WATERSHED-BASED DEVELOPMENT: OUR NORMATIVE FRAMEWORK

Watershed development programmes consist of a set of biophysical, technological and social interventions aimed at bringing about 'watershed development'. Over the past three decades, the concepts that determine the goals of watershed development programmes have also evolved hand-in-hand with the content of the programmes. Understanding the 'achievements' and 'shortcomings' of any watershed development programme, in fact, requires first an understanding the notion of 'watershed development' and how this broad notion is to be translated into specific objectives in the context of watershed development. Such translation may also be based upon additional assumptions about what is possible and how to bring it about. One may call this set of goals, specific objectives and assumptions the 'normative framework' of an analysis. Whether explicit or implicit, such a normative framework is part of any analysis, an when normative positions are involved, it is best to put it forward explicitly, so as to allow readers to understand better the normative elements embedded in the analysis.

In this chapter, we outline *our* normative framework in the context of the goals of watershed development in India as they have evolved over the past three decades, which we find often not explicitly and systematically translated into specific objectives. We therefore, go on to develop the framework further, by specifying how we would translate the broad goals into specific objectives, the assumptions we make in doing so, and the consequent criteria for assessing the quality of watershed development that we use. We conclude with a discussion of how to relate this normative framework with those embedded in the projects or programmes that we shall be reviewing.

1. The evolution of watershed development concept and goals

1.1 From soil and water conservation to watershed development and beyond

Catchment protection programmes and soil and water conservation programmes were the precursors of watershed development. . Early efforts of treating watersheds were aimed at catchment protection. Catchment protection programmes looked upon the watershed as a unit, but they focused on their character of catchments of particular dams were mainly aimed at reducing sediment load and siltation of the reservoir. Soil conservation programmes aimed at conserving fertile or productive agricultural soil through bunding, but the bunding component operated at the farmer's field as a unit and lacked any larger unit of organisation. Check dams and other waterline treatment carried out for water conservation were taken up in an isolated manner without being integrated into a watershed-scale programme.

With the emergence of watershed development as a distinct programme, soil and water conservation acquired a unit of organisation – the watershed. Soil and water conservation are still central to watershed development, and other components such as afforestation and common land regeneration or agronomic changes are linked to this central theme. However, more recently, watershed development is also being seen more and more as a core strategy for stabilising rural livelihoods, especially in the dry, rainfed regions of India by everybody concerned: governments, donors and NGOs. All other developmental issues, including employment generation programmes, rural credit, women's empowerment, and even prohibition -- even population control as in the case of Adarsh Gaon Yojana in Maharashtra -- are being subsumed under this concept. In short, watershed development programme seems to have become the flagship of rural development programmes[1].

1.2 From production to 'sustainable development': livelihoods, sustainability, equity, gender and participation

There is also an increasingly shift in the goals of watershed development. Earlier, along with soil and water conservation concerns, there was a preoccupation with production goals and targets, with increasing production the overriding goal as characterised the Green Revolution agriculture strategy). There is now increasing attention being paid to issues like a) how the increase in productivity is brought about, b) what happens to the biophysical system and processes (or what can be called conditions of production) in the process of production itself, and c) finally how does it contribute to the quality of life. Terms such as participation, gender, equity, sustainability and livelihoods are now much more prominent, if not commonplace, in the watershed development literature. These concerns are increasingly reflected in the provisions of the 1995 Common Guidelines as well as the now revised guidelines of 2001 issued by the Central Government concerning watershed development programmes[2]. For example, the Common Principles for Watershed Development talk about promoting equity for the resource poor and women and suggest, amongst many other things, 'equitable right to all households in any new water resources developed under the project' as one of the ways to achieve this (MANAGE 2000)[3]. Different NGOs, State governments and the Central government have included these concerns in one way or the other in their watershed programme. The most extreme example of this shift is that of KAWAD, which prefers to call its programme a 'livelihood programme with a watershed approach'.

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[1] For a detailed discussion on the evolution of watershed programme since the early 1930s refer to (Shah 1998).

[2] This is not to say that there are no problems with the Guidelines. In fact there has been a fair amount of criticism about the Revised Common Guidelines (2001) which further got revised (known as Hariyali) and became applicable from April 1, 2003. In the Hariyali guidelines, though the alleged aim is 'to further simplify procedures and involve the Panchayat Raj Institutions (PRIs) more meaningfully in planning, implementation and management of economic development activities in rural areas', the main criticism has been that there has not been enough devolution of powers and also that the space of the NGOS, CBOs, etc. has been reduced. For a detailed discussion refer to Shah (2003) and also the WASSAN website, www.wassan.org for related material on Hariyali - workshop reports, recommendations, consultations with CBOs/ PRIs/ NGOs, concept papers on Hariyali.

[3] This is also reflected in the detailed 'success criteria' given in the revised NWDPRA guidelines. For details see (GOI 2000).

These shifts in the goals, or at least the rhetoric, of watershed development is a reflection of the changes taking place in developmental thinking during the 1980s and 1990s. In particular, following the Brundtland Commission's report, 'sustainable development' became the new catchall phrase (WCED 1987), and 'participation' the new *mantra* for development success. More recently, the focus has shifted to 'sustainable livelihoods' (Ashley and Carney 1999). In any case, the need to ensure the environmental sustainability of the development process and the need to empower the poor and marginalised communities have become more clearly articulated and more widely accepted in development discourse.

2. Our normative framework

There could hardly be any disagreement that livelihood enhancement, in a sustainable, equitable and participatory manner, should be the goal of any development process. The devil, however, is in the details, in translating this general proposition into specific objectives and criteria in a specific context. Many assumptions are involved in this translation. These assumptions include both additional value judgements about 'what should happen' as well as subjective assessments as to 'what can happen' in the given biophysical and social context.

