

EXECUTIVE SUMMARY

The concept of integrated and participatory watershed development and management has emerged as the cornerstone of rural development in the dry and semi-arid regions of India. The country has made massive investments in this approach. Even more ambitious plans have been made for the future—the government has set a target of Rs.76,000 crores for the next 25 years. As we enter this second generation of watershed-based development programmes with such heightened targets and expectations, it is important to ensure that the experiences from the first generation of widely implemented watershed development are fully understood and internalised. The present review, undertaken by CISED, hopes to contribute to this process.

The normative framework underlying the review

Understanding watershed development requires a “normative framework” embracing the notions of “watershed” and “watershed development”, and how they are translated into practice. Such translation may also be based upon additional assumptions about what is possible and desirable, and how to bring these changes about. One may call this set of goals, specific objectives, and assumptions the normative framework of an analysis.

Catchment protection programmes looked upon the watershed as a unit but focused mainly on reducing reservoir sediment load. Soil and water conservation are still central to watershed development, but afforestation, common lands regeneration, agronomic changes, and so on, are also linked to this central theme and watershed development is now being seen as a core strategy for stabilising rural livelihoods in the dry, rainfed regions of India. Further, participation, gender, equity, sustainability, and livelihoods are now much more prominent concerns in the watershed development literature and are increasingly reflected in the official watershed development guidelines.

In a country like India where the vast majority has been dependent on natural resources for their livelihoods, “development” will have to be based primarily on long-term sustainable

productivity enhancement and, in the drought-prone regions, on increasing the dependability of production and, consequently, the security of livelihoods.

The interconnectedness of the biophysical and the social is intrinsic to watershed development and draws strength from this interconnectedness. Biophysical and social interventions are not two separate processes, but aspects of a single unified process and ecosystem processes and resources are basic economic resources as well. Moreover, historical processes and factors also interact with the biophysical and social interventions.

Earlier discussions of needs centred on the fulfilment of basic or subsistence needs. Since the early 90s, the concept of livelihoods, and more specifically “sustainable livelihoods” (SL), has entered the rural development discourse prominently. A definition of these terms is offered by the Department of International Development (DfID): “A *livelihood* comprises the capabilities, assets and activities required for a means of living. A *livelihood* is sustainable when it can cope with and recover from stresses and shocks and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base”.

Livelihood is conceptualized in this review in a similar manner. However, livelihood needs in the sense the term is used in the study, include not only the basic needs of food, shelter, and clothing, but also include needs that are imposed due to the nature of the livelihood activity. It also includes certain surpluses over and above directly satisfied consumption needs that can be exchanged with the larger system. Finally, it places a higher premium on *natural* as compared to other forms of assets, thus for example, in watershed development, it emphasises the need for creating equal access at least to the increment of these assets it creates.

An important question is how many of these needs should be fulfilled locally and to what degree in kind? As a norm, we should consider basic food, fuel, fodder, and domestic water needs separately, and treat self-reliance (not necessarily self-sufficiency) in these needs as one of the objectives to be achieved at the

watershed level. In most conditions self-sufficiency in these is possible and desirable at the watershed level. Even in exceptional situations where this may not be possible, it should be possible and desirable for a substantial component of these requirements to be produced locally, and the rest to be met from exchange on equal terms with the larger system. The fulfilment of needs also needs to be considered at the level of the watershed ecosystem as well as at the household levels. Elsewhere we have used biomass as the measure to quantify these needs on the basis of a minimum upper bound approach and show that a farmer family of five generally needs a productive potential of about 15 to 18 T (dry weight) annual biomass increment to meet all the above mentioned livelihood needs, including estimated minimum cash requirements.

In the review we use the term sustainability in the specific sense of environmental sustainability and consider maintaining and enhancing the productive and assimilative potential of the ecosystem as the sustainability goal and derive a few operational norms that logically follow from this approach in the context of watershed development. Livelihood needs depends crucially on who has access to how much and what kind of productive resources, that is, equity. In the normative framework the first dimension is the distribution of human well-being across typical barriers of class, caste, ethnicity, and gender, with the implication that one needs to disaggregate the “local community” and consider the differential impacts of watershed development.

