

WATERSHED DEVELOPMENT PROGRAMMES IN INDIA AND INSTITUTIONAL IMPERATIVES

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India is endowed with annual average rainfall of nearly 1,200 mm but a very small proportion of it is managed effectively. The various estimates on potential for rainwater harvesting suggest vast opportunities for mitigating the shortages. However, the socio-administrative measures in vogue do not encourage participation by the beneficiaries. There are several success stories in rainwater harvesting, but these initiatives are rarely institutionalised at national level. There is need to incorporate the characteristics of such organisations into the already existing decentralised institutions, by restructuring them. A local broad based organisation, having more legal and administrative powers and explicit focus on procedures and functioning, can go a long way to effectively implementing the watershed development programmes.

I. INTRODUCTION

In view of the Indian agricultural sector's slow growth rate during the past few years, there is all round concern for raising production and productivity immediately. The continuous slow growth rate of slightly more than two per cent in the preceding ten years is a pointer to some fundamental malaise afflicting this sector, which is defying solutions from the on-going policies and measures [Government of India, 2007a]. Technological fatigue in irrigated areas, low capital formation, and inability to harvest rainwater and make rain fed areas equal partners in the growth process are some of the basic factors responsible for the current state of affairs. However, providing irrigation facilities is fundamental to potential breakthrough. The areas amenable to easy centralised control and distribution under dams and canal networks, and deep tube well technologies have almost exhausted the scope for further expansion of irrigated area in the current circumstances. Out of the net sown area of 1,41,101 thousand hectares, 54,682 thousand hectares (38.75 per cent) is the net irrigated area. Three states, namely, Haryana, Punjab and Uttar Pradesh, which constitute the granary of the country, together have 25,402 thousand hectare net sown area and 19,374 thousand hectare net irrigated area. Separately, these states have 83.90 per cent, 84.47 per cent, and 72.76 per cent of the net sown area under assured irrigation, respectively. In the rest of the

country, out of the 1,15,699 thousand hectare of the net sown area, only 35,308 thousand hectare, which constitute only 30.51 per cent of the net sown area, is under irrigation [Government of India, 2007b]. Thus, the vast rain fed areas, not necessarily water deficient, need to develop irrigation facilities based on rain water harvesting and surface and sub-surface water conservation measures.

The South West monsoon brings most of the rainfall in the country but has highly variable, irregular and undependable rainfall pattern, in terms of distribution and amounts. It has been estimated that the mean annual average rainfall in the country, over space and time, is 1,170 mm. It generates a run-off equivalent to 400 million hectare meters (m ha-m) of water. Out of this, nearly 180 m ha-m surface run-off is available for harnessing, but most of it (150 m ha-m) flows into the sea and a small quantity (30 m ha-m) is stored or used directly through diversions and other measures [Raju, et al, 2004]. As regards the distribution of the rainfall in the country, only a small proportion of total geographical area (mostly in west Rajasthan) gets annual average rainfall of less than 500 mm. In such situations, it is generally recognised that water conservation efforts offer vast scope for enhancing the water availability and mitigating shortages. The Central Ground Water Board, on the basis of availability of monsoon run-off and storage potential of

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vadose zone (unsaturated zone between the land surface and the zone of saturation), estimates 21.42 m ha-m additional ground water storage, of which 16.05 m ha-m can be utilised [Central Ground Water Board, 2004]. Thus, depending upon the rainfall patterns and the land features, a good combination of rainwater harvesting and ground water recharge measures offer ample opportunities for attaining self-sufficiency in water resources in most of the regions in the country.

The growing scarcity of water, amidst plenty, points to inadequate efforts to conserve and store water, when it is freely available. The same is also evident from the inability of agriculture to cope with the impact of fluctuations in the rainfall. The serious manifestation of this phenomenon is over exploitation of ground water resources. It is evident from the fact that over exploited and dark blocks¹ in the country have increased from 253 in 1985 to 1,098 in 2004, besides recording a steep decline in ground water levels in 300 districts over the years [Government of India, 2007b]. One estimate puts a quarter of India's harvest at risk from ground water depletion [Seckler, 1999]. The World Water Council observed, 'The crisis, however, is not about having too little water to satisfy our needs. Rather it is poor management of available water resources that has created an artificial gap between demand and supply of water' [Cosgrove and Rijsberman, 2000]. Further, observations of Hayami and Ruttan [1985] justifiably sum up the state of affairs in under developed economies. They state: 'We indicated that (the) basic factor(s) underlying the performance was neither the meagre endowment of natural resources nor the lack of technological potential to increase output from available resources at a sufficiently rapid pace to meet the growth of demand. The major constraint limiting agricultural development was identified as the policies that impeded rather than induced appropriate technical and institutional innovations. As a result, the gap widened between the potential and the actual productive capacities of LDC (Less Developed Countries) agriculture'.

India has a history of programmes for conservation of soil and water resources by adopting *in situ* moisture conservation and increased irrigation through tank and aquifer based water harvesting. After some initial soil and water conservation programmes, many of them implemented by research institutions and pilot projects by various agencies, the country embarked upon massive area development plans following watershed approach after 1994. The programmes, such as, National Watershed Development Project for Rain-fed Areas (NWDPPRA), Watershed Development in Shifting Cultivation Areas (WDSCA), Drought Prone Areas Programme (DPAP), Desert Development Programme (DDP), Integrated Watershed Development Project (IWDP) and Employment Assurance Scheme (EAS), are in operation. They were recommended for implementation on the basis of watershed approach. These six programmes account for about 70 per cent of funds under watershed programmes in the country [Government of India, 2000a]. A working group of the Planning Commission proposes in its report to develop estimated degraded and rain fed areas of 88.5 m ha in a period of 20 years at a cost of Rs 72,750 crore, with people's participation through various watershed development projects of three Central Ministries (Agriculture, Rural Development, and Environment & Forests) as well as several externally aided projects [Planning Commission, 2001]. The Central Ground Water Board based on experience gained through implementation of pilot schemes, has a Master Plan for artificial recharge to groundwater -- to recharge 36,155 million cubic meter of surface run-off in about 4,48,760 sq km of water deficit areas in the country. The Plan envisaged construction of 225 thousand recharge structures in rural areas at an estimated cost of Rs. 19,880 crore over a period of ten years, in collaboration with local communities/*Panchayats* and non-governmental organisations (NGOs).

