

ORGANISATIONAL STRUCTURE INVOLVING COMMUNITY FOR EFFECTIVE WATERSHED DEVELOPMENT

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ABSTRACT

Evaluation of watershed development projects time and again revealed that the development to be sustainable, calls for involvement of beneficiaries at all stages of development process so as to transform them as Self-Managers. The existing approaches in developing three watersheds under similar agro-climatic and socio-economic conditions, developed by research, development and NGO agencies were assessed to identify an appropriate organisational structure for developing watersheds on a sustainable basis keeping productivity, conservation, livelihoods and equity concerns in harmony. The longitudinal approach (before and after situation) was adopted to measure the impact.

People's involvement was better in NGO managed watershed due to formation of affinity groups such as SHGs and UGs which remained active even after completion of the programme. The study has established the need for strengthening local level institution, by creating suitable institution at the district level, with capacities and capabilities in managing resources on long term basis for improving productivity and ensuring livelihoods to the rural communities. Strengthening local level institution with support from UGs formed at the village level to conserve and manage the resources related to crop production, livestock, water use and managing common properties would lead to sustainable development by transforming every individual as a partner of the programme. It is concluded that for sustainable development of watersheds, involvement of local level institutions supported by affinity groups and guided by technical persons at different levels on continuous basis was needed. Then alone the primary stakeholders can transform into self-managers.

Introduction

Watershed programmes as a strategy, for resource conservation and productivity increase, through multidisciplinary approach

for developing rainfed areas was initiated during early 1980s after gaining experience from model watersheds as at G.R Halli (Karnataka), Fakot (Uttarakhand) and

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Sukhomajri (Haryana) (Dhruvanarayana, 1993) and subsequently through 43 model watersheds implemented during 1983 across the country. Consequently, integrated watershed development programme as a movement for overall development of rainfed agriculture in the country has been operationalised since the Seventh Five Year Plan (1987-92). Soon it was realised that adoption of watershed technologies requires collective and cooperative strategies among individual households and communities and hence, people's participation was identified as the key factor in effective implementation

of the programme (Ratna Reddy *et. al* 2010; Wani and Garg, 2009). Accordingly, integrated watershed development programme with participatory approach was emphasised since 1990s with focus on resource conservation for raising crop productivity and improvement in livelihoods. The guidelines released in 1995 provide a definite design for people-centred approach integrating sustainable rural livelihoods with watershed management (Turton, 2000). The strategy of watershed development evolved over time for promoting sustainable rural livelihoods is presented in Table 1.

Table 1 : Watershed Approach in India on Time Scale

Time Line	1960s	1970s	1980s	1990s	2000
Invention	Soil and water conservation measures on watershed basis in riverine projects	Soil and water Conservation measures Operational Research Projects and Ravinous watersheds	Resource conservation measures and productivity enhancement measures (model watersheds)	Resource Conservation measures productivity enhancement measures and land based livelihood improvements measures	Resource Conservation measures for improved incomes to the community and livelihood improvement activities
Strategy	Sectoral	Area development through multi-disciplinary approach	Area development	Holistic development	Improvement of rural economy
Approach	Top down and contractual	Top down and contractual	Multi - disciplinary	Participatory mode	Participatory mode
Sustainability & Transparency	Not owned by the community, less transparency	Area development through multi-disciplinary approach, less transparency	Partly owned by the community, moderate transparency	Community ownership, Community Vigilant	Community ownership, complete transparency
Policy Shift	Departmental Projects	Departmental Projects	Departmental Projects	DPAP guidelines	Hariyali guidelines

Evaluation of watersheds implemented subsequent to the guidelines revealed significant and positive impacts such as marked improvement in the access to drinking water, increase in the area under cultivation and yield increases in crops, improved fodder yields and rise in milk yield, reduction in the migration of labour and rise in groundwater levels and mitigation of drought (Hanumantha Rao, 2000). However, a critical review of the watershed programmes has shown that participatory approach has still not been institutionalised on a large scale. According to Shah (1998), the performance of watershed developed by Government Organisations (GOs) was very good in technical aspects while it was weak in enticing community participation and converse was true with respect to Non-Government Organisations (NGOs). Post-Project sustainability was a serious concern in many watersheds due to poor delivery mechanisms because of weak institutional set-up at community level (Sanghi, 2009).