We outline below our understanding of what these broad, often rhetorical terms mean (or should mean) in the specific context of watershed development. We should state two underlying assumptions at the outset. Firstly in a country like India where the vast majority of the population -- farmers, agricultural labourers, adivasis, pastoralists -- have been historically dependent on natural resources for their livelihoods, 'development' will have to be based primarily on long-term sustainable productivity enhancement of and economic value addition to the natural resource base, including in the long run, local renewable energy sources as well. Secondly, in the dry or drought-prone regions of the country, development is not just about raising the average productivity of resources, but also about increasing the 'certainty' or reliability of production and the consequent security of livelihoods -- reliability and security that are often threatened or undermined by drought.

2.1 Interconnectedness of the biophysical and the social

Before we proceed further it may be necessary to dwell a little on the interconnectedness of the biophysical and the social especially because this interconnectedness is intrinsic to the very concept of watershed development and the final outcome of any intervention is a combined effect of both. Indeed, watershed development as an approach to sustainable rural development draws its strength from this interconnectedness.

The watershed as a biophysical entity is an ecosystem (though not necessarily an ecosystem type) comprising of all biophysical processes within the watershed and their interactions with the larger systems, and biophysical interventions constitute modifications of these processes. However, the very same interventions are also social processes. Biophysical and social interventions are not two separate processes, but aspects, or abstractions of the same unified process. What appears as soil erosion in the

former case may appear as inability to meet food needs in the latter case. What appears as expense on production input for buying fertiliser may appear in the other as pollution. In fact ecosystem processes and resources are our basic economic resources as well, and watershed development has brought this unity to the forefront.

Moreover, there are historical factors at work, and watershed development is not a matter of writing on a clean slate. Historically determined processes and factors inherent in the situation in the watershed interact with the biophysical and social interventions and may be crucial in determining the acceptance and implementation of technologies and rules for resource use. It may be argued that it is important to know the social context of intervention to understand fully how the ecosystem processes generate indirect impacts on different groups over different temporal and spatial scales, so that one can go beyond the immediate reaction that local communities might offer more to the direct benefit flows.

Our main aim here is to focus on the interconnected themes of livelihoods, sustainability, equity and participation and our discussion centres mainly on aspects relevant to these themes. We feel that the interconnectedness of the biophysical and the social has not been given its due in the analysis of watershed development, where it is especially relevant. This interconnectedness is the underlying thread that binds the viewpoint that the review represents.

2.2 Livelihood Needs

2.2.1 Approach to defining livelihood needs

Earlier discussions of needs centred on the fulfilment of basic or subsistence needs. The issue was how far has a strategy been successful in meeting basic needs of food, fuel, shelter, clothing, education and the like (Streeten 1979; Brandt Commission 1980). The requirements here have a clear connotation and it is reasonably easy to evolve operational indicators for them. The shift to livelihood needs requires a little more discussion.

The concept of livelihoods and more specifically ‘sustainable livelihoods’ (SL) entered the rural development discourse in a prominent manner from the early 90s. Most of the donors (for example DfID, CARE, Oxfam and UNDP) today use some version of a 'sustainable livelihoods’ framework in prioritising funding projects and also in evaluating their impacts. One of the SL frameworks that appears prominently in the discourse is of that of DfID. DfID’s professed aim is to eliminate poverty in poorer countries and the promotion of sustainable livelihoods is one of the means to achieve this aim. For 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”*. DfID stresses the importance to livelihoods of capital assets and distinguishes five categories of such assets: natural, social, physical, human and financial. Donor organisations like CARE, Oxfam and UNDP also use the SL framework more or less in the same way as all of them focus on assets (though they call them by different names) and micro-macro linkages. DfID’s SL

framework itself is derived largely from Chambers and Conway's work on 'sustainable livelihoods' in the early 1990s[4].

Our understanding of livelihoods (and of sustainability: see section 2.3) is quite similar to that articulated in the SL framework. However, we prefer to specify livelihood needs in more detail. 'Livelihood needs', in the sense we are using the term, include the basic needs of food, shelter, clothing, etc., and in addition also include needs that are imposed due to the nature of the livelihood activity. A farmer would require, for example, means of tillage, and he/she would have to satisfy this need either through maintaining a pair of bullocks himself/herself, or sharing a pair with someone else, or else having enough cash to hire a pair or a tractor. Similarly a tanner would require a water source for tanning the hides. Also our approach differs from subsistence frameworks in the sense that in livelihoods we also take into account certain surpluses over and above consumption needs which can be exchanged and/or value added. In other words, one may say that basic needs represent human needs unmediated by relations of production (both in the sense of production and exchange), whereas livelihood needs are those that include the needs imposed by the immediate relations of production. One key difference between our notion of livelihood assurance or enhancement and that embodied in the SL framework is that we place a higher premium on *natural capital* as compared to other forms of assets or 'capital'. We do believe in the primacy of natural capital in areas where the livelihoods of the people are primarily dependent on natural resources. Therefore, we recognise that right to land and water has to be a basic component of the livelihood strategy. For example, in the context of watershed development, we clearly recognise the need for creating equal access at least to the additional resources created (in terms of annual flows – whether it is water or biomass) as a prerequisite for meeting the livelihood needs of the resource poor[5].

2.2.2 Composition of livelihood needs: food, domestic water, fuel, fodder and other consumption goods

In the rural Indian context, particularly in drought-prone areas, the minimum livelihood needs that need to be assured would consist of domestic water (including drinking water and water for livestock), food, fuel, fodder, some biomass input to the agricultural system to maintain soil productivity and other goods and services that may have to be obtained from the larger system. The last would include needs like health, education, entertainment, transport, etc. Additionally, since our understanding of livelihood includes the way one earns one's livelihood, access to resources -- whether it is land, water, livestock, or any other resource or facility needed for the production process -- is also considered part of the livelihood needs.

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[4] This is not to say that all the four approaches are the same; they do differ on emphasis (for example CARE puts emphasis on a rights-based approach) and this would be reflected in the actual programmes that these agencies support.

[5] There is quite a bit of literature available on different SL frameworks. E.g., Carney *et al.*(1999); Bebbington (1999) and Conway (2002).

