

Enhancing Livelihoods Through Participatory Watershed Development in India

Cathryn Turton

Working Paper 131

Results of research presented in preliminary
form for discussion and critical comment



Working Paper 131

**Enhancing livelihoods through participatory watershed
development in India**

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Acronyms

WSD	Watershed development
CPRs	Common pool resources
Sida	Swedish International Development Corporation Agency
KAWAD	Karnataka Watershed Development Project
NTFPs	Non-timber forest products

Summary

The last decade has seen increasing decentralisation of responsibilities for management of natural resources to the community level. The watershed development (WSD) programmes being supported by the Government of India are one example of this. Microwatershed development is currently attracting over £300M/yr of central government funding with numerous projects being implemented through NGOs. Approaches to assessing the success of WSD in India have evolved over time. During the 1970s and early 80s, the evaluation of watershed initiatives was based primarily on biophysical criteria. The late 1980s saw a growing awareness that WSD is about more than maintaining or improving the productivity of natural resources. The guidelines issued by the then Ministry of Rural Areas and Employment for example cover multiple objectives including, productive, social, ecological/environmental and equity objectives.

This paper uses the sustainable livelihoods approach to take a fresh look at the impact of WSD on rural livelihoods. It focuses particularly on questions relating to the extent to which WSD activities result in the creation of new livelihood opportunities and to extent to which these opportunities are both equitably distributed and sustainable.

As WSD approaches have evolved from externally imposed biophysical interventions towards more participatory approaches encompassing a broader range of activities so the potential impact of WSD on household **assets** has increased. This has implications for all five types of assets defined in the SL framework. However there are concerns regarding the distribution of these benefits. For instance WSD envisages the construction of a wide range of physical assets principally for soil and water management but it is the better-off, being landholders, who generally benefit disproportionately from an increase in groundwater levels brought about by these measures.

Of particular concern is the issue of access by poorer groups to common pool resources (CPRs). WSD projects have invested considerable efforts in establishing the rules for access to such areas and in creating collaborative agreements for community management of such CPRs. The key question is the extent to which the poor retain access to CPRs after WSD efforts have taken place. Overall the issue is whether the short-term losses in terms of access to CPRs are outweighed by the longer-term gains.

In terms of **livelihood strategies**, WSD can open up new opportunities by supporting agricultural intensification processes. The subsequent increases in crop intensity can also potentially lead to the creation of labour opportunities. Some of the most striking evidence of intensification comes from the livestock sector. Restrictions on access to CPRs have encouraged the move towards stall-feeding systems for both large and small ruminants. There are important intra-household dimensions to intensification strategies. While increases in agricultural productivity might occur as a result of WSD, men usually appropriate on-farm gains and the increased drudgery is disproportionately borne by women. With an increase in land productivity, men frequently choose to increase the production of cash crops such as sugarcane and cotton.

WSD can also provide new opportunities for households to diversify their livelihood strategies. NGO projects have paid specific attention to providing opportunities to the poor to diversify, often through the formation of self help groups for women, the landless and other marginal groups. These groups undertake a number of activities ranging from traditional crafts (such as leaf plate making; weaving and basket making), mushroom cultivation, forestry activities and so on. However artisanal products generally face inelastic demand, so that the scope for any increased contribution to livelihoods is likely to be limited.

As well as assessing the new opportunities arising from WSD it is also important to consider the issue of the compatibility of WSD with existing livelihood strategies. The importance of this is perhaps best illustrated by looking at migration, which is one of the most important means of diversifying rural livelihoods for the poor in India. WSD involves the establishment of new institutions such as watershed committees; migrants – generally the poorest – are often absent from villages and so tend to be marginalised from decisions on resource use.

Overall, it is acknowledged that watershed-based approaches can lead to substantial improvements in rural livelihoods. However, they are not a panacea: productivity gains in pilot projects have not been achieved to the same extent on a wide scale and the links between productivity gains and livelihoods is complex and poorly understood. Overall the paper urges a note of caution over the potential role that WSD can play in enhancing livelihood opportunities for the poor. Of most concern is that achieving these productivity gains can actually work against the livelihood strategies of certain groups. Undoubtedly, to achieve distributional equity is the most difficult challenge. An adequate distribution of benefits (poor/better-off; men/women) relies on exceptionally careful and continuing vigilance.

In conclusion, this paper demonstrates that a livelihoods perspective can be used to encourage a more explicit analysis of the ways in which WSD directly and indirectly affect people's livelihoods. It encourages a broader and more structured assessment of impacts relevant to the poor. This can help practitioners and policy-makers to adjust their approaches and so enhance poverty impacts, even though this may be incremental and subject to other sectoral or governmental goals.

1. Introduction

The last decade has seen the increasing decentralisation of responsibilities for management of natural resources to the community level. The WSD programmes being supported by the Government of India are one example of this. Microwatershed development is currently attracting over £300M/yr of central government funding alone, with a further £100M – £200M/yr from the States and from donor-supported projects. Numerous projects are also being implemented through NGOs.