To provide additional strength to the programme, Government of India (GoI) has modified its guidelines during 2000 by incorporating most of the activities found successful in achieving sustainability (Turton et, al 1998; Anonymous, 2000). In spite of such guidelines, no evidence is forthcoming to indicate a specific approach that becomes broadly applicable to all situations for achieving sustainability. Hence, the existing approaches were reviewed by assessing the impacts in respect of different issues and also examining the constraints that are affecting sustainability so as to develop an appropriate organisational arrangement that would be effective in implementing the watershed management programmes by the people so as to restore ecological balance.

Study Area

The present study was undertaken by adopting "before and after" situation in three

watersheds developed by different agencies in Kurnool district of Andhra Pradesh to assess the appropriateness of institutional arrangement for realising the desired goals envisaged. As the main objective of the study was to identify the differences in performance and impact of watershed development under different organisational arrangements, it was necessary to select watersheds under similar agro-climatic conditions. Accordingly, three watersheds namely (a) S. Rangapuram, implemented by Non-Government Organisation (NGO) under the new guidelines during 1995-99 with DPAP funds; (b) Gundala Watershed developed by District Rural Development Agency (DRDA) being Government Organisation (GO) with the help of multi-disciplinary team during the period 1991-94; and (c) Chinnatekuru watershed managed by a Research Organisation (RO) with funds from DRDA using the services of Line Departments during the period 1983-90 were selected. The area of the watersheds ranged from 816 ha at S. Rangapuram, 1120 ha at Chinnatekuru to 8577 ha in case of Gundala Watershed.

The watersheds are located at an altitude ranging from 300 to 500 Mts and between 77-58⁰E Longitude and 15-15⁰N Latitude. All the watersheds have undulating terrain with multiple slopes. The slopes range from 0.5 to 8 per cent in case of arable lands and 5 to 33 per cent in case of hillocks. The climate is arid to dry, semi-arid in all the watersheds with average annual rainfall being 468 mm occurring over 41 days at S. Rangapuram, 487 mm received in 39 days at Gundala and 654 mm over 44 rainy days at Chinnatekuru. Crop failures are common in all the watersheds due to either failure of rainfall or its ill-distribution.

The soils in the watershed are red sandy loams and are characterised by shallow depth due to heavy erosion in the past. However, in valleys one will encounter red clay loam soils indicating accumulation of clay through runoff

from higher slopes. The erosion intensity in the watersheds ranged from moderate to severe. Most of the cultivated lands of the watersheds are classified under capability class-III and class-IV while the hill areas are classified under capability class-VI to VIII.

Methodology

Sampling Procedure: For each watershed, 50 farmers were selected representing different economic strata in relation to their proportion using stratified random sampling procedure. The landless, marginal, small, medium and large farmers formed the respondents for the study.

Nature and Sources of Data : The data regarding the characteristics of the watersheds, organisational structure and administrative arrangements, cost of developmental activities, climate, land use, cropping pattern and cropping intensity and other demographic features of the study area were collected for both the benchmark year and years of reference (2001-2002) from the implementing agencies. Structured schedules were employed to collect information on planning, implementation and problems encountered in the implementation of the watershed development activities from the concerned officers and staff of the implementing agencies. Apart from stakeholders, the perceptions and responses of administrators and technocrats responsible for implementation were also obtained through personal interviews after carefully framing the issues concerning to watershed development, impact and sustainability. Details like employment generation, migration and annual income were collected from the selected representatives of different categories of farmers and landless labourers through a structured schedule during the year 2001-2002.

