

## WATERSHED DEVELOPMENT : ISSUES AND REALITIES

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### ABSTRACT

*Water is the most valuable resources of nature. This is renewable and inexhaustible resource but is in trouble these days. Demand of water has been increasing continuously its supply decreasing. If we look at the water resources of India in the global context, India has 4 percent water whereas she is housing 16 percent of the world's population. It means the per capita availability of water is quite low in our country. India ranks first in the world in irrigated area. One-eighth area of the country is flood prone and one-sixth area is under the grip of drought. Nature of monsoon is mostly responsible for this. Food grains and other agricultural products are required in large quantity for the growing population. For this reason the use of water for irrigation of crops has been increasing. The demand for water has increased in the cities due to rapid urbanization, industrialization, and modernization. In addition, the demand for water has been increasing for sewerage and for removing all kinds of wastes.*

### INTRODUCTION

The word watershed refers to a “contiguous area draining into a single water body or a water course” or “it is a topographical area having a common drainage”. This means that the rainwater falling on an area coming within a ridgeline can be harvested and will flow out of this area through single point. Some refer it as a catchment area or river basin.

Simply, we can say it is the development of watershed area based on type of soil, depth of soil, vegetative cover, harvestable rain water in that area and watering that area and water budgeting and treatment given to soils from the ridge to the valley. It is not a simple word. The term watershed development encompasses additional dimensions like equity, sustainability, gender and peoples participation. It has become a trusted tool for the overall development of the village and people living within a watershed area.

Watershed development refers to the conservation regeneration and the judicious use of all the resources – natural (like land, water plants, animals) and human – within the watershed area. Watershed Management tries to bring about the best possible balance in the environment between natural resources on the one side and man and animals on the other. Since it is the man which is primarily responsible for degradation of environment, regeneration and conservation can only be possible by promoting awakening and participation among the people who inhabit the watersheds.

Watershed is an area of internal drainage above a common point of outlet. The size of the watershed is dependent on the topography of the area. It is bound on all sides by a divide or ridge line. The watersheds are classified into mini watershed and micro watershed depending on the size. The basic components identified in the watershed development are the

soil & water conservation, water resources development, agricultural productivity and most important being the people's participation in development of watershed.

Watershed Development projects have been taken up under different programmes launched by the Government of India. The Drought Prone Area Programme (DPAP) and the Desert Development programme (DDP) adopted the watershed approach in 1987. The Integrated Wasteland Development Projects scheme (IWDP) taken up by the National Wasteland Development Board in 1989 also aimed at developing wastelands on a watershed basis. This programme has now been brought under the administrative jurisdiction of the Department of Wastelands Development in the Ministry of Rural development. The fourth major programme based on watershed concept is the National Watershed Development Programme in Rainfed Areas (NWDPR) under the Ministry of Agriculture.

## STUDY AREA

Maharashtra occupies the western and central part of the country and has a long coastline stretching 840 kilometres along the Arabian Sea. One of



the more prominent physical features of Maharashtra is the Deccan plateau, which is separated from the Konkan coastline by Ghats. The Ghats are a succession of steep hills, periodically bisected by narrow roads. Most of the famous hill stations of the state are at the Ghats. The Western Ghats (or the Sahyadri Mountain range) provide a physical backbone to the state on the west, while the Satpura Hills along the north and Bhamragad-Chiroli-Gaikhuri ranges on the east serve as its natural borders. The state is surrounded by Gujarat to the north west, Madhya Pradesh to the north, Chhattisgarh to the east, Telangana to the south east, Karnataka to the south and Goa to the south west.

Maharashtra is the third largest state by area in India. Its coastline is 840 km long along the Arabian Sea. The Western Ghats better known as Sahyadri, are a hilly range running parallel to the coast, at an average elevation of 1,200 metres (4,000 ft). Kalsubai, a peak in the Sahyadris, near Nashik city is the highest elevated point in Maharashtra. To the west of these hills lie the Konkan coastal plains, 50–80 kilometres in width. To the east of the Ghats lies the flat Deccan Plateau. Forests comprise 17% of the total area of the state. A majority of the forests are in the eastern and Sahyadri regions of the state. The main rivers of the state are Krishna, Bhima, Godavari, Tapi-Purna and Wardha-Wainganga. Since the central

parts of the state receives low rainfall, most of the rivers in the region have multiple dams. Maharashtra has around 1821 notable large dams.

