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INTERNATIONAL WATER WATERSHED DEVELOPMENT PROGRAMME :
MACRO-MANAGEMENT FOR MICRO COOPERATION

INSTITUTIONAL ARRANGEMENTS AND IMPACT OF PARTICIPATORY
NATURAL RESOURCES MANAGEMENT

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LIST OF ABBREVIATIONS / ACRONYMS

BMZ	Bundesministerium fuer Wirtschaftliche Zusammenarbeit und Entwicklung (Federal Ministry for Economic Cooperation and Development)
CBP	Capacity Building Phase
CO	Community Organiser
COWDEP	Comprehensive Watershed Development Programme
DPA	Drought Prone Area
FIP	Full Implementation Phase
FPC	Forest Protection Committee
GoG	Government of Germany
GoI	Government of India
GoM	Government of Maharashtra
GS	Gram Sabha
GtZ	Deutsche Gesellschaft fuer Technische Zusammenarbeit (German Agency for Technical Cooperation)
HRD	Human Resources Development
IGWSDP	Indo-German Watershed Development Programme
KfW	Kreditanstalt fuer Weideraufbau (German Bank for Reconstruction and Development)
KT weirs	Kolhapur Type weirs
MISEREOR	A German Church related funding Agency
MoF	Ministry of Finance
NABARD	National Bank for Agriculture and Rural Development
NGO	Non Governmental Organisation
PS	Panlot Sevaks : Watershed Volunteers
PSC	Project Sanctioning Committee
SC	Social Centre
SHG	Self Help Group
VSHG	Village Self Help Group
VWC	Village Watershed Committee
WOTR	Watershed Organisation Trust
WS	Watershed
WSD	Watershed Development

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INTRODUCTION

The Indo-German Watershed Development Programme (IGWSDP) is a bilaterally assisted Programme being implemented in the State of Maharashtra. While the first agreements were arrived at in 1989, it was only in 1992 that all formalities were completed. Work, which had already begun earlier, acquired momentum in 1993. To date the programme is being implemented in about 85,000 ha. spanning 20 districts of Maharashtra.

The major partners on the German side are the BMZ (Ministry of Economic Cooperation), the KfW (German Bank for Development) and GtZ (German Agency for Technical Cooperation), while those on the Indian side are the MoF (Ministry of Finance), NABARD (National Bank for Agricultural and Rural Development) and WOTR (Watershed Organisation Trust).

In this Paper, I shall attempt to outline the circumstances and reasons that led to the initiation of the Programme, the underlying assumptions and beliefs, the issues involved, the institutional and administrative arrangements arrived at and impacts or results obtained.

1. THE BACKGROUND

Maharashtra, which is the 3rd largest State in India lies on the western coast of India. It has a population of 78,900,000 people and covers a geographical area of 307,713 sq. km. Administratively it is divided into 31 districts covering a total number of 43020 villages.

Geographically Maharashtra consists of a narrow Coastal Belt called the Konkan, a range of hills running north-south called the Western Ghats, and sloping eastwards from the Ghats for over 700 kms., the Maharashtra plateau.

The major geological formation (91 % of the state) is the Deccan Trap which consists of hard basaltic layers which increase in thickness from east to west. In the western region near Bombay the thickness reaches nearly 7000 feet. Hydrogeologically due to non porosity of the hard rock formation favourable conditions are created primarily by secondary features like weathering, fractures, fissures which allow an infiltration rate of between 9 - 22%

Climatically April and May are the hottest months with temperatures ranging from 32 - 46 °C. The rainfall pattern is uneven accompanied by erratic behaviour both in frequency and intensity. Rainfall is highest in the coastal region ranging from 2000 - 6000 mm. followed by the rain shadow zone in the central zone (1/3 of the state) where rainfall ranges from 150 mm - 750 mm. Rainfall in the eastern part of Maharashtra ranges from 1000 - 1200 mm. Almost half the state has been classified as Drought Prone Area (DPA) covering 14 districts. The bulk of rains (85%) come between June - September (also called Summer Rains) and the rest from October -

February. Water Budget - wise, in no part of Maharashtra has the soil enough moisture to last the whole year. There is always a deficit with the period of stress increasing between November and May.

It is estimated that actual well stocked forests cover only 9% of the state with the concentration being the western ghats and northern and eastern Maharashtra.

Agriculturally about 60% of the state is under cultivation engaging 63% of the population. With about 9% of India's population and 13% of its cultivated land, Maharashtra has an above average man-to-land ratio. However its productivity is below average.

Irrigation - wise about 13% of the land is under irrigation and even if all the potential is fully harnessed, it is estimated that no more than 25% of the land will be irrigated. Thus agriculture in Maharashtra will predominately be rainfed-based dry land farming. During the summer of 1995, as many as 23,000 villages and hamlets experienced acute drinking water shortages.

We thus see that a fairly large part of Maharashtra is arid or semi-arid and dependent upon the Monsoons for agricultural purposes and life sustenance. Thus, monsoon failure quickly leads to a collapse of the fragile bio-ecological system leading to drought and the attendant human suffering and deprivation.

2. THE PROBLEMATIC

Monsoon failure and recurrent drought has been a constant and frequent feature of Maharashtra, especially so in the Drought Prone Areas covering close to half the State. And it was thus natural that the bulk of developmental efforts both from Government and private agencies / NGOs was concentrated on this area.

The issue was how to ensure food security, stable income flows and adequate livelihood opportunities or employment so as to mitigate poverty and remove the spectre of hunger and destitution.

Prior to the recent spurt in industrialisation in Maharashtra, the economy was largely agrarian and it was naturally felt that by increasing agricultural productivity and output, the issues outlined above would be addressed. Availability of sufficient water, introduction of modern agricultural technology, access to markets, credit, energy, infrastructure, both physical and social, would provide the solution, or so it was generally believed.

3. THE RESPONSE

Accordingly the State invested heavily in all these sectors.

NGOs/ private agencies focused on developing water sources, providing agricultural technology and access to credit to the farmers. One such leading NGO working in the semi-arid region of the Ahmednagar District was the Social Centre, founded by Fr. Hermann Bacher a Jesuit, over 25 years ago.