The second dimension emanates from spatial or locational inequalities and this is primarily because of the bio-physical characteristics of the watershed itself. Given that the relationship is often fundamentally asymmetric (for example, activities upstream can affect downstream, but not vice-versa), the issue needs to be carefully addressed at all scales: within the micro-watershed, across watersheds, and across the entire basin. It becomes important to see how those asymmetries map on to the historical inequities of access to productive resources and how watershed development interacts with them. The general experience is that the asymmetries map on to the inequities in a way that more likely accentuates rather than attenuates the

inequities within the local community unlike environmental sustainability, which watershed development is likely to enhance *per se*. The implication is that if there are no pro-active elements of equity built into the programme it only accentuates inequity.

The normative framework treats water as a common property resource to be managed and regulated collectively in order to ensure equitable and regenerative use. This implies prioritising water use in the following order: drinking water; water for domestic use and for cattle; water required for ecosystem regeneration, water required for livelihood activity, and surplus/extra water that could be used for cash or commercial crops. The normative framework also aims at a fairer distribution of increased resources with privileged access to the resource poor.

It is important to recognise that water is both a local and non-local resource and that the interdependence effects of scales appear as “externalities” and unlike slogans like “*gaonka pani gaonme*” (the rain that falls in a village is for that village) that may help conserve water in the short run, we need collective regulation and control of water resources at increasing scales ensuring inter-watershed or basin-level equity as well. Hence the normative position limits the right of water for every community to assured access to the water from local as well as non-local sources together necessary for assured livelihood. Accordingly, water is first treated as a common pool resource to be managed and regulated collectively in order to ensure equitable and regenerative use for livelihood assurance and ensure equitable sharing of shortages and surpluses. Only the residual resource is treated as a resource to be regulated by the market.

The enhancement of ecosystem resources and productive potential with public funds and collective, community effort has the potential for ensuring equitable access to *the additional resource created, even as prior right to previously existing resources are recognised and left largely undisturbed, thus making equity a positive sum game.*

Participation has gained increased currency in developmental practice and in related research and literature and this increased awareness is

drawn from various sources and standpoints. Participation is often seen as a means to achieve other goals, or as a value or a goal in itself. The framework sees it as both a goal as well as a means of ensuring more equitable, sustainable, and efficient outcomes.

However, in highly differentiated communities, simple transfer of decision making power to “the community” may turn out to be handing over decisions to the dominant sections within the community. It is necessary to recognise the heterogeneity and ensure that pro-active space is created within the local community institutions for all sections, especially the lower, marginalised strata.

The framework also recognises the importance of outside intervention and believes that participation, livelihood assurance, regenerative use, and equitable access should be the explicit foundational objectives of the collaboration between the community and outside agencies. The key role of outside agencies is that of capability building, by providing information and offering a forum for discussion aimed at resolving issues related to the objectives through discussion and debate. It is also important to recognise that there is a need for greater accountability and transparency on the part of the outside agency to the local communities.

Impact on livelihoods

The review finds that watershed development has improved livelihood opportunities for watershed communities though the degree of improvement varies from the spectacular to the “now not very good”. The distribution of benefits has not always been even, and there are also reversals though in all cases some livelihood improvement has carried over. On the whole, watershed development shows significant impact in better years, but has not mostly been able to insure against bad years. In certain cases conflict between drinking water and irrigation needs has been accentuated by watershed development. Though watershed development has brought down migration in the initial phases, the post-project phase does not show a uniform trend and in some instances availability of work has been reduced

There is a lack of consideration of the issue of dependability and watershed planning is mostly

based on average or mean rainfall or close to 50% dependability. It is imperative that the programme be planned at a dependability of 80% or more to add stability to the programme and achieve planned targets every four out of five years. This makes it easier to build up surpluses during the four better years (of which one or two will be quite good) to tide over the one year in which planned targets may not be met.

