Multi-Stakeholder Platforms (MSPs) in Water Resources Management: Some Issues and Suggestions

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"How to Split the Baby: King Solomon's Wisdom on California's Water" was the title of Dr. Sanjay Pahuja's talk in Bangalore[1], on the water conflict in California and the mechanism to resolve it. Be it Krishna, Narmada or Cauvery – river waters are a contested ground in India, full of complexities and a welter of contending parties. Confronted with two women both laying claim to the same child, the wise King Solomon in the biblical story ordered the child to be cut in half and shared, and observed each woman's reaction to determine who the true mother was. Of course, babies are not divisible; but waters are.

And fights over waters take us back to historic times. According to the *Goutama Buddhar Kappiyam*

> "When the Sakiyas and Koliyas waged a terrible war
> About sharing the river Rohini,
> Blood, gushing like a spring, flooded the waters,
> The Buddha, coming to know of it,
> Did what was needful
> To end the long-drawn discord and
> To bring both sides together.
> All shall be well if good men try." [as cited in Guhan, 1993]

Good men still try but the conflict rages on: Replace the river Rohini with any of our rivers, and the Sakiyas and Koliyas tribes with the riparian states or groups and users around that river. Except that while the Sakiyas and Koliyas abound, there is no Solomon or Buddha in our midst. There is much self-interest but little wisdom, very little of Buddha's "self-enlightenment" about the issue – the enlightenment of the people themselves. The role of Multi Stakeholder Platforms (MSPs) needs to be seen in this context – as forums in which different stakeholders have the space to articulate their concerns and then come to negotiated settlements. In other words, MSPs need to be seen as decentralised, institutions of self-governance not entirely dependent on the state or its agencies for all their wisdom, especially in the sphere of arbitration of disputes and resolution of conflicts.

There would probably be little difference of opinion about the need for multi-stakeholder platforms in integrated water resource management when viewed as institutions for a democratic dialogue between different stakeholders and more

[1] Dr. Sanjay's Pahuja's talk was organised by Centre for Interdisciplinary Studies in Environment and Development (CISED) in November 2002 at Institute for Social and Economic Change (ISEC), Bangalore.

specifically the more direct ones, the users themselves. The difference would be more likely to lie in the details, for example, the circumstances in which these platforms can function effectively or the preconditions for their success. This reminds us of Uphoff's statement in the context of natural resource management: `the question is no longer whether decentralised collective action can be effective, but under what circumstances it is appropriate . . . '[as cited in Lele, 2002].

Water as an ecosystem resource and its characteristics

The necessity of MSPs, to a great extent, is related to the very nature of water as an ecosystem resource and its characteristics. Some of these important characteristics are as follows:

(1) Water, as we said in the beginning, is divisible and amenable to sharing.

(2) It is a common pool resource. While this is true of all forms of water it is presently clearly accepted only in respect of surface water. Presently groundwater falls predominantly within the private property regime, though there is an increasing awareness of the need to treat it as a common pool resource and manage it accordingly.

(3) It has multiple uses and users and there are resultant tradeoffs involved.

(4) There is the inherent problem of excludability. Often the exclusion costs involved are very high.

(5) It involves the issue of scale and boundaries and evolving some understanding around them. For example, what does one call local and exogenous, downstream and upstream, and what are the relationships between these entities?

(6) The way water is planned, used and managed causes externalities – both positive and negative. And there is the added possibility that some of the externalities may be unidirectional.

The purpose here is not to make an exhaustive list but to point out some of the important characteristics of this resource that would have a bearing on the institutions, related to it[2]. These characteristics also have certain other immediate fallouts. One, they have the potential both, to become an instrument of equitable and sustainable prosperity for all those who depend directly or indirectly on water for their livelihoods as well as to trigger contention and conflict thus becoming an instrument of polarisation and exclusion. To quote from the recently published WCD Report, "The unfolding scenario for water use in many parts of the world is one of increasing concern about access, equity and the response to growing needs. This affects relations between rural and urban populations; upstream and downstream interests; agricultural, industrial and domestic sectors; and human needs and the requirements of a healthy environment" [World Commission on Dams, 2000]. In terms of scale these conflicts

[2] In fact there is considerable amount of literature available on some of these, especially about common pool resources, their defining characteristics and the `fit' between these characteristics and the institutions to manage them. Lele, 2002 summarises some of these discussions and debates.

range from conflicts between micro watersheds to river basins and from riparian states to nations. No wonder many predict that the third world war, if it takes place -- and one hopes it does not -- would centre around the issue of water.