Approaches to assessing the success of WSD in India have evolved over time. During the 1970s and early 80s, the evaluation of watershed initiatives was based primarily on biophysical criteria. Large amounts of money for instance were invested in monitoring soil losses, changes in vegetative cover and changes in depth of water tables. The late 1980s saw a growing awareness that WSD is about more than maintaining or improving the productivity of natural resources. The guidelines issued by the then Ministry of Rural Areas and Employment for example cover multiple objectives (MoRAE, 1994:5-6) including:

- *productive* (optimum utilisation of the watershed's natural resources);
- *social* (employment generation and development of other economic resources in the village);
- *ecological/environmental* (easy and affordable solutions that build on indigenous knowledge);
- *equity* (emphasis on improving the economic and social condition of the resource poor).

Current concerns centre on the issue of sustainability (Kerr et al., 1998). WSD is fundamentally about the creation of new opportunities for all sections of the community, which should be sustainable beyond the rehabilitation period.

This paper uses the sustainable livelihoods approach (Carney (ed.) 1998) to take a fresh look at the impact of WSD on rural livelihoods. It focuses particularly on questions relating to the extent to which WSD activities result in the creation of new livelihood opportunities and the extent to which these opportunities are both equitably distributed and sustainable.

The paper begins (Section 2) by introducing the policy and institutional context for WSD in India. Section 3 sets out some questions relating to the impact of these policies on the livelihoods of the poor. Section 4 assesses the extent to which WSD has enabled rural communities to build up their capital assets and the extent to which these gains have been equitably distributed. Section 5 examines the resulting changes in the composition of the livelihood strategy portfolio – namely, agricultural intensification/extensification, diversification and migration. The paper concludes with an assessment of how successful WSD has been as an instrument for reducing rural poverty, and provides some suggestions on how the impact of WSD on livelihoods might be enhanced.

2. The policy and institutional context

This section provides an overview of the evolution of WSD programmes in India and the roles that organisations and policies have played¹. It describes the evolution in thinking on WSD that has moved away from a focus on the rehabilitation of the natural resource base towards a more holistic vision which sees WSD as one approach to tackling rural poverty.

2.1 Government – early initiatives

Largely in response to the substantial benefits recorded from ‘special projects’ of the kind described in Box 1, the GoI initiated a number of efforts attempting to implement similar approaches on a wide scale. These included principally the National Watershed Development Project for Rainfed Areas (NWDPR) under the Ministry of Agriculture and Cooperation, and under the Ministry of Rural Areas and Employment, the Drought Prone Areas Project, the Desert Development Project, the Integrated Wastelands Development Project (IWDP), and part of the Employment Assurance Guarantee Scheme.

Box 1 Benefits generated by special watershed projects in the 1970s and 1980s

The case of Kharaiya Nala, southern Uttar Pradesh

Close collaboration between a GoI research organisation and State line departments (Agriculture, Horticulture, Animal Production) and the village community allowed the testing and implementation of what has now become a ‘standard’ package of WSD treatments: ridge-to-valley approach, including contour trenches on the upper slopes; fencing of common land to allow regeneration; checkdams and gullyplugging, and the promotion of soil and water conservation on agricultural land. The benefits recorded 3 years after completion of the activities included:

- Reduction in runoff from 70% to 22%, and in soil loss from 41t/ha to 1.9t/ha;
- Rise in water table from 12m to 6m depth; increase in number of wells dug by villagers from 12 to 483; increase in proportion of irrigated land from 9.6% to 69%;
- Area sown under *kharif* and *rabi* increased by 85% and 233%; cultivation in *zaid* for first time; extensive switch to higher value crops;
- Over 300 ha of arable wasteland brought into crop production;
- Seven-fold increase in fuelwood offtake; switch from cowdung to firewood as fuel;
- Fodder planted on almost 150 ha of field bunds and gully plugs; dry fodder production increased by 235%;
- Switch from livestock species previously relying on open grazing (nondescript cattle; sheep; goats) towards higher quality stall-fed draught and milch animals;
- Former herders find employment as agricultural labourers;
- Increased soil fertility;
- Creation of village investment funds from the sale of produce from the commons (fuel, fodder) and creation of a revolving fund for small loans at nominal interest.

Source: Hazra (1998)

¹ A fuller account of many of the experiences discussed here is to be found in Farrington et al. (eds) (1999).

These early large-scale approaches to WSD exhibited a number of flaws:

- They were primarily evaluated according to biophysical factors (Box 1). Thus success was related to changes in yield, land use, livestock productivity etc. There was no attempt to understand what changes this brought about in people's livelihoods
- The approach adopted in different projects WSD projects largely reflected the primary mandate of the responsible Ministry;
- They operated in a top-down fashion, implementing 'models' developed through research, with little attempt to take into account the needs of local users of watershed resources, nor to adapt to local biophysical or socio-economic conditions;
- Practically no contribution from beneficiaries was required, even on private land, so that there was little local ownership of the new works, little commitment to their maintenance and a syndrome of dependency on government was strengthened.

As a consequence, their performance was poor, and a major survey by Kerr et al. (1998) in semi-arid areas, came to the conclusions that:

- Recently completed watershed projects funded under central government schemes and including projects supported by the World Bank, showed no noticeable difference in most criteria from untreated villages and plots.
- Soil conservation works on rainfed plots are much better maintained where farmers themselves have made a financial contribution towards their cost:
- Participatory approaches combined with careful selection of villages with favourable characteristics for WSD offer the best prospects of success. On a small scale they attract special treatment from NGOs and/or donors which may be difficult to sustain as they attempt to expand, but may in part be compensated by innovative NGO-GO collaboration.
- Women and the poor receive some benefit from employment created during rehabilitation, but otherwise their interests are widely neglected. Continued vigilance is needed to protect their interests.

