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PEOPLE'S PARTICIPATION IN MANAGING COMMON POOL NATURAL  
RESOURCES : LESSONS OF SUCCESS IN INDIA

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ABSTRACT

This paper presents a critical review and analysis of five selected successful cases of common pool natural resources management in India and, based on the analysis done, identifies major determinants of people's participation in development and management of common pool natural resources. The term, people's participation, is used to mean the act of partaking by local people in all stages of common pool natural resources development and management programmes right from designing of various resource development and conservation structures through monitoring and evaluation of their performance and impact. The case study method of research was used to explore the major determinants of people's participation. The findings of the research are generalised to the theory of collective action as developed by Mancur Olson (1971) and James M. Buchanan and Gordon Tullock (1965).

The five success stories selected for the study were : the Parwara Van (Forest) Panchayat in Uttar Pradesh, the Arabari Experiment in joint forest management in West Bengal, the Ralegan-Siddhi project in micro-watershed development in Maharashtra, the Sukhomajri project in micro-watershed development in Haryana, and the Mohini Water Co-operative in Gujarat. The case study revealed that the major determinants of people's participation in development and management of common pool natural resources were : substantial excess of expected private benefits from participation over the expected private costs of participation; high stakes of local people in the resource(s), organisation of local people in small groups; honest and good local leadership, existence and enforcement by the people involved of rules for regulation of resource use and for fair and equitable distribution of benefits from collective action; legal back up of the rules; involvement of non-governmental organisations in organising, educating, training, and motivating the people; and willingness and ability of government to provide needed financial and technical support.

## Introduction

People's participation has become a rhetoric these days in India and other developing countries. Participation connotes different things to different people. In common parlance, it is used to mean an 'act or fact of partaking' or 'sharing in'. According to Banki (1981 : 533), participation means "a dynamic group process in which all members of a (work) group contribute, share, or are influenced by the interchange of ideas and activities toward problem-solving or decision making". In this paper, we use the term to mean the act of partaking by local people in all stages of common pool natural resource development and management programmes right from designing of various resource development and conservation structures through monitoring and evaluation of their performance and impact. People's participation thus defined requires, among other things, that the target group of people voluntarily spend their time, energy, and money on the programme and adopt the recommended resource development measures and management practices and maintain them in good condition on a sustained basis.

By a common pool natural resource we mean any natural resource that is used in common by an identifiable group of people and whose use is subtractible, i.e., every user of the resource reduces the quantity of the resource available to other users in the group. In this paper, our focus is on the common pool natural resources of land, water, and forests.

The watershed management approach facilitates successful and cost-effective development and management of common pool natural resources. This is so because all the resources in a watershed irrespective of whether they are owned privately, publicly, or collectively by local people, are interdependent and therefore interact with one another. If something is done to any one of the resources, it is bound to have implications for all the other resources in the watershed. The watershed management approach requires that every field/parcel of land located in a watershed be treated with appropriate soil and water conservation measures and used according to its physical capability. For this to happen, it is necessary that every person having land in the watershed accepts and implements the recommended watershed development plan. There are some components of a watershed development plan such as bunding, levelling etc. which can be implemented by the farmers involved acting individually and there many other items such as check dams, waterways etc. that can be implemented only through collective action of the farmers. This means that for successful implementation of a watershed development plan, people's participation is necessary for action on their individual farms as well as on common property land resources in the watershed. Of the five successful cases analysed in this paper, two relate to micro-watershed development and management, two to management of natural forests, and one to management of canal water.

Like most other agricultural and rural development programmes in India, common pool natural resources development programmes also have suffered due to inadequate people's participation. Therefore, it is necessary for successful implementation of such programmes that the factors affecting people's participation in them are identified and necessary measures for securing their needed participation adopted. This paper is a modest attempt at identifying major determinants of people's participation in the programmes of development and management of common pool natural resources of land, water, and forests.

### A Theoretical Framework

There is no universally valid theory of people's participation in development programmes. What we have is a set of propositions stating the conditions under which people participate and do not participate in collective action. Since all development programmes in general and watershed development programmes in particular entail some collective action on the part of their target group, factors affecting collective action also influence people's participation. In other words, determinants of people's participation constitute a bigger set of which determinants of collective action are a subset. We shall use the theoretical approaches to collective action developed by Olson (1971) and Buchanan and Tullock (1965). According to these and other similar frameworks, people will participate in collective action when they are organised in small groups; when the expected private benefits from the collective action exceed the expected private costs of participation; and when rules for preventing free riding and shirking and ensuring equitable sharing of benefits and costs of the collective action exist and are enforced and monitored by the people themselves (Singh, 1991 : Ch. 2). In this paper, we seek to generalise and expand this theoretical approach using the case study method of research.

### Methodology

The case study method of research was followed to achieve the objectives of the study. According to Yin (1984 : 23), " A case study is an empirical inquiry that investigates a contemporary phenomenon within its real life context when the boundaries between the phenomenon and the context are not clearly evident; and in which multiple sources of evidence are used". In general, the case study method is preferred to other methods of research when the researcher is interested in answering "why" and "how" questions, and when he/she has little control over the factors that affect the phenomenon to be studied. Results of case studies, like those of experiments, are generalised to theoretical propositions and not to populations or universes. In this sense, the goal of the case study researcher is to expand and generalise theories and not develop new theories. Of the four types of commonly used case study designs, we chose the holistic multiple-case design (Yin, 1984 :41-53). In this design, we have a single unit of analysis and multiple cases. Following this design, we chose five cases for in-depth study and analysis. The unit of analysis was the project under study.

