
Participatory Watershed Management: Examples From Herat, Western Afghanistan

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ABSTRACT

This paper derives from watershed management studies undertaken as part of an Asian Development Bank project preparation study for the Hari Rud catchment of western Afghanistan. Western Afghanistan has a fragile, arid environment. Years of conflict, social disruption and drought have resulted in almost total denudation of vegetation cover through uncontrolled grazing and intense pressure for fuel supplies. With a newly inaugurated government, participatory watershed management offers the most practical solution for sustainably reversing this degradation. This paper describes a successful example of community collaboration facilitated by an NGO in the Pushtun Zarghun District to protect villages from serious wind erosion. The factors leading to this community mobilization and action are analysed. This paper then examines how these lessons could be extended more widely to improve watershed management under the government's declared policy for community management of forest and range resources. Emphasis is placed on the need to focus on village fuel materials, an issue rarely considered in the literature.

BACKGROUND

This paper is based on the results of watershed management investigations (Virgo, 2005) that formed part of a multidiscipline study to prepare a project for improving water resource

management and irrigated agriculture, focused on the Hari Rud catchment of western Afghanistan, funded by the Asian Development Bank.

In common with the rest of Afghanistan, the Hari Rud catchment has suffered from some 25 years of conflict and social disruption, which have also adversely impacted on natural resources. Natural vegetation has been subject to intense degradation through overgrazing and browsing by livestock, and fuel collection by the human population, intensified by a breakdown in land user rights. Formoli (1995) suggests that the destruction of trees (forest, planted and fruit) was probably the greatest environmental disaster that occurred during the war years, exacerbated by a 5-year drought (2000-2004). The UNDP (2005) states that *restoration of forests and other vegetation cover, combined with grazing management, are high priorities to combat erosion, desertification and flood risks.*



Map of Afghanistan. The study area is located in the Hari Rud river catchment near Herat in Western Afghanistan.

As all non-farmed lands are considered to be ‘government land’, with communal access, there is no incentive to manage grazing or to conserve natural resources. Previous traditional land rights for transhumant pastoralists lapsed during the years of conflict, thus no formally recognized rights now exist. Non-farmed lands are now subject to uncontrolled exploitation for grazing by settled and transhumant pastoralists as well as for fuel collection by all communities.

In recognition of the minimal government capacity in the field and the importance of land user rights to encourage conservation and management of natural resources, the Ministry of Agriculture, Animal Husbandry and Food (MAAHF, 2004) introduced a Community Forestry and Rangeland Management (CFRM) policy. The declared objective of the policy was for:

Communities throughout Afghanistan to acquire and deploy their capacities independently to implement improved forest, rangeland and other land covers which achieve a sustained balance between maximization of production and productivity in all rural land uses (dryland farming, irrigated farming, livestock husbandry, forest products, wildlife exploitation) and, on the other hand, effective maintenance of the natural and wildlife resource bases.

The CFRM program proposes vesting responsibility for natural resource management with the actual users, accompanied by granting land user rights to committees that are representative of these users, subject to satisfactory negotiation and agreement between all stakeholders and adherence to acceptable management plans. The program will offer limited development funding to assist the committees. The program therefore recognises the failure of conventional policies to address the severe degradation of forests and rangelands and that the current perception of forest and rangeland being under “communal ownership” encourages users to maximize exploitation without any consideration of investment in management. The new approach should give communities an incentive to invest in the improvement and management of natural resources.

STUDY AREA

The Hari Rud River drains an elongated (450 km x 70 km) catchment that follows a major east-west tectonic fault line. Most of the catchment comprises steep mountainous terrain. The study area focuses on the Hari Rud catchments immediately upstream of the provincial city of Herat, where the river channel broadens into an extensive alluvial flood plain. The main valley is flanked by gently sloping outwash fans below the bordering steeply dissected mountain ranges.



Tributary valley of Hari Rud River

The climate is arid, with cold winters and hot dry summers (Fig. 1). Precipitation (rain and snow) occurs mainly in the winter. The mean annual rainfall at Herat is 310 mm but precipitation in the study area during the 2000-2004 drought years fell to only 180 mm. Mean temperatures range from a maximum of almost 30°C in June to August, with minimums of near 0°C in December to February. Snow melt is a major contributor to runoff: Given the elongated nature of the catchment and elevations ranging from 900 m to 4,000 m, snow melt is progressive up the catchment. Therefore in-flow of runoff to the Hari Rud river system is spread over a period of about two months (March-April). Strong, hot and dry north winds are common during May and June.