Second, given all this, it follows that we need to design institutional mechanisms and social arrangements, which can regulate the actions (and non-actions!) of the different stakeholders. While designing such mechanisms -- and we believe MSPs are one such mechanism -- we also have to make efforts to appropriate the positive synergy that is possible between the state and its agencies, the different users and their representative organisations and also perhaps the wider civil society organisations and the market, especially in the context of the private property regime that exists today in the water sector.

User participation: The need to go beyond the present day concept of PIM

There is also now an increasing recognition that user participation as a from of direct democracy is essential for efficiency, sustainability and equity both as a normative principle and as a functional tool. Very often institutions are seen more from the point of view of efficiency. However, in the context of water, the experience so far has been limited to joint management institutions like Water Users'Associations (WUAs) that are primarily institutional arrangements between the state and a single type of user or use, basically the irrigation water users. Here too, the operational unit is generally a minor-level command area within the distribution system, though of late there has been talk about federating such WUAs. Thus, by design the present-day WUAs are an institutional mechanism for participatory irrigation management (PIM) that is supposed to perform a limited role. The issues that are unfolding today in respect of water which are rooted in or emanate from the various characteristics described earlier cannot be properly addressed within the framework of such joint management institutions. Also, on the larger scale, as in the inter-state river disputes that are on the increase, there has been a demand and there is also a provision in the Constitution to constitute River Boards or River Basin Authorities, but they are primarily constituted by the state and more or less imposed from above. There is a need to go beyond both these forms (single focus joint management institutions and the top down, centralised River basin organisations) and evolve forums for inclusive dialogue, negotiations and settlements. MSPs could fit the bill as they can provide the necessary space for all the direct and indirect stakeholders can come together and function within the framework of deliberative democracy [SOPPECOM, 2004].

Nested, multi-layered MSPs

There is also the debate about the need for `nested' institutions, multi-layered institutions as against the single-point joint management institutions[3]. This is valid in the context of MSPs too. If we have to address issues like scale, positive and negative externalities and the unidirectional impacts of water, then it is best to design MSPs at different scales and eco-system units (like micro watershed, sub-watershed, watershed, river basin, etc.).

[3] For a detailed discussion see Ostrom, 1990 and Lele, 2002.

The experience of MSP-like processes in South Maharashtra

For the past many years Society for Promoting Participative Ecosystem Management (SOPPECOM) has been working in the water sector and has initiated MSP-like processes around many specific issues. Sometimes this has taken the form of a bilateral or a multi-lateral dialogue between the major stakeholders and though it has not often led to the establishment of a formal MSP, MSP-like initiatives have constantly emerged. Mention may be made here of the mutual interaction between Shetmajoor Kasdhtakari Shetkari Sanghatana (SKSS) – the farmers' movement in South Maharashtra, SOPPECOM and the State Government and Departments where SOPPECOM has attempted to play the role of initiating an MSP-like process around specific issues and projects. The more notable examples are the Chikotra valley issue, the Uchangi dam issue and the Tembu Lift Irrigation Scheme. SOPPECOM has played an important role in initiating MSP-like processes on all these issues.

In Chikotra valley the movement led by the local NGO, Shram Shakti Pratishtan (SSP), is demanding an equitable access to the water from the Chikotra dam for all upstream areas. This has brought in the displaced as well as the upstream farmers as stakeholders into an MSP-like process. A process of continuous interaction is ongoing between the Chikotra valley farmers, the classical command area farmers, the displaced, the government officials and ministries as well as noted irrigation experts. SOPPECOM helped SSP and the local farmers in articulating this alternate demand through study, capacity building and also in participating in the dialogue with the government officials. In the case of the Uchangi dam, the farmers in Uchangi were opposed to the dam because of submergence and also because they felt that the same objectives could be achieved by smaller dams at different sites. Here too SOPPECOM helped initiate and maintain an MSP-like process where there was an effort to reconcile the stakeholder interests. A compromise solution of a dam with reduced height[4] was accepted as an interim solution.