Statistical and Analytical Tools : The data, both secondary and primary, were analysed

using appropriate statistical tools. Measures of central tendency and ratios, specifically simple averages and percentages were employed to compare the data between the different areas selected with respect to land use, cropping pattern, crop yields, returns and income.

Implementation Process : The Watershed Development Team (WDT) members under NGO organised S. Rangapuram watershed, interacted with Watershed Association (WA), Watershed Committee (WC), User Group (UG) and Self-Help Group (SHGs) and other stakeholders to assess knowledge levels pertaining to natural resources and their management. During the first phase, Entry Point Activities were taken up to address their immediate problems, so as to enlist their participation in the future programme. In the second phase, Participatory Rural Appraisal (PRA) was carried out to determine the problems and assess opportunities for choosing appropriate techniques/strategies to overcome the same in all sectors. The programme was implemented subsequently involving people as per the guidelines.

In the case of Gundala watershed, the Multi-disciplinary Team working under the Project Director, DRDA had formed the Watershed Committee and an action plan was prepared in consultation with people involving Line Departments for conserving resources and improving productivity. The programme was implemented through the Line Departments in association with people.

In the case of Chinnatekuru watershed, the scientists from Central Soil and Water Conservation Research and Training Institute (CSWCR&TI), Bellary (Karnataka) conducted initial surveys for preparing the inventory of resources involving staff from Line Departments under the overall supervision of DRDA. After discussing the needs and priorities of the people by forming a Watershed

Society, action plan was drawn in consultation with Line Departments and local Research Organisation for resource protection and productivity enhancement.

Impact

In general, all the watershed development programmes (WDPs), irrespective of the implementing agency, led to rise in groundwater level in the wells and availability period from 3 to 6 months in Gundala and S. Rangapuram and from 6 to about 9 months in Chinnatekuru. Consequently the total area irrigated has increased by 12, 176.5 and 6.7 per cent in Gundala, Chinnatekuru and S. Rangapuram watersheds, respectively. This has helped in internalising the negative externalities associated with groundwater extraction in terms of reducing extraction costs as well as increased area under irrigation. Planning and implementation on scientific basis as done by RO, by establishing appropriate linkages with Line Departments resulted in productive utilisation of the augmented resource, apart from ensuring equity among stakeholders (Jain, 2010).

Several workers have reported increase in productivity, economic improvement and additional employment due to WDPs. The yields of all major crops viz., groundnut, redgram, setaria, sorghum, vegetables, onion and cut flowers etc., in the above watersheds have increased due to implementation of watershed based technologies irrespective of implementing agency, varying from 14 to 90 per cent. The increased employment opportunities and assured employment days per adult have resulted in reduction of number of idle days by 55.9, 12 and 39.5 per cent in Research Organisation, Government Organisation and NGO managed watersheds respectively, indicating increased agricultural activities in scientifically managed watersheds. This led to reduced out-migration from

watershed areas to almost nil in Research Organisation managed watershed whereas it reduced by 17 to 25 per cent in other watersheds. Consequent to watershed development programmes, the livestock population has increased varying from 68 to 83 per cent in cows, 57.5 to 73 per cent in buffaloes and 63 to 149 per cent in sheep across watersheds. As a result, the landless across watersheds have improved their incomes through milk sales by 155 to 168 per cent (Jain, 2007). The continuous change in the production portfolio as a result of strong technology back-up from research institutions seems to have strengthened livelihood security and increased farm income (Rama Mohan Rao et al 2000; Joshi et al 2004).

Awareness and Participation of Primary Stakeholders

The primary stakeholders in all the three cases felt that the programme is more of soil and water conservation benefiting land owners rather than area development for improving economic well-being of the people. The primary stakeholders under NGO managed watershed were aware of the activities; however, they were not aware of the roles and responsibilities of the committees and their members. The meetings were not regular and the issues discussed mostly related to soil and water conservation. The stakeholders in GO and RO managed watersheds were totally ignorant about the committees and their responsibilities.