From the 1950's upto the late 70's the quest for water led to the digging of open wells, followed by ever deepening bore wells as the ground water table receded due to monsoon failures and overwithdrawals. In this period, in the Ahmednagar District, the ground water table fell from 40 ft to 300 ft. Moreover, the irrigation wells primarily benefited individual farmers. However, as rural electrification intensified and credit became more easily available, the shortcomings of individual advancement to the neglect of the community he lived in became evident. Moreover as ground aquifers were not getting sufficiently recharged, the focus shifted to group beneficiary programmes centered around lift irrigation schemes and recharge structures like nallah bunds, check dams, KT weirs and underground dams.

Despite all these efforts and massive investments, it was observed that while undoubtedly, there were pockets of development, nevertheless, the vast majority of the rural folk were as poor off as before. Drought had, infact, increased in frequency and intensity, unemployment was chronic, water sources had become fewer and leaner, agricultural production had plateaued and soil fertility had in fact begun to decline. The drought of 1972 is remembered even today with a shudder. It devastated the rural economy leading to mass migration and pauperization of the peasantry.

The situation provoked a rethinking of developmental strategy and approach leading to a major paradigm shift. The following realizations emerged

- 1) Development had to be sustainable and replicable. For this to happen it must also be just. All should benefit fairly and perceive themselves as benefiting fairly. An intervention that benefits the greatest number is to be preferred to one that benefits the few even if the latter produces greater returns in absolute terms, which is usually the case in the short or middle run. Given the rigidities, sensitivities and complexities of agrarian social groups, the intervention should be perceived by each major interest group as non-threatening and beneficial. That intervention is preferable wherein it is accepted that due to natural or immutable causes the disadvantaged groups will usually benefit earlier than the dominant groups. This greatly reduces the sensitivity of social and political bargaining.

- 2) A situation had to be looked into in its entirety and in all its interrelationships. This meant that the entire environment involving all the interactive subsystems at that particular place like land, water, biomass, animals, humans and meteorology would have to be taken into consideration. The agricultural subsystem would have to be seen in terms of its interrelationships with the other subsystems and not exclusively. Water had to be looked at not only as an input but as a life giving movement called the hydrological cycle.
- 3) The approach and focus had to shift from maximum output with minimum inputs - resource exploitation - to resource mobilisation, namely the conservation, management and judicious utilisation of resources.
- 4) Furthermore, the designing of interventions and their application would have to be done by the concerned groups / parties themselves so that their legitimate interests are preserved, furthered and they have a sense of "ownership" of the intervention.
- 5) It was further realised that poverty eradication and drought mitigation could only be achieved through environmental and ecological regeneration wherein all the concerned groups were actively involved and benefited fairly.
- 6) The watershed presented itself as the natural starting point and its development as the desired result. For the watershed is not only a self contained environmental system but also the area of survival of those living in it. Watershed development being an area treatment, would necessarily benefit the majority of people (provided feudalistic patterns of land holding and agrarian relationship are not predominant) and would only be implementable if the various major interest groups cooperated with each other.
- 7) In this regard watershed development was particularly appealing because given the geological profile of Maharashtra, if treatment is done from ridge-to-valley and emphasis is given to soil conservation and biomass development, the farmers occupying the upper part of the catchment benefit earlier and significantly before those in the lower catchment. The observed lead time for subsurface water flow in a watershed of around 1000 ha. is between 2 - 4 months. There is thus an inbuilt distributive system in favour of the poor. Small and marginal farmers usually own lands in the upper catchment

The paradigmatic shift thus involved a moving away from the individual and group to the community in which both subsist; from individual subsystems to their totality as an interactive system, namely the environment and its ecology; from sectoral interventions to intersectoral linkages; from resource exploitation to resource mobilisation; from benefits to the few to benefits for the many.

Thus watershed development provides both the framework in that it is a complete geographical spatial unit as well as the agenda which brings people together in a common effort wherein the majority of people all benefit.

In 1981, the Govt. of Maharashtra launched the COWDEP (Comprehensive Watershed Development Programme), which sought to treat watersheds in a comprehensive and integrated manner. The drawback in this attempt was that the role of the people was incidental to the programme and instead of following the hydrological principle - ridge to valley - it often went from valley towards the ridge but rarely to the top.

In 1987, Maharashtra witnessed another severe drought. This brought several of the NGOs together at Aurangabad to discuss and formulate a long term strategy for drought proofing. It was decided to go in for a large scale programme of watershed development involving the communities living therein. They were supported in this conviction by the encouraging results obtained in some watershed projects which were being successfully implemented by a couple of NGOs as well as by the Government.

The NGO's however expressed the strong need to have adequate finance, technical and managerial support as well as Government permission to treat lands belonging to it such as Revenue lands and Forest lands. An appeal was made to donors and other institutions to come forward and support this initiative.

Present at this meeting was Fr. Hermann Bacher who by now had become the Resident Representative of MISEREOR in India. He accepted the challenge and thus in 1987, he initiated the process which is now called the Indo-German Watershed Development Programme (IGWDP).

4. THE CHALLENGE OF SCALE : FROM ONE TO THE MANY

Upscaling individual success stories to a large scale Programme calls for a prospective of macro-management which at the same time has to be rooted in and be responsive to the micro-level. Unless there is continuous and enabling cooperation between key sectors and actors such a process would be bound to get unstuck thus seriously jeopardizing sustainability as well as replicability.

The IGWSDP has as its objective poverty eradication through the creation of a "people's movement" for ecological regeneration along watershed lines.

What were the assumptions and premises, the issues involved and the legal and Institutional arrangements made during the evolution of the IGWSDP ?