## OBJECTIVES

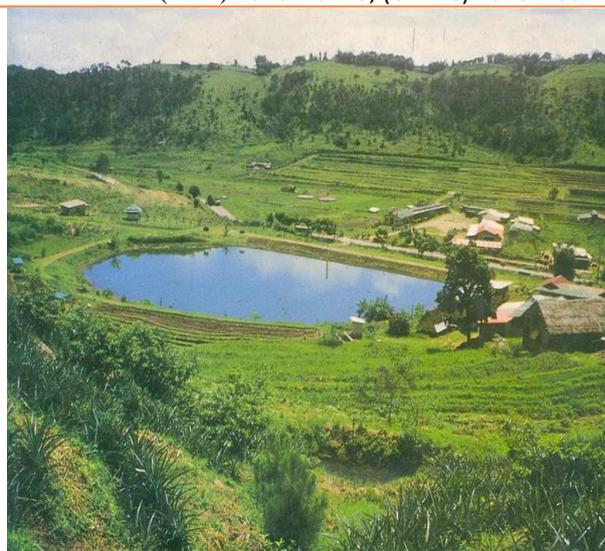
The objectives of integrated watershed and water resources management are as follows:

- To mitigate the adverse effects of drought on crops and livestock
- To control desertification
- To encourage restoration of ecological balance and
- To promote economic development of village community.
- To Conserve soil and water resources
- Enrich the ecosystem and further develop the bio-diversity
- Help improve crop productivity
- Increase availability of safe drinking water, fodder and fuel wood
- Create gainful self-employment opportunities.

## METHODOLOGY

Village Watershed Committees and SHGs are formed and micro planning is done for individual families. Along with area treatment, improved agricultural practices, promotion of appropriate agro-horti systems, promotion of support activities like silvi-pasture, improved chullahs/ biogas; enterprises by women, agro service centres are promoted as part of integrated approach towards the program. The activities are planned, implemented and managed by the community itself through village watershed committees and self help groups. These people's organisations handle the responsibility of maintaining the area treatment and sustaining the activities initiated in the program.





Region wise performance is as follows:

Regions	Total area in ha.	Micro watershed	Villages	Families benefiting
Kokan	4795.27	35	33	4503
Western	15256.58	25	27	4911
Vidarbha	33142.43	58	70	10240
Marathwada	185	2	2	350
North Maharashtra	7976.12	58	62	7553
Total	61355.4	178	194	27557

## DISCUSSION

There are in all around 44,185 micro watersheds in Maharashtra. According to estimates around 67% of the geographical area requires watershed treatments. Around 26,713 micro watershed programmes have been started in the state since 1992 out of which 8,322 have been completed. Regionally, 23% of the programmes are in Vidharbha region, 8% in

Konkan and 69% are in the drought prone regions of Maharashtra. Eighty three per cent of the projects are under the IWDP (State) having 22,302 micro watershed development programmes followed by DPAP (909), NWDPR (917), EAS (1549) and AGY (645). About 522 NGOs are involved in implementing the DPAP programmes, 766 NGOs in the implementation of EAS programmes whereas all projects under AGY, IGWDP, CAPART etc are implemented through the NGOs. However we should state that there are some discrepancies and inconsistency in the data available on status, progress and coverage of watersheds. For the state as a whole, of the total land available for watershed development, 29.50 per cent

For the state as a whole, of the total land available for watershed development, 29.50 per cent had been treated by 2002 while above 70% of lands remain to be treated. In Konkan 30% land available for watershed has been treated, in the Vidharbha region 21% of the land has been treated and in the rest of Maharashtra, 33% of the land available for watershed has been treated. State programmes accounted for 64% of the total expenditure. The expenditure figures from 1992 shows that the distribution in different regions has fairly corresponded with the size of area to be treated in these regions. About 10% of the total expenditure has been in Konkan region, 69% has been in the drought prone region and 21% has been in Vidharbha region. Out of the 16,678 incomplete programmes, 1,344 are in the dark and grey areas, 3,060 are in the drought areas, and 7,681 are in the tribal areas. These incomplete watersheds are prioritised by the state for additional investments and completion.