The stakeholders in NGO managed watershed supported by WDT & MDT members have positively responded up to 98 per cent as against 10 per cent and 42 per cent under GO and RO managed watersheds respectively, in relation to watershed strategy. WDT and MDT members felt that watershed activities are more sustainable (up to 80 per cent) as against 40, 36 and 26 per cent of the stakeholders felt sustainable in NGO, RO and

GO managed watersheds, respectively. The stakeholders' participation in watershed development was 78 per cent in GO as against 70 per cent in NGO and 32 per cent in RO. NGO watershed is superior in watershed management through participation and in terms of building community based organisations, sustenance of watershed and capacity building etc. due to emphasis on income and employment generation activities.

The capacity building activities were considered to be adequate in NGO managed watershed, whereas the same were considered to be inadequate by the respondents in GO and RO managed watersheds. Formation of local level institutions for operating the programme was absent in RO managed watershed and in GO managed it was less intense whereas formation of SHG and UG was intense in NGO managed watershed, indicating people's involvement in the programme. Lack of involvement of land owners will lead to inadequate management of a land parcel and to environmental degradation while sufficient participation yields benefits in the form of reduced erosion and increased productivity (White and Renge, 1994, Joshi *et. al.*, 2005). Even the Mid-Term Appraisal conducted by the Ministry of Agriculture, GoI, revealed that projects have failed to attain sustainability due to lack of involvement of the people by the concerned agency (GoI, 2001).

Secondary Stakeholders

The WDTs noticed improvement in productivity and additional employment due to implementation as identified by Rama Mohan Rao *et al* 1997. The MDT felt the need for building capacities at different levels to ensure cooperation among the members of WDTs and MDTs in implementing the programme by people, apart from regular social audit.

WDT and MDT members felt that watershed activities are more sustainable (up to 80 per cent) whereas only 40, 36 and 24 per cent of the beneficiaries in NGO, RO and GO managed watersheds, respectively felt that the activities are sustainable. The programme is more seen as a soil and water conservation and not as a village development programme, as a result landless have not become partners in the programme.

Further, the WDTs and MDT have expressed that the benefits of the watershed development programmes were reaching only to few leaving others. Inadequate livelihood support activities to landless and marginal farmers are responsible for not establishing equity among the stakeholders for sharing the benefits of the programme.

Administrators

The administrators' views were gathered to identify the weaknesses in the existing procedures for developing watersheds adopting a particular organisational structure.

The major findings of the discussions with the administrators are :

- * It is necessary to actively involve the people who manage the village level institutions and public life in the village for the success of the programme.
- * Holistic and mixed farming systems should be promoted appreciating the role of livestock and due attention should be paid both in funding and technology.
- * At present no convergence of various developmental programmes at watershed level is noticed. Bringing all developmental programmes under one umbrella of area development programme would bring realisation among the people manning village level

institutions, to ensure sustainable development.

- * At present there is no proper exit policy. Completion of treatment to various lands should not be taken as an end but to be considered only a means for improving economic standards of the people. Hence building the ability of people and local institutions to manage the natural resources for the benefit of all, without jeopardising its future use should be treated as the end goal and organise trainings to the local institutions in the direction.

Future Requirements

The future policy as enunciated in the Tenth Five Year and subsequent four Five Year Plans clearly advocates that Watershed Programme must become people's programme with government's support and should not remain as a government programme for the people. The 72nd and 73rd Amendments of the Constitution, envisage that Panchayati Raj Institutions need to be empowered to give shape to a possible people's movement, with the need based village level planning as its central theme, ultimately making it as a primary implementing agency of watershed development programme. In fact, the "Hariyal" programme launched from 1-4-2003 by the Ministry of Rural Development (MoRD), Gol is a step in this direction. Training Gram Panchayat (GP) as Project Implementing Agency (PIA) using micro-watershed (~50ha) (Yugandhar et al., 1999, Srivastava, 1999; and Crispino Lobo, 2009) in the first year leads to development of local level Institutions capable to plan and implement developmental programmes.