Villages, which are concentrated along the river, average about 200 families, rising to 400 families in the main irrigated zone of the Pushtun Zarghun District, immediately east of Herat. The total population is around 137,800 (of which 14,000 are ‘urban’). A socially structured and largely feudal governance system applies in most villages, in which the community is managed by the influential elite of Elders, through a traditional council (*Shura*) headed by an *Arbob*

(Headman). The activities of the *Shura* are sometimes controlled by powerful ‘Commanders’, who gained and retained power during the recent conflicts. Poverty levels are high and services minimal, as indicated by the 25% infant mortality rate. Rural women are generally ‘invisible’, being confined to homesteads or heavily veiled. They have minimal direct impact on natural resource management. Many settled people are landless, working as share-croppers for land lords or herding flocks of village sheep and goats. Transhumant pastoralists traverse the area on a seasonal basis. There are also large numbers of returning emigrants, who were displaced by the previous conflicts.

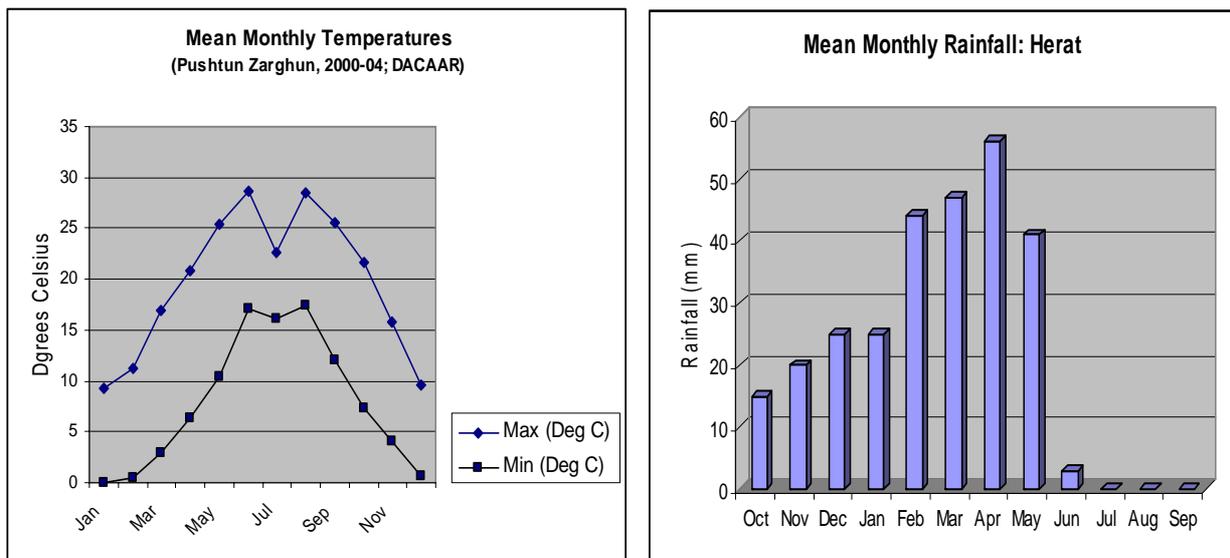


Figure 1. Mean climate data.

The land is virtually devoid of natural woody vegetation; even the rootstocks have been up-rooted for fuel. The only natural vegetative cover comprises sparse small thorny herbs, with *Artemisia* and *Poa* species in more favourable sites. Intensive irrigated agriculture is practiced on the lower floodplains and locally along river channels and below springs that disgorge at the foot of the flanking hills.

METHODS

The study was carried out from January to May 2005. The methods included visual inspection of the watersheds, participatory interactions with communities and review of published literature.

The overall approach aimed at seeking a practical model for watershed management that could be implemented within the existing severe logistic and institutional constraints. The CFRM



A village in the Pushtun Zarghun District

program provided a logical policy framework within which to operate and an opportunity for effective community involvement in planning, implementation and maintenance. The CFRM program specifically aimed at community forest, range and wildlife enhancement, which required slight amendment to orient the approach towards wider watershed management activities. The key issue was “How successful would community participation be under the prevailing socioeconomic environment, especially given the breakdown of administrative and social institutions?”

The methods therefore included assessing:

- The physical and social requirements of watershed management
- The strengths of community organizations
- Previous experiences of participatory approaches in the area.