Impact on sustainability

The review shows that there has been a beneficial impact of watershed development on watershed ecosystems: soil erosion has been checked, land cover has improved, and groundwater recharge has increased. However, there is no corresponding social regulation of water use or of extraction from the commons. Non-cropped area is brought under cultivation by large scale levelling, and there is a shift away from food crops without an accompanying shift to sustainable crop practices. Watershed activity is possibly showing up in decreased flows into downstream tanks and reservoirs. Drinking water is increasingly being met from deeper aquifers. However, many of these phenomena have not been adequately studied; neither have there been many water balance studies.

Thus, in the context of sustainability, there is an urgent need to 1) promote sustainable productivity enhancement measures, 2) regulate biomass extraction rate, 3) plan watersheds on the basis of ridge to valley without taking a dogmatic position about it, 4) be aware of the balance while planning run-off suppression measures, 5) study and monitor unintended hydrological effects, 6) regulate groundwater extraction, 7) do integrated planning, prioritise and socially regulate water use, and 8) make applied water part of project design.

Watershed development and equity

In respect of equity, the review finds that by itself, watershed development accentuates inequity: favours the landed and the lower reaches; as well as those who have the wherewithal to invest in wells and pumps. In some cases, measures like bans on grazing and cutting trees, closing of commons, and a ban on keeping goats, which are imposed from above, have hit the rural poor, especially the Dalits and

landless, very hard. However, it also finds now a greater awareness of equity issues related to the landless, the women, the Dalits, and the marginal farmers. However, it often sees the solution as non-land based income generation activity, unrelated to watershed development. There is a need for the resource poor to be ensured a share of the increased resources that watershed generates.

Increased awareness of gender has led to establishment of self help groups (SHGs) that have helped women save, obtain credit, and become more active and visible. But this activity has not become an integral part of the watershed development and has had little impact on traditional gender roles.

Watershed development and participation

Similarly, the review finds an increased awareness of the need for participation. However it is mostly viewed as a means to obtain co-operation, raise efficiency, and gain legitimacy rather than an empowering objective in itself. Much of the decision making still remains in the hands of the development agencies and CBOs function mostly as implementing agencies.

In the comparatively newer projects, there is greater emphasis on providing representation to all social groups and hamlets on multiple user committees for sectoral interest groups. Overall, there is an increase in community participation in the operation and maintenance of the structures and assets, though common lands remain neglected.

However, participation of the local communities in crucial decisions has been pretty dismal along with control over fund allocation and expenditure. Major decisions are taken (beforehand) by PIAs and consultation with local people is often synonymous with consultation with the “powerful”.

Treating cost sharing as an indicator of participation is also problematic. Though the core idea of cost sharing ensuring people’s commitment may be acceptable, the issue of the quantum is not. Resource poor sections may be “priced out” of the programme because they cannot afford the contributions. Sometimes contributions come from withheld wages or from

reduction in wages. Effectively this means that the poor, pay on behalf of the landed.

Participatory Rural Appraisal (PRA) is being increasingly used as a tool for data collection, to enlist local participation and to capture local development priorities. Even when not reduced to a bureaucratic procedure it is problematic because often it may represent only the opinion of a few, especially the dominant sections in the village. It is necessary to contextualise PRA and demarcate what it can do and what it cannot. PRA techniques can be an effective tool for a qualitative and rapid understanding of the situation. However, as it does not provide reliable quantitative data regarding resource status or land use patterns, and may leave no space for interactive learning between local knowledge systems and “external”, “modern” systems of knowledge.

There is also a lack of adequate space for and articulation with the Panchayati Raj institutions and the relationship between them and watershed development organisations remains problematic. Greater attention is needed to address 1) participatory monitoring and evaluation, 2) the role of local communities as regulatory layers, 3) lack of nested institutions, and 4) the conditions for effective participation, for moving on from participation to self-governance.

Research needs

The review also identifies the following research needs: a) Development of easy, practical and robust models for water balance studies that can give good, workable, first approximations with sufficient scope for improvement and adaptation as precise data become available; b) Study of the serious hydrological changes being brought about by watershed development at the micro-watershed as well as at sub-basin and basin levels; c) Long term, co-ordinated, multi-locational studies through collaborative research network to capture impacts of watershed interventions, especially the ecological impacts, which take a longer period to work themselves out; d) Inter-disciplinary studies to understand the interventions, processes, and outcomes in a more holistic and integrated manner and capture the multi-dimensionality of the problem in an integrated manner.