There is no universally acceptable measure or index of people's participation that could be used to evaluate resource development programmes in terms of people's participation. One could use as crude measures of participation such parameters as proportions of the target group of people who participated in various stages of a programme, who adopted various recommended measures and practices, and who expended their time and money on participation in collective action required for resource development and management on a sustained basis. We used information collected from published and unpublished documents and through the Key Informant Technique (KIT) to assess the extent of people's participation in the selected projects (Trembley, 1982). Following KIT, we asked selected knowledgeable local people and representatives of governmental and non-governmental organisations associated with the selected projects to rank people's participation as low, medium, and high in terms of these parameters.

### **India's Experience**

In India as also in other developing countries of the world, the government today is the single biggest actor in the field of development and management of common pool natural resources. That is why we talk of people's participation in (government-sponsored) resource development and management programmes. According to one of the schools of development scholars and practitioners which is now gaining currency all over the world, the traditional roles of government and people in development should be reversed. That is, people should prepare their own development programmes and the government should participate in those programmes by way of financial, legal, and technical assistance. This seems to be a difficult but desirable goal worthy of serious pursuit. Until that goal is achieved, we should contend ourselves by enlisting increasingly higher participation of people in government-sponsored resource development programmes and by empowering them to initiate their own development programmes. In India, in recent years, we have made some progress in both the directions, i.e., local people taking initiative and preparing their own programmes for development and management of common pool natural resources and the government departments/agencies trying to enlist local people's participation in resource development programmes. A brief review of five of the successful efforts made in both the directions is presented below, a profile of the selected cases is presented in Table 1 and a summary of the key determinants of people's participation identified from the analysis of the cases in Table 2.

### **The Parwara Van (Forest) Panchayat Experience**

The Van Panchayats (VPs) in Uttar Pradesh hills represent one of the oldest people's institutions in India formed for promoting co-management of natural forests by people and government. VPs were constituted by the government under the Indian Forest Act 1927 in response to people's protests and agitations that followed the settlements and reservations of forests in the Uttar Pradesh hills at the turn of the last



century. Till 1865, local people had unrestricted rights in the use of forest resources except as and when some forest produce was to be exported. The local people protested and agitated against the extension of government control over the forests in the region. Consequently, the government agreed to allow people to form VPs to protect and manage the forests in the areas where local demand was heavy. The Van Panchayat rules were originally framed in the year 1931 and later revised in 1972 and 1976. As of 1985, some 4,058 VPs had been formed in the hills of Uttar Pradesh. Although the formation of VPs started in 1931, the process is still on (Ballabh and Singh, 1988a and Ballabh and Singh, 1988b).

The Parwara village falls within the administrative jurisdiction of Nainital district in the Uttar Pradesh Hills and is situated about 50 km away from Nainital city on the Ramgarh-Nainital road. The nearest market place is Bhatelia, about 3 km away, and the main village settlement is about 2 km away from the pucca road. With a total population of 650 in 1981, the village was smaller than the typical village in the Uttar Pradesh plains and the majority (93%) of the population belonged to a single caste group - the Kshatriyas. Generally speaking, villages in the Uttar Pradesh hills are more homogeneous in terms of caste structure than those in the plains (Guha, 1985). The Parwara VP was established in the year 1932. A profile of the VP is presented in Table 1. The village had relatively large area under the VP forest, 249 ha or nearly 2.30 ha per household. The VP forest had a good vegetative cover but not everywhere; at many places denuded and vacant spaces were visible. There were no reserved forests in the vicinity of the village. Kharsu and oak were the two major tree species in the VP forest. In the opinion of the villagers and the Revenue Department officials associated with the VP, the VP forest was better maintained and better managed than other VP forests in the area.

According to the 1976 VP rules, a village interested in forming a VP may pass a resolution with two-thirds of its adult members in its favour, demarcate the land for the purpose and send the resolution to the Sub-divisional Magistrate (SDM) who gets the land surveyed and a Khasra prepared. The approval is given by the District Magistrate (DM) and the final sanction is granted by the Commissioner.

At the village level, a Van Panchayat Committee headed by a Sarpanch is the sole arbitrator for management of the VP forest. The members of VP are elected by the village people every five years. The election is mostly informal, voting is done by raising hands, not by secret ballot. It is generally ensured that all parts and all groups of the village are represented in the VP Committee. A village VP Committee can have 5-9 members. The elected members are called Panchas, and they elect their leader, the Sarpanch (President). The elections to the VP Committee are conducted under the supervision of an officer nominated by the District Magistrate (usually Forest Panchayat Inspector (FPI) or Patwari). Most often, in VP Committees, each caste is represented in

proportion to the number of households in the village belonging to it. The present VP Committee was elected in the year 1982. In the sixties, for over a decade, the Sarpanch (President) of the VP was a very honest and respected person. During his tenure, the VP forest was managed and protected very effectively. During 1980-82, the earlier Committee had been under suspension and the Patwari (village revenue clerk) was entrusted to look after the management of the VP forest. The reason for suspension, as stated by the villagers, was dissatisfaction of the villagers with the then VP Sarpanch; we were told by the villagers that the Sarpanch, in collusion with a politician, made a lot of money by illicitly felling and selling trees from the VP forest.

According to the Van Panchayat Niyamawali 1976, the Van Panchayats have the following responsibilities:

1. To protect and develop the forests falling under the jurisdiction of the Van Panchayat.
2. To distribute its produce among the right holders in an equitable manner.
3. To demarcate its boundary by fixing boundary walls, pillars etc. and prevent encroachment in the forest land.
4. To enforce the regulations of the Van Panchayats.
5. To carry out the orders of the District Magistrate and Sub-divisional Magistrate from time to time.

The Van Panchayats have the following powers :

1. The Van Panchayat can sell fallen twigs and grass for the bonafide domestic use of the right holders in the village.
2. An offence involving a sum of not more than Rs. 50 (later revised to Rs.500) can be compounded with the agreement of the offender.
3. Van Panchayats can forfeit the tools used for illicit lopping.
4. They can impound stray cattle.
5. Stolen timber and other produce, if seized, can be sold only with the prior approval of the DM.
6. Local sale of surplus forest produce from Van Panchayats to the right holders cannot be made without the prior approval of the DM and the Divisional Forest Officer (D.F.O.).