A) Assumptions and Premises

(i) Concerning The Operational Milieu

- a) The key to success of a watershed project is the people living within it. Only when they realise the relationship between the degraded environment and their poverty, come together as a group and decide to do something about it can successful rehabilitation of the watershed occur. In other words they must transform themselves into an effective Self Help Group (SHG).
- b) This is only possible when all the major interest groups negotiate sharing and transfer arrangements as well as agree on an arbitration or conflict resolution mechanism. This village SHG (VSHG) must then decide what to do, how to go about it and evolve mechanism for monitoring and maintenance. A small committee of capable, representative individuals must then be nominated by the VSHG to execute its mandate. We call this committee the Village Watershed Committee (VWC).
- c) Since watershed development often requires from certain groups the giving up of presently enjoyed benefits or their postponement to a later date, compensatory alternatives which are at least as good as the benefits foregone need to be arranged in order to ensure their cooperation. This usually takes the form of external financial assistance by way of wages and purchase of locally available material.
- d) Usually a catalyst is required to bring people together and focus their creative energies. This role of mobilisation has usually been done by grass root NGOs.
- e) Since a watershed development is a complex ecological unit, rehabilitation must be undertaken carefully and sensitively. This calls for considerable technical inputs which often is not available with most NGOs nor in one institution. Hence collaborative arrangements have to be made with Technical Support Organisations (TSO's).
- f) For a "people's movement" to unfold a certain "critical mass" of successful people-managed projects should occur so that a significant "demonstration effect" is obtained. This would also require the creation of enabling framework conditions and the cooperation of key

Institutional actors. Furthermore it would call for the involvement of a large number of VSHGs and NGO's.

However environmental rehabilitation often requires large sums of money, a rather sophisticated organisation and management system and appropriate technical inputs. Most NGO's and VSHG's would have to acquire the necessary skills and develop the requisite capacities. Hence a Capacity Building Pedagogy and induction programme would have to be developed.

- g) Since land and water are not only natural resources but also political factotums, no large scale effort is possible without the active administrative and political support of the Government and the political establishment. This is especially true since the Government does own some parcels of lands in watersheds. Furthermore, with its vast developmental infrastructure and activities the Government can contribute significantly by way of extension support.

Moreover, in a democracy, politicians do play a critical role in the shaping of public opinions and consensus. Acceptance of a developmental initiative by the political establishment creates an enabling ambience.

- h) Financial Institutions with their far-flung network and massive financing of the agricultural sector and developmental activities must also be involved if the programme is to receive timely and appropriate financial assistance. Moreover, since watershed development creates the infrastructure that makes agriculture, especially in rain fed areas viable, it is in the banker's own interest to join the programme as a partner.

It can thus be seen that watershed development at both the micro and macro levels is both complex, requiring the complementary cooperation of various actors as well as enabling framework conditions.

How all the above is reflected in the IGWSDP at the operational level in terms of the various sectors, actors, functions and linkages is outlined schematically and diagrammatically in Annexures 1 and 2 respectively

(ii) Concerning the Organisational Milieu :

- a) An organisational framework has to evolve from a process of consultation and dialogue between all the key actors. A sustainable participatory approach at the grassroots level is only possible if the delivery mechanism (the organisational framework) is itself the result of dialogue., interaction and sharing of experiences.

- b) There should be a confluence of interests. All key partners must feel that by cooperating together they individually stand to gain considerably. It is therefore important that they be brought together in a manner and into a relationship wherein they feel a sense of partnership and ownership.
- c) In view of the fact that disparate partners from different sectors - government, private and civil society having different outlooks and approaches have to necessarily come together in a synergistic dynamic, it is vital that there be at all times continuous and free flow of information and ideas. This builds up trust and consensus.
- d) In view of the complexity of situations and the need for timely and appropriate interventions, coordination and networking amongst all the partners and actors is crucial.

B. The Organisational Framework :

(i) Overview

The IGWDP consists of 2 phases. The first phase is called the "*Capacity Building Phase*" and the second phase is called "*Full Implementation Phase*". The Full Implementation Phase is the main programme and is administered by National Bank for Agricultural and Rural Development (NABARD). The Capacity Building Phase is a supportive programme to the above and is administered by the Watershed Organisation Trust (WOTR) which has been set up by the Programme Coordinator.

PHASE I: THE CAPACITY BUILDING PHASE (CBP)

- a. NGOs that are capable of doing work but have not proved their capabilities in watershed development are included.
- b. These NGOs as well as the VSHGs that want to join the Programme undergo an orientation program organised by WOTR to understand the concept of watershed development. They also undergo a systematic training schedule to equip them with the social, technical and managerial skills required.
- c. They are then put in contact with the local Govt. Depts., so that they can make use of their administrative, technical and financial facilities.

- d. Once the people and the NGO have demonstrated a willingness to follow the Programme discipline, physical work on a small micro-watershed, say about 200 ha, within their area is started. This is used for both training and demonstration.
- e. Once the project starts off and continues in a sustained manner, it could then proceed to the Full Implementation Phase. This phase lasts for a period of 12 - 18 months.

PHASE 2: THE FULL IMPLEMENTATION PHASE (FIP)

- a. Only NGOs who have proved their capability to carry out watershed development are selected. These then prepare a project proposal together with the VWC and the assisting Technical Support Organisation (TSO), if any, and forward the same to NABARD which considers the proposal.
- b. The Project Proposal is approved by the Project Sanctioning Committee, which is a state-level committee
- c. Sanctioned projects funds are then forwarded by NABARD to the bank account jointly operated by the NGO and VWC while management costs go directly to the NGO.
- d. Monitoring and supervision is done by NABARD and the Programme Coordinator, while on-going support is provided by WOTR. This phase lasts for a period of 48 months.

Diagrammatically the two phases are organically linked as follows

1	Phases	Phase 1 : 12 - 18 months	Phase 2 : 48 months
2	Nature	Capacity Building of VSHGs/NGO	Full scale Implementation of WS project by VSHG supported by NGO
3	Organisation Responsible	WOTR	NABARD / PSC
4	Funding partner	GtZ	KfW
5	Activities involved	<ul style="list-style-type: none"> * Social Awareness * Social Mobilisation (Establishment of VWC, FPC *¹, etc.) * People's participation through voluntary contribution of labour / cash, controlled grazing, etc. * Training of VWC, NGO and Panlot Sevaks *² * Development of management systems for VWC and NGO * Small scale activities in a micro-watershed 	<ul style="list-style-type: none"> * Feasibility Report Preparation * Large scale implementation of sanctioned project.

(ii) Organisations / Institutions Involved:

The following institutions/organisations are involved in the execution of the IGWDP.

a. At the Project Level:

- i) The Village Watershed Committee (VWC) : The VWC consists of persons nominated by consensus at a formal or informal Gram Sabha attended by adult members of the village, representing all the sections in the village and also the different geographical areas. This body actually "owns" the project and is responsible for the planning, implementation, monitoring and maintenance of the project.