Even prior to Kerr's study, growing concerns in some government circles had led to the drafting of the new Guidelines on Watershed management (MoRAE, 1994), which aimed to strengthen participatory planning and local-level decision-taking. These drew on the experience of a number of innovative NGO and donor-supported experiences, which are now summarised.

2.2 NGO approaches to watershed development

It is generally accepted that NGOs have had a more successful record in WSD. NGOs are widely diverse in terms of size, professional qualifications, geographical and sectoral areas of work, and (in relation to WSD) in approaches, scales of financial support, networks and linkages (Honore, 1997). Drawing on the work of two of the more experienced NGOs in WSD – Mascarenhas (1998) for OUTREACH and Fernandez (1993) for MYRADA – the following account describes an approach characteristic of many NGOs.

NGOs typically attempt initially to support the formation of 'focus groups' of various kinds on the principle that groups which are moderately homogeneous in economic and social terms allow skills to be developed for the much more difficult negotiations over the management of CPRs in a WSD context. Such groups may centre on economic activities such as milk production, poultry rearing or

the collection and processing of various non-timber forest products (NTFPs). In many cases, they will not be related at all to natural resource management, for instance in cases of groups formed for “woman and child health” activities. The general intention is that groups should develop skills in leadership, negotiation and conflict resolution, and should, in a Freirean mode (Freire, 1972), develop a capability to identify the problems and opportunities they face within the wider social and economic context, respond to them from their own resources as far as possible, and learn how to draw in external resources as necessary. Groups are typically also encouraged to develop savings and small-scale local lending schemes to assist in breaking the control of local money-lenders, and are given training in the basic skills necessary to manage funds.

The major difficulty with NGO approaches to date is that they require lengthy periods of face-to-face interaction. NGOs can allocate the resources for this since they simply mandate themselves to work in limited areas. By contrast, government supported programmes necessarily aim for wider coverage. Much of the current policy debate over WSD concerns ways of blending the depth of NGO initiatives with the breadth of government approaches.

2.3 Donor agencies’ initiatives

In the Indian context, the importance of donor-supported efforts lies less in their overall financial contribution than in their flexibility to experiment with and ‘pilot’ new approaches – a flexibility which government norms and procedures do not easily permit. Donors have also placed a strong emphasis on developing partnerships between stakeholders in the WSD process. The approach of the Swiss Agency for Development and Cooperation (SDC), for instance, is characterised by efforts to share responsibilities between NGOs and the public sector according to their comparative advantage, in ways which are mutually reinforcing. They also seek to achieve collaboration among government departments and search for coherence and complementarity between participatory appraisal methods and ‘scientific’ measurement and planning techniques used by government.

Closer NGO-government collaboration is potentially synergistic (Farrington and Bebbington, 1993). It has featured in the rhetoric of GoI planning (e.g. the VIII 5-Year Plan) and, has succeeded in some sectors such as health (Arya, 1998). However, historically it has achieved limited progress in agricultural and natural resource development in India (Farrington and Lewis, 1993; Alsop et al., 2000). SDC-supported projects such as, initially PIDOW in Karnataka (Fernandez, 1993; 1999) and, subsequently, PAWDI in Rajasthan, have been unable to break down vested interests on both sides.

The Government response

The Government of India’s awareness of experimentation by both NGOs and donors led to a number of innovative responses, principally by the MoRAE. New Guidelines for Watershed Development were published in 1994, intended to be ‘common’ across MoRAE. The Guidelines have found wide acceptance, and are innovative in:

- The extent to which they promote the principles of participatory WSD;
- The extent of decentralised decision-taking and funding they permit;
- Their provision for different types of organisation (government; NGO; university; even private commercial) to act as local project implementing agencies.

They embody approaches to WSD intended to be:

- implemented on a wide scale,

in ways which:

- enhance the productivity of the resources;
- ensure a degree of equity in the distribution of benefits;
- and are ecologically and institutionally sustainable.

This section has documented the evolution of WSD approaches. There is no doubt that the most recent approaches recognise the importance of building on peoples' priorities and it is this factor which determines whether WSD can be judged successful. The following sections assess *how, for whom* and *to what extent* WSD is meeting the livelihood priorities of the rural poor.

3. Watershed development and its impact on livelihoods

So what has been the impact of these new initiatives on the livelihoods of the poor? Given their relatively recent history, it is difficult to make a detailed assessment of the performance of WSD programmes. Anecdotal evidence and impact assessments of individual projects (particularly of donor and NGO-implemented projects) suggest several positive trends:

- Increase in cropping intensity and yields of both irrigated and dryland crops
- Reduction in the threat of drought to crop and livestock production
- Increase in milk production (livestock systems move from open grazing and towards cross-breeds)
- Recharge of ground water
- Decline in sedimentation downstream
- Improved fodder production
- More livestock managed under stall-fed conditions
- Year-round availability of drinking water
- Creation of employment opportunities for landless labour
- Diversification of the village economy into artisanal and other activities as people gain the confidence to approach banks for credit

This kind of evidence however tells us little about the *actual* impact of WSD on peoples' *livelihoods* (Box 2).