The VP Committee has a right to make rules and regulations for the utilisation of forest resources and for their enforcement. These rules should, however, be within the purview of the Uttar Pradesh Van Panchayat rules. For tree felling and grazing, in

Parwara, the total area under the VP forest has been divided in five compartments and only one compartment is opened every year and that too is done only for two months (normally January and February) when there are no alternative sources of fodder and fuel available for the villagers. No family can bring more than three head loads of green leaves on a single day. A fee of Rs. 4 per head load of green leaves is levied on each household for the entire period of two months. Monitoring and regulation of off-take of fodder and fuel from the VP forest is done by the members of the VP Committee, two paid watchmen and the villagers themselves. To ensure that none of the households or persons takes undue advantage during the period of lopping, the members of the VP committee move around the forest. If any person is found violating the rules or lopping more than the prescribed share, his/her family members are not allowed to enter in the forest; sometimes, the violators are fined also. The complaints made by the villagers about illicit felling and lopping are considered by the VP Committee. What the VP Committee is not able to regulate is the extent of lopping of a particular tree. For normal regeneration and growth, it is recommended that the upper one-third portion of the tree should not be lopped, but in practice most parts of the tree are lopped. In addition to green leaves, each household receives every year one tree for fuel purposes and 10-12 poles per household for house construction. Marking of the trees for these purpose is done by the Sarpanch of the VP with the prior approval of and in consultation with the Forest Department (FD). For the villagers, grazing right is unrestricted. However, factors like self-restraint and religious taboos help in the regulation of use of the VP forest. For example, illicit felling in the VP forest is denounced in the village but it is not considered bad if it is done in the reserved forest area. Similarly, it was mentioned to us by villagers that some 80-100 trees in the vicinity of a temple had never been lopped.

For preventing illicit felling of trees and lopping for fodder, the VP Committee has three options:

- (i) It can fine within the limit of its powers.
- (ii) It can lodge a complaint with the SDM, or
- (iii) It can lodge a First Information Report with the local police.

In Parwara village, some 400 cases of illicit lopping and felling had been reported as of 1986. In 200 of the cases, the villagers were involved and in the remaining 200 outsiders. A total fine of Rs. 7,000 was imposed on the offenders out of which Rs. 2,000 had been recovered.

The VP is facing a number of problems these days in regulating the use of its forest. First, the legal proceedings are decided within the purview of the relevant section of the Indian Forest Act 1927 and this takes a very long time. Second, even if the VP imposes a fine, the recovery is almost impossible since there is no immediate instrument available with the VP to enforce it. There is a provision in the VP



rules that dues of the VP could also be collected along with land revenue, but most often collection of the VP's dues is deferred. Third, it was the opinion of most of the old villagers with whom we talked that the interest of the Sarpanch and the members of the VP Committee in protecting the forest has been gradually declining over time. When we asked for the reasons for this, the answers usually were: (i) when the human and livestock population was low and consequently their requirements were less than the produce available, it was easy to enforce the regulations; (ii) with the increase in outside contacts and with the access to outside markets, there is more temptation now for the villagers to resort to illicit felling; and (iii) political activity has increased in the village which, according to them, is always detrimental to the growth and development of village forest. These forces, operating individually or together, dampen the people's participation in social and community work (Ballabh and Singh, 1988b).

Our interviews with selected key informants revealed that people's participation in protecting and managing the VP forest was medium to high. In their opinion, people's participation in VP forest management emanates from the fact that the VP forest fulfils their basic needs of fuelwood, fodder, small wood, and minor forest produce and the people's perception that the forests are important for their survival. Two other important factors that facilitated people's continued participation in the management of VP forests in the Uttar Pradesh hills are : (i) cultural homogeneity of local people; and (ii) relatively egalitarian distribution of land holdings compared to the plains of Uttar Pradesh. These two factors have helped in preventing the benefits from VP forests being cornered by those who are socially and economically strong.

However, the impact of these factors would not have been as impressive, had the VPs not assured a fair and equitable distribution of the forest produce to all the right holders and if the right holders had not had a high stake in the forests. The VPs have adopted methods that have in-built mechanism to distribute the produce fairly and equally. In addition to this, the violators of the rules and regulations are penalised by the VPs; although their capacity to enforce the penalties has been eroded over a period of time. To some extent, factionalism within the villages has also helped in proper forest management. This is because the group dominating the VP committee wants to remain in power and, therefore, it tries to manage the VP forests well whereas the opposition group tries to highlight the short-comings, and loopholes in the forest management. In much of the rural India, however, wide socio-cultural and economic inequalities exist and they often create conflicts among the people who tend to polarise in small caste and class groups. But open discussions of the conflicts have advantages in that the conflicting interests of various groups could be reconciled amicably and disagreements minimised to ensure people's participation in developmental programmes on a large scale. Such discussions were facilitated by open and informal elections to VP Committees in the Uttar Pradesh hills.

Partly on the basis of the foregoing discussion and analysis, and partly drawing upon the study done by Ballabh and Singh (1988a and 1988b), we could conclude that people's participation in forest protection and management could be secured easily where people have high stakes in the forest, constitute a relatively homogeneous group, are organised, have good and benevolent leadership, are certain that the benefits from their participation would be quite substantial and would be distributed among the legitimate claimants in a fair and equitable manner, and have a legal back up to enforce their rules and regulations (Table 2). The survival of VPs for such a long period is a testimony to people's ability to manage their common property forests. There is a strong need to improve the proposed Van Panchayat Niyamawali 1989 to make it more people-centred and less bureaucratic by giving more powers to people to protect and manage the VP forests.