II. PEOPLE'S PARTICIPATION IN GOVERNMENT PROGRAMMES

The National Water Policy, while emphasising the development and management of water resources on a hydrological unit basis, advocate that 'management of water resources for diverse uses should incorporate a participatory approach by involving not only the various governmental agencies but also the users and other stake-holders, in an effective and decisive manner, in various aspects of planning, design, development and management of the water resources schemes. Necessary legal and institutional changes should be made at various levels for the purpose, duly ensuring appropriate role for women. Water User's Associations and the local bodies, such as municipalities and *Gram Panchayats* should particularly be involved in the operation, maintenance and management of water infrastructure /facilities at appropriate levels progressively, with a view to eventually transferring the management of such facilities to the user groups/local bodies' [Government of India, 2002]. Thus, in line with this, and the general liberalisation and decentralisation process initiated in 1991 in the country and based on recommendations of various high-powered committees, Government of India formulated the *Guidelines for Watershed Development* [Government of India, 1995]. These Guidelines were put in operation with effect from (w.e.f.) April 1995. In a continuous process of evaluation and change, these guidelines were subjected to modifications, in order to bring about convergence among various departments and make these guidelines functionally more useful and efficient. Thus, the Common Approach for Watershed Development [Government of India, 2000a], the Guidelines for Watershed Development (Revised - 2001) [Government of India, 2001], and the *WARSA Jan Sahabghita: Guidelines* [Government of India, 2000b] have been brought out. The latest version of these guidelines - *HARIYALI* guidelines [GOI, 2003]- has sought the partnership through constitutionally recognised Panchayati Raj Institutions (PRIs). These reports contain

suggestions, which could be called revolutionary, with far reaching consequences. There are major departures from previous approaches, which promise to lay the foundation for a paradigm shift in institutional arrangements to manage water and other natural resources.

These reports recommended participatory approach at grass root level. Local inhabitants are empowered to initiate activities, which they consider most appropriate to meet their requirements and also involve the implementation ability of the beneficiary population at the local level. In this scheme, the planning and the execution work under the projects have been entrusted to the local community. The local community is free to choose appropriate technology, which may be local innovations evolved by the community. The various provisions under the Guidelines provide for a regime, where power is exercised 'by' the people. The Project Implementing Agency (PIA) is another very crucial agency in this process of watershed development. While the main development activities will be carried out by the watershed community itself, the overall facilitation by way of organising watershed committees, providing technological input, coordinating with other agencies, like credit institutions, research organisations and state government departments, etc., will be the responsibility of the PIA. The PIA is also empowered to engage persons with specialisation in required fields of interest, like agronomy, horticulture, agricultural engineering, forestry, animal sciences or other basic sciences, to carry out the task scientifically and efficiently.

But the vast number of mid-term reviews, and impact evaluation and exploratory studies suggest that the programmes implemented by the state departments in partnership with local communities are not a success story. The effectiveness of programmes is low across the states, and the problem of poor delivery is endemic [Pangare, 1998; World Bank, 1998; Fan et al, 2000; Shah, 2001a, 2001b; Kerr et al, 1998;

Jodha, 2002; Mitter, 2005; Government of India, 2007]. The models of decentralising management have also some serious flaws and some of them are summarised below:

- * Legal status: The user groups have no property rights and statutory authority over the resource, independent of particular department programme or project. They have little autonomy to develop strategy for the development of resources.
- * The schemes are left to be planned and executed by district level officers who, in most cases, are also PIAs. Under the hierarchical bureaucratic set up, the capability of these officers to do planning and involve masses at grass root level is extremely limited. Decision-making power rests with those at the apex of the organisation, and project activities simply require delivery of the off-the shelf technological activities. The ability to respond to clients' needs is hardly built up in the procedures, and they are not accountable to local community. Their interest is limited to financial expenditure alone. Once money is spent, physical progress is automatically taken for granted. Structures are abandoned because of lack of post-project maintenance. Many times, the farmers are not convinced about their need at all.
- * NGOs are considered to work in close association with local people and take into account the needs of the people and work judiciously. This facilitating role has some success, but the overwhelming evidences are that the benefits are not sustainable in the long term, and livelihood base remains only marginally improved if at all.

and delineated on the following major factors for their unsatisfactory performance [Government of India, 1994].

- * Multitude of activities over widely dispersed areas of very small sizes.
 - * Ad-hoc planning without people's involvement.
 - * Non-viable work plans in the absence of multi-disciplinary agency at watershed, block and district levels.
 - * Plans not oriented to local needs and activities not taking cognisance of indigenous technologies.
- No appropriate mechanism for maintenance of created assets.

Panchayati Raj Institutions & Watershed Development Programmes

The Constitution (Seventy-Third Amendment) Act, 1992, created three-tier *Panchayati Raj* Institutions (PRIs) for local self-governance, in which *Gram Panchayat* is the village level body of elected representatives. *Gram Sabha* (the general village assembly), which is an inseparable part of a *Gram Panchayat*, is the forum, where the marginalised poor can influence decisions affecting their lives. Several arguments have been made for PRIs, especially the *Gram Panchayats*, playing a central role in the decentralised watershed management programmes. *Gram Panchayats* have rights over the natural resources within their boundaries, and also have the mandate to plan local development and integrate various activities. The PRIs together, by definition, are able to 'scale-up' activities, as they are vertically integrated into a political structure. *Gram Panchayats* have a constitutional commitment to represent the marginalised sections of the community through reserving a third of the seats for them. It enables these groups to mobilise around their needs and place their demands systematically, for these to be recognised. Given the particular dependence, which women and Scheduled Castes/Scheduled

A high level committee, headed by Prof. Hanumantha Rao, comprehensively reviewed in 1993 the watershed development programmes

Tribes often have on natural resources, their involvement in PRIs could be of particular importance for the powerless groups.

Despite the apparent potential, there are many reasons why PRIs may not be the appropriate institutions to ensure local development. There is very urgent need to look into the detailed working of *Gram Panchayats* in these respects, and to explore whether or not they provide adequate framework for decentralised watershed management.

- * A *Gram Panchayat* is very often elected on the basis of many social issues in the village. The question of suitable development strategies is not the main issue, over which a *Gram Panchayat* is elected. *Gram Panchayat* members, including Sarpanch (the chairman), have little interest, knowledge or aptitude to understand the development needs and problems of the public and to make suitable plans accordingly. Members, generally illiterate, have little idea of the role they are supposed to play.
- * By the Seventy-Third Constitutional amendment, more responsibilities are delegated to the *Gram Panchayats*, and there is increased fund flow. Therefore, elections to Panchayats have also assumed more prestige and powers. The seats are mostly cornered by persons with money and muscle power, and they represent the interests of the rich and influential section. The poor and unprivileged continue to have little voice in the working of *Gram Panchayats*. Seats are reserved for women and the unprivileged category of social groups, but the impact is less due to the prevailing patriarchal system and proxy candidates.
- * Once elected, a *Gram Panchayat* tends to become a sovereign, autocratic body. There are no communication channels with *Gram Sabha*. Regular meetings do not take place and level of participation of women and poor households is low. In a study, in the state of Uttar Pradesh, collective decisions regarding public works had been taken only in about 20 per cent of Panchayats [Srivastava, 2002].
- * Mechanisms for ensuring transparency within *Gram Panchayats* remain weak. Budgetary transactions are rarely discussed in *Gram Sabhas* or Panchayats and are shrouded in secrecy. No records of the meetings are maintained.
- * *Gram Panchayats* lack the technical expertise and the financial capacity to hire technical experts, in order to intervene in watershed management on their own.
- * *Gram Panchayats* have become more accountable to the district officials than to the *Gram Sabha*. The programmes are not prepared on the basis of general consensus in the village. The plans prepared by the state department officials are generally endorsed by the *Gram Panchayats*, without formal discussions in the *Gram Sabha*.
- * The programme implementation procedures through contractors under supervision of state officials have not changed much. Despite devolution, the block functionaries continue to have an upper hand, and there is hardly any diminution in their powers in the post Seventy-Third Amendment scenario. In the process, the *Gram Panchayats* have come to stay as the lowest rung of bureaucratic delivery system.
- * *Gram Panchayats* are not active in education, health, promotion of Self- Help Groups, which require people to come together as equals and work through consensus.