2.2.3 Meeting needs: produced versus purchased

In the context of livelihood needs, one of the important questions is how many of these needs should be fulfilled locally (and to what degree) in kind? For example, it could be argued that if farmers produce sufficient cash crops and get high returns, they could then buy food. In other words it is not necessary for watershed development to contribute to food production if it contributes to raise their cash incomes sufficiently to buy the required food. The same argument would apply to fuel or fodder. In many of the areas under the high input-based green revolution agriculture, something of the kind has already happened. Even in many areas where rainfed cash crops are important, farmers have to produce for the market to have enough cash to meet food requirements.

However, for a number of reasons, we believe that if the food, fodder and fuel requirement is produced locally and preferably by every farmer, then there is greater self-reliance and dependability of livelihoods. If farmers have to buy food, fodder or fuel from distant areas with the help of cash, there are many possible points at which the chain may break. Generation of equal amount of cash does not necessarily mean it will be spent on those needs. There is a distinct possibility that it may be squandered on something else[6]. Or the terms of trade may turn to be more and more unfavourable[7]. And finally, if the same argument is continued up to the national level and everyone chooses in this way, there may be cash, but not sufficient food produced.

As a norm, this review considers food, fuel, fodder and domestic water needs separately, and treats self-reliance in these needs as one of the objectives to be achieved at the watershed level. In most agro-ecological conditions obtaining in the country, it considers self-sufficiency in these livelihood needs to be possible and desirable at the watershed level. However, it does make a distinction between 'self-sufficiency' and 'self-reliance'[8]. In exceptional situations where self sufficiency in these needs may not be possible, it would still consider self-reliance to be possible and desirable, that is, it considers it possible and desirable for a substantial component of these requirements to be produced locally, and the rest to be met from a kind of production that could be exchanged on equal terms with the larger system.

We should also note that livelihood needs would depend upon the livelihood patterns in an area and for different social sections, in the patterns prevalent amongst them. For example, the fodder needs of a household that is primarily dependent on pastoral activity as the primary source of livelihood would be quite different from that of a typical peasant household. Livelihood patterns have historically evolved and are continuously changing. Older forms are often rooted in older ecosystem contexts that may no longer be prevalent.

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[6] In some of the mines in Madhya Pradesh, women from miners' households waged a struggle and forced the management to pay half of the wages directly to the women in the household!

[7] For some of the issues related to trade and sustainability at macro level see Lélé (1993).

[8] The term self-sufficiency suggests that all the needs are met locally and there is no relationship with the 'external' world. This is very close to the Gandhian concept of self-sufficient villages. However, in the case of self-reliance, the idea is that there should be parity in terms of energy and value in the exchange that takes place between the 'local' and the 'external'.

Similarly, they start from different resource endowments or access that are rooted in the class and caste differentiation as well as inequalities that have historically evolved. Watershed development itself could change them significantly in one direction or the other.

2.2.4 Are needs being met: consumption norms and scales

How do we assess whether the livelihood needs are met or not? Our normative framework implies that the way is to estimate or quantify each of the above mentioned needs and then see whether the watershed development efforts have been able to meet them. Elsewhere we have used biomass as the measure to quantify these needs on the basis of a threshold approach (working out minimum upper bounds for the values leaving some scope for later optimisation). Our studies show that a farmer family of five persons generally needs a productive potential about 15 to 18 T (dry weight) annual biomass increment to meet all the above mentioned livelihood needs, including estimated minimum cash requirements (Paranjape and Joy 1995; Datye 1997; Paranjape *et al.* 1998)[9].

However, it should be noted that so far, none of the studies we review has taken this approach, nor has it provided sufficient data that would allow an estimate. Hence, in this review, due to paucity of data, we restrict ourselves to a relative position. Some studies have looked at what has been the change in availability (in terms of increase, decrease and no change) by comparing the before and after scenario, or comparing the programme villages with control villages and then make an assessment. The review therefore confines itself to tentative conclusions in this respect.

Another related issue is that of scale –should we assess the fulfilment of livelihood needs at the village/watershed level or at the household level. If assessment is carried out only at the village level, it may hide significant intra-village variations in both needs as well as their satisfaction. There is a need to consider the fulfilment of livelihood needs at the level of the household [10]. The review therefore would attempt to see this issue at both the levels – one at an aggregate level of the watershed ecosystem to see whether the interventions have increased the productive potential to meet the livelihood needs and also see how this is playing itself out at the household levels.

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[9] This approach is broadly called as the biomass-based planning approach which tries to tie both the sustainability and livelihood needs together. As per this approach the livelihood needs of a typical family is estimated in terms of biomass and the studies show that if a family of five can produce or get access to about 18 T of biomass (dry weight) in a year then it can meet all its needs with a break up of food (2 T), fodder (5), fuel (2), recirculable matter for agriculture system (6 T) and surplus biomass for cash income (3 T). So one of the criteria to judge whether the watershed development has been able to meet the livelihood needs of the people is to see whether the watershed has reached such a production potential (keeping in mind the sustainability issue). We have not made this part of our normative framework because this may be quite a bit of divergence from the frameworks under which the programmes operate.

[10] Given the likelihood of gender-based discrimination, there is also the need to go one more step below and desegregate the household and see what is also happening to women within the household.

2.2.5 Efficiency considerations

A common way of assessing the performance of a watershed (or any) development programme is to assess all benefits in economic terms and then carry out a benefit-cost analysis or estimate the Internal Rate of Return (IRR). The review does not adopt this approach for several reasons. Firstly, as indicated above, we believe that food, fodder, fuel and some of the other subsistence needs need to be met separately and in kindf , not in equivalent cash terms. Secondly, in a typical benefit-cost analysis, similar benefits flowing to rich and poor households are valued equally. This means that large absolute gains to rich households can offset small absolute losses to poor households, even if the loss to the poor is much higher relative to their income. This does not mean that analysis cannot be corrected for this. Such bias could be avoided by requiring that livelihood needs are met at the household level and not merely at the aggregate level of micro-watershed or village level, or have a cut off point for imputed values so that economic gains in excess of livelihood needs are segregated. This requires methodological innovation that seems to be missing from watershed studies based on a cost benefit approach. It should be clear that we do not think that a favourable aggregate benefit cost ratio by itself is a measure of performance in so far as watershed development is concerned. This does raise the issue of how to accommodate cost effectiveness in the analysis. Our normative position on this favours the least-cost option that can fulfil specified developmental goals of sustainability, livelihoods, equity and participation in the context of a given watershed.