### The Arabari Experiment in Joint Forest Management

There is a growing body of experience available from India and abroad showing that joint protection and management of forests by forest departments and local people living in and around forests can effectively protect degraded forest lands thereby allowing them to regenerate. The Arabari experiment in joint protection and management of natural forests has now become well known in India and abroad (Singh, 1991). The experiment was started by the Forest Department of West Bengal in 1971-72 in the Arabari Forest Range which is located in East Midnapur Forest Division, about 30 km away from Midnapur town and 200 km west of Calcutta. In 1972, as part of its project, Resuscitation of Sal Forests of South-west Bengal, the Forest Department launched an experiment in natural forest regeneration in Arabari (Table 1). The then District Forest Officer (DFO), Dr. A.K. Banerjee, soon after taking over his charge, realised that it was difficult to regenerate and protect the Arabari forest without the cooperation of the local people who depended on the forest for fuelwood, fodder, wood, grazing of animals, minor forest produce and even cash income from sale of fuelwood. Consequently, he started meeting people in the neighbouring villages and informally discussing with them the need for forest protection [and regeneration, and orchards. On other crops, the Society loses money. At the present water rates, the Society makes fixed by the Irrigation Department. At the current rates, surplus is available only from sugarcane litres of water purchased is also levied on the society. The Society charges the farmers at the same rates atric rate was fixed at 25 paise per 10,000 litres of water. In addition, a local cess of 5 paise per 10,000 e for the landless labourers in the lean period, they sold the wood illicitly felled from the forest to generate cash that they needed to buy the basic necessities of life. As overexploitation continued, forest productivity declined over time and the forest became degraded.]

The DFO promised to help solve the problem of livelihood of the local people in the lean period, provided they were ready to

co-operate with him in the task of regeneration and protection of the forest. With the consent and assurance of the local people, he demarcated 1,272 ha of degraded forest land for plantation and protection by the people. The plantation work was to be taken up in full swing only in the lean period, and all the local people were assured equal employment opportunities. All the people living in the villages situated in the vicinity of the forest were asked to form a Forest Protection Committee (FPC) for managing the plantation and protection work. The committee was assured work under various on-going rural employment schemes and given exclusive rights to all non-wood forest products, free of cost. Their immediate needs for fuel and fodder were also taken care of.

Initially, the villagers were allowed to cultivate paddy, fodder crops, sabai grass, maize and groundnuts on some of the degraded forest land. Honey beehives were established in eucalyptus groves on an experimental basis as a possible source of supplementary income to the villagers. Poles were provided to the villagers for house construction and repairs and making cots for sale at subsidised rates. The participating villagers were given exclusive rights to all minor forest products such as sal and kendu leaves, dry twigs, seeds of mahua, subabul, sal and akashmani trees etc. Fruits like mango, guava, jack fruit, kendu fruit etc. and valuable medicinal plants were also allowed to be collected and sold in the market by the participating villagers. The villagers earned substantial amount from the sale of these products.

While the committee was organised in 1972, it was not formalised until 1977, when the list of beneficiaries was checked by the Forest Department and the Panchayat. A demographic survey was conducted by the Forest Department, as well as the Indian Statistical Institute, Calcutta as the initial list received from the Panchayat was biased. All the 618 families residing in and around the project area were included in the list. Only the heads of households were enrolled as members of the committee. The committee was headed by the President and consisted of 11 members, one each from 11 participating villages. I had a Secretary to handle routine office and other matters.

When the committee started functioning, 22 persons from 11 participating villages guarded the forest in the day time; one man and one woman from each village. Some forest guards and van mazdoors (forest labourers) also accompanied them on patrol. The van mazdoors were landless labourers hired from all the 11 villages. Night guarding was not done as it was not considered necessary. If a person failed to turn up for his/her duty he was called for an explanation. Each member was assigned to the patrol duty for one week, every two months.

If a person who is not a member of the committee is spotted destroying the forest or cutting wood from the forest, and he/she is caught by the villagers, may be fined or handed over to the Forest Department. The fines imposed range from Rs. 2 to Rs. 5. The FPC feels that if a person is fined



heavily, say Rs. 100 to Rs. 500, it will be difficult for him/her to pay the fine and even if they manage to do so, they will try and recover the fine from the forest in retaliation. If a member of the committee is at fault, he is presented before the committee. The members then tell him about the merits of conserving the forest and the sentiments of the villagers toward the forest. They listen to his problems and assure him work within the village, only if he promises to stop cutting the forest.

The protection provided by the participating villagers allowed the forests of Arabari to regenerate. Consequently, by 1988, 700 ha of fine sal coppice and a plantation crop of over 305 ha had been raised. At the 1988 price, 700 ha of sal forest was valued at Rs. 12.6 million and the expected benefits exceeded the expected costs by over ten times (Sarabhai et al., 1990 : 41). This encouraged the FD to formalise the partnership through a special Government Resolution issued in July 1989. This Resolution was modified and a new Resolution was issued in July 1990. Both the original and the modified Resolutions stipulated, inter alia, that (i) the members will have to protect the forest/plantation for at least five years to be eligible for sharing of the usufruct; (ii) each eligible beneficiary will get his proportionate share of the usufruct from the final harvesting not before the crop attaining the age of ten years; and (iii) the concerned Forest Official shall set apart 25% of the net sale proceeds at every final harvesting of the concerned plantation/forest for distribution to the eligible beneficiaries. After the first Resolution was issued, the local people came to know about the benefits of the membership of the FPC. Consequently, some of the villagers from Chandmuda village under Gorebeta police station approached the FD with a plea that they should also be included in the list of beneficiaries as they have also worked for the regeneration and protection of the forest. As the FD originally included in the list of beneficiaries only the villagers under Keshpur police station, the villagers from Chandmuda were not included in the list. The FD did not accede to their request. Consequently, these villagers filed a suit in the High Court staking their claim under the Indian Forest Act 1927 and were able to get an injunction against the FPC. In the mean time, the FD harvested about 95 ha of regenerated forest in 1986-87. But due to the court injunction, the produce could not be sold. Afterwards, to avoid losses in storage, the court directed the FD to sell the produce and deposit the beneficiaries' share of 25% of the net sale proceeds in a bank account. Accordingly, the FD sold the produce in 1989 and deposited in a bank account a sum of Rs. 3 lakh on account of the share of the beneficiaries. As of October 1990, the case had not been settled and the beneficiaries had not received any payments. According to Shri Nantu Ghosh, currently a member and formerly the founder President of the FPC, villagers now have lost their patience and have started illicit felling again. The FD had to employ 10-12 forest guards to protect the forest.