III. SUCCESSFUL WATERSHED DEVELOPMENT PROGRAMMES: SOME FACTS AND INSIGHT INTO THE PROCESS

Water conservation programmes, once part of local tradition and rituals in all the regions, became the responsibility of the State, with the advent of colonial rule and the State taking control of all natural resources. There was not much change in the situation even after the Independence. The Indian Constitution empowers the states to legislate in this regard, and in most cases colonial laws are still in force. The much more recent Bihar Irrigation Act, 1997 also provides that all rights in surface water vest in the Government [Cullet, 2007]. The general alienation of the masses and the scanty implementation machinery of the State led to a situation, in which conservation and management of natural resources was grossly neglected and, in the absence of efforts for regeneration, natural resources stood over-exploited. In this scenario, some isolated local initiatives in various parts of the country successfully implemented water conservation programmes. Therefore, an insight into these processes will be in order, to understand the factors behind their success.

Technology

Local variants for water conservation measures were adopted in each case. These methods do not allow the rain-water to get collected and give rise to a flood-like situation. Rain-water, upon falling on ground, is either stored in the vicinity or given the opportunity to percolate into the ground or a combination of these two methods is used. Based on relief, slopes, soil type, soil depth and geology, etc, the array of structures with different shapes and sizes has been used at various locations.

In Ralegan Siddhi, district Ahmednagar, Maharashtra, the watershed development process led by Anna Hazare, started with construction of Nullah bunds. It proved successful and the water level in the wells improved. Next, a percolation tank, already constructed by the state department,

which was not holding water, was renovated by re-laying its foundation and strengthening its walls. These successes were followed by extensive treatment of catchment area. To check run-offs, contour trenches, *gully plugs*, loose boulders, and *gabion* structures were constructed along the hill slopes. More *nullah bunds*, check dams, and cemented *bandharas* were put in place at strategic locations. These measures increased the infiltration of harvested water and recharged the ground water. It resulted in regeneration of 85 wells and 8 bore wells, and they were viable all through the year.

In Khandwa district, in the state of Madhya Pradesh, fast depleting vegetative cover, high soil erosion, impermeable black cotton soil, and continuous basalt formation has led to high run-off conditions. Coupled with over exploitation of ground water and cultivation of water intensive crops, it has resulted in severe depletion of sub-surface water, creating a crisis. In this situation, 50,000 hectares of land in 1,067 villages was treated with water conservation structures. In all, 17,60,439 *kundies* (deep percolation trenches), 2,430 km continuous contour trenches (CCTs) and 4,087 km field bunds were put in place. In addition to these trenches, 7,303 earthen checks, 3,060 Khandwa Hydraulic Structures - a modified form of ponds to suite the local topographical and physical conditions, 729 tanks, and 208 dams were constructed. The contour trenches were laid down on all kinds of terrains, like forests, agricultural fields, and barren wastelands with various soil types and depths. The contour intervals, their depths, and other structures were adjusted in the given terrain to absorb and store volume of water generated with 10-15 cm rain-water at any point of time. Thus, the peak rainfall was also absorbed and no run-off was allowed to be generated. The sub-surface retention of water ensured increased soil moisture and enhanced the capacity to survive the dry spells. In subsequent years, wells got recharged with a few rainfall events, and the water availability as well as the cropping intensity was better even in drought years. It indicates that less

rainfall does not necessarily mean shortage of water. It was estimated that 17 per cent of the average rainfall of the district was enough to provide the required amount of water. The post monsoon winter *rabi* crop was sown in almost 70-90 per cent of area. At some places, water was still available to grow summer crops during drought years [Gupta, 2003].

At Alwar, in Rajasthan state, a voluntary agency, *Tarun Bharat Sangh* (TBS) spotted the neglect of tradition that had sustained the area and its populace in the past. They started working on *Johads* to address wide range of social and economic issues [Khalakdina, 1998]. *Johad* is a simple mud and rubble barrier built across the contours of slope to arrest rain-water. Sometimes, a series of them are constructed depending upon the type of slope and terrain. These structures have high embankments on three sides while the fourth is left open for entry of rain-water. The height of the embankment is such that the capacity of *johad* is more than the volume of run-off coming from the catchments. The cover area, i.e., water storage area of *johads* varies from 2 hectares to maximum 100 hectares. Nearly 2,500 such water harvesting structures in 500 villages were created or renovated. Besides, TBS also stressed other water measures, like field bunding on individual farm-land, and protection of forest-land. The cumulative effect of all these measures helped increase ground water table in this region. A survey conducted by TBS, with the help of Action for Food Production (AFPRO) in 1988, suggested that out of 970 wells in 120 villages, only 170 wells were operational, and that the rest did not have any water. The same team in 1994 found all wells (970) in use and providing perennial supply of water. The conversion of seasonal streams to perennial rivers is also attributed to water harvesting measures.

At village Laporla, in semi-arid state of Rajasthan, an indigenous method of *Chauka and Santra* - a system of bunds and trenches on the common pasture land, and re-building of almost lost village ponds helped increased percolation,

storing water on ground and arresting top soil erosion [Gandhi Peace Foundation, 1998]. The protection of common land by adopting social measures against tree felling, grazing and encroachments paved the way for natural regeneration. Meticulously planned and organised planting of indigenous trees and shrubs reinforced the water harvesting efforts. The village with its about 500 hectares of land reported tremendous increase in productivity and cropping intensity.

Similarly, in Gaya district, Bihar, Mahesh Kant and Sarita, a social activist duo, led nearly 35,000 people in 40 villages and helped reviving a 45 km long canal with branches into 170 village tanks. This age old traditional system, known as *ahar-paine* or tank-canal system, allowed abundant river water in monsoon to flow into village tanks (*ahars*). From the tanks, water is carried to the farms for irrigation [Gokhale, 2004].

The Deendayal Research Institute (DRI) in Satna district, Madhya Pradesh, has implemented an extensive and integrated watershed management project in collaboration with the District Rural Development Agency (DRDA), Satna, under Rajiv Gandhi Watershed Mission sponsored by the Government. The watershed area was situated in Vindhya Hills range with an approximate area of 12,536 hectares comprising 17 micro-watershed areas and 18 villages. The annual rainfall in the area varies from 800 mm to 1,100 mm. The soils in the hillocks are rocky, stony and gravelly, with steep slopes, undulating topography, and dispersed/impooverished vegetal cover. Water flows freely on the surface due to poor percolation and compact nature of soil. The physical measures taken included staggered contour trenches, contour/field bunding, cattle proof trenching, loose boulder check dams, percolation tanks, and farm ponds. A key to the watershed management strategy was the use of locally available material for construction of the

required structures. Steel or cement was used sparingly and mainly for spillways, etc. [DRI, 2002].