The issue of the Tembu Lift Irrigation Scheme (TLIS) is perhaps the one that comes closest to an MSP. The TLIS is a large lift irrigation scheme that will irrigate 79,600 ha in South Maharashtra by lifting water from the Krishna river. It involves many important issues. SKSS, the South Maharashtra movement, has demanded a restructuring of the scheme to ensure equitable access to all farmers in the drought prone region through which it passes, including local lifts wherever needed. The other issue is the cost of energy that is involved in lifting the water, of how it is to be paid for, and what is to be the cost. With the help of the International Water Management Institute (IWMI) supported study on co-management of energy and water [Joy and Paranjape, 2002], SOPPECOM held a series of two meetings of all the stakeholders involved: the farmers and their leaders, the irrigation officials, the ministry representatives, the electricity board officials, the renewable energy development

[4] The government agreed to reduce the height by 2 meters and only then the local people allowed the government to start the construction. This reduction by 2 meters would help in reducing the submergence thus saving most of the houses in the village settlement. The government also agreed to construct another smaller dam to make for the reduction in the storage at Uchnagi. However, the recent report from there indicate that tension is already brewing in the area because the government, without taking into confidence the local people and the organisation, is planning to raise the height by 2 meters, thus going against the consensus reached earlier.

agency for the state, environmental groups, and other experts and interested groups drawn from civil society. The meetings were very helpful in facilitating and extending the understanding between various stakeholders. In multi stakeholder participation, `even the process, the type of interactions between some of the stakeholders and the socio-political capital it generates are also important' [Connick and Innes, 2003]. Since then the government has started joint exploration of the possibilities of restructuring the scheme for equitable access for all farmers in the Atpadi taluka portion of the scheme on pilot project basis. The farmers on their part have shown readiness to take over the scheme, pay full water charges in advance every season and pay the full electricity charge provided they are charged on rates on par with all other farmers.

Necessary conditions for taking multi-stakeholder processes ahead

Based on our experience so far, we feel that there are a few aspects that need urgent attention if MSP-like processes are to graduate to meaningful, stable MSPs and become institutions of water governance. MSPs will need to take into account 1) the heterogeneity of stakeholders and give proper attention to it, 2) take prior rights and context of MSP formation into account, 3) the complexity of water as a resource, 4) will have to be informed by an innovative approach to water sector reform that will allow accommodation of different stakeholder interests, 5) will need to be supported by access to reliable data, information and decision support systems and, lastly, 6) the presence of a committed support and resource agency. These points are briefly discussed below.

1) The heterogeneity of the stakeholders

Heterogeneity is a term, which includes both horizontal difference and vertical differentiation and exploitation and very often the way the term is used creates confusion between the two. It manifests itself in different forms and ranges from information asymmetry to unequal relationships, closeness to or distance from power and the state, in different levels of organisation, of numerical strength, of bargaining power, of access to resources, to information and to legal or other remedial actions. The issue is that of creating a level playing field so that the different stakeholders can participate in the process on an equal footing and that issue has to be addressed in MSPs.

Probably the first thing to be done is to distinguish between different types of stakeholders and to define the exact relationship that the different stakeholders have with water. In short, this means working out a typology of stakeholders in the context of water. As a first step, a distinction could be made between the direct stakeholders and the indirect ones. The direct stakeholders in a quantum of water may be identified as the ones who depend on the use o that water for their livelihoods, whether directly or indirectly. It could include agriculturists, labourers, pastoralists and shepherds, fishing communities, craft persons, women, etc. In this context water use that entitles persons to become direct stakeholders may include water for drinking and domestic use, for cattle, for agriculture, for industries, for craft-based production systems, for recreation, etc. There is also a need to explicitly acknowledge the persons displaced as

a consequence of water related projects as direct stakeholders and as a separate category of stakeholders with full right to be involved in the MSP processes. There is now an increasing awareness that the ecosystem requires a minimum water use and there is a need for basically keeping certain portion of the flows and storages unbound and `unutilised' so that the river systems, ponds, lakes, etc., can perform their ecological functions and services. The ecosystem therefore needs to be treated on par with direct stakeholders.