The present study identifies several lacunae in the existing Organisational Structure in developing capacities of local organisations in managing developmental

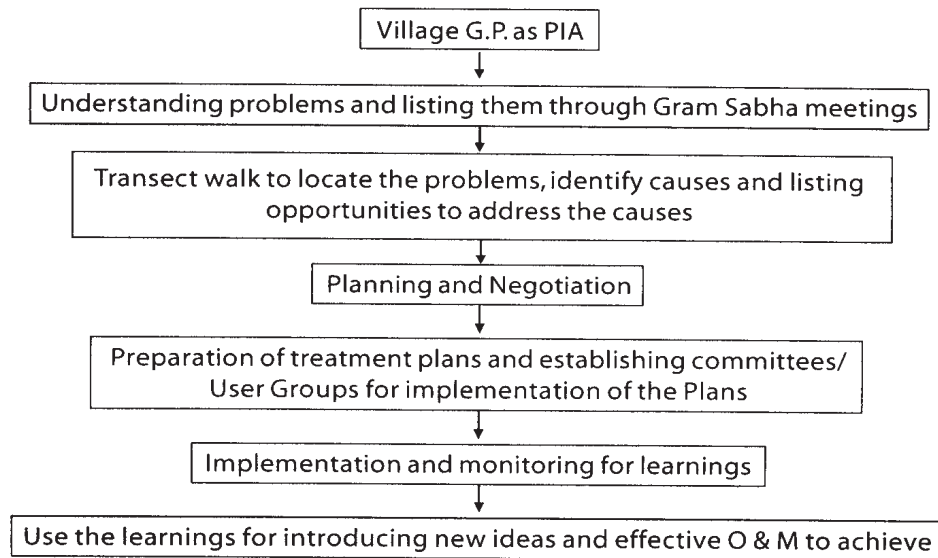
programmes. The responses of the administrators clearly establish the need for strengthening local institution with capabilities and convergence of all developmental programmes at the village level for cross subsidisation apart from all round development to ensure livelihood security to the population below poverty line. The formation of SHG and their continuity even after withdrawal from the watershed reveals the need to form either "affinity groups" or "focus groups" for undertaking resource development and management at the village level. In this regard, it is observed that the existing in vitro user-based institutions rather than setting up new organisation or committees will be more successful (Mukherjee, 1998). Several models have been attempted by workers to bring sustainability to watershed development (Adolph, 1997). However, problems in group formation and their functioning were identified as major bottlenecks in implementing the programme. These models did not have internal monitoring system to make necessary corrections for improving efficiency as well as sustainability (Rama Mohan Rao *et. al.*, 2000).

The past experiences reveal that any development, to be sustainable, can neither be imposed nor imported and it must come and grow within. It is a dynamic process and not just economic dynamism but learning to develop in different ways. The above underscores the role of participatory approaches in all developmental programmes related to natural resources. In watershed development programmes if productivity, conservation and equity concerns are kept in harmony, then the results can be synergetic. It calls for involving users at all stages of development and management including operation and maintenance by developing an appropriate local administrative system equipped with technical skills and control within the existing socio-economic framework.

There is a priority need to strengthen the capacities and skills of stakeholders in the area of their interest to transform them into self-managers (Fig-1) which requires considerable

time and effective training at different levels (Shah 1998, Crispin Lobo, 2009 and Sivanna, Gopinath Reddy and Srinivasa Reddy, 2007).

Fig. 1 : Process of Planning & Development of Watershed by the Local Level Institution



The available theory and practice suggest that small homogeneous groups representing full spectrum of stakeholders can carry out implementation tasks better than big groups or committees (Mukherjee, 1998; Rajasekhar et al, 2003; Sreenath Dixit et al, 2007). Hence at the watershed level, it is necessary to build affinity groups having focus on poverty, livelihoods, water management, soil management, crop management, CPR management etc. By training such groups, it will be possible to effectively plan and implement the programmes.