Vijay Kedia - an engineer turned farmer - invented low cost, individual and independent method of rain water harvesting, which he called Kedia-Farm Pattern (KFP) *bandhara* (storage) and advocated it as a solution to no rain, low rain and heavy rain situations. KFP *bandhara* is 60 cm wide, nearly three meters deep, and 30-40 meters long trench just prior to the boundary of a field. A PVC sheet is placed vertically on the walls of the *bandhara* opposite to the flow of water and two feet horizontally on the bottom. The *bandhara* is refilled with porous excavated soil. During monsoon season, in normal course, rain-water does not percolate two feet below ground and the farmers cut the field boundary to drain collected water out to the neighbouring field. In KFP *bandhara* water travels along the PVC sheet vertically downward upto the bottom of the trench where the PVC is laid at the bottom also. The water starts flowing backward and percolates into the soil through this artificial recharging path. Percolation accelerates due to pressure head created by trench depth. Within 2-3 weeks, the reservoir water percolates into the ground completely and *bandhara* is again ready to receive another spell of rainwater. In one monsoon season, KFP *bandhara* can recharge water 4-5 times of its holding capacity. With this method it is possible to capture almost the full amount of rainfall, which charges the nearby aquifers and the wells [Kedia, 2004].

The use of check dams in water conservation and storage is amply demonstrated at Jhamka village in Junagarh district in Saurashtra region of Gujarat. This region, consisting of northern arid region (less than 400 mm precipitation) and the south-western semi-arid region (precipitation ranging from 500 mm to 1,000 mm), is subject to drought hazards with an average frequency of once in every three years. The intensive agriculture in the last many years has put pressure on groundwater resources. The water level has

gone down 120 meters to 210 meters at many places. In this situation, check dams and percolation ponds caught the fancy of the populace, to combat droughts and water shortages. Mansukhbhai Suvagia - an employee in the state soil conservation department with training in water management- thought of having a cluster of check dams at one place, in order to have maximum impact, in contrast to having check dams here and there with marginal impact. He also addressed the problem of high costs of construction, by putting in place reinforced cement concrete (RCC) dams, selecting sites with maximum natural advantages, and voluntary labour of the participating villagers. The impact of this strategy was brought out very ostensibly at village Jhamka. In a span of five months, i.e., from July 1999 to November 1999, 51 check dams and two ponds were put in place, some of them big enough to store more than 1,00,000 cubic meters of water. The water level, which had gone down to more than 200 meters in last 15 years because of proliferation of electric tube wells, came up to less than five meters. The main targets were recharge of soil, and raising groundwater level. They were carried out as one time activity with not much post-project maintenance and distribution management. The high quality of construction, due to people's direct participation, also ensured little post project maintenance.

Under the Indo-German watershed development programme (IGWDP), soil and water conservation is carried out through construction of physical structures, promoting plantations and forestry, and encouraging right farming practices. The Project, while recognising the importance of indigenous knowledge and practices, found it necessary to augment them by modern techniques and management practices. The activities like hydrological and sediment monitoring, thematic maps for improved planning, participatory rural appraisal (PRA) techniques, and training of field level staff in operation and maintenance of hydrological

equipment and soil and water conservation techniques were the important components of the programme.

Organisation and People's Participation

The most successful programmes have their genesis in the philanthropic initiatives of some persons having at heart native interest in the region. The public service with selfless motives, understanding of local social and agro-economic problems, and an appeal to the local community to ameliorate their own lot are the main characteristics of the process. The local community, after developing strong faith in the leadership, organise themselves in the form of village level management committees, which undertake measures for soil and water conservations.

Anna Hazare, the chief architect of the transformation at Ralegan Siddhi, after his voluntary retirement from Indian army, decided to dedicate himself to work for welfare of the society. He demonstrated his unselfish motives, and the village began to rally behind him. A sense of solidarity developed and the villagers started assembling under his leadership, to discuss their problems related to the welfare of the village. They together decided to wipe out alcoholism and forced the closure of illicit liquor brewing units in the village. Jointly, the village lads were helped to get jobs in government-run employment schemes. To improve the water availability for agricultural activities, the water harvesting activities were initiated, and ultimately the village society was able to harness this resource without financial help from outside agencies.

At Laporla, the process started with the initiative of a local youth - Lakshman Singh - with the formation of a strong *Gram Sabha*. In addition to soil water conservation measures, enforcement of a strict code of conduct and regulation against illegal felling and cutting of trees and killing of

wildlife on the pasture lands were introduced. Fortnightly and monthly meetings were held to plan, execute and monitor the work.

Mahesh Kant and Sarita, at Gaya, led the powerless downtrodden people with the central theme that people should act for themselves, and that the work of someone acting on their behalf was not sustainable. However, in the absence of strong law and order enforcement in the state, the flag bearers paid the price by laying down their lives, when the feudal lords in the area had felt threatened by the empowerment of the poor, and killed the duo.

At Jhamka, the sheer magnitude of the problem faced by the rural folks, and the workable solution in sight under a noble leadership helped them to organise themselves at local village level, to ameliorate water shortage and improve their agriculture and income. The leadership induced instant formation of village committees, once the site and other technical details were finalised. The watershed development programme undertaken by the Deendayal Research Institute (DRI) is an example of successful implementation of government schemes with stipulated guidelines through an NGO. The DRI, equipped with highly skilled scientific manpower and monetary resources, adopted an integrated approach of resource conservation, development and management. The Institute apprised the resource poor villagers of their problems through participatory rural appraisal methods, and educated them in the methods of watershed management, to alleviate these problems. People's participation was actively sought in the preparation of the action plan, fixing the priorities for work, and the execution of the projects within the programme. The persistent efforts could generate a surge of voluntary participation, which became a part and parcel of the implementing process. However, the leadership role rests with the DRI. The DRI, having permanent local establishment, adopted the project and continued to play this role.

The IGWDP promotes cooperation between state government departments (SGDs) and NGOs, in order to combine and utilise the respective strengths of the partner organisations towards the common objective of watershed management. The activities, planned by SGDs and NGO with their mutual consultation, are sponsored and supervised by the IGWDP. But the goal of all these organisations is to organise local watershed committees and local institutions having representation of all the socio-economic groups. The objective is to strengthen the watershed committee by all the partners in such a way that the committee is capable to handle all watershed management activities on its own after termination of the project. Under Indo-German Watershed Development Programme (IGWDP), investment in physical capital begins only after ascertaining that people will work together to maintain investments on both, private and community, lands. One important early project activity under the IGWDP was to plant trees and grasses in the catchment areas and to protect them. Only after people demonstrated such social discipline, does the project invest larger amounts of funds in new watershed structures. Help of smaller local NGOs was sought to organise various village level committees, with an aim to transfer all post-project responsibilities to the successful NGO and the village community. In the programme, there was a strong emphasis on developing the village social capital. Vijay Kedia, however, demonstrates that water-harvesting measures can be undertaken without the community joining hands, and that there exists a low cost technology, which can be implemented individually. Widespread dissemination of the technology is vital and some organised efforts to demonstrate the technology is the basic requirement.