42.5% of the total land is suffering from different degrees of soil degradation and water erosion is the major contributing factor. The watershed management should concentrate on these areas where soil is lost through run-off and the strategy should be to prevent soil erosion while at the same time conserving surface run-off. The strategy for watershed development during the next 25 years should be based on the extent of area available for development, i.e. 146.22 lakh hectares, of which 50.21 lakh hectares where work is incomplete should be the first priority. A coverage of at least 1 million hectares per year should be the target for watershed development for next 15 years.

It is better to change the planning approach from the political-administrative boundary to micro-watershed / eco-region based approach. This does not mean that the present day administrative boundary as a planning unit will be done away with, it may acquire the federative nature. What is definitely envisaged is that the watershed concept should be introduced as an integral component in the mainstream development activity. Thus the micro-level development planning and resource management management primarily covering the resource conservation of land, water and biomass and secondarily covering the resource use through agriculture, forestry, irrigation, hydro power, waste land development etc. should have a watershed based approach.

Watershed treatment must be from ridge to valley. There cannot be an artificial division of the forest and non-forest land, as well as private and community lands, while applying various methods of treatment. Therefore, the issue of degraded and wastelands has to be taken up to ensure that every drop of water and every part of land is best utilized. While taking due care of such "wasted" lands, state should not overlook the need to improve the efficiency of even non-degraded lands whether they are under forest or agricultural cover. It



is a matter of concern that even our good forests are subject to illegal exploitation and that the sustainability of our agricultural lands is threatened by the over use of irrigation, chemical fertilizer and pesticides, besides being susceptible to depletion through diversion for other uses. Special care should be taken to save both these categories of land from degradation.

In the state, 146 lakh hectares of area could be brought under watershed development. To achieve this goal, major policy decisions are required in terms of funds, manpower and collaborative strategies. The major issues of concern for watershed development are identified as huge requirement of funds, timely and adequate availability of funds, large number of untrained field staff, problems of contribution by farmers-participants, regional differences and disparities, role of NGOs in providing technical and social support and coordination among line departments. To overcome this, a phased strategy is required besides convergence of different centrally and state-sponsored as well as externally assisted developmental programs. Besides this, priority should be given to the most degraded area based on ecological indices and satellite information.

Given the enormity of the task involved in undertaking soil and water Conservation in 146 lakh hectares of area in terms of finance, manpower and technology, a well thought out plan is required. Areas which urgently require conservation methods should be prioritized based on a five-year perspective and resources have to be mobilized for both hardware and software components. Convergence of different programs related to agriculture, horticulture and soil and water conservation is required, besides involving different institutions and agencies both private and public. A master plan is required which takes into consideration both the micro and macro requirements, but local planning and implementation should be based on active participation of the stakeholders.

At the implementation level, expertise is required in the fields of agronomy, engineering, community mobilization, livestock and livelihood promotion, marketing etc. Collaboration and synergies have to be built between different line departments, private and public institutions and non-governmental organisations to perform this huge task. Coordination and management also envisage personnel, policy formulation and institutional restructuring. Enormous inputs are required for primary stake holders in awareness building, concept of watershed management, project implementation and post project management, institution building, etc. Inputs and extension services are also required in the areas of sustainable agricultural practices through low external input, integrated nutrient management, integrated pest management and other alternative technologies. Besides this, the secondary actors/facilitators also require training and capacity building to facilitate the processes and expected outcomes. Institutions and expertise should be identified by the state to cater to the needs of this capacity building effort. Policies are also required to be framed for convergence, exploitation and utilization of resources, approaches and strategies.