After this come the indirect stakeholders like the state and its different agencies, civil society organizations and groups, professionals, experts, and others who may be related to water from the point of its `governance' rather than direct use. Here the term governance is used as an umbrella term including all aspects like water resource planning, source creation, distribution, regulation, cost recovery, and the like. Depending on the specific context and scale, the composition of both the direct and indirect stakeholders could change. Once we identify the different stakes and the respective stakeholders within a specific context and scale, it lays the ground for other processes: the actual process of negotiations, different roles, norms of access, prioritisation of water use, how and where to apply cuts in scarcity situations, how to price water for different uses, etc.

2) The context of MSPs

MSPs do not function in a vacuum; they are not a case of *tabula rasa*. For example, different users already have access to certain amount of water at certain costs and, however unequal that may be, certain prior rights may already be established. Second, stakeholders are already enmeshed in pre-existing relationships and negotiations that may have taken place or may be going on both within the direct stakeholders themselves and also between the direct and the indirect stakeholders, especially and more importantly, with the state and its agencies. Sometimes these existing relationships, especially those unequal relationships within the direct stakeholders and with the state and its agencies and those giving rise to rent seeking, may become a hindrance for the functioning of MSPs. Third, is the issue of initiatives that the state may come up with – for example, the national and state water policies, or other policy initiatives like participatory irrigation management, or bringing in regulatory authorities in the water sector. How do the MSPs respond to these initiatives? Are MSPs bound to function within these frameworks or are they supposed to change the framework itself and shape these initiatives? In short, what is the exact nature of the relationship between the MSPs and the state initiatives is a question that is of great relevance. It is important in this respect to define the boundaries of MSPs and also to understand their limitations.

In Maharashtra, during the last couple of years the state has taken a number of such initiatives. The first of such initiatives is the enunciation of the principle of equitable water access. When the present Congress led coalition government took over the reins in Maharashtra a few years ago, the coordination committee of the parties supporting the government issued a 51-point Common Minimum Programme (CMP) in which the very first point talks of equitable water distribution on the basis of population. It is perhaps for the first time that such a progressive looking initiative has come from the state, and it is undoubtedly the strong mass movement for equitable access to water, especially in the south Maharashtra, that has forced such a declaration. However,

when there have been pressures from below to implement the decision in grassroots contexts, the government has backtracked on this promise citing various practical and procedural difficulties including prior rights and established different treatment to different areas, though taking care not to reject the principle in toto.

Similarly, in its second initiative, taken soon after its inception the government had declared that individual permits to lift water from storages and streams would not be granted and permission would be given only to collective entities like user groups and co-operative societies. Here again, as shown by the experiences of Chikotra valley in Kolhapur district, the government has first shown lack of seriousness in implementing it, and has recently, backtracked completely and freely allowed individual lifts.

The third initiative is the issue of passing the Maharashtra Farmers' Participatory Irrigation Management Act, 2002 known as the PIM Act. The effort has been to water down its provisions and reduce the scope of its application.

The fourth is the Maharashtra State Water Policy (MSWP) issued soon after the Central Government came up with the National Water Policy (NWP). Unlike the CMP, the MSWP does not talk about equitable access to water, which is nevertheless part of its common minimum programme CMP). The policy (MSWP) also mentions tapping private resources and parties for developing water sources without necessarily clarifying whether this includes privatising water rights and the water source itself, or merely the privatisation of service delivery, leaving open a backdoor entry for the privatisation of water sources and rights.