To ascertain the factors that contributed to the evolution and successful application of the concept of JFM, we interviewed



an old and knowledgeable person from one of the 11 participating villages, Shri Nantu Ghosh. What we gathered from our talks with him is as follows. Until 1972, the FD was not able to protect the forest and the villagers had virtually destroyed all of it: only the stumps were left. The success of the Arabari experiment could be attributed mainly to the personal interest taken in the experiment by Dr. A.K. Banerjee. After taking over as DFO in 1972, Dr. Banerjee spent most of his five-year tenure talking to the villagers and educating and convincing them about the need for and the benefits from regeneration and protection of the forest. The then Minister of Forest, who now is no longer, was very sympathetic to Dr. Banerjee's work and extended all possible support to him. Provision of wage-paid employment to all those villagers who wanted to work, of small wood for meeting the genuine needs of the villagers, and full rights to non-wood forest produce free of charge were crucial to the villagers' participation in the regeneration and protection of the forest.

According to Shri Ghosh, of late, the FPC has been politicised and has virtually been captured by the CPI (M), i.e., the Communist Party of India (Marxist) cadres. Of the 13 members of the FPI, 11 including the President belong to the CPI(M) and the remaining one to the Congress (I). A similar view was expressed earlier in a meeting with us by Shri Subhash Chandra Bhagat, Range Forest Officer, Arabari, in-charge of the JFM programme. He told us that due to political interferences, the effectiveness of most of the FPCs in protecting the forests had been gradually declining over time. He cited one instance from the Belpadi Range where three of the participating villages had a tussle on political grounds and destroyed the forest while the other villagers and the police watched the scene helplessly.

The Arabari experience demonstrated that local people would effectively protect the degraded forest if their basic needs of fuelwood, fodder, and small wood are fulfilled, if they are provided exclusive rights to non-wood forest products, and wage-paid employment, and are assured of substantial cash benefits from the final harvest. However, the experience also indicated that more comprehensive discussions with the local communities having legitimate claims to benefits from the forest need to be held before forest protection and management responsibilities and system of distribution of the benefits from joint management are determined and finalised.

Based on the encouraging results of the Arabari experiment, the Government of West Bengal has prepared an ambitious programme to regenerate some 259,000 ha of sal forest under the joint forest protection scheme. At present, there are some 1,266 Forest Protection Committees in the Western Circle protecting and managing about 152,000 ha of forest land which account for about 37 % of the total forest area in the Western Circle.

The success of the Arabari experiment is attributed mainly to the political commitment of the State Government to better forest management, substantial and immediate benefits to



individuals from participation in the form of wages and forest produce, a clear cut policy for sharing of benefits from forest protection with the participating local people, dynamic leadership and commitment of senior forest officers to the approach of joint forest management, and willing participation of local people in the programme (Table 2 and Singh, 1991: Ch. 13).

Encouraged by the success of the West Bengal experience in joint forest management, the Ministry of Environment and Forests, Government of India, in June 1990, issued guidelines to all the States and the Union Territories for involvement of village communities and voluntary agencies in regeneration and protection of forest lands. As per the guidelines, access to forest land and usufructory benefits are limited to those eligible local people who get organised into a village institution specially for forest protection and regeneration and with no restriction on membership.

### The Ralegan Siddhi Project Experience

Ralegan Siddhi is perhaps India's first model of micro-watershed development initiated and fostered by local people under the guidance of an enlightened and benevolent local leader. The Ralegan Siddhi project was launched in 1975. The major force behind the project has been Padma Shri Anna Hazare who after retirement from the Indian army in 1975 returned to his native village-Ralegan Siddhi and started the village reconstruction and development work. The project is well known all over the country and is well-documented (Patil, 1988 and Pangare and Pangare, 1991). Ralegan Siddhi is a village of about 2100 people located in the drought-prone Parnal tehsil of Ahmednagar district of Maharashtra. A profile of the village is given in Table 1. The village receives scanty rainfall of only 250-300 mm annually. Hence, the highest priority in the project was given to harvesting and conservation of rain-water. The project covered four watersheds and a total geographical area of about 972 ha of which about 651 ha was cultivable, 137 ha forest land, 123 ha revenue wasteland, and 51 ha village pasture land. The total expenditure incurred on the project from 1975-76 to 1985-86 was about Rs. 11.42 million of which Rs. 4.74 million (about 42%) was granted by the Government of Maharashtra, Rs. 4.08 million borrowed from the Bank of Maharashtra, 1.34 million contributed by the local people mainly through shramdan (voluntary contribution of labour), one million granted by various non-governmental organisations (NGOs), and the remainder by other sources including Anna Hazare who donated Rs.87,000. (Pangare and Pangare, 1991). The average cost of the project per ha of the total geographical area covered was about Rs. 11,761 which included the cost of a hostel building (Rs.16 lakhs) and a veterinary hospital (Rs.1 lakh).

A series of 31 check dams and nala bunds constructed under the project have created about 282,000 cubic metre water storage capacity that has resulted in increased availability of groundwater. This has facilitated sinking of community wells.