When the project is being executed on, the VWC is expected to be formally registered.

*¹ FPC : Forest Protection Committee

*² Panlot Sevaks : Watershed Volunteers

- ii) Non-Governmental Organisation (NGO) or Voluntary Agency (VA) : The NGO is responsible for motivating organising and involving the village community in preparing and implementing the watershed project. The NGO and the VWC are jointly responsible for project preparation and implementation, to receive funds and be accountable for the same.

b. At the Program level:

i) Linkage Building / Networking:

The Programme Coordinator is a representative of the NGOs and has the responsibility of communicating between different agencies - NGOs, NABARD, WOTR, KfW, GtZ, Government agencies. The Coordinator also attends to problems faced by the participating NGOs and VWCs. On specific request from the NGO/VWCs, the Coordinator may be able to render help for project specific problems as well. Along with NABARD and WOTR, the Coordinator is also involved in selecting new NGOs and watershed projects, in helping NGOs and village communities in improving their skills and in project monitoring. The Coordinator is also a member of the Project Sanctioning Committee.

ii) Administrative & Financial Support:

- a) NABARD is the legal project holder and administers the Main Program, namely Full Implementation Phase (Phase 2).
- b) WOTR is the legal project holder and administers the Capacity Building Phase (Phase 1).
Both NABARD and WOTR are responsible for the execution, supervision and monitoring of the Indo-German Watershed Development Programme. The Programme Coordinator is the common link between the 2 Phases.
- c) Project Sanctioning Committee (PSC): has been constituted at NABARD and has the following responsibilities :
1. To evolve the standard conditions for identifying NGOs and projects to be included in the Programme,
 2. To consider NGO applications and project proposals
 3. To sanction projects.
 4. To periodically review the Programme and suggest modifications

The PSC is headed by the competent sanctioning authority within NABARD. Apart from the Chairman and Member Secretary, it comprises of four representatives of NGOs, the Programme Coordinator, three representatives of the Government of Maharashtra (Secretaries of the Dept. of Forest, Agriculture and Water Conservation), a representative of the Ministry of Agriculture of the Government of India and special invitees, if any.

The PSC oversees and supervises both Phase 1 and Phase 2 of the IGWDP.

iii) Technical Support:

Technical Support Organisations (TSO) are NGOs or other organisations who have the competence to undertake necessary technical investigations and prepare comprehensive watershed projects. Their help may be sought by NGO/VWC's in preparing watershed projects and in formulating project proposals as per the designated Terms of Reference (ToR).

The Programme Coordinator's Technical Team that forms a part of WOTR may also be availed of in this regard.

iv) Policy and Extension Support: This is provided for by the Government of Maharashtra, Government of India and its various agencies and departments.

The Government of Maharashtra has passed policy resolutions supporting the IGWDP and has advised the concerned departments and organisations to provide data, help and guidance to the NGO/VWC's participating in the Programme. The Forest Dept. and the Soil and Water Conservation Dept. have also passed the necessary executive directives

The inter-relationships between all the organisations and institutions involved in the IGWSDP is represented diagrammatically in Annexure 3

5. IMPACT :

Earlier in the paper we had shown that one of the key realization of 3 decades of developmental efforts from the 1950's to the beginning of the 1980's was that poverty alleviation and drought mitigation could only be achieved through participatory environmental and ecological regeneration along watershed lines. And this is one of the key premises of the IGWDP.

While it is a bit early to make definitive pronouncements, results available sufficiently support this assumption.

We shall briefly outline the impact of 3 watershed projects - Pimpalgaon Wagha, Kasare and Mendhwan - projects initiated and supported by the Social Centre in the drought prone area of the Ahmednagar District bear testimony to this. Pimpalgaon Wagha and Kasare though not financed by the IGWDP were amongst the key inputs that helped in the designing of the Programme. Mendhwan was financed by the Programme.

A) At project Level :

(i) On Groundwater, Net Cropped Area, Agricultural Productivity and Livestock.

The Pimpalgaon Wagha watershed project (840 ha / population 879) was began in 1988. The annual average rainfall in 1988 was 511 mm. An economic impact survey was conducted during the year 1991- 1992, which was a year of drought with only 409 mm of rain on 15 days only. The results are tabularly represented in Annexure 4. Prior to the WSD programme, the village had only 75 wells, 40 of which had water for a maximum of eight months. By 1990-91, the village had 82 wells, 40 of which had water for 11 months; however, in 1991 - 92 these 40 wells had water for only eight months because of the drought. Nevertheless, some of the wells that previously had no water for irrigation purposes now had up to three months supply of water. Area seasonally irrigated rose from 60 ha. to 168 ha. (an increase of 140%). Crossbred cattle rose from 20 to 200 (+ 900 %). Significant increases in crop productivity were also recorded. The net cropped area rose from 400 ha. to 600 ha. (+ 50 %).

The Kasare watershed project (827 ha. / population 1030) began in 1989 (500 mm rainfall). An impact study was conducted in 1993 - 94 (rainfall 300 mm) and the results presented in Annexures 5 and 6. It was a drought year.

The number of wells rose from 40 (1989) to 74 (1993) (+85 %). There was a 150 % increase in the number of wells having perennial water supply. Despite the drought, net cropped area did not decline during the summer season and increased by 71 % during the winter season. Agricultural productivity also doubled despite the adverse conditions during both cropping seasons. Cross bred cattle which were nil previously rose to 50. Migration to nearby villages

and towns declined considerably. Net irrigated area (perennial and seasonal) rose from 26 ha. to 150 ha. (+ 477 %).

The Mendhwan watershed project (1355 ha. / population 1467) was begun in 1989 (rainfall approx. 400 mm) and an impact study conducted in 1993 - 94 (rainfall 250 mm). The results are presented in Annexure 7. The number of wells rose from 83 to 92 (+ 11 %). Wells having 12 months water supply rose from 2 to 10 (+ 400 %) and those having 8 months supply from 30 to 62 (+ 107 %). Total net cropped area remained the same though area during the winter crop season actually rose by 63 % and area under vegetables from 4 ha. to 25 ha. (+525 %). Total irrigated area rose from 44 ha to 170 ha. (+ 286 %) and cross bred cattle from 25 to 102 (+308 %). Agricultural employment period rose from 3 months to 8 months.