Box 2 What does an increase in productivity really mean for the livelihoods of the poor?

'From our project experience...we were faced with the question of how to understand the impact of our project interventions. In purely physical terms we could say that there was so much increase in crop productivity as a result of soil and water conservation, or so much increase in grasses under pastureland development – but what did it mean besides this?

- Who benefited from this increase in productivity?
- What about the landless and marginal farmers for whom this increase in absolute terms was quite small?

This led us to try and understand the existing livelihood base of the rural poor and marginal farmers based on which we could then assess the real impact of our project interventions'.

Source: SPWD (1998)

The key point here is that WSD is not an end in itself, but it is a means to an end: 'reducing the incidence of rural poverty'. The SL approach provides a framework for analysing the 'fit' between WSD activities, rural livelihoods and ultimately poverty reduction. Table 1 indicates some questions raised by the SL approach which are explored in the following sections.

Table 1 Sustainable livelihoods and watershed development

Livelihood component	Key issues
Capital assets	<p>Which assets are most important to the poor?</p> <p>Are there particular combinations of capital assets – or sequences in their development – which increase the likelihood that WSD will succeed?</p> <p>Has access by the poor to common property improved as a result of WSD?</p>
Livelihood strategies	<p>Does WSD support the livelihood strategies of the poor?</p> <p>How does WSD interface with other livelihood strategies: NR-based, non NR-based and migration?</p> <p>How do people’s livelihood strategies affect their participation in and benefit from WSD?</p>
Sustainable livelihood outcomes	<p>What contribution has WSD made to sustainable livelihoods?</p> <p>What are the relevant outcome indicators?</p> <p>Are people’s own livelihood priorities being addressed?</p> <p>How can activities be adapted in order to enhance livelihood impacts on target groups, while remaining consistent with the overall objectives?</p>

4. Watershed development and capital assets

This section assesses the extent to which WSD has enabled rural communities to build up their capital assets and the extent to which these gains have been equitably distributed. It pays particular attention to CPRs, which have long been an important focus of WSD and are an important asset for the poor.

4.1 Building up the asset base

As WSD approaches have evolved from primarily externally imposed biophysical interventions towards more participatory approaches encompassing a broader range of activities so the potential impact of WSD on household assets has increased. WSD has implications for all five types of assets defined in the SL framework, for example:

- Human capital – through capacity building activities; participation in new institutions and processes;
- Social capital – through the formation of watershed committees, user groups and new or strengthened institutions;
- Financial capital – through the establishment of credit groups, the establishment of a WSD fund;
- Natural capital – through increases in trees, livestock, irrigated area, more productive land;
- Physical capital – through increase in irrigation facilities, soil and water conservation structures.

There is a growing awareness of the links between different capital assets. Investments in physical capital such as bunds, check dams and the re-vegetation of common lands for instance are relatively easy to achieve. The returns to physical investments of this type however will rapidly decline if appropriate investments in social and human capital are not also made to develop sustainable and equitable institutions to manage these assets. Similarly the idea of sequencing is important. Some NGOs argue strongly that the local institutions which determine access to natural capital (e.g. common land) need to be regularised before WSD activities are undertaken.

4.2 Access to capital assets

Although WSD can no doubt have quite significant positive impacts on the natural resource base (see Box 1), there are growing concerns over the distribution of these benefits. The principle of the ridge to valley approach for instance may work against the interests of the poor who often rely on the commons in the upper slopes much more heavily than do the better-off. To begin with water control structures in the lower slopes would privilege those (i.e. the better-off farmers) having reliable access to agricultural land. The notion that the poor, who are denied access to the commons during the rehabilitation period, can benefit from casual, unskilled employment opportunities created by construction requirements in the lower slopes is appealing, but requires close monitoring; and there are important questions surrounding the sustainability of any of these gains. Box 3 highlights some of the other tensions, which exist between better-off and poor households, regarding access to both existing and newly created assets.

Box 3 Watershed development – capital assets and the poor

- WSD envisages the construction of a wide range of *physical assets* principally for soil and water management, such as bunds, checkdams, gullyplugs, ponds, shallow wells, and so on. However, there remain questions over access and sustainability for the longer term, especially if joint responsibility for maintenance is not clearly agreed. The better-off, being landholders, generally benefit disproportionately from an increase in groundwater levels brought about by soil and water conservation. Information on how any agricultural intensification impacts on employment opportunities for the poor remains sketchy.
- Common pool resources (CPRs) such as grazing or forest land constitute an important form of *natural capital* and joint action is generally required to manage these. Spending pressure under government programmes means, however, that the formation of resource user associations is hasty, and that the views of the poor and women are rarely taken adequately into account. Long standing problems, such as encroachment remain unsolved. After rehabilitation, the increased potential offtake of timber, fuel and fodder often attracts the attention of the better-off to CPRs, which, in degraded form, had generally been the preserve of the poor.
- *Social and human capital* is being strengthened through the formation and capacity building of focus groups, watershed associations etc.. However, the short period allowed for preparatory activities, together with the lack of social organisational skills among (especially government) project implementing agencies (PIAs), means that careful approaches to *human and social capital* development are rarely implemented on a larger scale.
- In terms of *financial capital*, most forms of rural investments in India suffer from a ‘handout’ syndrome, in which rural people have long been regarded as the recipients of government munificence, with the consequence that they distinguish clearly between ‘government projects’ for which the government has planning, implementation and (in their view) maintenance responsibility from activities they undertake privately.