Water from these wells supplied at a moderate rate has enabled the farmers to grow two or three crops every year including fruits and vegetables which are now even exported to Dubai. As a result of increased availability of water for irrigation, the total cropped area in the watershed increased from 619 ha in the pre-project period to 859 ha in 1985-86. The project had a significant positive impact on crop and milk yield rates and production, fodder production, employment, and incomes. It has been observed that after the implementation of the project, no villagers go out of the village in search of work as they used to do before the project.

The villagers have participated whole-heartedly in the project and have contributed through both Shramdan and cash. All the soil and water conservation structures were built through community action. The villagers have completely stopped grazing their animals on common property lands and have switched to stall-feeding which has become possible as a result of increased grass production from the common property land after stoppage of grazing. They have stopped illicit lopping and felling of common property trees and planted more than two lakh trees mostly on the common property lands including hill slopes. This has prevented soil erosion, besides providing a variety of products such as fuel wood, fodder, fruits etc. To enlist people's participation in the village development work including the project activities, Anna Hazare has organised the villagers into some ten different associations of which six are engaged in development and management of common pool natural resources of land, water, and forests. Equitable distribution of water among the eligible farmers is ensured through various Pani Puravatha Mandals (Water Supply Associations). Anna Hazare uses the forum of Gram Sabha to introduce new ideas and seek people's involvement in refining and implementing them. He makes sure that the final decisions taken in such meetings are considered by the majority of the villagers as their own.

The Ralegan Siddhi experience shows that the rural people under the guidance and leadership of good, enlightened and honest persons could develop and manage their common pool natural resources and distribute the benefits equitably. When villagers are well-informed about various rural development programmes launched by government for their benefit and when they are organised and have the support and guidance of good local leaders, they could demand from the government officials what is meant for them and thus achieve their common goal of development through their own resources supplemented by funds earmarked by various governmental and non-governmental organisations for rural development (Table 2). Given proper leadership, the Ralegan Siddhi model could be replicated in other villages in India. Anna Hazare is now trying to institutionalise the model by training rural youth who have volunteered to follow in his foot steps.



## The Sukhomajri Project Experience

Sukhomajri is another well-known model of micro-watershed development in India. The model has been well documented (Chopra et al., 1988). Sukhomajri is a small village of about 538 people, mostly Gujars, in the lower ranges of the Shivaliks in Haryana. A profile of the village is given in Table 1. Roughly half of the total land in the village is owned privately by individual farmers and the other half is common property land. The major portion of the catchment is owned by the Forest Department. The Sukhomajri project was launched in 1979. It focused on harvesting and recycling of rain-water. Sukhomajri now has three rainfed reservoirs. All the rain-water that falls on one side of the village is collected and stored in these reservoirs and is used for both irrigation and drinking purposes. In Sukhomajri, a total area of 4,085 ha was treated at a total cost of Rs.78.32 lakh or at an average cost of Rs. 1,917 per ha. About 61 % of the total cost was accounted for by skilled and unskilled labour.

A Water Users' Society was set up in 1982 to manage the reservoirs and ensure equal distribution of irrigation water and forest produce among the villagers and thereby to enlist their participation in the project. Initially, a young management professional was hired by the Ford Foundation to help organise the villagers and put the Society on sound footing. Another consultant was hired for working with the women of Sukhomajri, listening to their problems, and urging them to take an active role in conserving the watershed. After a series of talks with the villagers, and after much discussion all around, a system of distribution of reservoir water was established in which every member was to be given equal share regardless of the land owned. The landless also had a right to water and could sell their share to others. The right to membership of the Society and to water was contingent on the observance of stall-feeding. All these factors led to greater participation of villagers in the project than in the exclusively government-sponsored watershed development projects (Table 2).

The project was financially viable with a benefit-cost ratio of 2.06 at the 12 % discount rate and an internal rate of return of about 19 % (Chopra et al., 1988). The project resulted in a significant increase in crop and milk yield rates and production, reduction in the number of cows and goats, increase in the number of buffaloes, increased availability of water, and higher incomes. Funds for implementing the project came from the Haryana State Government (Forest Department), Indian Council of Agricultural Research and the Ford Foundation. Technical guidance was provided by the staff of the Central Soil and Water Conservation Research and Training Institute, Research Centre, Chandigarh.

The Sukhomajri experience (Anonymous, 1984 : 4-5) shows that exhortations for participation and cooperation do not work, especially if they are aimed at people who live on the margin of subsistence. The poor cannot stop grazing their animals in





highly degraded and over-grazed common pool lands for the sake of their conservation when their lives depend on the animals. Only with increased productivity of crops and increased milk yields resulting from supplemental irrigation made possible by the reservoirs constructed under the project and assurance of equal share of every village household in the reservoir water were the villagers ready to invest in soil and water conservation measures and to participate in the programme whole-heartedly. It was also observed that land, water, and forest resources are better managed and incomes are sustained at a high level when people are also involved in decision making about the strategy of rural development (Kadekodi and Chopra, 1990: 383).

### The Mohini Water Co-operative Experience

The Mohini Water Co-operative Society is one of the successful surface irrigation cooperatives in Gujarat State and the first of its kind in India ( Mandalia and Charan, 1989 : 288). The Society was registered under the Gujarat State Co-operative Societies Act 1961 in September 1978 with the total membership of 145 and the paid up share capital of Rs. 7,900. It was based in Mohini village of Choryasi taluka of Surat district in south Gujarat. It started its operations in April 1979. A profile of the society is given in Table 1. The origin of the society is traced to the then Area Development Commissioner (ADC), Ukai-Kakrapar Project, Surat, who proposed the idea of forming a water users' co-operative to a progressive farmer and social worker, Shri Bhikhubhai B. Patel. Shri Patel was then Sarpanch, Mohini village Panchayat, and Chairman, Service Co-operative Society, Mohini. He accepted the idea on the assurance of the ADC that the State Government will provide a managerial subsidy for meeting the salary and other establishment costs of the society and would also bear the operating losses, if any, in the first three years.