The results were used to develop a suitable model for community-based watershed management.

ANALYSIS OF PHYSICAL AND SOCIAL ISSUES

Soil Erosion

There is little visible evidence of widespread accelerated erosion. Despite the minimal ground cover during the period of precipitation (winter), the rainfall amounts are very low (200-400 mm) and likely to have relatively low erosivity. Moreover, much of the precipitation on the higher slopes is as snow, which has zero erosivity. Splash erosion rates are therefore probably low, as supported by Dedkov (1990). Dekov also stated that *agriculture and grazing accelerate the development of erosional forms, but this contemporary anthropogenic intensification of erosion is only slight*, which infers that although the sparse vegetation cover does not protect the soil, the dryness of the climate results in only a slight degree of erosion. The principal cause of accelerated erosion is the reduced infiltration of the hill slope soils, resulting from *a reduction in vegetation cover through grazing, soil compaction due to trampling by grazing animals and intensive cutting and uprooting of vegetation for fuel*. This accelerates rill erosion, speed of runoff and localized downslope gullying.

Increasing the infiltration and absorption capacity of the upland soils must therefore be a key focus for watershed management. This needs to be combined with meeting community demands for fodder and fuel. The principal priorities are therefore:

- Alleviating the pressure of fuel material collection.
- Improving the quality and management of the rangelands.
- Reducing the velocity of surface runoff from sloping lands to increase *in situ* conservation of moisture.

Fuel Wood

Lack of availability of fuel material is the principal watershed-related concern of the rural communities, although there is only minimal reference to this in the published literature. Fuel collection is the responsibility of men and children. Any burnable vegetation is collected: sticks, woody herbs (*khor*) and uprooted saplings. A national survey



Returning from a fuel collection expedition

(NRVA, 2003) showed that 94% of the households in the area use such material for cooking. This is supplemented by crop residues, tree prunings, waste paper, plastic and dung. Villagers often lend donkeys to other families, in rotation, for fuel collection expeditions. A man and two or three children with three donkeys make a 3-day round trip to the remote hills to collect up to 150 kg. This is adequate for one average household compound for a month. The demand for fuel material is estimated at about 0.60 kg per person per day. This translates into some 27,000 tons per year in the study area.

There is little formal recognition of the seriousness of the fodder and fuel shortages or of the severe denudation of the rangelands. When prompted, older people agree that fuel is their principal problem and recall that vegetative cover was better in their childhood. The dire shortage of fuel is not perceived as critical by the influential elite, probably because it is not their responsibility. However, one village Elder noted that children were unable to attend school because all their time was spent searching for fuel.

Provision of alternative, sustainable sources of fuel materials, that are available to all households, must be a primary component of watershed management activities. Options include:

- Establishing community-managed forest lands close to the villages, socially protected and managed and equitably available for use by all households. There are examples of vegetative regeneration in areas that have been protected.
- Additional planting of fast-growing multi-purpose trees in irrigated areas, along canals and on community land allocated for joint use and management for the benefit of landless residents. These would include species that provide fuel, fodder and income (eg: Ash (*Fraxinus floribunda*), Walnut (*Juglans* sp), Willow (*Salix* sp), Jujube (*Ziziphus mauritiana*) and Mulberry (*Morus alba*)). Khaurin (2003) recommends *Robinia pseudoacacia*, *Salix wallichiana*, *Populus ciliata*, *Morus* spp and *Elaeanus latifolia* where some water is available. Poplar (*Populus nigra*, *P. balsamifera* and *P. alba*) are recommended as agroforestry trees for this area by the Forest Research Institute (India). *Acacia tortilis* is adapted to dry conditions, yielding fodder and timber. Yadav and Blyth (1996) recommend *Prosopis cineraria*, which could be introduced on farms to provide fuel wood and fodder (foliage and pods), with minimal irrigation. Additional rainfed fodder species can be sought from Iran.