(ii) On Human Resources

- a. In all 3 projects it has been observed that there is greater integration between the various groups in the village. Groups which were before marginalised now take part actively in village affairs.
- b. In Kasare the women run their own dairy cooperative and all 3 villages have their women's credit unions.
- c. Villagers now deal more confidently with government officials and in all 3 villages the government is implementing several schemes.
- d. Furthermore there is a greater participation in social and cultural events and the number of such occasions seems to be increasing.
- e. The village watershed committees (VWCs) in all these villages have been registered and are now actively maintaining the assets created during the programme implementation.

(iii) On Natural Resources:

- a. The ban on free grazing and cutting of trees has had a significant impact in terms of grass and vegetative cover. Shrubs are now in greater evidence and local grass species are beginning to appear.
- b. In Kasare despite poor rains (1994), 3 of the check dams were full (3 metres standing water column). A similar situation existed in Mendhwan and to some extent in Pimpalgaon Wagha.

- c. Soil erosion has also greatly reduced as evidenced by the low rate of siltation in the lower areas and by the fact that the waterways have now become lined with grass.
- d. In both Kasare and Mendhwan wild life by way of deer, rabbits, peacock and water birds have increased. This is an indication of a regenerating and supporting environment.

B) At Institutional Framework Level :

This programme has benefited greatly from government support and in turn has also had a significant impact on government policies and practice in the area of watershed development.

1. On the 27th of August 1992 the GoM passed a resolution giving administrative sanction to the IGWSDP extending all support. The Secretaries (the highest civil authority in the state) of the Departments of Water Conservation, Agriculture and Forests are represented on the Sanctioning Committee of the Programme.
2. Permission to treat lands belonging to the Forest Department was given on the 11th of July 1994 followed by a clarification on the 22nd of January 1996 regarding the non-applicability of the Forest Conservation Act 1980 to the implementation of the IGWDP. It should be remembered that this a very great step forward and underscores the commitment of the government to supporting the programme and its principle of Ridge to Valley treatment.
3. The Department of Water Conservation also modified its own watershed programme by insisting on Ridge to Valley approach, greater emphasis on soil conservation rather than water harvesting, making people the centre of their project through establishment of a Village Watershed Committee as well as joint account for project funds.
4. Today in Maharashtra, watershed development has become a buzz word and together with the government and other institutions the IGWDP has contributed in a significant way towards increasing public awareness in the area of natural resources management and poverty alleviation.
5. The programme has always received support from the political establishment. However, in the Ahmednagar District a unique event and the harbinger of future developments called the Sangamner Pattern has evolved. This model called the Sangamner Pattern which was devised and launched by Frs. Hermann Bacher and Robert D'Costa, involves the local elected representatives, local elected self government bodies, local cooperative industrial organisations, educational institutions, NGO's and villagers in a unique partnership where decisions are arrived at jointly, work and responsibility is apportioned and fixed and actual

execution of work done by the villagers supported by all these various agencies. Regular review meetings are jointly undertaken. The Sangamner Pattern opens up a new path for collaboration and also sets into place the basic elements needed for the arising of a grass roots movement. As a result of this unique cooperation a developmental dynamic has arisen which has resulted in a rapid expansion in area covered from 5,000 ha. in 1994 to 25,000 ha. in 1996 in the Sangamner Region.

C) At the Programme Level :

1. As of April 1996 the programme is now in 20 districts of Maharashtra covering a gross area of 85000 ha. involving 51 NGOs and 74 village self-help groups (projects). The demand is increasing.
2. Other states like Andhra Pradesh, Gujarat and Orissa have formally requested that the programme be also extended to their states. Both the KfW and the GtZ have indicated support provided a similar paradigm called the Maharashtra pattern is followed albeit with locally necessitated modifications.
3. In both Pimpalgaon Wagha and Mendhwan the VWCs have registered themselves as NGOs and are now taking up other villages for watershed development under the IGWDP. This is of crucial importance to us as their success here together with governmental and political support [see B / 1 & 5 above] would truly constitute the primary preconditions for the arising of a people's movement in watershed development.

6. CONCLUSION :

One of the key learnings of this participatory large scale programme has been that when people and institutions come together in an enabling environment supported by appropriate institutional arrangements and adequate inputs on a timely ongoing basis it is possible to generate a developmental dynamic which can result in significant lasting benefits to a large number of people and institutions.

Furthermore, it has now been established that given minimum favourable meteorological, edaphic, geological and ecological conditions, environmental regeneration along watershed lines can lead to an increased availability of water as well as to drought mitigation.

OPERATIONAL LEVEL : PROGRAMME OVERVIEW - SECTORS, ACTORS, FUNCTIONS

SECTORS	ACTORS	FUNCTIONS
1 Rural (Grassroots Watershed)	<ul style="list-style-type: none"> • Village Self-Help Groups (VSHG) • Village Watershed Committees (VWC) 	1. To plan, coordinate, execute, supervise monitor and maintain the watershed development project at village level
2 Voluntary (NGO's - Village Self Help Groups Promoters - VSHGP)	<ul style="list-style-type: none"> • Individual NGO's • Associations of NGO's • WOTR ¹ 	<p><u>Individual NGO's</u></p> <ol style="list-style-type: none"> 1. To motivate, educate and facilitate the organisational process of VSHG's towards undertaking WSD work. 2. To assist VSHG's in proper planning, execution, monitoring and maintenance of WSD project 3. To present completed proposals to the funding body and to accept the money sanctioned for the project <p><u>NGO Associations / WOTR</u></p> <ol style="list-style-type: none"> 1. To provide a common forum wherein NGO's and VSHG's can share their experiences, learnings and expertise. 2. To liaison, network and build linkages with Govt. and other Institutions and agencies. 3. To propagate the concept of WSD and to assist in upgrading the social and technical competencies of NGO's and VSHG's
3 Planning and Support	<ul style="list-style-type: none"> - Competent NGO's - Voluntary and private sector specialised organisations / Institutions. - Government Institutions/Departments - WOTR. 	<ol style="list-style-type: none"> 1. To assist NGO's and VSHG's in project planning and formulation 2. To conduct training and capacity building for NGO's / VSHG's in relevant areas and disciplines
4 Financial	<ul style="list-style-type: none"> - NABARD ² / KfW ³ - WOTR / GtZ ⁴ - Local Banks - Donor Agencies ⁵ 	<ol style="list-style-type: none"> 1. To provide timely and adequate funds for Capacity Building, training and project implementation, networking and coordination. 2. To evolve efficient, flexible, situation - responsive, area-specific, need-based banking practices and innovative risk friendly credit regimes and emes. 3. To assist NGO's and Village Watershed Committees in financial management and accounting.
5. Government	<ul style="list-style-type: none"> - Government Administration - Government Departments 	<ol style="list-style-type: none"> 1. To assist VSHG's and NGO's by way of technical expertise and developmental finance 2. To extend whatever administrative support as may be needed to expedite matters