The fifth initiative is the drafting of the proposed Regulatory Commission for Water Resources known as the Maharashtra Water Resources Regulatory Authority Act. Here the government tries almost to wash its hands off from all decisions in respect of the water sector and practically hands over all these powers to a one-person Regulatory Commission thereby taking the whole thing out of the political and socio-economic space in which contestation and negotiation has so far being taking place. The present draft has an inherent tendency to centralisation. For example, any party aggrieved by any decision of the Commission has to approach the High Court for redressal sending every petty complainant to the state capital to seek justice! The present draft also does not provide a framework within which the Commission has to operate and arbitrate on policy issues like water access and rights, pricing, etc., that properly speaking lie in the political sphere.

And the most recent `initiative' is the loose talk of `auctioning' of water to the highest bidder. Jayant Patil, the Finance Minister of Maharashtra, in an interview to the Marathi daily "Sakal" has talked of `auctioning' water rights (sic!) to private parties -- he says that `the youth of today needs some business and taking *maktas* (monopolies) of water management will be a good opportunity for them to earn their livelihoods'.

What these initiatives collectively show is that, firstly, there is all-round confusion and lack of serious thinking on the issue. There is a lack of coherence in the approach of the government. The second implication is that the government is seriously thinking of privatising water and if this happens, then, the logic of the game will change drastically. The question is where do the MSPs fit in, especially in a privatised mode of operation.

3) The complexity of water

Water as an ecosystem resource is a very complex resource. The complexity comes from different sources. One is the nature of the water source itself – whether it is surface water or groundwater -- and the modes of utilisation like surface irrigation versus lift irrigation. The second is the property regime around this resource. In India, though ultimately the state is the `owner' of water, the property regime operates differently in different kinds of situations and grassroots contexts. Perhaps the most general of these is the difference between surface water and groundwater. Surface water is still seen and managed to a great extent as common pool resource. However, in the case of groundwater, private property regimes operate strongly and there are not many rules or laws regulating its use. The third is the question of scale – water sources can be small, local sources to large, major projects and also the catchments may vary from micro-watersheds to river basins often cutting across state boundaries. The fourth area of complexity is in terms of different, contending uses and users and the issue of positive and negative externalities, which we have discussed earlier. All these factors add to the complexity of the issues and the MSPs have to address this and devise strategies accordingly.

4) Need for an innovative approach to water sector restructuring

The conventional framework governing the water sector (in terms of the framework for water resource planning, source development, norms of access, etc.) generally is premised on and gives rise to many types of conflicts within the direct stakeholders. There is a conflict between the displaced persons and the beneficiaries; there is a conflict between the agricultural water users and the industrial water users; there is a conflict between the head reach and the tailenders in an irrigation project; there is a conflict between the upstream and downstream; and many more may be identified. There is a need to recognise these conflicts and evolve a strategy that can take care of some of these conflicts. It is only around such a strategy that MSPs may emerge and function effectively.

One of the sharpest conflicts that has come to the forefront in recent years is the conflict between the project affected and the project beneficiaries. The various struggles of the project affected persons, especially those from the Narmada valley affected by the Sardar Sarovar Project (SSP), have highlighted this issue. One of the reasons for this conflict lies in the way we plan our water resources, especially the way we tackle larger sources, like large dams. Because of the way projects are planned today, the total water that is planned to be used is stored behind the dam creating large contiguous submergence in one place. Alternatively one could also plan large sources so that they divert large bodies of water, and instead of storing the water behind the dam, carry the water to widely dispersed areas and store most of the water locally in a decentralised manner within the beneficiary areas themselves. This approach can greatly reduce contiguous behind-the-dam submergence. We have gone into the details of this issue and illustrated how it can be done and what are the implications of the same in our alternative to the SSP [Paranjape and Joy, 1995].

In the alternative approach, as illustrated in the context of SSP, a substantial portion of the behind-the-dam submergence is exchanged with an equal area of local submergence in the service area of the project. There is an independent significance of

every ha of behind-the-dam submergence being exchanged for a ha of local submergence which needs to be discussed and which goes to the heart of the conflict around most of the major projects being floated today. With every such exchange, the proportion of people who are uprooted en-masse reduces drastically. In fact, large, concentrated and contiguous submergence is disruptive not only of people's lives but also of the ecosystem in the area.