In all these experiments, an important aspect of the people's activity has been the process and the manner, in which the activity was implemented. The watershed management activities started as a collective effort, in response to the common constraints. Implementation

processes were based on the local socio-economic conditions, sound delivery mechanism owned by the local community, and commitment from the project implementing agencies, which happened to be the local committees working under the guidance of a local leader. These projects created forums for collective decision-making, and for ensuring representation of all the stake-holders. These forums enjoyed autonomy, had resources of their own or were entrusted with public money, and worked to address their immediate constraints. The additional monetary resources were generated, once a sound project implementation system was put in place. Empowerment of the poor, through building their capabilities, and providing access to sustainable livelihood and opportunities for off-farm work was part and parcel of the processes adopted. It demonstrated that improved watershed management was not so much a matter of monetary allocations, as of processes and governance.

Scaling Up

All these major successes were emulated in the states of their origin at the state level in the country. The Government of Maharashtra launched *Adarsh Gaon Yojna* (Ideal Village Scheme) to replicate the Ralegan Siddhi model in 300 villages by combining technical staff of the government departments with social NGOs. People in each village selected a local NGO to help them in social organisation, implementation, maintenance of records and accounts, and monitoring of the project activities. The local NGO was also instrumental in coordinating with the appropriate government department, to access funding and the technical guidance. The soil and water conservation department of the state government was entrusted with implementation of technical work. [There are at present Water Conservation, Water Resources, and Rural Development Departments of the Government of Maharashtra].

At Jhamka, the ingredients of the success story helped in spreading the movement in voluntary mode to the other parts of the state. Local village societies in other regions, under the leadership of Mansukhbhai, undertook the same feat in more villages. The local public contributed both money and voluntary labour. Nearly 500 more check dams were constructed. Many industrialists and charitable institutions in the area joined the movement. They raised money for this cause and developed some remarkable water conservation sites. At village Khopala in Bhavnagar district, 210 check dams were constructed. In November 1999, the Gujarat government announced the Sardar Patel Participatory Water Conservation Programme on Jhamka pattern, which was officially launched in January 2000. Under this programme, the beneficiaries raise 40 per cent the cost of check-dams and the balance 60 per cent is contributed by the government. Till August 2004, 41,758 check dams have been constructed in Gujarat, benefiting nearly 4,18,000 hectares. These check dams have an average height of 1.5 to 2 meters with water storage capacity of 1,50,000 cubic meters to 3,50,000 cubic meters. Further, the government has the agenda of constructing another 1,50,000 check dams in the next five years. This movement has made the state famous for its check dams.

At Laporla, the village assemblies, *padyatras* (i.e., group of persons going around in the village on foot), folk songs and bhajans (holy hymns), and religious rituals of worshipping land and trees, rejuvenated and strengthened the local awareness of environmental protection. It very strongly spread the message in 80 more neighbouring villages and they were galvanised to undertake similar activities. At Khandwa, a government servant, the Chief Executive Officer (CEO) of the Khandwa Zilla Parishad, demonstrated the technology, and the idea caught up very fast, due to its efficacy and profitability. The public, at large, created their own water harvesting structures to help re-charging their

wells. Similarly, Mahesh and Sarita provided the leadership and opportunity to the masses to come together to manage their systems.

The IGWDP is an example of collaboration between the government and non-governmental organisations that seek to scale up the success of small NGO programmes [Farrington and Lobo 1997; WOTR, 2000; NABARD, 1995]. Its guiding philosophy was the need for collaboration among village level organisations, NGOs, skilled in social organisation, and government organisations, having monetary and technical resources. The IGWDP also developed elaborate procedures to cut through bureaucratic, time consuming and inefficient procedures, to ensure that funds move quickly. As of July 2000, the IGWDP has developed 123 villages covering about 1,30,000 ha, with the help of 74 grass root level NGOs [WOTR, 2000].

IV. MAKING INTEGRATED WATERSHED DEVELOPMENT A NATIONAL PROGRAMME

Need for Effective Grass Root Level Institution for Watershed Management

In the existing statutory framework, inherited from the colonial era, and further strengthened after the Independence with new enactments, the state is the owner of most of the natural resources, including water.² The various state departments manage these resources on behalf of the State.

However, existing arrangements are proving inadequate, and it has led to a trade off between ever increasing demand for these resources and sustainability and ecological considerations. Moreover, there are international initiatives, to reform water governance law and policy in the developing countries, in recognition of the impending water crisis and the need to improve access to fresh water by the masses. Both, domestic and international factors are favouring decentralised management, and the state is called upon to change its role from that of service provider to a regulator. The overriding thrust is to transfer part of the existing government

prerogatives to the users. The natural consequence of this change in the policy thrust is the need of new governing bodies at local levels to take over these responsibilities. However, in the absence of such grassroot level institutions, the existing institutional framework of government departments, *Gram Panchayats* and NGOs, is roped in, and efforts are on to transform them for this new role. The new emphasis on partnership programmes of state departments with local communities is, thus, the transition phase. The existing ground level institutions, not set up and equipped for this role, are involved in a relatively un-coordinated and ad-hoc manner. The state, on its part, is also reluctant to transfer access or ownership rights to local communities through these institutions and still maintains almost full control over the resources and the management processes.

As stated earlier, most of the successful programmes in different regions were taken up by the respective state government departments for implementation in partnership mode on a larger scale. However, these programmes ended up with hegemony of government departments, and could not replicate the success stories in collaborative mode. For many performance indicators, the government projects did not perform any better than non-project villages. The government programmes bring in monetary resources and the legitimacy to the projects but lack the dynamics of interaction with the local population with different expectations and behavioural norms. The government officials have not learnt to take up the position of a local leader, whom people trusted and volunteered to work in unison. The NGOs possess skills necessary for community involvement and their target-oriented existence contributes to the success of the programme. However, there is a very small number of such organisations and, given their voluntary nature, development of such institutions is also not common.

Need for Socio-economic Base for the Poor in Rain Areas

In India, the rain fed areas are home to most of the poor and deprived population, and the majority of them are dependent on agriculture. Fragmented small agricultural holdings, lack of resources and infrastructural services, and illiteracy are the hallmark of these regions. These regions, with small contribution to the national exchequer and low consumption level, witness low level of economic activity. The failure of the earlier approaches to rural development programmes to transfer resources in favour of the rural poor (top-down approach), and the recent efforts of the decentralised watershed management by actively involving local communities in project formulations and implementation process (bottom-up approach), can be traced to weak socio-economic institutional bases or a complete absence of these in rural areas. Thus, the lack of institutional facilities for technology transfer and development, soil and water conservation measures, organised markets, banking, extension activities, and other institutional support services is both, the cause and consequence, of non-integration of local population with the rest of the market economy. The inability to address stagnating growth in agriculture amidst liberalisation and high growth rate of the rest of the economy is a pointer to this low level of integration. The farming communities in these areas need to be organised around some local grass-root level institution for their empowerment and generation of organised pressure for investment in and effective implementation of programmes meant for them.

In literature, people's participation is conceived, in principle, as an umbrella term that covers participation from policy planning and project design to management of water and other farm based rural activities. But, the changes effected so far in project implementation focus on participation of the ordinary rural folk at the tail end of the process. The broader participation is

possible, if there exists a framework of administrative management, capable of generating appropriate environment of general participation and assuming responsibilities enshrined in such thinking. The available body of literature provides woefully small hints on such initiatives, and suggests fragmented approach, mostly tinkering with existing institutions at the margin. Such changes are unlikely to impact situation and produce results at a faster pace.