2.3 Sustainability

Terms like sustainability and sustainable development are being used very widely for very different things: from a purely economic sense equivalent to the withdrawal of all state subsidies and support, to a strictly the environmental sense[11]. For the purposes of the review, we start from the specific sense of environmental sustainability as mediated by human intervention.

2.3.1 Sustain what: products or underlying biophysical processes?

According to the World Commission on Environment and Development, "Sustainable development is development that meets the needs of the present without compromising the ability of the future generations to meet their own needs" (WCED 1987). The key point of debate has been what exactly has to be conserved or sustained so that the 'ability of future generations' will not be 'compromised'. Our viewpoint falls broadly into the 'strong sustainability' school (Costanza 1991; Daly 1991), namely, that which requires conserving 'natural capital' independently of other forms of capital. Thus, 'maintaining and enhancing the productive and assimilative (as sinks) potential' becomes the objective if sustainability is the goal. In the specific context of watershed development, one is talking about sustaining the increased productivity and availability of various resources that is supposed to result from the interventions.

[11] See Lélé (1991) for a review of the 'sustainable development' discourse and Lélé (1993) for a detailed discussion of the concept of sustainability.

To be proactive in our interventions we have to focus on the underlying processes and see what is happening to this process over time because of particular type of interventions rather than wait for the decline in production to show up [12]. We outline below some of the operational norms that logically follow from this approach to sustainability in the context of watershed development.

2.3.2 Use water within renewability limits

Water is an important resource in the context of watershed development for many reasons (from the point of view of productivity, sustainability, livelihoods and equity) and hence it is important to see what is happening to water as a result of watershed interventions. Here we need to make a distinction between stock and flow. Stock refers to water in the deeper aquifers which have been built up over very long time spans. Flow refers to the annual availability of water. Very often increase in irrigated area is taken as a success of watershed programmes and the question whether the increase in irrigation is from the stock or the flow is seldom addressed. Our normative position is that the water use within the watershed should be planned, as far as possible, within the annual flows or within the annual renewability limits. However, there may be 'bad' years in which even the domestic water requirements may not be met through the annual flows. In cases like this water from the 'stock' could be used with the understanding that the 'stock' would be replenished in 'good' years [13].

2.3.3 Minimise import of water, do it in a fair manner

Our normative framework allows for import of water supplements (from outside the micro watershed like the sub-basin or basin) in cases where the local water resource development through watershed planning cannot fully meet the livelihood needs. We do foresee some situations where a certain amount of water imports would be required, because of the paucity of water resources within the watershed. However, this should be

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[12] One way to understand this, as Lele puts it, is by looking at what is happening to the physical attributes of the system (like dynamic steady state, reliability, resilience and adaptability) and how certain changes affect these attributes. For example, how do certain shocks like droughts affect the biophysical processes and the ecosystem's (non)ability to cope with such shocks (Lele 1993). Another way of understanding these underlying processes from sustainability point of view is to see whether the primary productivity of that ecosystem is maintained and enhanced through the type of interventions we make (Paranjape and Joy 1995); (Datye 1997). To operationalise the notion of sustainability, Shah *et al.* (1998) have given some basic guidelines : a) The rate of regeneration of a renewable resource must be greater than or equal to the rate of harvest; b) Waste emissions should not exceed the renewable assimilative capacity of the micro-environment; c) The rate of exploitation of non-renewable resources must always be less than or equal to the rate of creation of renewable substitutes; d) In case an existing renewable resource is to substitute for a depleting non-renewable resource, the rate of harvest of this resource must be strictly less than its rate of regeneration, to the extent necessary to permit this substitution.

[13] Here the distinction between `stock' and `flow' is used to make an overall assessment of water balance within the micro-watershed and it is easier to understand sustainability of water use in terms of annual flows which can be, to some extent, correlated to the utilisable components of the annual rainfall. Of course, in real situation it may be rather difficult to finely separate stock and flow. According to Himanshu Kulkarni of ACWADAM, Pune, "stock and flow are integral properties of water, which should not be separated. Availability depends upon both stock and flow. Also, stock could be both renewable and non-renewable and flow would be common to both renewable and non-renewable. Flow would only be unidirectional in the case of non-renewable resources". (From his comments on the draft copy of this report).

done only if a systematic water balance study shows that there is such a shortfall in meeting the livelihood needs, and evn while doing so, care should be taken that it is done in a fair manner and not at the expense of the 'legitimate' claims of others outside the micro-watershed [14].

2.3.4 Use uncultivated resources within renewability limits

Use of uncultivated biomass resources like fodder, fuel, mulch and timber is an integral part of the rural livelihood strategy. Generally these products are derived or harvested from own non-crop land or from the CPRs (like forests, village revenue lands, etc.). Very often value judgement creep in describing a particular way of utilising these resources and this is very pronounced in the case of forest resources. The reason is that there are multiple uses and users at different scales. In fact these issues have been systematically discussed in Lele (1994). According to him, the term unsustainable use should refer to 'a use that results in declines in a particular benefit over time' and changes in the mix of benefits provided by the CPRs (forests) should generally be 'non-judgementally termed as land use change'. He therefore defines sustainability "as maintaining the benefits from biomass flows to the villagers using the forests, and measured these benefits in physical terms" (Lele 1994). He further points out that ensuring this sustainability not only requires harvesting at a rate less than the rate of regrowth, but also ensuring regeneration of the vegetation, maintaining soil fertility and possibly maintaining certain levels of biodiversity.