Moreover, in the context of local submergence, the project affected do not remain an abstract, remote entity for the project beneficiaries. The project affected people share the daily life of the project beneficiaries. They share the same sources of drinking water, the same *bazars* (markets), the same festivals; they are the same people joined by kin relations to them sharing the same joys and sorrows. This is an extremely important context for rehabilitation. Though nothing can replace the will and the capacity of the project affected to struggle for their own demands and interests, the degree of social amity with which issues can be resolved does undergo a radical change.

It is exactly the opposite in the case of behind-the-dam submergence of large water bodies. Not only are the project affected people abstract, remote entities -- outsiders -- for the project beneficiaries, the division almost always coincides with the divisions between advantaged and disadvantaged social groups, and in a majority of cases between adivasis and non-adivasis (tribals and non-tribals). It becomes a matter of one group bearing losses for the benefit of another. The resistance of the project affected people brings into play all the interests, emotions and prejudices that are dormant and not so dormant between them. Slowly, it turns into a dismal war in which everything goes against the predominantly adivasi people in their struggle against a misconceived project that treats their losses as inevitable losses in the interests of the `country' or `development'.

It is essential to realise that the issue is not submergence *per se*; it is our experience that people are much more rational in working out arrangements in a local context in which the project affected are a part of their daily lives and the gains are palpable. The issue is that of the coincidence of boundaries between the project affected and the project beneficiaries and those between socially advantaged and disadvantaged groups, of the disadvantaged having to bear the losses for the benefit of the advantaged and of that being presented as inevitable losses in the interests of `progress' and `development'.

The second aspect of this alternative approach relates to impact on rehabilitation and to the question where the oustees are to be rehabilitated. It is usual for the project affected, necessarily from upstream areas, to be given land for rehabilitation in the downstream command areas. The objective behind this is laudable enough. They have to be given irrigated land from the same project and it has to be acquired from the beneficiaries. And generally, if the oustees in the upstream areas and the beneficiaries in the downstream command are bound together by ties of kith and kin and culture, there is a favourable environment for tackling the issue, though nothing can finally replace the organised struggle and resolve of the oustees. The less they share, the sharper the conflict becomes, and when these boundaries coincide with the boundaries which demarcate the dominant and the dominated, the better off and the oppressed the problem becomes intractable. The rehabilitation of oustees in the downstream areas

then means not only an uprooting but also their further dispersal and their being thrown into a hostile environment.

Interestingly in south Maharashtra there is a serious effort being made to bring together the two major contending stakeholders, namely, the so called beneficiaries and affected people, under a new demand of restructuring projects on equitable basis and supporting each others' demands. This process needs to be expanded.

5) Access to reliable data, information and decision support systems

One of the preconditions for the meaningful functioning of MSPs is this whole area of reliable data and information. And as things stand in India today this is also one of the weak links in the whole process. Most of the data is collected and managed by the government agencies. The reliability of the data is very often under question[5]. Then there is the question of getting access to it as most of it is under the `secrecy' domain. This is irrespective of the fact that an official Right to Information Act is in place in many states. The inter state water disputes have further complicated matters. So one of the primary tasks is to generate reliable data both through participatory and other scientific methods. There is lot of talk about natural resource data management systems (NRDMS), but there is very little that is being done on the ground to combine various methods of collecting data, synthesising and analysing them and also making them available to different stakeholders in a usable form so that rational decisions and informed choices can be made. In fact agreed upon data is one of the outputs of multi-stakeholder processes [Connick and Innes, 2003]. All these should lead to decision support systems and they should be able to simulate various scenarios in terms of resource availability, resource use prioritisation, and resource use efficiency[6].