Source: Turton et al. (1998)

4.3 Common pool resources – an important asset for the poor?

CPRs represent a form of natural and social capital that individuals and communities can draw on in pursuit of their livelihood strategies. A study by Jodha (1986) concluded that CPRs make a key contribution to rural livelihoods and are critical for sustainable agricultural production in semi-arid areas (Table 1). They form a part of rural peoples’ strategies for adjusting to the harsh and stressful environment.

More recent evidence also supports this view. Surveys conducted for the DFID Karnataka Watershed Development Project show that three quarters of the rural poor in the watershed areas depend on CPRs for fuel, fodder and some food (KAWAD, 1995). The role of CPRs is particularly important in lean times, acting as a buffer in times of drought or other crises. During droughts, the collection of tubers and wild foods from the forest is an important coping mechanism. CPRs also provide independent sources of income to women, through, for instance, goat rearing, broom making, leaf plate making and collection of tendu leaves and tamarind (Lokur-Pangare, 1998). All of these occupations depend upon CPRs, either for fodder or raw materials.

WSD in India has its roots in the widespread concern over land degradation – with approximately 170 million hectares classified as degraded. Large areas of this land are classified as CPRs. ‘Before and after’ pictorial comparisons of WSD efforts often compare areas of barren rocky common land with productive pastures and shrub cover. The assumption is generally that management regimes have deteriorated into open access in a ‘tragedy of the commons’ scenario. WSD projects have

Table 2 Contribution of CPRs to livelihoods in rural India**Collectively Managed CPRs**

Contribution	Community forests	Pasture/wasteland	Ponds/Tanks	River	Watershed drainage	River/Tank beds
Physical Products						
Food/fibre	+		+	+		
Fodder/fuel/timber	+	+	+			+
Water				+	+	
Manure/silt	+	+	+		+	+
Income and employment gains						
Off-season activities	+				+	+
Drought period sustenance	+	+				+
Additional crop activities			+	+		+
Additional animals	+	+				
Petty trading and handicrafts	+					+
Larger social/ecological gains						
Resource conservation	+	+				
Drainage/recharge ground water			+	+	+	
Sustainability of farming systems	+	+	+		+	+
Renewable resource supply	+	+	+			
Better micro-climate environment	+	+		+	+	

Source: Jodha (1986)

invested considerable efforts in establishing both the rules for access to such areas and in creating collaborative agreements for community management of such CPRs.

The key question is the extent to which the poor retain access to CPRs after WSD efforts have taken place. To take one example, a crucial element of many watershed projects has been restrictions on the use of common grazing areas during rehabilitation and thereafter to permit sustainable off-take. Adolph and Turton (1998) note that such controls in a watershed project in Andhra Pradesh had different impacts on households of different socio-economic status. Landowners were able to compensate for the loss of grazing, through the substitution of crop residues, the availability of which had increased due to improved irrigation facilities. Landless livestock owners on the other hand were forced to sell their livestock raised similar concerns (Kerr et al., 1998).

Box 4 Compensating the landless

Kerr et al. (1998) report that the landless and nearly landless were the most likely to express dissatisfaction with watershed projects. Problems arise because projects seal off access to common property whilst re-vegetation is under way. Many landless people depend on these lands for their livelihoods, particularly for grazing sheep and goats. All projects try to offer employment as compensation. However, most complained that employment created under the project did not adequately compensate for loss of access to common lands or that employment opportunities diminished after the first few years of the project whilst the grazing bans were still in place.

Lokur-Pangare (1998) reports more positively from another project in Maharashtra. Here the existing users of specific common land and water resources – not the whole community – made the decision regarding how they were to be managed. Landless livestock owners formed a ‘resource user group’ and had a primary say in decisions over grazing land management. Overall the key question seems to be whether the short-term losses in terms of access to CPRs are outweighed by the longer-term gains.

A second dimension of change often brought about by WSD projects is the privatisation – both *de facto* and *de jure* – of CPRs. This can work both in favour of the poor and against. Commonly, the more wealthy bribe local officials to turn a blind eye to encroachment, whilst in other cases encroachment is the desperate action of poor and landless households. Encroachments are evident throughout rainfed areas and are legalised by State governments from time to time. Integral to some WSD programmes is the granting of individual plots of previously common land (usually the most degraded land) to the landless and poor. Many of the private land plantations developed under the Sida-funded PAHAL project are located on encroached land previously under the jurisdiction of the Revenue Department. The project recognised that a fair amount of consensus prevails about rights over these areas and proceeded with the plantations, despite the lack of formal legal entitlement (Sjöblom, 1997).