2.3.5 Soil resource quality and potential

Enhancing and sustaining the productivity of croplands and uncultivated lands requires maintaining the productive potential of soil in these lands. This potential is a complex phenomenon, influenced by various physical, chemical and biological characteristics such as texture, field capacity, nutrient content, organic matter content, presence of useful microbes, etc. However this would require much more scientific investigation and data which is not generally available. What we propose to do is to look at some of the visual and qualitative indicators that may have been recorded by different studies such as erosional characteristics, ability to withstand dry spells, and turbidity of stream flow to assess the impacts on soil quality and potential.

2.3.6 Crop practices and agro-ecological processes

Crop diversity (as against mono-culture agriculture)is generally taken as an indicator of sustainable agriculture. In our framework we would also need to look at the impact of watershed interventions especially on the agronomical practices that are promoted, to see the changes in cropping pattern, crop varieties, etc.. So, we would also look for the changes for example in input use, the extent of chemical versus organic input useThe normative position consistent with our concept of sustainability demands a shift from the high external input based agriculture to low external input based agriculture practices. The latter represent a wide range of practices that include but are not restricted to pure organic agriculture or methods. In fact, practices that do not totally exclude chemical

[14] For a detailed discussion of the issue of access to exogenous water and how this can be integrated with the local water system and what are the conditions for such imports see (Paranjape and Joy 1995); (Datye Undated).

fertilsers but belive in their minimal and judicious use in ways that are not environmentally damaging now are formally called Low External Input Based Sustainable Agricultural (LEISA) practices and the LEISA network has considerable following.).

2.3.7 Balance between cropped and non-cropped lands

Watersheds consist an interconnected system of different types of lands (in terms of slope, uses, capability, etc.) and intervention on one type of land or a plot can have an impact on other types of lands and plots. Complete suppression of soil erosion may sometimes deprive the downstream agricultural plots of valuable nutrients.;Sometimes bringing existing non-crop land under tillage may increase soil erosion; Watershed development literature often treats conversion of non-crop land to cropland as a desirable goal and an indicator of success. However, it should be noted that the non-crop land performs various types of ecological functions. For example, a significant decrease in non-crop land can also decrease the population of predators of pests which would result in higher pest attacks on crops. So there is a need to maintain a balance between the cropped and non-cropped areas within a watershed.

2.3.8 Energy and materials – the global aspect of sustainability

There is another, global, aspect of sustainability of production practices, namely, the impact of the production practices on the long-term requirement of energy resources. A movement towards sustainability in this sense would imply reduction in the requirement of non-renewable energy sources and materials. The degree of the reduction would indicate in some sense the degree of movement towards long term sustainability. One of the ways to see how this dimension of sustainability plays itself out in the context of watershed development is to look at the use of renewables in various structures especially water harvesting structures like check dams, nallah bunds, farm ponds, etc.

2.3.9 Sustainability as dependability

Livelihood assurance implies not only the fulfilment of livelihood needs but also their fulfilment with a sufficient degree of dependability. The critical input here is water because it is the most variable input into the ecosystem. For this reason the degree of assurance with which water services are planned becomes an important factor.

If livelihoods have to be assured for the rural poor, the degree of assurance has to be sufficiently high. In our opinion, an acceptable degree of assurance has to be about 80% or more. This implies that livelihood needs would be fulfilled in four out of every five years. If this is so, then it is feasible for them to build sufficient reserves during those four years (one or two of them would be very good years too) to cover the shortfall that may be created in the fifth year.

In respect of water, this means that water resource planning must be done on the basis of 80% dependability rainfall. Once we plan in this manner, we also have considerable amount of variable water resources that are available in the good years. The system that we plan must be of a kind that can take this variable resource into account and use it efficiently.

2.4 Equity

2.4.1 Different dimensions: class, caste, ethnicity, gender, and offsite impacts

The satisfaction of livelihood needs depends crucially on who has access to how much and what kind of productive resources. Thus, the issue of livelihoods brings in its wake the issue of whose livelihoods, the question of equity. In our normative framework we are basically talking about two dimensions of equity. The first dimension of equity is "the concern about the intra-generational distribution of human well-being across typical barriers of class, ethnicity, and gender, etc., including concerns about fairness of outcome as well as processes" (Lele 2002). This dimension of equity is related to the historically embedded inequalities [15]. Class, caste (or community) and gender are the three major dimensions in which inequality manifests itself in India. Of course there are other forms of inequality also, for example, the division between tribals and non-tribals. The implication here is that in assessing the impact of watershed development, one needs to disaggregate the 'local community' in terms of different social sections (class, caste, ethnicity, etc.) and see the differential impact on them. The gender dimension adds one more layer to the issue – one needs to go beyond the household level and see what are the impacts on the women within the households [16].

The second dimension emanates from spatial or locational inequalities and this is primarily because of the bio-physical characteristics of the watershed itself. Especially in the case of water, one's location in the watershed (upper reaches versus the valley portion) often determines one's access – people who own land in the valley portion benefit most from the augmented resource. This issue of upstream-downstream difference is not limited to these differences within the watershed. It crops up as an issue between adjoining watersheds, between upstream and downstream communities, right up to those differences within the entire river basin itself. Given that the relationship is fundamentally asymmetric, that is, activities of upstream land owners or water users can affect downstream communities, but not vice-versa, the question of what constitutes fair or unfair behaviour by upstream communities (or equitable allocation of resources or benefits between upstream and downstream communities) crops up immediately and needs to be carefully addressed at all scales: within the micro-watershed, across watersheds and across the entire basin [17].

2.4.2 Water use prioritisation: inter-sectoral equity

The normative framework on which the review rests treats water as a common property resource to be managed and regulated collectively in order to ensure equitable and regenerative use. This implies making distinctions about water use and treating different

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[15] Shah (2003) clubs all these inequalities under the umbrella term 'historically disadvantaged'. For a detailed discussion see (Shah 2003).