The area of operation of the society extends to six villages all of which lie in the command area of the Bhestan minor of the Kakrapar Left Bank Canal system of the Ukai-Kakrapar Irrigation Project. The gross command area of the society is about 525 ha and the culturable command area was about 487 ha in 1989-90. The total number of farmers in the command area of the Society was 231 all of whom were members of the Society in 1989-90. About 75% of the members were Patels and about 70% were marginal and small farmers.

Financially, the Society became an instant success, distributing a dividend of 12 % from the second year onwards. It has been given the highest classification 'A' by the auditors of the Co-operative Department year after year since its inception except in 1989-90. It owns a tractor, which is leased to members on concessional rates for cultivation purposes. The Society has been regularly paying water charges to the Irrigation Department and till 1982-83, it was able to fully recover its water dues from its members. But since 1983-84, arrears of water charges have been mounting up and in 1989-90, a sum of Rs. 63,000 was outstanding against the



members. Actually, in 1989-90, the Society incurred an operating loss of Rs. 62,680.

The staff of the Society are well paid by local wage standards. In accordance with the agreement with the Irrigation Department of Gujarat State, the Society is charged on a volumetric basis and the Society charges its members on the crop area basis. The volumetric rate was fixed at 25 paise per 10,000 litres of water. In addition, a local cess of 5 paise per 10,000 litres of water purchased is also levied on the society. The Society charges the farmers at the same rates as fixed by the Irrigation Department. At the current rates, surplus is available only from sugarcane, and orchards. On other crops, the Society loses money. At the present water rates, the Society makes a profit only if the major proportion of its culturable command area is put under sugarcane. If the major proportion of area were under food grains, the society would make losses. The Mohini Society became a financial success because about 58 % of its cultural command area was put under sugarcane, instead of the prescribed 18 %. In most Indian public irrigation systems, there is a prescribed cropping pattern based on the pattern estimated at the time the project was formulated. Though the design pattern should, in theory be respected, the actual pattern varies considerably. If the Mohini Co-operative followed its prescribed cropping pattern, it would be in a deficit. Any group or society who abided by the prescribed pattern would not be viable, since the surplus is too small to cover its salary and other administrative costs. The financial success of Mohini is primarily due to the sugarcane-biased crop pattern followed in its command area.

The experience of the Mohini Water Co-operative Society shows that the organisation of irrigators into a co-operative society helped them secure assured, adequate, and timely supplies of irrigation water from a public canal system which under the government management was not dependable and was not meeting their water requirements fully and in time. Assured, adequate, and timely supplies of water resulted in increased crop yields and income and thereby improved economic condition of the members. Wastage of valuable water through over-irrigation under the conditions of uncertain and irregular supplies in the pre-society era was reduced after the formation of the society (Singh, 1991, Ch. 9).

Our interviews with selected key informants revealed that although the problems of free riding and non-co-operation in maintaining the common pool distribution system, in payment of water charges to the society in time, in adhering to the planned crop pattern, and in using the water judiciously were not completely eliminated, the member-irrigators co-operated in minimising the wastage of water and putting it to more productive use. As a result, the area irrigated increased over time and the irrigation potential created was more fully utilised. The distribution of water through the Warabandi system developed by the society was fair and equitable and the members were satisfied with it. The Government officials in the Irrigation and the Command Area Development Departments

were spared of the hassles involved in recovery of water charges, distribution of water, and repair and maintenance of field channels in the pre-society days (Singh, 1991 : Ch. 9).

All in all, the Mohini Water Co-operative Society provides a good example of how canal water could be better used and managed collectively by the co-owners under the auspices of a formally organised co-operative society backed up by a set of statutory byelaws and patronised by government. After having seen the positive impacts of the society, farmers in the other villages of the command area of the Ukai-Kakrapar Project have started approaching the Irrigation Department with requests for help in establishing similar societies in their villages. Ten such societies had already been organised by the end of November 1990 and another 12 were in the pipeline. The most crucial requirements for success of this kind of management system are an enlightened, benevolent, and stable leadership, a fair and equitable system of distribution of water, assured, adequate, and timely supplies of water, financial viability of the society, linkages with other local organisations and institutions concerned with agricultural development, substantial private benefits to irrigators from joining the society/organisation, co-operation of members in payment of their dues to the society and government patronage and support (Table 2).

### Lessons and Directions for Future

The key determinants of people's participation in managing common pool resources in the five cases presented and analysed in this paper are summarised in Table 2. We could draw the following lessons from the experience reviewed and analysed in this paper :

1. The most important pre-requisite for people's participation is that the expected benefits from participation must substantially exceed the expected costs of participation. Programme interventions or measures that seek to enhance the expected benefits to people or reduce the expected costs are likely to elicit more of people's participation than those that do not seek to do so. This condition was fulfilled in all the five cases analysed in this paper.
2. People would participate in the programmes of development and management of common pool natural resources only if they are conscientized, organised and empowered to do so. A great deal of effort and resources are required for empowering local people and for building people-centred local institutions and organisations and linking them to higher level institutions engaged or interested in similar work. Formal organisations of local people existed in all the five cases analysed in this paper.
3. Non-governmental organisations (NGOs) are better oriented to enlist people's participation and have necessary skills and patience to work with them. They could play a crucial



and unique role in organising, educating, conscientizing, and motivating local villagers, in mediating between them and the government officials concerned, and in serving as public interest "watch dogs". They are better than government agencies to train people and thereby to empower them so they could identify their problems and resolve them on their own eventually. The NGOs played such a role very effectively in two of the five cases, namely, the Ralegan-Siddhi project, and the Sukhomajri project, where people's participation was higher than in the other cases. It is high time that the governmental organisations engaged in natural CPR development programmes learnt from the experience of the NGOs and incorporated the lessons into their strategies. Otherwise, huge amounts of scarce resources would continue to be wasted on ill-conceived, ill-designed and badly executed resource development programmes as before.

