfer of irrigation management, to study the peculiar characteristics of local agricultural practices as these may have special implications for the

structure and management styles of the institutions required to administer them. Local agricultural organizations are often quite different from 'mainstream' institutions built on a Western industrialised model (Bottral, 1981).

A study about participatory irrigation management in Indonesia (Bruns and Soelaiman, 1992) concluded that farmers took little responsibility for the operation and maintenance of irrigation systems because the government-built systems did not meet their needs. Furthermore, farmers felt that the systems belonged to the government and, according to Indonesian law, systems built or improved by the public sector did in fact belong to the government. The researchers recommended therefore that farmers be involved in the planning and implementation of new irrigation projects.

An aspect that shows just how different the mentality of local communities may be from that of centralised agencies is the way that they look upon the economic implications of using water resources as a raw material. One must realise that, sometimes, farmers who are making use of water supplies to irrigate their crops might not even be aware that they are somehow changing the natural resource situation (Thomas, 1956). After all, the view of water as a natural resource has been developed by professional economists and is not necessarily shared by smallholders and traditional for whom agriculture is a way of life rather than a production process in a capitalist sense. As Perry *et al.* (1997) state, the notion of water as an "economic good" is a very recent one and arose at the International Conference for Water and the Environment held in Dublin in 1992. It was conceived as a compromise between those who asserted that water is just another private good, subject to the laws of the market, and those who held that it is a basic human need that should be exempt from market pricing and economics.

It is a fact that in most cultures, water is associated with life rather than with profit. Water is the source and giver of life and for this reason is often viewed as a basic need - a human right - more than an economic resource. (Rathgeber, 2003). Moreover, some rural communities may look upon certain resources such as water, soil and even living organisms as "gifts" of nature that cannot be given a financial value. This obviously conditions the way that farmers look upon, not only the water supply situation but even the whole concept of agriculture, and any attempt to involve them in the running of large-scale irrigation and water-use schemes must take note of this vision if and when it occurs.

FARMERS' ORGANISATIONS

Most of the benefits that come from the involvement of farmers in the planning and running of irrigation schemes depend on whether there exist solid organizations that will represent farmers and coordinate the work needing to be done. Participatory Irrigation management implies the establishment of an organization of water users. There is also the implication that farmers possess sufficient technical knowledge to play a part in such projects. This is not always the case and the first step to obtain farmer participation is to devise institutional means – for example setting up committees – to bring the all stakeholders together to plan jointly (Vermilion and Brewer, 1996). The challenge of creating a new organization of users is perhaps the most central feature of the management transfer process. The act of management transfer from the agency to the users depends upon a user organization that is capable of assuming those management responsibilities.

CONCLUSIONS

All these and other considerations show that the setting up of a Participatory Irrigation Management scheme that may appear to an engineer or policy-maker to be a simple administrative and logistic measure can actually be a complex operation with far-reaching social consequences. The type of privatisation or participation has to be tailor-made for each situation. In general, this should be a combination of approaches that first of all satisfies basic needs criteria and secondly optimizes the economic returns (Perry *at al*. 1997). It is now widely accepted that there is no single ideal or universal structure which is best for all circumstances. This is well-expressed by Handy (1993) who states that "most modern theories of organizations are increasingly persuaded of the wisdom of the appropriate, of the match of people to systems, to task and environment, of interrelations between all

four, of what has come to be called the systems approach to management theory."

Since there is therefore no single pattern of organization – centralized or decentralized – one has to take note of possible solutions that are suitable for each situation. One of the most important options to be considered is the extent to which a central agency relinquishes its authority to one or more local NGOs. The degree of concentration or dispersal of responsibility which is appropriate to any given situation varies considerably from one case to another. There are technical reasons and 'human resource management' for this. The technical factors include for example a shortage of water which places restrictions on the irrigated acreage and the type of crops grown by the farmers. The control of pests may also require the establishment certain rules for crop rotation. In all these cases there is an manifest need for a central agency with enough authority to take and enforce decisions over a wide area. When it comes to human resource potential it is more difficult to judge the extent to which responsibilities should be devolved to farmers. Where the management capacity of farmers is low, it is appropriate for the official agency to assume direct responsibility for a relatively large number of functions. As the farmers' experience and capabilities for group action increases, more functions and responsibilities can be passed over to them.

However, some authors claim that the role of a central agency depends not only upon the available human resources but also on the size and extent of the irrigation project. There is "a certain point along the spectrum of size above which the level of performance can be expected to decline if executive responsibility for operating and maintaining the system is left exclusively in the hands of the farmers themselves" (Bottrall, 1981). Precisely where this threshold or upper limit is fixed depends on a number of factors such as the simplicity or complexity of the technology concerned, the abundance or scarcity of the water supply and the social cohesion of the communities involved.

The last factor is likely to be heavily influenced by the nature of the system's origins. If it is a system that has been set up by the farmers themselves and was subsequently maintained and operated by them the motivation to act cooperatively is much more strongly developed than if the system was constructed by government.

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