[16] For some of the critical issues related to gender and development see (Agarwal 1986); (Dankelman and Davidson 1988); (Rao 1991); (Leach *et al.* 1995). For a summarised discussion on the major trends in gender and development writings see (Kulkarni and Rao 2002).

[17] For a detailed discussion of the asymmetries in watershed and other ecosystem processes see Lélé (2002) and Kerr *et al*. (2002).

uses differently. First it implies prioritising water use. Broadly, the priority in most areas would be: drinking water; water for domestic use and for cattle; water required for ecosystem regeneration and water required for livelihood activity; and surplus/extra water that could be used for cash or commercial crops. The principle here is that water should become available to the next category of use only after the first use is assured.

This implies that we take into account what has been the impact of watershed interventions on all these dimensions of equity [18]. To state it more explicitly, in our normative framework we take that a fairer distribution of increased resources should be ensured with a privileged access to the resource poor. The way to ensure this may differ from situation to situation. We do not prescribe any one way of doing it, since there are many different ways in which it may be done. From the point of the review it would a significant attempt to try and unravel the different ways in which the issue of equity has been handled on the ground [19].

2.4.3 Practical feasibility: from equality to equity

We should also take note that equity, a comparatively new term seems to have replaced equality, a good, old-fashioned term that was used to denote issues related to the distribution of and access to resources till the end of the seventies and the early eighties. Equality has been inscribed on the banner of all radical movements for social change. It is defined in relation to what they, meaning the social movements, see as inequality. Moreover, they believe that inequality is the result not of the intrinsic worth of individuals but of the way we arrange our social affairs. It is the result of social structure, and the demand for equality has always been a demand for a radical, egalitarian social transformation, for structural changes in society. However, after the eighties, for a host of reasons including globalisation, economic reforms, growth of the voluntary sector and growing NGOisation, the word equality that still smelt of the radicalism associated with it began to be increasingly replaced by the word equity. With this the emphasis also shifted from the 'radical projects' that characterised the radical mass movements to what is immediately possible and practicable. In the context of watershed development we are using the term equity (and not equality) because we are only talking about what can be done *without* a radical restructuring of social relations. In other words, it points out and demarcates the space that is still available within the system. This means, for example, that if we create preferential access (not necessarily ownership) to small parcels of land and limited quantities of water for the disadvantaged sections, then inequity will reduce, although equality will not be reached.

2.4.4 Contextualising equity in watershed development

A commitment to equity brings special concerns in respect of watershed development. In view of the asymmetries in watershed processes (for example, those between surface water and groundwater, between upper and lower reaches, between downstream and

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[18] For a critical review and detailed discussion on the issue of equity in the context of CPR research see Menon (1999).

[19] For a detailed discussion on the question of equity in the context of irrigation see Boelens (1998). The first three parts of this book deal with the conceptual dimensions of equity and the rest of the book deals with different case studies and experiences.

upstream), it becomes important to see how those asymmetries map on to the historical inequities of access to productive resources and what impact watershed development has on 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. This is because a) land in the upper reaches is owned more by the poor, in the lower reaches by the rich and upper caste, b) watershed development augments groundwater, which is currently private property and can be tapped much better by the rich and the landed, less by the rural poor and not by the landless, and c) in any case, increased availability or assurance of water does not directly benefit the landless in the normal course of affairs.

Therefore, unlike concerns in respect of environmental sustainability, which watershed development per se is likely to enhance, we are likely to find that there is nothing intrinsic in watershed development to take care of inequity. The implication is that if there are no pro-active elements of equity built into the programme it only accentuates inequity. There is now a growing realisation of this aspect of watershed development and recently there have been greater efforts to include an adequate equity component in watershed development programmes. How effective these have been is an important aspect of the review.

2.4.5 Water: local or non-local resource?

Another important issue relates to the question of contextualising the issue of equity within watershed development. It is important to recognise that water is both a local and non-local resource. The localist viewpoint sees water only as a local resource. However, water flowing down from upstream watersheds is the basis of livelihoods in the downstream regions. It is important to recognise that modifying water regimes in any watershed, however small it may be, ultimately, has *basin*-wide implications. Because watershed development looks at watersheds on the micro-watershed scale and treats and manages the watershed as an independent entity, the interdependence, the downstream effects appear as 'externalities'. It is in the way we define our boundaries that it becomes so – because water is both a local and exogenous resource. And so, while slogans like '*gaonka pani gaonme*' (basically meaning the rain that falls in a village is for that village) may help conserve water, they go against the grain of collective regulation and control of water resources. While we can argue in the case of many other local resources (except water) that local communities should have full right over the resources in their areas, the same cannot be said about water.

Recognising that the impact of watershed development extends beyond the treated watershed, a commitment to equity means ensuring inter-watershed or basin-level equity as well. Here, our normative position is that every community has a right to water as part of its right to assured livelihood. This implies that the local communities should be assured of adequate access to the water necessary for their livelihood – from local *as well a*s non-local or so-called exogenous sources together (as we have qualified this in the section on sustainability). From this perspective, all communities should have a right to utilise as much of the local water resource as they can to fulfil their livelihood needs. But this also means that the water that does not go to fulfil livelihood needs, does not form part of this right. To put it differently, everybody in the watershed has a right to a

basic quantum of water (which also includes the aspect of quality in the case of the drinking water component) as part of right to livelihood. Only after meeting the basic service of all, the 'surplus' water should be provided to people as extra, economic service for commercial production, whether agricultural or industrial.

The normative framework on which the review rests treats water first as a common pool resource to be managed and regulated collectively in order to ensure equitable and regenerative use, and only secondarily in respect of the residual resource, as a private resource regulated by the market. On this background it becomes important to explore how far watershed development has brought about collective management and regulation of water use and create equitable access (in terms of basic service) and to explore what have been the actual priorities of water use on the ground.