5. Watershed development and its impact on livelihood strategies

This section examines the impact of watershed policies and structures on the livelihood strategies adopted by rural communities – particularly the poor. It highlights changes in the composition of Scoones' (1998) 'livelihood strategy portfolio' viz: agricultural intensification/extensification, livelihood diversification and migration.

5.1 Agricultural intensification/extensification

WSD can open up new opportunities for households to both intensify and extensify production, for example through:

- Increasing the frequency of cultivation – increased groundwater recharge often permits cultivation of a second crop, or 'life-saving' irrigation of a main crop; and
- Adopting new technologies, such as improved varieties of staple crops, higher levels of input use and higher yields; shifts to the cultivation of higher value crops in some areas;
- Expansion of cultivated areas – soil and water conservation and irrigation structures can bring new land into production.

All of the above tend to generate increased demands for labour. These may be provided initially from farm family sources and subsequently by hired labour. Beyond pilot projects, however it is not known, for instance, how far intensification/extensification generates employment opportunities for households – often poor and the landless – who depend on labouring for their livelihoods.

Some of the most striking evidence of intensification in rainfed areas in India comes from the livestock sector. Restrictions on access to CPRs – often promoted through WSD – have encouraged the move towards stall-feeding systems for both large and small ruminants. In the shorter term – when restrictions are most strict - households may become more dependent on crop residues. Some studies have also highlighted the importance of private resources, with increased numbers of trees on farmland and the cultivation of range grasses and legumes in niches such as field boundaries, private wastelands, terraces and bunds (Hobley and Shah, 1996). In the longer term as access restrictions are eased and their productivity improves, CPRs can become an important fodder resource for cut and carry systems (Farrington and Lobo, 1997). Overall this suggests a diminishing role for CPRs in grazing systems, but an increasing role as a source of cut fodder. As the previous section outlined not all households will however be able to intensify successfully – the poor may be unable to cope with the loss of access to CPRs in the shorter term.

There are also important intra-household dimensions to intensification strategies. While increases in agricultural productivity might occur as a result of WSD, men usually appropriate on-farm gains and the increased drudgery is disproportionately borne by women. With an increase in land productivity, men frequently choose to increase the production of cash crops such as sugarcane and cotton. It is important therefore that women are included in decisions over land use and crop planning, to ensure that household food requirements (vegetables, fruit and a variety of grains) are provided for adequately (Box 5).

Box 5 Women are farmers too

An important objective of WSD is increased land productivity. It is therefore ‘farmers’ who first come forward to participate in project activities. It is often the same farmers who are nominated to the local decision-making bodies – including the watershed committee – set up for the project. Women are nominated to these committees under a kind of ‘reservation policy’, implying that they are not members of the farming community in their own right. However, women are also farmers. They are the primary food producers and contribute more hours of work and perform more tasks than men in agricultural production. They not only cultivate land belonging to their families and work as agricultural labourers, they also independently lease plots for cultivation. Women farmers have independent views about farming practices and can contribute significantly to the improvement of agriculture.

Women reported that the shift to cash cropping resulting from increased water availability in rehabilitated watersheds had generated increased risk for their families. Increased investment financed through credit, has resulted in a highly vulnerable economic condition. Given a choice, women would opt for enhanced stability and the cultivation of food grains.

Since women rarely own land, they are not recognised by policy makers as farmers; the term ‘farmer’ is usually treated as masculine.

Source: de Souza (1998)

It seems that WSD can support strategies of intensification if careful analysis of the livelihood strategies of different households and individuals precedes decisions on project activities. But in countries such as India, rigid socio-cultural relations at village level may work against the poor. For poor groups (usually the low-caste and/or women) to assert their rights over resources as these become more productive through rehabilitation requires careful initial development of skills and confidence, robust and transparent procedures for decision-taking, monitoring of any departures from what has been agreed, and awareness among all concerned that, if necessary, resort to an external agency continues to be feasible. These conditions are difficult to put in place on a wide scale. Serious policy attention therefore also needs to be given to alternative strategies of diversification and migration.

5.2 Diversification

In the past decade recognition has grown that agricultural production is only one of the strategies that contribute to livelihoods. Rural households – particularly the poor – engage in a wide range of activities. In India there are important traditions, often underlain by formal and informal institutions, which dictate the types of activities that households and individuals may pursue. For instance, villagers’ participation in many non-farm activities such as carpentry or basket making is dictated by strong caste-based institutions. The collection of NTFPs has traditionally been an important livelihood strategy for tribal groups.

WSD has supported these diversification strategies in a number of ways. NGO projects have paid specific attention to providing opportunities to the poor to diversify their livelihoods, often through the formation of self help groups for women, the landless and other marginal groups. These groups undertake a number of activities ranging from traditional crafts (such as leaf plate making; weaving and basket making), mushroom cultivation, forestry activities and so on. However, as recent detailed preparations for a DFID Western Orissa Rural Livelihoods Project demonstrated, the prospects of such enterprises tend to be assessed on the basis of historical production and sales levels. Certainly, the evidence points to some prospect that local people could benefit if restrictions on their access to or sale of NTFPs were lifted (Neera Singh, pers. comm) but over the longer term,

artisanal products generally face inelastic demand, so that the scope for any increased contribution to livelihoods is likely to be limited.