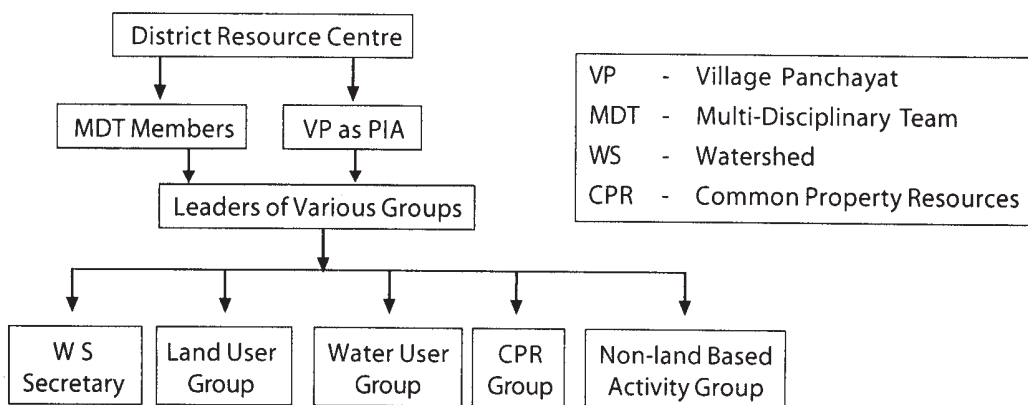
Such a programme demands an effective training organisation located at the district level, depicting the resources, problems and prospects along with technical solutions. Towards this end, it is essential to develop a District Resource Centre at each district

managed by multi-disciplinary team, with complete information related to bio-physical, geo-hydrological and socio-economics of the area (Fig-2). Such knowledge helps in assessing the potential capabilities and weaknesses. The centre should also have a flow of information with respect to technologies for resource conservation, livelihood opportunities related to resources and present alternative land uses along with efficient management practices apart from various developmental programmes and their activities in the district. The centre must be able to provide both resource and functional literacy at the watershed level along with applicable knowledge system that are location-specific. The centre should act as a good training facility for stakeholders on appropriate methods, workable technologies and organisational skills. Since watershed

development is not a one shot approach, solving one problem may result in another problem e.g. as landuse changes new problems in terms of water quantities and qualities/fodder scarcity/surplus etc. may appear. There should be a continuous interaction with different organisers so as to

complement the project support roles presently played by DRDA or funding agencies. It should work as a forum where people and institutions can share experiences and knowledge related to natural resource management.