Equally important in this respect is the principle of equitable sharing of shortages and surpluses. Without such a viewpoint, we cannot expect downstream-upstream conflicts to be resolved. In the absence of an understanding based on such a principle, generalisation of watershed development activity, far from mitigating this conflict, is likely to sharpen it further. But watershed development activity also creates the potential to inculcate these principles from the bottom up, instead of their having to be enforced top-down.

2.4.6 Watershed also creates conditions for a positive sum game

Although it is true that the asymmetric nature of watershed processes makes watershed development 'naturally' prone to aggravating intra- and inter-village/watershed inequities, we should also take note of the immanent potential that watershed development has for equity, though it may be realised only where strong pro-active initiatives exist.

Watershed development results in enhancement of ecosystem resources and productive potential. Moreover this enhancement takes place on the basis of public funds and through collective, community effort. Thus it can be argued that *the additional resource that has been created be assured equitably to everyone in the watershed, even as prior right to previously existing resources are recognised and left largely undisturbed.* Thus, without greatly disturbing prior rights and use, potential access to productive resources for the rural poor could be created by watershed development. It creates the possibility of providing equitable access within a positive sum game framework. This in fact, represents the most important aspect of the potential that watershed development creates. It is for this reason that the review treats these possibilities as important.

2.5 Participation

2.5.1 Participation: both a goal and a means

Over the last two decades or so participation (variously seen also as collective action, community driven development, decentralised governance, etc.) has gained increased currency both in developmental practice as well as in CPR research and literature. This increased awareness about the need for participation of local communities and the need for decentralised governance draw from different sources and standpoints like a) critique of the centralisation of power in the bureaucracy and alienation of local communities, b) disenchantment with the top down approach, c) increasing aspirations, awareness and

demands from the 'subalterns' for their share both in political space as well as in the benefits of development. Hardin's "Tragedy of the Commons" in a way forced the CPR research community to look at the question of community and community control and institutional issues much more closely and this has given rise to a vast literature which also brings out the different strands, trends and nuances of the problem [20].

Very often participation of the local communities or resource users is seen as a means to achieve certain goals. For example Water Users' Associations (WUAs) are being formed with the primary aim of increasing cost recovery in terms of collection of water charges and water use efficiency). Or JFM committees are formed for the protection and 'sustainable' use of forest resources. Thus participation is a means to achieve a goal, which is often set by the state or an outside agency. This is an instrumentalist viewpoint on participation. However, there is also the counter viewpoint, which values participation for its own sake irrespective of what outcomes it leads to, and utilises participatory mechanisms and tools to increase the participation of local communities or users of resources. In our framework we see participation both as a goal of developmental (decentralised) process in that it helps communities make an informed choice and also as a means of more equitable, sustainable and efficient outcomes. In the former context, it means the creation or enhancement of genuine participatory democracy at the grassroots. We outline below what this means in the context of watershed development in India, which is implemented in highly differentiated rural communities and, by virtue of being a financially demanding programme, necessarily means outsider input and intervention.

2.5.2 Democracy within local communities

Given that rural Indian communities often are highly differentiated, decentralised democratic governance is easier said than done. Simple transfer of decision making power to 'the community' may well turn out to be handing over decisions to the dominant sections within the community [21]. Nor is it necessary that such simple transfer will ensure regenerative and equitable use. The quality and nature of within-community participation in democratic local governance depends to a great extent on the characteristics of the local community itself. For example in a community which is economically, politically and socially extremely stratified and hierarchical, the type of participation forthcoming would be very different from the type that one can expect in relatively homogenous communities bound by more egalitarian and democratic norms of behaviour and relationships. There is therefore a need to recognise the heterogeneity (both horizontal and vertical) within the local community while forming the various institutions so that space is created for all sections to participate in the process.

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[20] For a detailed discussion on the major trends and issues in the CPR research over the last 30 years since Hardin's "Tragedy of the Commons" see Dietz (2002).

[21] There is a growing literature which argues that pre-existing inequities within local communities would distort the outcomes. This literature challenges the earlier assumptions that village communities are relatively homogeneous in their interests and cohesive in their relationships with each other and deconstructs the 'local community'. Some of the writings include (Li 1996); (Agrawal 1997); (Menon 1999); (Mosse 1997); (Shah 2003).

2.5.3 Outsiders' role

In almost all watershed programmes in India, outside intervention plays a major role in the funding, implementation, technical guidance, setting up different organisations, etc.. There is no example of watershed development, which is initiated, funded and managed purely by the local communities. Even in the case of Ralegaon Siddhi, though Anna Hazare is from the same village, he had the opportunity of living outside of a different type of exposure that allowed him access to knowledge, contacts and status which he could successfully use for the development of the village. And, the financial support mainly came from the different government departments and other sources. The normative framework that underlies the present review, clearly recognises the role of outsiders and hence also considers it important to spell out clearly what that role should be and what should be the relationship between the local community and the outsiders.

2.5.4 Basis of collaboration with the outsiders

We feel that informed participation, livelihood assurance, regenerative use and equitable access should be the foundational objectives of the collaboration between the community and outside agencies. The latter two concerns do not emerge spontaneously and even if they do, they seldom acquire foundational importance, unless conscious attempts are made to address them as issues and this often requires the intervention and support of outside agencies.

Outsiders and public funds may have pro-active role to play in these matters by ensuring that transfer of decision making and mobilisation of public funds to the 'community' are contingent on the disadvantaged getting a fair share of the benefits, on their getting a greater voice in the decision making and on the 'community' ensuring regenerative use of ecosystem resources

2.5.5 Two way capability building – the key role of the outsiders

However, it should also be emphasised that the process of capability building described above is a two-way process. It has been pointed out in many studies how the pre-conceived mindsets and notions of the outsiders have done grievous harm to development projects. It is important for the outsiders not to start off with any preconceived ideas of what form the foundational objectives of the collaboration may take in social arrangements and actions. It is rarely that a community, its history and ideas will not incorporate the foundational objectives described. Circumscribed as they may be by the constraints of social structure and history, it is rare not to find forms that aim at equity, at a regenerative relation with their surroundings and value people's control over their own lives. One can then build on these traditions, for example, in Maharashtra on the *phad* system for equity and sustainability or the notion of *kadosariche paise* (the money tied to the end of a sareefold) for independent income for women. The foundational objectives may then be seen as an amplification and extension of principles immanent in these traditions and social forms. Without such an understanding and learning from the community it is well nigh impossible to make any headway on a voluntary and informed consensus on sensitive questions.