Framework for Grass Root Level Institutions

Based on the empirical assessment of watershed management programmes in the country, a novel institutional framework incorporating the general trend of decentralisation and people's participation is proposed in this study for effective implementation of such programmes. The framework is the possible frame of reference, within which relevant issues for implementing watershed and agricultural development programmes can be identified, addressed and resolved at grass-root levels. The proposed framework is visualised from the following perspective:

1. Agricultural Technologies: identification and dissemination for livelihood enhancement in watershed areas.
2. Planning, implementation, and post-project maintenance of physical water harvesting measures in watershed areas in socially sustainable manner; and
3. converging programmes of various government departments and other organisations with watershed development programmes.

It is suggested that these perspectives can be operationalised in two institutional environments:

1. Open chain network, with dynamically evolving partners and local communities.
2. Closed vertical activity-based chain network, within clearly defined participatory agro-business enterprises.

1. Open Chain Network: Organisational Model

The open chain network model allows the existing institutional framework to embrace both, decentralised and knowledge based, management of watershed development activities. The watershed development programmes with new guidelines on decentralisation and people's participation spell out arrangements of collaboration between various partners, like District Rural Development Agency (DRDA), government line departments, *Gram Panchayats* and sub-committees under *Gram Panchayats*, NGOs, and subject matter specialists from other public autonomous institutions.³ However, as pointed out earlier, these constituent units have inherent problems in their functioning and, together, do not put in place a cohesive and responsible body at village level or any other intermediate level, for effective implementation of projects in partnership mode. Some initiatives, not necessarily directly related with watershed programmes, like District Planning Committee (DPC) and Agricultural Technology Management Agency (ATMA) at district level were introduced⁴ to overcome such problems, but not much success can be attributed to them. Similarly, the *Gram Sawaraj* Act of Madhya Pradesh and the provision of *Block Sansad* and *Zilla Sansad* of Bengal are efforts to improve the role of the PRIs and ensure better participation of the beneficiary public. But, a comprehensive analysis of the scenario points to a need for metamorphic version of existing arrangements and, preferably, a new body or institution free from the legacy of previous organisations. However, the method to create such an institution without an abrupt break from existing arrangements poses a big question mark. Nonetheless, it does not obliterate the need for such an exercise. In an environment, where more

and more responsibilities⁵ are assigned to *Gram Panchayats*, there is opportunity to transform and strengthen them in a new form. Some of the characteristics of such transformed institution, at village or some intermediate level, which may be called Village Development Society (VDS), are contemplated and given below. Although VDS is postulated as the transformed *Gram Panchayat*, its characteristics may be considered independent of the previously existing institutions, in order to highlight its role as a body capable of implementing programmes effectively with changed processes and procedures.

Already, the Constitution (Seventy-Third Amendment) Act, 1992, provides for administrative, financial and legislative powers of the PRIs, which can be extended to a VDS. Under Article 243G, the legislature of a state can make a law to empower the *Gram Panchayat* to prepare plans 'for economic development and social justice', apart from other matters specified in the Eleventh Schedule to the Constitution. The topics in the Eleventh Schedule include minor irrigation, water management and watershed development, fisheries, drinking water, waterways, health and sanitation, public distribution system, and maintenance of community assets. Similarly, Article 243H authorises *Gram Panchayat* to impose taxes, duties, tolls and fees, and receive grants-in-aid from the state. It also has a provision for constitution of a Finance Commission every fifth year, to review the financial position of the *Gram Panchayats* and to make recommendations to the government on (a) the principles, which should govern the distribution between the state and the *Gram Panchayats* of the net proceeds of the taxes, (b) duties, tolls and fees leviable by the state, and the determination of the taxes, duties, tolls and fees, which may be assigned to, or appropriated by, the *Gram Panchayats*, (c) the grants-in-aid to the *Gram Panchayats* from the Consolidated Fund of the state. However, this scheme of decentralisation of powers is yet to be

effectively put into practice, and the VDS provides states the opportunity to fulfil this constitutional obligation.

Village Development Society: Two Tiers of Management

The successful programmes implemented in different parts of the country have genesis in the honest, sincere and benevolent local leadership, which generated self-help to implement the desired programme by the community itself. Providing leadership and opportunity to the unorganised but willing population to fulfil their dreams was the key to the successful implementation of the programmes. This important aspect cannot be over looked while making watershed development plans people's own programme for its effective implementation. The above-mentioned qualities should form the basic requirement of the personnel holding positions in a Village Development Society (VDS). The commitment, dedication and communication skills of such persons should help them play the role of a facilitator, and create a niche position for themselves in the local community. However, such leadership is not common and cannot be instituted easily in the management system. Moreover, this also does not alleviate the need for such elements in the grass-root level institutions. It is necessary that persons with high moral and ethical standards form the core of the VDS.

Thus, the VDS may consist of a core group of personnel and a peripheral one. The core group personnel, preferably from the local area, will be the persons of repute with impeccable record of honesty and devotion for rural development. They will be technically competent persons capable of manning the office of high authority. Small group of such persons will together provide the leadership and oversee the managerial and coordinating functions of the VDS. The position will be voluntary and the office is not likely to offer any material benefits. There is no dearth of public-spirited individuals in any region who are

prepared to voluntarily contribute in such efforts. The local respectable members of the society, known for their honesty and uprightness, will also be the members of the core group. Some mechanism may be devised to include such persons in the VDS. To further strengthen such organisations, rules and procedures can be incorporated to make them transparent in their working.

The peripheral group of persons will consist of technical officers derived from different functional areas. Each one will be the programme leader for the programme proposed and planned by him/her or their departments. Any stakeholder will be free to operationalise the programme mechanisms for technology development, dissemination and value addition. As a measure to strengthen and develop the rural economy, government may encourage all types of personnel to take part in the activities of a VDS. Persons from all walks of life like, industry, banking, administration, police, law, and religion may be extended incentives to become members of the VDS and promote their programmes.

VDS: Autonomous and Accountable Body

A VDS will be the society of all stake-holders having interests in agriculture and rural development. It will include government officials, technical experts, industry representatives and NGOs. General public, along with the members of the core and peripheral groups, will constitute the *Gram Sabha*. Experts, if not belonging to the watershed area, will not have the voting rights. This will be the decision-making body and members, through informal meetings among themselves, will evolve consensus over the issues of common interest. The role of core and peripheral group members will be very important in building up the consensus. Their impartial, sincere, and knowledge-based facilitating advice will help creating a congenial atmosphere in this process. The successful case studies have demonstrated that active and responsible participation by the

local inhabitants rests with responsible and transparent behaviour of the managing agency. This, in turn, generates a sense of fruitful and rewarding involvement of the general public. This is the crucial element which is not there in existing formal institutions and sought to be inculcated in VDS. Decisions taken in *Gram Sabha* will be implemented by respective programme leaders (peripheral group) and supervised by the core group of VDS.