- 1 WOTR : Watershed Organisation Trust
2 NABARD : National Bank for Agricultural and Rural Development
3 KfW : German Bank for Reconstruction and Development
4 GtZ : German Agency for Technical Cooperation
5 for activities other than watershed development or those net covered by the Programme

IMPACT OF THE MENDHWAN PROGRAMME - KEY INDICATORS

		Pre watershed before 1989 - 90 (Nos.)	Current Status 1993 (Nos.)	Percentage Change (%)
	Rainfall	approx. 400 mm	250 mm	
1	No. of Wells	83	92	+11
2	<u>Availability of Water</u>			
	a) 12 months	2	10	+400
	b) 8 months	30	62	+107
	c) 4 Months	40	20	-50
3	<u>Net Irrigated Area</u>			
	a) Perennial	4	20	+400
	b) Seasonal	40	150	+275
	c) Total (ha.)	44	170	+286
4	<u>Agricultural</u>			
	a) Net cropped area	517.26	517.26	Nil
	b) Crops taken :			
	i) Pearl Millet	460.15	405.00	-12
	ii) Sorghum	56.15	91.45	+63
	iii) Vegetables	4.00	25.00	+525
	c) Horticulture			
	i) Pomegranate	7.00	12.40	+77
	ii) Mango	5.50	10.20	+85
	iii) Guava	NP	8.00	NP*1
	iv) Ber, Chiku, Coconut	NP	18.25	NP
5	<u>Oil engines</u>	20	2	-90
6	<u>Electric motors</u>	50	70	+40
7	<u>Livestock</u>			
	1. Bullocks	150	200	+33
	2. Cows (Scrub)	100	15	-85
	3. Cows (cross bred)	25	102	+308
	4. Sheep / Goats	6575	2136	-68
8	<u>Dairy Milk (litres)</u>	140	300	+114
9	<u>Fish (kgs)</u>	Nil	458	-
10	<u>Agricultural Employment Period (months)</u>	3	8	+167
11	<u>Assets</u>			
	1. T.V.	Nil	8	NP
	2. Cycle	150	225	+ 50
	3. Motor cycles	1	12	+1100
	4. Tractors	1	5	+400
12	<u>Land Value (Rs. / ha.)</u>			
	a) Agricultural Land (Irrigated)	45000	87500	+94
	b) Waste Land (Rainfed)	7500	20000	+167
13	<u>Houses</u>			
	a) Huts (thatched roof)	50	40	-20
	b) Mud Houses	130	130	Nil
	c) Permanent Houses (cement structures)	12	22	+83
14	<u>Wasteland (ha.) Afforested / grassed</u>	41	197	+381

*1 NP : None previously

IMPACT OF THE KASARE PROGRAMME - KEY INDICATORS (1989 - 1994)

Sr. No.	Period of Water Availability (Months)	Pre Watershed 1989 - 90	Current 1993	Percentage Change
	Amount of Rainfall	Approx 500 mm	Approx. 300 mm	
1	Wells / ground water availability	No.	No.	
	12 months (perennial)	10	25	+150
	8 months (2 crops)	21	34	+62
	4 months (1 crop)	0	10	NP
	Dry	9	5	-44
	TOTAL	40	74	+85

		Pre watershed (1989 - 90)		Current Status (1993 - 94)		Percentage Change (%)	
		Area (ha.)	Output (Quintal)	Area (ha.)	Output (Quintal)	Area / No.	Output
2	Agriculture						
	1. Net cropped area	540	1500 *1	540	3000 *1	Nil	+100
	2. Crops taken *1						
	Kharif Crops (Pearl Millet)	400	1000	400	2000	Nil	+100
	Rabi Crops	140	500	240	1000	+71	+100
	3. Horticulture (Ber, Mango, custard apple, sweet lime)	Nil	-	5 *2	-	NP *3	-
3	Net Irrigated Area						
	a) Perennial	6	-	20	-	+233	-
	b) Seasonal (1 & 2 crops)	20	-	130	-	+550	-
	c) Total Net irrigated area (ha.)	26	-	150	-	+477	-

		Pre watershed before 1989 - 90	Current Status 1993 - 94	Percentage Change (%)
		(Nos.)	(Nos.)	Area / Nos.
4	Oil Engines	5	15	+200
5	Electric motors	11	69	+527
6	Livestock			
	1. Bullocks	150	154	+3
	2. Cows (local variety)	250	127	-49
	3. Cows (cross bred)	Nil	50	NP
	4. Sheep / Goats	500	173	-65
7	Period of Agriculture Employment (Families)			
	12 months	10	25	+150
	8 months	25	50	+100
8	Agril. Equipments			
	1. Ploughs (improved)	Nil	16	NP
	2. Pesticides pump	Nil	5	NP
	3. Seed Drills	Nil	3	NP
9	Pasture / Fodder Availability			
	From forest Land	No harvestable produce	360 cart loads given to 90 families	NP *4
	From Private Land	No harvestable produce	60 cart load given to 15 families	NP