Fig. 2 : District Resource Centre



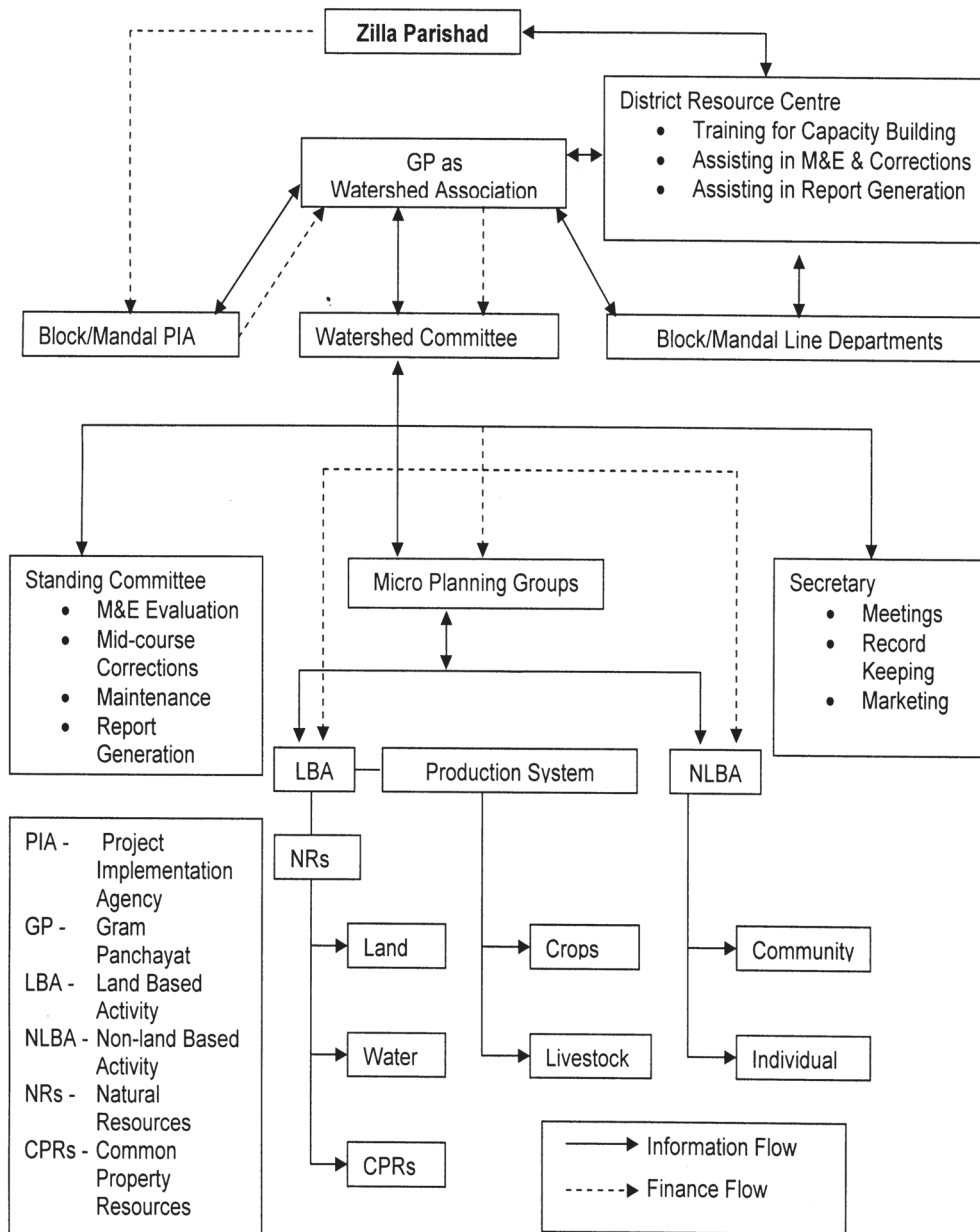
Conclusion

The watershed development programmes, irrespective of organisational set-up have improved crop yields and milk production as well as cropping intensity indicating better utilisation of production base. In all cases, improvement in groundwater recharge is noticed, such resource augmentation is effectively utilised by adopting micro level planning using technical skills under RO managed watershed. On the other hand, formation of affinity groups and their effective functioning subsequent to the programme under NGO managed watershed clearly establishes the need in promoting local affinity groups with focus on poverty, livelihoods, water management, CPR management and crop management under local level institution and build their capacities and capabilities in planning, developing and managing resources keeping productivity and

equity concerns central to the programme. If the concerns of conservation, productivity and equity are to be kept in harmony, all the stakeholders need to be partners of the watershed development programme. It means watershed programme should be a people's programme in which government should participate for providing technical support. Hence organisational structure to manage watershed should be of local level institution supported by affinity groups and guided by technical people at different levels on continuous basis so as to transform individual stakeholders into self-managers. Persons thus trained will eventually become the effective Natural Resource Managers and will be able to effectively implement the programme and foster development in different ways to achieve the sustainability. However, such groups need to be continuously supported with knowledge and information for which effective links with technocrats available

at the resource centre is a must. In accordance with the above, the following organisational set-up is recommended for sustaining the development (Fig-3).

Fig. 3 : Proposed Organisational Structure for the Watershed Development Programme



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