A VDS will be the focal point institution to coordinate efforts of all the agencies interested in rural development. This approach will facilitate collaborations with business groups, key NGOs, and other agricultural experts for commonly agreed framework, action plan, and outcome. Government programmes can also be implemented through this body. NGOs and private sector can initiate interventions on behalf of rural population. Thus, the VDS will play a mix of roles of coordinator, facilitator, enabler, and regulator. It will be a regulator of the village development programmes in the sense that it will monitor and evaluate the progress of these programmes. Members of the VDS are planners also, and mid-term reviews will help introduce required changes in programmes under progress. Members of the VDS will work out system description, problem diagnosis, search for appropriate technology, monitoring, and evaluation. Direct participation and observation of the expert group in the VDS, and the relevant stake-holders, having capacity and the willingness to intervene, will quickly reveal the major bottlenecks. Experts will represent different public and private organisations concerned with rural development. Among themselves or by inviting relevant organisation, they will suggest and introduce schemes to solve the problem. The whole arrangement will ensure an ambience of innovation and demand-driven assistance, rather than pushing pre-determined technology packages and programmes. The programmes in the villages will be implemented through individual households or users groups or self-help groups.

In order to impart local characteristic to a VDS, it will have the power to make rules and bye-laws for its conduct of business, and amend, add or delete them from time to time. There are always informal unwritten rules of local governance in the form of conventions or rituals regarding use and maintenance of natural resources, which are evolved over long period of time. They are, however, easily displaced or extinguished by new laws that fail to even acknowledge their existence. Such local level arrangements may be implemented as code of conduct by the VDS. The Panchayats (Extension to the Scheduled Areas) Act, 1996 (PESA) already empowers state legislatures to frame such laws in respect of Scheduled Areas and Tribal Areas. Such provisions can be made selectively by the state in respect of watershed areas.

A VDS will also be empowered to create administrative, technical, and other posts and make appointments thereto. The Constitutional amendment has cleared the ground to create self-sufficient, autonomous, democratic, and responsible *Gram Panchayats* or VDS, free from hierarchical syndrome, to manage local natural resources at village level or slightly higher intermediate level. However, these provisions have not been implemented so far, and there is need to delegate powers to grass-root level institutions by the states. This is the crux of the issue. It does not require further legislation. Measures, like mobilisation of public opinion or Supreme Court intervention are the courses ahead. The VDS may emerge as an institution, to which these powers may be delegated without much hesitation. These changes also constitute the wish list of reforms in agriculture sector.

Livelihood Enhancement, Capacity Building and Empowerment

The watershed development so far remained synonymous with soil and water conservation by implementing physical measures, like water and soil harvesting structures. This did not automatically lead to higher productivity and

sustained livelihood. In fact, development of livelihood, which includes farm production methods as well as off-farm livelihood methods, continues to receive low attention under watershed programmes. The national agricultural support programmes, like fertiliser, power, and irrigation subsidies, procurement and price support, by-passed the rain-fed agriculture, because the farmers in rain-fed areas, with small holdings, no irrigation, low input use, nil or small marketable surpluses, are not in a position to benefit from subsidies. This historic neglect has created a very high degree of indifference on the part of farmers and business towards rain-fed agriculture.

The VDS needs to conceive both the production method and the incentive support system for promoting rain-fed farming and watershed activities. Thus, it has to work for assured irrigation, and water harvesting and conservation facilities, technological inputs in methods of water application, low water consuming cropping pattern and crop varieties, efficient farm practices, etc. Realisation of better prices, through farm level processing and linkages to marketing centres, is also necessary for sustainable rain-fed farming. These activities should not become project-based one-time activity but convert rain-fed farming into productive and livelihood generating enterprise. The VDS, by virtue of a conglomerate of resource persons, will also be the rural knowledge society steering knowledge-based rain-fed farming and other agro-business activities.

The VDS will ensure capacity building of the local community in agricultural development, by facilitating organisation of farmers into associations and cooperatives in marketing, agro-processing, and other agriculture-related activities. Resource-poor and illiterate farmers stand little chance to organise themselves on these lines in the absence of such efforts. For quite some time, self-help groups (SHGs) have also emerged as a powerful tool of socio-economic empowerment of the poor in rural areas. An SHG

is a small homogeneous group of 5-20 persons for pursuing self-employment activities in a coordinated manner. These groups, spearheaded vigorously by the National Bank for Agriculture and Rural Development (NABARD) as a mechanism to link banking to the unorganised poor rural masses, and very often led by women, have become a common rural phenomenon in many states. Now, different departments of the state and central governments find it convenient to implement their poverty alleviation and social intermediation programmes in education, health, access to land and water, etc, through these groups. However, there is urgent need to build up capacities and nurture these groups, prior to establishing their linkages with banks and other organisations. The VDS, by employing skilled personnel, will actively facilitate them in their working. Such arrangements gain importance, in view of the on-going process of market liberalisation, and the new opportunities emerging in the rapidly expanding economy. The VDS will also ensure that the benefits of the government schemes are availed un-hindered by the targeted community, and the community is protected from vested interests. It is possible that some of the vested interests, being stake-holders also, will be influential members of the VDS. However, the decision-making process of the VDS, which is necessarily open, free and transparent, due to the participation of the core and peripheral group members in *Gram Sabha*, may expose and/or prevent, at least to some extent, the vested interests from influencing the decision-making in their own favour. This is in contrast to the existing arrangements, in which *Gram Sabha* meetings are not frequent, and convened to fulfil statutory requirements only. The decisions of the influential members of the *Gram Panchayat* are hardly discussed, and are considered as final. The VDS will help canalising financial support through credit institutions and private investments, and also help the training for skill up gradation.

With growth and modernisation, there is a major shift from production-driven agriculture to market-driven farming. This cannot be possible without a fast information flow from the rest of the world to the local community. The VDS will provide the information on sources, quality, the potentials of different techniques and the technology used for production and processing of agricultural produce in an appropriate format that farmers have capacity to access, analyse and act upon. In addition, the VDS, concerned with sustainability issues, will need to maintain a wide variety of information about spatial (geographical) conditions and their impacts on natural resources and production systems, and the socio-economic profile of the region in question.

2. Closed Vertical Chain Business Model

VDS can successfully endeavour to create an environment to build partnerships locally with other organisations, active in rural services and development. Such partnerships with defined participating local and business groups and value-adding business activities, identified and selected by the VDS, are fully amenable to closed vertical business supply chain network. The VDS will negotiate on behalf of the farmers and arrive at terms favourable to farmers, so that the participating local and business groups are not allowed to exploit the farmers, as before. Demand aggregation and increased market penetration will provide the incentive for rural infrastructure development, like food processing, storage and transport, etc. The higher cost of infra-structure will be absorbed through this business model, which will help lowering transaction costs and achieving higher business volumes. The business models also provide technical support and advice to produce quality farm output, and arrange for supply of good quality farm inputs. The technical support for limited or specific activities may also be obtained through out-sourcing to experienced resource persons/ organisations, identified by the VDS. However, the pre-requisite for this closed chain business model to be viable and sustainable, is sound business plans and strategies, based on

all conceivable value-addition and distribution practices. Developments, like e-Choupals, agro-business centres, organised supermarket chains, food-parks, certified organic production of seeds, herbs, and medicinal plants, formation of real estate companies by farmers themselves, are examples of increasing integration of agricultural sector with the rest of the economy. However, there is need of a body to enhance competitive strength of farmers, and promote such activities wherever necessary. The intimate understanding of the social and economic conditions, and mutual trust fostered by the VDS will help integrating rural masses with main stream economic activities.