*1 Includes food grains (pearl millet, sorghum, wheat) only

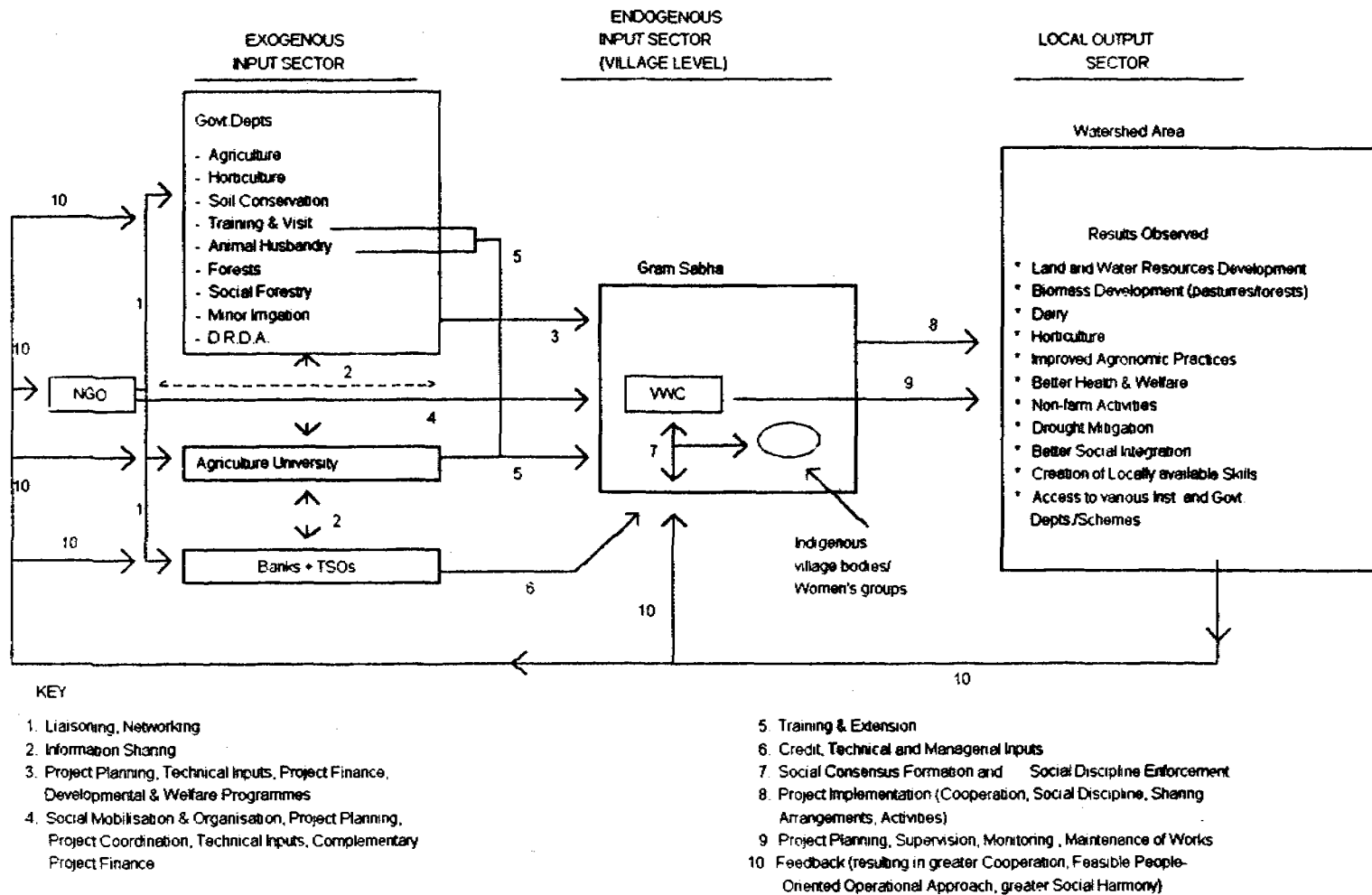
*2 Another 10 ha. was to be planted in the coming rains

*3 NP - None previously

*4 This has been possible due to a ban on free grazing which was common previously and which was imposed by the VWC

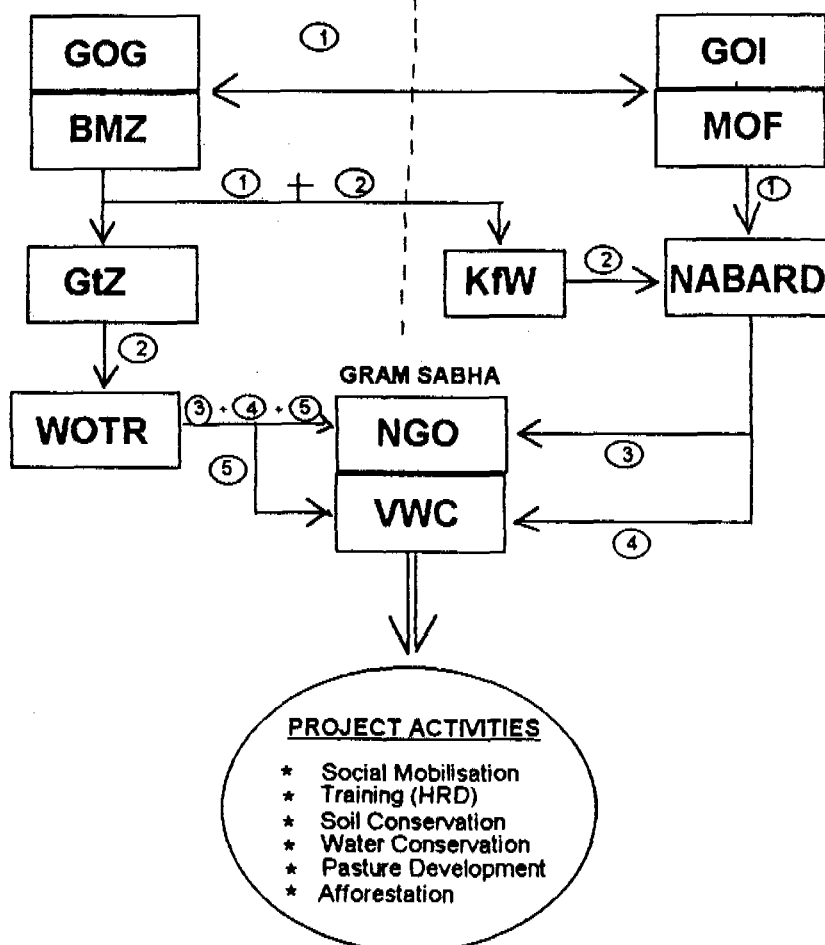
ANNEXURE 2

Project Level : The NGO and Participatory Watershed Development : Sectors, Actors, Linkages, Functions, Output, Results