The review also makes specific suggestions for research in different areas as listed below:

Hydrological: a) cross-scale and inter-scale hydrological effects (upper to valley portions, intra- and inter-watershed relations up to basin-scale); b) surface water-groundwater interactions; c) aquifer behaviour, in particular balance between shallow and deep aquifers, their sizes, recharge rates, locations, and so on; d) net effect of different soil and water conservation measures as well as afforestation and agricultural practices on quantities like infiltration and erosion under different geo-physical conditions.

Land-Vegetation-Water interactions: a) agro-ecological relationships and impact on one another as an ecosystem; b) grazing and forest management, in particular productivity, sustainability, and offsite effects.

Socio-Economic and Institutional aspects: a) compare asset-based approaches with income-based approaches, in terms of benefits, their distribution and sustainability; b) scope for biomass-based value addition — biomass, labour, energy, capital and financial requirements, and identification of possible bottlenecks; c) scope of watershed and NRM-based development in different regions, limits, and implications, especially in resource poor areas; d) indigenous knowledge, its scope, and issues in its interface with modern knowledge; e) role of CBOs and SHGs in improving participation and sustaining benefits beyond project period; f) ways of better addressing the problem of local heterogeneity by equitable and sustainable reconciliation of interests and conflict resolution; g) social and institutional mechanisms and capability building for incorporating rigorous participatory grassroots benchmarking, monitoring, and assessment in watershed based development programmes.

Need to re-orient the approach and policy

The review also highlights an immediate need to re-orient the present approach to watershed development and put an enabling policy framework in place to ensure that watershed development programmes adequately meet the requirements of the four central concerns, namely, sustainability, livelihoods, equity, and participation/self-governance. It calls first of all

for a reorientation of approach to watershed development based on the following: a sustainable productivity enhancement orientation; pro-active measures to deal with sustainability and equity issues; preceding resource generation with institutional arrangements to handle those resources; making adequate technology choices; and taking dependability into account in watershed planning.

There is also an urgent need for an enabling legislation for collective regulation of groundwater use and eventually moving towards IWRM from below. Many policies, which may not be directly related to watershed development programmes *per se*, also impinge on the outcomes, including electricity tariffs, irrigation policy, agriculture research and extension policy, fertiliser and agricultural produce pricing, and forest policy. There is also a need to restructure the watershed development programme by increasing the watershed development allocation and period, and conduct it in phases. The suggested first phase consists mainly of upper reach programmes, plantation activity, capability building, and institution building; it does not include constructing any major water harvesting structures. The second phase deals mainly with full drainage line treatment and the third phase with what is now being called watershed plus targeted mainly at the resource poor. Funding for each phase should be conditional on fulfilling the conditions for the earlier phase. Such a restructuring and phasing will provide an enabling environment and incentives for groups and organisations who want to fully address the foundational objectives of watershed-based development, namely, sustainability, livelihoods, equity and participation/self-governance.

Watershed: The last frontier

The review concludes with a word of both caution as well as hope. What makes watershed development issues in India of crucial importance is the historical conjuncture that we find ourselves in. In the process of globalisation and privatisation that is sweeping the country now, the local natural resources, synonymous with watershed ecosystem resources, represent the last frontier; they are the last of the

productive resources that the rural poor have access to. Watershed development represents a dual possibility in this respect. It may, with the right policies and political will, provide an opportunity to bring more and more of the ecosystem resources under social control, provide preferential access and ensure expanding sustainable livelihood opportunities for the rural poor and carrying them beyond subsistence. On the other hand it may result in the augmentation of ecosystem resource potential only to put it to unsustainable use, benefit the already better off, leave the

impoverished no better off than they were earlier, and in the process also undermining both sustainability and equity. Actualising the former potential requires concerted action by all stakeholders in watershed development – Panchayati Raj institutions, community based organisations, government agencies, non-government development agencies, academic community, and donors. They need to come together and discuss and evolve a course of action that comprises a set of focused options in respect of further changes in approach, research, and policy.