The large number of successful programmes in rainwater harvesting implemented by social leaders or local organisations have demonstrated the possible suitability of the business model to this sphere of activity, too. In comparison to the major dam- and canal-based irrigation projects, the cost of watershed development is very low, and in many cases, the local community of the watershed raised the whole amount through their personal contributions and donations in cash and kind. In the absence of cumbersome procedures and rent-seeking elements, conditions which the setting up of the VDS is likely to result into, the local community could accomplish the task at much lower cost with superior quality of construction, with the VDS providing a mechanism for more effective and transparent inter-agency co-ordination and decision-making. The immediate solution provided by these measures made the investments quite attractive and the local society reaped the benefits immediately. However, these experiments have not shown much interest in generating revenue, and maintaining and improving the capacity of such endeavours, possibly, due to absence of institutional and legal backing. These popular movements need to become a part of the local grass-root level institution, that is, the VDS or the existing PRI, and should be strengthened as a platform for providing services in irrigation and common property resources, like pasture lands

and minor and major forests produce. The PRIs have the provision for collection of fees for such services, but this option has not been explored so far and needs to be developed and strengthened.

V. CONCLUSION AND THE WAY AHEAD

The development of grass-root level institutions is central to sustainable agricultural development, inclusive of healthy natural resource base, and maintenance of high economic growth rate in the country. The reform process, initiated in agricultural sector as a sequel to general decentralisation and liberalisation in the economy, needs to be strengthened by conclusively targeting the basic requirements of this sector. A grass-root level institution, enabling hitherto non-participating or, at best, passively participating rural population to be party to economic growth, is the foremost requirement for a sustained and continuous growth in the agricultural sector. *Gram Panchayat*, along with *Gram Sabha*, barring a few exceptions, has not made any dent in local development. There is no general participation. In fact, they have become the lowest rung of the local state departments. Many such problems are enumerated in this paper. The VDS will work in close association with rural masses, and will have responsibility to protect their interests. It will create strong and transparent processes in local resource management, to enable the local communities to be part of it and respect it. In fact, the social issues in natural resource management are the real challenges, which the VDS will face, and through it justify its own existence. It is expected that VDS will be able to put in place a social regulatory mechanism for these activities. The cooperation and assistance rendered in the rest of the activities, and the existing social conventions and laws will provide enough authority to the VDS to this end. However, looking at the physiographic and ethnic diversity in the country, no single model can ever be applied across the country. Institutional innovation at the community level has to be a continuous process and must be experimented with, in order to evolve a functional VDS. In addition to an effective grass root level

institution, a general liberal policy framework in public domain, like easy access to capital, creation of alternate marketing channels in procurement, processing, storage, and trans-border movements will also be important requirements for this model to be successful. Fully defined and clear property rights, and entitlement to benefits from public land will help creating necessary capital resources in rural sector

NOTES

1. The development block in the country have been classified White, Grey, Dark and Over Exploited on the basis of net annual ground water draft and total utilisable ground water resource for irrigation. The white and grey blocks have net annual draft less than 65 percent and 65 to 85 percent, respectively. The Dark blocks have 85 percent to less than 100 percent net annual draft and Over Exploited blocks have net annual draft over 100 percent of utilisable ground water resource [Ground Water Resource Estimation Methodology, 1997].

2. The Northern India Canal and Drainage Act, 1873 is still the backbone of the laws governing irrigation water. It confers on the government the right to 'use and control for public purposes the water of all rivers and streams flowing in natural channels, and of all lakes'. The Indian Constitution, after Independence, gave powers to the states to legislate in this area. Thus, the states have the exclusive power to regulate water

3. A District Rural Development Agency (DRDA), headed by Additional Deputy Commissioner (ADC), has overall responsibility for watershed programme implementation in the district. It selects one Project Implementing Agency (PIA), in most cases an existing state department, like agriculture, soil conservation, or forest, to implement the programme. A PIA is assisted by a Watershed Development Team (WDT), selected by DRDA, consisting of personnel from agriculture, engineering, life sciences, or social sciences. A Watershed Association (WA) in the selected watershed area is synonymous with *Gram Sabha*, and it appoints a Watershed Committee (WC) to interact with the PIA in programme implementation. Physical construction activities are carried out through contractors, adopting usual departmental construction work procedures.

4. Under Article 243ZD of the Constitution of India, a District Planning Committee (DPC) need to be constituted at the district level in every state to consolidate the plans prepared by the Panchayats and the Municipalities in the district, and to finalise them technically and financially for adoption and implementation by local bodies. The DPC in this endeavour is also mandated to consult other institutions, constitute sub-committees and appoint consultants. However, DPCs have not been created in a number of states. Where operational, they are yet to function as envisaged in the Constitution. They neither consolidate nor prepare draft

district developmental plans. 'Planning' is of poor quality and is generally a mere collection of schemes and works. Integration of *Gram Panchayat* plans into the District plan, even when done, also tends to be a mere summation and not a synergistic integration. (Planning at the Grass-roots Level: An Action Programme for the Eleventh Five Year Plan, Report of the Expert Group, Ministry of Panchayati Raj, March 2006, New Delhi.)

ATMA is a society of key stakeholders responsible for all the technology dissemination activities at the district level. It is a focal point for integrating research and extension activities and decentralising day to day management of the public Agricultural Technology System (ATS). It is a registered society responsible for technology dissemination at the district level. Research and extension units within the project districts, Krishi Vigyan Kendras (KVKs) and the key line departments, like agriculture, animal husbandry, horticulture and fisheries etc. are constituent members of ATMA. Each unit would retain its institutional identity and affiliation but programmes and procedures concerning district-wise activities would be determined by ATMA Governing Board and implemented by its Management Committee (MC).

5. (In his budget speech for 2006-07, the Union Finance Minister stated that the bulk of the resources under Centrally Sponsored Schemes would go to eight flagship programmes, namely, Sarva Shiksha Abhiyan, Mid-day Meal Scheme, Drinking Water Mission, Total Sanitation Campaign, National Rural Health Mission, Integrated Child Development Services, National Rural Employment Guarantee Programme, and Jawaharlal Nehru Urban Renewal Mission. Except for, the Urban Renewal Mission, these schemes fall within the core functions of *Gram Panchayats*. Along with these flagship programmes, a few more Central Programmes could be considered as important from the point of view of giving a clear and precise role to *Gram Panchayats* in planning and implementation. These also include relevant programmes under 'Bharat Nirman', aimed at rapid improvement of rural infrastructure. These programmes are: Swamajayanti Grameen Swarozgar Yojana (SGSY), Rural Housing, Indira Awas Yojana (IAY), Pradhan Mantri Gram Sadak Yojana (PMGSY), Adult Education, Rajiv Gandhi Grameen Vidyutikaran Yojana, and Remote Village Electrification Programme.

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