4. Local leadership plays an important role in enlisting people's participation in natural CPR development programmes by mobilising people's resources, energy, and by assuring the people that ~~that~~ they would have access to the benefits from their participation in collective action for CPR development and that the distribution of the benefits would be fair and equitable. In four of the five projects analysed in this paper, the quality of the local leadership was good initially, if not through out the currency of the project.
5. The role of government should be confined to providing financial and technical assistance, basic infrastructure, and enabling legal and political environment conducive to people's participation in CPR development programmes. A lot of investment is required initially for restoration and development of degraded natural CPRs. Such investments in CPR development should be made by government on the same principles as in the case of irrigation projects. This is what was done by government more or less in all the five projects analysed in this paper.
6. Formal systems for sharing the benefits from collective action among the local people involved should be evolved and enforced by the people themselves and backed up by legal provisions or appropriate administrative decrees. Such systems existed in all the five projects but were implemented more strictly and effectively in Ralegan-Siddhi and the Sukhomajri projects than in the other projects.

The above-mentioned determinants of people's participation revealed by the case study serve not only to generalise but also expand the theory of collective action as spelled out earlier in this paper. The theory is generalised in the sense that there are five more instances where it holds, and expanded in the sense that, besides explaining collective action, it also explains individual action in the context of development and management of common pool natural resources.

## Concluding Remarks

How to enlist people's participation remains one of the most baffling problems presently confronting planners and managers of common pool natural resources development programmes all over the world. The experience of the five selected projects reviewed and analysed in this paper shows that the most important pre-requisite for people's participation is that the expected private benefits from participation must substantially exceed the expected private costs of participation. Programme interventions or measures that seek to enhance the expected benefits to people or reduce the expected costs are likely to elicit more of people's participation than those that do not seek to do so. Other important determinants of people's participation include organisation of people into small groups, good local leadership, existence and enforcement of rules for equitable sharing of benefits from collective action, and willingness and ability of government to make needed investment in CPR development and provide technical information, training, and guidance. Non-governmental organisations are better oriented to enlist people's participation and have necessary skills and patience to work with people, to organise them, to motivate them and to train them and thereby to empower them so they could identify their problems and resolve them on their own eventually. It is high time that the governmental organisations engaged in common pool natural resources development and management programmes learnt from the experience of the non-governmental organisations with involving people and incorporated the lessons into their strategies. Otherwise, huge amounts of scarce resources would continue to be wasted on ill-conceived, ill-designed and badly executed programmes as before.

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Table 1 : A profile of the selected cases

Particular	Parwara Van Panchayat	Arabari Experiment	Ralegan Siddhi	Sukhomajri	Mohini Water Co-operative
1. Location	Nainital district Uttar Pradesh	Midnapur district West Bengal	Ahmednagar district Maharashtra	Ambala district Haryana	Surat district Gujarat
2. Year when the project was launched	1932	1972	1975	1979	1978
3. Number of villages covered	1	11	1	1	6
4. Total area covered under the project(ha)	249	1,272	972	4,085	525
5. Total population of the project area/ members (1981)	650	3,600	2,100	538	1,440
6. Source(s) of funds for the project	Villagers themselves	Forest Dept. & Rural Dev. Department	GOM, banks & Villagers	GOM ICAR FF	GOG & Members
7. Implementing agency	Van Panchayat	Forest Protection Committee	Various organisations of villagers & GOM	Water users' Society, GOM & ICAR	Mohini Water Co-operative
8. Government departments involved directly	Revenue & Forest	Forest	Agriculture & Forest	Forest	Irrigation
9. Project performance as perceived by local people and outsiders	Successful	Successful	Successful	Successful	Successful
10. Level of people's participation	Medium to high	High	High	High	High

1. GOM -- Government of Maharashtra
2. GOM -- Government of Haryana
3. GOG -- Government of Gujarat
4. ICAR -- Indian Council of Agricultural Research
5. FF -- Ford Foundation



Table 2 : Some key determinants of people's participation in managing common pool natural resources in five selected cases

Determinant	Parwara Van Panchayat	Arabari Experiment	Ralegan Siddhi	Sukhomajri	Mohini Water Co-operative
1. Private net benefits from participation	High	High	High	High	High
2. Stake of the co-users in the resource	High	High	High	High	High
3. Assurance about access to benefits from participation	High	Medium	High	Medium	High
4. Quality of local leadership	Initially good, then bad, now good	Initially good, now average	Good all through	Average all through	Initially good, now average
5. Waiting time till some benefits became available	Nil	Nil	One year	One year	Nil
6. Size of the group of co-users of the resource	Large	Large	Large	Large	Large
7. Composition of the group of co-users	Homogeneous	Heterogeneous	Heterogeneous	Homogeneous	Heterogeneous but domination by a single caste
8. Existence of formal organisation of co-users	Yes	Yes	Yes	Yes	Yes
9. Existence of rules for regulation of resource use and distribution of benefits	Yes	Yes	Yes	Yes	Yes
10. Legal back up of the rules	Yes	Yes	No	Yes	Yes
11. Enforcement of the rules	Strict to lax	Strict	Strict	Strict	Strict to lax
12. Extent of free riding and violation of rules	Medium	Low	Nil	Low	Medium
13. Existence of penalties for violation of rules	Yes	Yes	Yes	Yes	Yes
14. Role of government	Facilitative but paternalistic	Positive & facilitative	Positive & facilitative	Positive	Positive & facilitative
15. Role of non-governmental organisation (external)	Nil	Nil	Positive & significant	Positive & significant	Nil