OVERVIEW OF THE IGWSDP : INTERRELATIONSHIPS AND FLOW OF FUNDS

Capacity building (Phase I) Full Scale Implementation (Phase II)



KEY

- 1 Administrative Approval + Support
- 2 Finance / Funds
- 3 Management Costs to the NGO
- 4 Project Funds to the NGO in case of CBP and to a joint A/c of NGO and VWC in case of FIP
- 5 Mobilisation + Technical + Administrative + Management Support

ABBREVIATIONS

BMZ	Ministry of Economic Cooperation
CBP	Capacity Building Phase
FIP	Full Scale Implementation Phase
GOG	Govt. of Germany
GOI	Govt. of India
GtZ	German Agency for Technical Cooperation
HRD	Human Resources Development
KfW	German Development Bank
MOF	Ministry of Finance
NABARD	National Bank for Agricultural and Rural Development
NGO	Non Government Organisation
VWC	Village Watershed Committee
WOTR	Watershed Organisation Trust

ANNEXURE 4

ECONOMIC IMPACT OF WATERSHED DEVELOPMENT IN PIMPALGAON WAGHA (1988 - 1992)

Sr. No.	ITEM	PRE WSD	DURING PROJECT IMPLEMENTATION	
		1988 - 89	1990-91	1991-92 (Drought)
		Rainfall : 511 mm		Rainfall : 409 mm
1.	Wells / ground water availability	75 - all seasonal of which 40 - 8 months water 30 - 6 months water 5 - dry	82 - of which 40 - 11 months water 30 - 9 months water 5 - 6 months water 7 - 3 months water	82 - of which 40 - 9 months water 30 - 6 months water 5 - 3 months water 7 - dry
2.	Area seasonally irrigated	60 ha.	100 ha.	168 ha.
3.	Livestock			
	a. Crossbred	20	120	200
	b. Buffaloes	30	20	15
	c. Scrub cattle	58	10	10
	d. Goats	485	125	40
	e. Bullocks	150	200	200
4.	Daily milk output (ltrs.)	150	900	1400
	Daily milk value (Rs.)	525 @Rs. 3.50/litre	3600 @ Rs. 4.00/litre	6300 @ Rs. 4.50/-
5.	Crop Productivity			
	a. Sorghum (Irrigated)	12.5 Quintals/ha.	22 Q/ha.	14 Q/ha.
	(Rainfed)	2 Q/ha.	7 Q/ha	-
	b. Pearl millet (Irrigated)	12 Q/ha.	22 Q/ha	8 Q/ha
	(Rainfed)	2 Q/ha.	7 Q/ha	-
6.	Net cropped area			
	a. Pearl millet	300 ha.	100 ha.	70 ha.
	b. Sorghum	100 ha.	300 ha.	200 ha.
	c. Pulses / Oil seeds	-	200 ha.	200 ha.
	d. Vegetables	-	-	5 ha.
7.	Horticulture	-	28 ha.	33 ha. (of which 22ha. irrigated and 11 ha. rainfed)
8.	Forest trees / pasture	Negligible	62 ha.	86 (Cumulative)
Over 2,00,000 trees have been planted.				

Source : Lobo / Kochendörfer-Lucius

"The Rain Decided to Help Us" : Participatory Watershed Management in the State of Maharashtra, India, EDI Publication, 1995

IMPACT ON OTHER ECONOMIC INDICATORS - KASARE (1989 - 1994)

Sr. No.	Subject	Description	Unit of measurement	1988-89	1994	Change (%)
1.	Agricultural wages	a) Men	Rs/person	20	30	+ 50
		b) Women	Rs/person	15	20	+ 33
2.	Land Prices	a) Rainfed farm - poor soils (light) - heavy soils	Rs./acre	5000	15000 ^{*1}	+ 200
			Rs./acre	8000	15000	+ 88
		b) Irrigated - seasonally - perennially	Rs./acre	10000	30000	+ 200
			Rs./acre	25000	75000	+ 200
3.	Migration out of the village	a) To near by village or on Govt. projects (Feb.-June)	person/day	200	0 ^{*2}	- 100
		b) To Bombay and other towns i) on seasonal basis ii) on a more or less permanent basis	yearly basis	75	10	- 87
			yearly basis	100	75	- 25
			yearly basis	20	3	- 85
4.	Intra-village migration	To own field where permanent structures (houses) have been constructed.	families	25	100	+ 300
5.	Fertiliser use	a) Organic manure (dung)	cartload	500	600	+ 20
		b) Organic manure (poultry)	tonnes	-	12.5	NP
		c) Chemical (urea/suphla)	tonnes	2.5	37.5	+ 1400
6.	Pesticides (chemical)	a) Liquid	liters	5	75	+ 1400
		b) BHC powder	tonnes	0.375	1.25	+ 233
7.	Non farm Activities	a) Poultry	No. of birds	Nil	2000	NP
		b) Commission Agent	Persons	Nil	2	NP
		c) Transport/Agri. Equipment	Truck/	Nil	2	NP
			Tractors	Nil	1	NP
		d) Well digging	Cranes	Nil	2	NP
		e) Small business : (motor rewinding, TV repairing).	Persons	Nil	3	NP
f) Tailoring	Women	Nil	15	NP		
8.	Consumables / Assets	(a) Radio	No.	10	44	+ 340
		(b) TV	No.	Nil	10	NP
		(c) Newly constructed houses (cement+brick)	No.	Nil	45	NP
		(d) Cycles	No.	35	71	+ 103
		(e) Motorcycles	No.	1	7	+ 600
		(f) Trucks ^{*3}	No.	Nil	2	NP
		(g) Tractor ^{*3}	No.	Nil	1	NP

* 1 : Since these lands are situated on the plateau, the proportionate increase in prices are not as much as in the case of dry farm lands situated in the valley.

* 2 : As many as 25 people come from other villages to work in Kasare on a daily basis over a period of 8 months in the year.

* 3 : Mentioned in 7 (c) above.

NP : None previously.