5.3 Migration

Migration is one of the most important means of diversifying rural livelihoods. Migration strategies in India vary widely: one or more family members may leave the resident household for varying periods of time and in so doing are able to make new and different contributions to its wellbeing. Migration may be seasonal or permanent; it may be point-to-point or circular in fashion; it may vary in distance of destination from within province, to within country or, occasionally, cross frontier (Stark, 1991).

The contribution of migration to livelihoods will depend on various factors, including the seasonality of movement, the length of time spent away, assets and social structures and institutions allowing for women (if men migrate) and others to pursue activities previously reserved for men and household heads. A starting point in assessing the role and implication of migration for livelihoods in any location is an understanding of the rationale behind migration. Broadly speaking we can observe a continuum between negative distress migration and positive livelihood migration in terms the capacity of migration to facilitate or constrain livelihood security.

In large areas of tribal India, migration occurs as a defensive coping strategy to cover existing debts and seasonal variability. Households have little choice if they want to survive. Migrants (often whole families) leave their villages after crop harvest and migrate to towns. Many travel long distances often to the same place each year. For instance, members of one village in Orissa migrate *en masse* to work in the construction industry in Dehra Dun, almost two thousand kilometres away. Migration is especially important for tribal groups and generally the livelihood strategies of poorer households with little or no land depend more heavily on migration. Whilst it has long been accepted that migrant remittances constitute an important component of rural livelihoods, increasingly in many areas, earnings from migration form the primary source of cash income. Mosse et al. (1997) report from a study in tribal areas of western India that earnings from migration contribute on average 86% of cash income and that 80–90% of households have at least one migrating member.

Migration is often highly formalised and involves complex sets of relations between building contractors, village recruiters and workers. These involve arrangements for securing work and providing for travel and accommodation expenses. These relationships are often highly exploitative in nature. For instance in western Orissa, labour contractors are also villagers' only source of loans. Highly indebted to the contractors, migrants have little bargaining power and are trapped in a vicious circle.

Migration is likely to become an increasingly important livelihood strategy for the rural poor. In relation to WSD there are several key issues which need to be addressed:

- Migrants' absence from villages tends to marginalise them from the decision-making process;
- Migrants' dependence on CPRs is highly seasonal and management strategies should accommodate this;
- Migrants may be absent at key points in the year and may lose out in the sharing of benefits from common resources;
- Migration often leads to the absence of the most able-bodied working population – often males – this has key implication for women's roles and decision making.

Migration has an important impact on participation in local level decision making processes. WSD involves the establishment of new institutions such as user groups and watershed committees. Migrants – generally the poorest – are often absent from villages and so tend to be marginalised from decisions on resource use.

In the context of WSD in India, most NGOs and several donors see seasonal migration as a negative phenomenon, largely on account of its exploitative nature and its disruptive effect on family life and wider social relations. This view clearly has some validity, but, whilst policy interventions should be sensitive to these requirements, they should not be unduly influenced by unrealistic ideals. WSD offers an opportunity to address migration issues: to promote intensification under WSD in employment-creating rather than in labour saving modes, so that substantial employment is created beyond the construction phase of rehabilitation (and it should be noted that labourers are unlikely to switch out of migration strategies until they are confident that substantial blocks of employment – probably at least forty days – are available in the home area); the second is to support migration processes so that labourers' conditions are improved, and they are gradually released from exploitative contractual arrangements. Groups and committees set up by WSD programmes could provide an entry point for improving awareness of migrants rights and building their capacity to exercise them.

5.4 How do livelihood strategies influence (lack of) local participation?

A livelihoods perspective can reveal why certain groups fall out or do not participate in WSD, and how participation can be enhanced. For example, activities may fit badly with livelihood strategies of the poor if involvement is particularly risky, requires access to specific assets, or occurs at a time when other livelihood activities are a priority for them. Some barriers may be insuperable, but in other cases, participation can be encouraged by adapting procedures to suit the livelihoods of the poor. Livelihoods analysis for an Indian watersheds project highlighted many obstacles for the poor in attending community meetings, relating to migration, lack of time, and power. As a result, the second phase of the project is paying careful attention to timing and developing alternative mechanisms for participation, including informal sub-watershed associations, and 'livelihood support teams' to work with the most vulnerable.

6. Conclusion

6.1 What is the value-added of a SL perspective on watershed development?

Adopting a livelihoods perspective can contribute to developing a better understanding of the impact of WSD in broader terms (Table 2).

Table 3 Watershed development and rural livelihoods

Desired Outcome	Watershed development
Income increased	Specific to location and socio-economic conditions
Poverty reduced	Yes, but evidence that the poor may lose out under regimes for management of rehabilitated CPRs and do not get a fair share of investment funds and benefits
Well-being and capabilities improved	Positive indications of institutional development
Livelihood adaptation, and resilience enhanced; vulnerability reduced	Location specific – where management successful, yes. Some cases where appropriate management of CPRs has reduced vulnerability to shocks
Sustainability of NR base ensured	Yes – but upstream downstream linkages are poorly understood. Restricted access to CPRs can lead to pressure in other areas of the watershed.