Going back to Sanjay Pahuja's talk which we mentioned in the beginning of this paper "How to Split the Baby: King Solomon's Wisdom on California's Water", he goes into the details of one such programme which is being used in California known as New California Water Systems Simulation Model (CALSIM). It is basically a planning model (for comparative "what-if" studies); not intended to be used as a real-time or absolute operations model. It was developed jointly by the state and federal government with active participation of various municipal, agricultural, environmental and power agencies. It is publicly available. It equips users with control of the modelling environment and empowers them to make fast and accurate changes. The model accounts for system operational objectives, physical constraints, legal and institutional agreements and/or statutes. It provides us with historical hydrological conditions, as modified to reflect a given level of development; the physical description of a water system -- dams, reservoirs, power plants, pumping plants, rivers, aqueducts, diversion structures, etc.; the simulation of coordinated operations of agencies; the simulation of environmental regulations and standards; the simulation of delivery decisions; etc. The model includes: decision variables

[5] In the context of inter state river conflicts in India it is said that the contending states keep two stets of data and a particular state uses the set of data which is advantageous to it as per the context. Also it is very often to get access to data where there is such conflicts.

[6] SOPPECOM has developed a methodology for data collection, evaluation and synthesis leading to resource literacy by combining participatory tools like Participatory Resource Appraisal (PRA) and Participatory Resource Mapping (PRM) with more scientific methods. For details see SOPPECOM, 2001.

(allocation of water for in-stream flow, delivery, and storage); objective functions (priority-based allocation of water constraints -- physical, operational, and institutional constraints on the system); and delivery shortage scenarios (applying cuts on each type of delivery until the delivery target is reached). CALSIM applications include: evaluation of project yields; evaluation of projects' water supply reliability under current and future demands; evaluation of projects' water supply under alternative project operation policies (risk curves); implementation and evaluation of environment protection programs; evaluation of future project facilities; evaluation of water supply impacts of existing and future environmental regulations; evaluation of joint operations and water transfer opportunities between agencies; evaluation of water quality and energy impacts of alternative operations; and evaluation of land-use changes (land fallowing, etc.).

The purpose of going into the details of CALSIM is not to eulogise CALSIM *per se*, but to point out that such programmes need to be developed to suit our purpose. However, it needs also needs to be pointed out that they become meaningful given a policy direction and commitment to negotiated settlements and dialogue. Such high-tech solutions cannot replace the necessary social processes, negotiations, conflict resolution and consensus building. They have to serve socially decided goals and not the other way round. And the use of such technological devices and software presupposes certain level of resource literacy, understanding and capability on the part of the different stakeholders. Nevertheless, such tools can go a long way towards exploring different arrangements and alternatives.

6) The need for a support, resource agency

Finally there is the question of how the different stakeholders will come together on one platform. Will they come together spontaneously? Can the state or its agencies do this? Or is there a need for an independent agency like a support organization or agency to initiate and sustain the MSPs?

Our experience of working in the water sector for the last 15 years or so (especially in Maharashtra) shows that there is a need of such an agency. By resource agency we do not mean that there should be an NGO for such a job. It can be a group of professionals like scientists and technologists with a multi-disciplinary character working with the grassroots movement centred around water. In Maharashtra we could develop such linkages and it has helped in developing the perspective as well as the practice. Some of us who are associated with Society for Promoting Participative Ecosystem (SOPPECOM) have been able to associate with this process. Even before the formation of SOPPECOM, this process had begun, from about 1984-85 and some of the recent initiatives have been discussed under the sub-heading "The experience of MSP-like processes in South Maharashtra" above. Our experience shows that such a group of people or agency can contribute to the process of dialogue between different stakeholders and help them make informed choices. Some of the inputs they could provide could be as follows:

(1) Initiating participative experimentation and helping the local organization and the people in evolving certain scientific principles of water use, demonstrating certain methods and practices that would enhance water use efficiency, productivity, etc., and also evolve norms for water access. One example of this

was "The Wasteland Integration Research Programme" – a study of foodgrain productivity in small plots and biomass productivity in wastelands[7].

(2) Taking up pilot projects or action research projects. There are many examples of this. One of them is the SOPPECOM effort in setting up the first WUA in Ahmednagar district in Maharashtra and later trying to scale up under different situations with different emphases like vertical scaling up, incorporating equity, conjoint use of ground and surface water, etc.