Practices suggested for sustainable soil and water conservation are recommended as **Ridge-to-valley conservation** including forest area which often falls in the ridge area or in the upper catchment of the watershed, proposed land use and treatment based on land capability and farmers' need, participatory microplanning with each individual farmer aimed at blending traditional and modern technology, contributions by the participants which will become part of a Maintenance Fund for future care, decentralized and *in situ* conservation, rather than concentrating on major structures on the drainage line, priority for land-based



treatments integrating sustainable agricultural practices, grazing restriction or controlled grazing on treated areas, especially in areas under afforestation treatment and ban on tree felling, financial devolution to the community and Gram Sabha which should be the final authority, representative executive body – the Watershed Committee (WC) – which is responsible for planning, implementation, monitoring and maintenance, local employment generation through watershed activities so as to create livelihood means during project implementation and Selfhelp promotion of women so as to build social capital and economic independence and gender integration in project planning and implementation. In this context, it is recommended to have Bio-industrial watershed approach, where there are industrial enterprises based on the opportunities provided by the watershed area for initiating agro-enterprises. This will be similar to the Rural Township enterprises of China. State can then pay concurrent attention in each watershed to the generation of both on-farm and non-farm employment.

Watershed Development will succeed only to the extent that the people are convinced of its benefits and are willing to make the necessary commitment, effort and contribution. They must therefore be at the centre of the project. Resources – financial, technical, managerial – should flow directly to them with all other agencies playing primarily a supportive and facilitative role. This will require a massive capacity building effort both for the village communities as well as accompanying agencies.

In order to ensure sustainability and replicability of the watershed development programme, it is imperative to effectively mainstream women, the landless and marginalised groups into the decision making, implementation and maintenance processes of the effort from the very beginning of the project. A sub program should be launched as part of watershed project which focuses particularly on building the capacities of women and providing them space within the institutional mechanism of the village and project. Children, through the village school, should be familiarised with the "what" and "why" of watershed development since they will determine the continuity of the assets and resources created.

Equity, in terms of burden and benefit sharing, access to and use of created resources should be planned from the very beginning of the project. Effective mechanisms to ensure equitable distribution and sharing should be put in place and the same regularly monitored. This is particularly crucial in the area of ownership, access to and management of water resources as well as preferential access to common property resource for the poor and the marginalised.

State government should formulate a policy for conserving prime farmland for agriculture. At present, good farmland is being diverted at an alarming rate for nonfarm uses. With our growing populations, we cannot afford to divert prime farmland for non-agricultural uses.

## **CONCLUSION**

Watershed development, wasteland development and rainwater harvesting should become the three pillars of the land and water conservation movement of Maharashtra. We recommend that Maharashtra Govt. may declare 2003 as the Soil and Water Conservation Year and promote a Soil and Water literacy movement through the mass media, Agricultural Universities and schools.



Maharashtra has many NGOs working in wasteland and watershed development programmes. By integrating Agri-business centres, Food and Herbal Technology Parks and other market-driven enterprises, it will be possible to make the Bio-industrial watershed movement as a model for linking the principles of ecology, economics and equity at field level. Land and water conservation should become everybody's business. This can be achieved through regulation, education and social mobilisation.

Farm ponds for the purposes of drinking water both for households and livestock should be considered on a village basis. The same would also be helpful for groundwater recharge. Given the special characteristics of the Konkan region, a package involving a multi sectoral approach such as agronomic practices, land husbandry, bio-mass development and mechanical and hydrological structures such as desilting of tanks, diversion bandharas and farm ponds should be developed.

## REFERENCE

- 1) Deshpande, R.S. and V. Ratnareddy (1991): Watershed approach in fragile Resource Regions-An analytical study of Maharashtra, mimeograph series no.33, Gokhale Institute of Politics and Economics, Pune.
- 2) Farrington, John CathrynTurton., & A.J. James (eds) (1999): '*Participatory Watershed Development*', *Challenges for the Twenty – First Century*“, Oxford University Press, Delhi.
- 3) Government of India (2007): Report of the Working Group on Natural Resources Management: Eleventh Five Year Plan (2007–2012), Planning Commission, New Delhi.
- 4) Joshi, et al. (2004): Socio economic and Policy Research on watershed Management in India: Synthesis of Past experiences and needs for future research, ICRISAT, Hyderabad.
- 5) Khalid, M.A. et al. (2004): *Impact Assessment Study of the Watershed Development Programme, a Compendium*, The Energy and Resources Institute, New Delhi.
- 6) Khirsagar, K.G. et al. (2003) *Evaluation Study of Wadgaonlakh Watershed in Osmanabad District of Maharashtra*, Osmanabad.