A SL perspective provides an opportunity to stand back and explore how WSD affects the livelihoods of the poor, and to see how these impacts can be enhanced. It highlights how even small changes in timing, location or sequencing can enhance the fit of WSD with livelihood priorities. Adopting a SL perspective has also encouraged a more explicit analysis of the ways in which WSD directly and indirectly affects people's livelihoods.

In terms of the overall impact of WSD – as a means to rural poverty reduction – watershed-based approaches have been demonstrated to lead to substantial improvements in rural livelihoods. However, they are not a panacea: productivity gains in pilot projects have not been achieved to the same extent on a wide scale and the links between productivity gains and livelihoods is complex and poorly understood.

Of most concern, is that achieving these productivity gains can actually work against the livelihood strategies of certain groups. For instance restricting access to CPRs to improve grassland productivity denies the poor access to a valuable resource. Shifts to cash cropping, possible as a result of improved access to irrigation, can encourage a more risky livelihood strategy and lead to increased food insecurity at the household level. Undoubtedly, to achieve distributional equity is the most difficult challenge. An adequate distribution of benefits (poor/better-off; men/women) relies on exceptionally careful and continuing vigilance.

The final section explores how these challenges may be addressed to improve the 'fit' of WSD with the livelihoods of the poor.

6.2 Improving the impact of watershed development

The conditions necessary for successful WSD are becoming clearly-established, and include: adequately sloping topography; adequate rainfall; high contribution of land-based activities to livelihoods; the willingness of landowners to allow the landless adequate access to the benefits of rehabilitation; adequate prospects for long-term ecological sustainability, including restrictions on the distribution and volume of groundwater extraction; adequate prospects for long-term institutional sustainability, including market links, and strong community commitment to joint action in resource management. Clearer guidance is needed for choosing between WSD and other options (Box 6).

Box 6 Guidance for rapid assessment of whether watershed development should be the primary basis of interventions for enhancing sustainable livelihoods.

1. Natural asset characteristics:
 - Is the proposed site within acceptable limits of rainfall and slope?
 - Are the boundaries of the watershed clearly defined? Do they broadly correspond to administrative boundaries?
 - Are there close linkages between private and common pool resources?
2. Human, social and institutional asset characteristics:
 - What is the caste composition of the village? What history of caste relations? What history of conflict over resource access?
 - How big is the village – the community? To some extent the smaller the community the better the chances of success – group agreement is more likely to collapse as numbers increase;
 - How extensive is sharecropping? Are share arrangements exploitative?
 - Is there a positive history of joint action in development or social activities?
 - What focus groups currently exist?
 - How are the commons currently managed?
 - How strong and representative is the *gram sabha* (village assembly)? How divisive have been elections to the *gram panchayat* (lowest tier of local government)? How well does the *gram sabha* interact with the *sarpanch* and *gram sabha*? Does accountability enter the relationship?
3. Financial and economic asset characteristics:
 - What economic activities do women and those with limited or no land currently undertake, over and above what would normally be expected (such as herding)?
 - What is the pattern and importance of seasonal migration?
 - What are the near-future prospects for new economics opportunities relevant to the landless?
4. Physical asset characteristics:
 - How good is communications infrastructure? Can it currently (or with low investment) support alternatives to WSD such as milk production and marketing?

There is also a need to improve the design, implementation and follow-up of WSD projects. Opportunities for improving the design, implementation and follow-up fall into 3 broad categories:

- Strengthening human capital at two broad levels: first, a longer pre-investment period to create and support local ‘focus’ groups; second, stronger capacity building for the staff of government agencies and *panchayat raj* institutions.
- Strengthening financial capital: the creation of small, locally managed savings and credit groups allows poor people to break free from moneylenders; more broadly, insistence on beneficiaries’ contributions to rehabilitation, especially on private land – and accompanied by

reforms to allow banks loans for this – will help to break the syndrome of dependence on government.

- Strengthening the link between project and policy. Opportunities need to be created for partnerships between NGOs and government and for close collaboration among different government departments, and between State and central government bodies. Partnerships between development agencies also need to be developed, and ways of enhancing their capacity identified. Government guidelines are being revised to address some of the weaknesses in designing, implementing and following up on WSD, for instance in pre-rehabilitation activities and stronger monitoring and evaluation. Areas still under-developed include cross-learning between NGO- and government-implemented projects, setting of criteria for selection (and de-selection) of villages and project implementing agencies.

Finally, more thought is needed on development pathways appropriate for those areas where preconditions do not favour WSD. For example, seasonal migration is an important livelihood strategy for semi arid India. Efforts to make the process less exploitative and support it through the public sector, via interested NGOs and/or via support through the banking system are likely to generate substantial poverty impact. By contrast, the evidence on alternative economic opportunities which are not land-based is mixed. NGO lore is replete with examples of how poor groups have succeeded in producing and marketing products made from NTFPs, such as tendu-leaf plates, or in launching new enterprises such as beekeeping or silk production. However, these rarely consider the costs of providing financial capital and the necessary skills, and of underwriting the high level of risk. Where these are taken into account, the prospects for micro-enterprise appear much weaker.

6.3 A final word

In conclusion, SL analysis (drawing on a wide variety of methods) should be used to encourage a broader and more structured assessment of impacts relevant to the poor. This can help practitioners and policy-makers to adjust their approaches and so enhance poverty impacts.

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