(3) Research studies on issues like deprivation, tailender problem, or co-management of water and energy in the context of high lifts on Krishna. The latter study on co-management helped in getting most of the stakeholders together for two meetings and trying to build up a preliminary consensus among them. It also helped the local organization in articulating its position in the case of Tembu Lift Irrigation Scheme, especially so the users have offered to take over the system and manage it.

(4) Helping grassroots organizations by carrying out participatory studies along with them and helping them come up with alternative plans to those put forward by the government. A further role would be to help them conduct a fruitful dialogue with the government. Examples of these are the cases in Kolhapur district of Uchangi dam and the Chikotra valley. In the case of Uchangi dam, SOPPECOM helped to develop an alternative proposal; though the proposed alternative was not accepted in toto, the height of the dam was renegotiated. In the Chikotra valley an innovative equitable access scheme for the valley is in the process of being negotiated.

(5) Collecting data and information as well as getting access to government policy documents, processing them and making them available in an understandable and usable form to local organizations and organizing debates around them.

(6) Last, but not least, also taking up activities related to resource literacy, capability building of the local organizations and user groups, etc.

There could be many other roles the support organization can play to further the effective functioning of MSPs and grassroots organizations. For us it has been a mutually beneficial experience and the last 15 years of such collaborative efforts has led to the development of a holistic perspective on water and also the innovative concepts related to integrated planning of local and exogenous water, sustainable and regenerative use, equitable access, user participation, mutual conditions and responsibilities. This perspective could then be taken back and rooted into the mass movements, not limiting itself to what is very often happening under the name of stakeholder participation and dialogue which is a group of urban NGOs and a few farmers and other direct stakeholders sprinkled here and there. In South Maharashtra, as described earlier, we find two key factors, namely science (in the form of studies, participatory resource mapping, alternative planning, etc.) and the strength of the

[7] This was a five-year (1986 to 1991) action research project taken up by Centre for Systems Analysis in Development (CASAD). This was an attempt to understand the foodgrain and biomass productivity under low input (both water and nutrients) scenario in drought prone regions and also to understand the inter-relationship between the crop production and biomass production in wastelands. SOPPECOM actually grew out of CASAD.

toiling masses coming together to open up space for a meaningful multi-stakeholder dialogue. In fact, MSP-like processes have, in South Maharashtra, led to a visible process in which thousands of people are getting organized on issues vital to the restructuring of the water sector. There is a need to build on this interrelationship.

Selected References

Connick, Sarah and Judith E. Innes (2003). "Outcomes of Collaborative Water Policy Making: Applying Complexity Thinking to Evaluation", Journal of Environmental Planning and Management, 46(2), 177-197, Carfax Publishing.

Guhan, S. (1993). The Cauvery Water Dispute: Towards Conciliation. Madras, Frontline.

Joy, K. J. and Paranjape, S. (2002). Energy-Water Co-management Opportunities and Challenges in the Tembu Lift Irrigation Scheme, Atpadi Taluka, Maharashtra. Pune, SOPPECOM.

Lele, S. (2002). Beyond state-community polarisation and bogus "joint'ness: crafting institutional solutions for resource management. 50th Anniversary Conference on "Globalisation and Poverty", The Hague, Netherlands, The Institute of Social Studies.

Mollinga, Peter (2001). Power in Motion: A Critical Assessment of Canal Irrigation Reform with a Focus on India. Working Paper/Monograph Series, 1, New Delhi, Indianpim.

Ostrom, E. (1990). Governing the Commons: The Evolution of Institutions for Collective. Cambridge, Cambridge University Press.

Paranjape, S. and K. J. Joy (1995). Sustainable Technology: Making Sardar Sarovar Project Viable. Ahmedabad, Centre for Environment and Education.

SOPPECOM (2001). SOPPECOM Approach to Natural Resource Data Management Systems. Mumbai/Pune, SOPPECOM.

SOPPECOM (2004). Participatory irrigation management: An overview of issues and the way ahead. Paper presented at the WALMI-SOPPECOM joint workshop organised at WALMI, Aurangabad on 2-3 July 2004.

World Commission on Dams (2000). Dams and Development : A New Framework for Decision Making. London & Sterling, Earthscan.