Hence, even though the local-outsider interaction and collaboration may take different forms, for the realisation of the foundational objectives of this collaboration, one of the

key roles of the outside agency should be that of capability building, of providing information and offering a forum for discussion of issues. It should become the conduit of communication of the experiences and the possible options that people elsewhere may have tried out (both successful experiments and failures) and helping the community arrive at a consensus. They have a similar role to play in respect of regenerative use. The path of least resistance in the face of the availability of water leads to the intensive input paradigm. Outsider intervention should be oriented towards participative experimentation with and adoption of regenerative practices. It is our experience that local communities do change their choices in the light of new information and experiences if these are discussed and a consensus formed before rights and interests are indiscriminately created.

The role of the outsider, as visualised by our normative framework of the review, may thus be summed up as that of capability enhancement. This involves pooling the knowledge that already exists within the community in a participative mode and synthesising it with data and information collected by the scientific establishment and government agencies and making it available to the local communities. This would help the local communities get both a qualitative and quantitative understanding of their ecosystem resources and then make informed choices between different options. We think capability building through resource literacy is a precondition for the informed participation of the local communities.

2.5.6 Accountability of larger structures and agents to the local community

The relationship between the local and outsider also calls for greater accountability and transparency on the part of the outside agency (larger structures, supra local, etc.) to the local communities. There are different ways in which this can be actualised. One is to state up front in clear terms the overriding concerns and goals of the outsider agency in intervening in the local situation (for example, the foundational goals of livelihood assurance, regenerative use, equitable access and informed participation that we discussed above). The underlying principle is that the local people should be engaged in a dialogue on these aims and see where the convergence and divergence occur (sometimes there may not be 'community' consensus on these because of the internal differentiation within the community). It is our belief that an explicit acknowledgement of these foundational goals makes for better participation as well as better performance in this respect. Second aspect is to have financial transparency and the outside agency should place information before the people regarding the funding sources, the quantum of money that is coming in and also the way the money is going to be spent. Keeping the account open for public scrutiny can ensure financial transparency and accountability[22]. The third aspect is related to the processes involved – how equitable is the relationship between the two fully recognising that the outsider agency may be in an advantageous position because of various factors. Putting it differently, it is important to see whether the outsider agency has evolved any mechanisms to 'democratise' the relationship between outsider and the local community. All these are important in the overall context of

[22] A good example of this is the Nirak-Parak in the watershed development programmes of the Rajiv Gandhi Watershed Mission in Madya Pradesh and under Nirak-Parak the implementing agencies are supposed to display all details regarding cost estimates for different works, actual expenditures, physical works, etc., on a wall in a prominent place in the village.

increasing NGO presence (or NGOisation) in the developmental sector. Very often there is a tendency amongst the NGOs to equate community or people's participation with NGOs getting representation in different committees and bodies. In other words, NGOs may end up behaving no differently from government departments that refuse to be accountable to local communities.

3. Are we setting divergent standards?

We have presented an exhaustive set of norms that we believe represent the essence of the broad goals of livelihoods, sustainability, equity and participation for us. One needs to ask to what extent the normative framework, as described above, overlaps with or differs from the framework of the programme it is supposed to review. Recognising the fact that it is rather difficult to answer this question because there is no single framework with which we can compare our framework, we can say that in terms of ultimate goals there is considerable amount of convergence. The professed aims of watershed development programmes, irrespective of the difference in the mode of implementation, are sustainability, productivity enhancement, livelihood assurance, equitable distribution of benefits and participation. Our normative framework also reflects the same concerns.

As we said in the beginning, however, the devil lies in the details. Very often the Guidelines do not define or specify what some of these terms mean and they are open for a wide range of interpretations[23]. Keeping in view the fact that watershed based development has become the linchpin of rural development in India, we have tried to interpret and define some of these broad developmental goals like livelihoods, sustainability, equity and participation and work out a desirable and achievable set of indicators for them.

Though we have tried to keep set of norms for each of the above mentioned outcomes or goals as broad as possible, there will inevitably be aspects of our normative framework that differ from the frameworks of the different programmes. Sometimes the difference may be in emphasis or it may be in the norms themselves. For example our normative framework puts a high premium on the equitable distribution of increased productive potential (for example water) as an important norm for equity. Most of the programmes may not share this [24]. Or consider the case of participation. For us participation is both a goal and a means and it is defined more in terms of people's ability (and space) to make informed choices. However, other frameworks generally look at participation more as an instrument (to maintain structures, etc.). We expect the areas of convergence and divergence to be clarified in the course of the review itself.

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[23] For example in the context of sustainability, though the NWDPRA Guidelines of 2000, mention conservation, development and sustainable management of natural resources including their use; and enhancement of agricultural productivity and production in a sustainable manner as objectives of watershed development, these objectives have not been converted into specific indicators, nor are they included in the "success" criteria.

[24] In the context of water resources, the NWDPRA Guidelines of 2000 mentions that "it may be desirable to locate water harvesting structures nearer to the fields/wells of resource poor farmers" and does not explicitly talk of equitable distribution of the improved water resources as a result of watershed intervention.

The situation is further confounded by the fact that, in most cases, we are not dealing directly with the programmes themselves but rather with studies, evaluations or assessment of these programmes. These studies may have been made from very different standpoints and concerns and may not provide sufficient information on whether our objectives and concerns have been met by the programme studied. We have tried to keep these possibilities in mind while conducting this review. However, the direction and thrust of the review depends crucially on this framework, and for this reason, even though we have not been able to bring the entire normative framework to bear during the review, we have chosen to describe it in some detail in a separate chapter.