Fodder

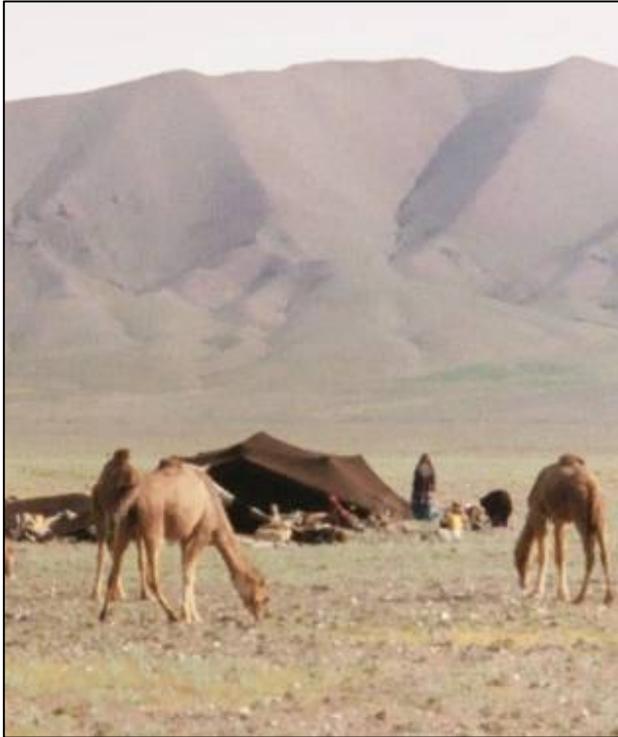
The communal rights of access to the non-farmed lands mean that users have no responsibility or incentive for improving the forest or rangeland (Scanagri, 2004). There is no evidence of any systematic fodder collection from the rangelands. Fodder crops and crop by-products are conserved by settled villagers for winter feed of 'urban' livestock and for sale to *Kuchi* pastoralists. Livestock production in the villages relies mainly on 'free' fodder from the rangelands.

Opportunities exist for planting high-yielding perennial grasses (e.g. *Pennisetum* sp) along canal banks. If user rights can be negotiated, there should be possibilities for closing areas of grazing land to enable grasses to grow for late summer cut-and-carry harvesting



Boys carrying fuel materials

and for exotic grasses to be planted along water harvesting bunds on the rangelands. The ultimate aim should be to encourage settled villagers to adopt stall-feeding for all animals, which would reduce pressure on the rangelands and encourage a focus on quality of livestock instead of numbers.



Kuchi pastoralists

The management of grazing is largely dictated by the animals themselves, water sources and the distance that settled people are prepared to walk. As all the non-farmed lands have communal access, there is no incentive to manage grazing or to enable an improvement in species diversity. Negotiating community rights to grazing areas and social fencing, to enable rotational grazing, would facilitate better productivity of the rangelands.

The *Kuchi* pastoralists traditionally do adopt a form of grazing management. They migrate from the lowlands to the highlands, following the snow melt and vegetation regrowth. They also attempt to conserve pasture areas near to their winter camps for grazing at the end of the season. As a result of conflicts, most either fled to Iran or opted for agricultural laboring. Due to changed politico-ethnic powers, the *Kuchi* who have returned have been unable to reassert their traditional access to rangelands and much of the winter lowland pasture has been taken over by rainfed farmers (Wily, 2004).

Non-timber Forest Products

Villagers traditionally harvest various wild plants with commercial value (as medicine, flavoring, glues/ resins and vegetables). Uncontrolled exploitation of these plants and products has had a detrimental effect on the environment, especially where the roots are extracted. Products of *Allium* spp are an important export to Pakistan for *aloe vera* processing for cosmetics.

With protection (or re-introduction), appropriate management, rational harvesting and improved processing for sale, non-timber forest products could yield additional sources of income to rural communities, as well as conserving biodiversity. The *Kuchi* people are aware of this potential but proper management cannot be assured without defined land user rights.

Water

Water is a major issue for settled and nomadic people. Traditional *kariz* (underground tunnels that tap aquifers in the foothills and lead to villages) are a vital source of domestic, livestock and irrigation supplies. Increasing infiltration in the catchment areas, through grazing management and water harvesting bunds would increase the reliability of flows in the *kariz*.

Some water harvesting bunds are used on the lower slopes but they favor downslope water spreading. Rainfed cereal farmers on the higher hills and plateaus cultivate up-and-down hill. Both systems increase runoff and erosion. Simple contour ploughing would reduce erosion and retain moisture. Check dams could trap seasonal flows in stream lines and conserve water for livestock, supplementary irrigation and aid infiltration. Bunding on steeper slopes would require great care: any physical disturbance could cause more damage than benefit.

Meantime, there is little point in establishing water harvesting structures until user rights to the land are clarified and formalized, to give an incentive to maintain the structures and any associated vegetative planting.

Physical Requirements of Watershed Management

The overall watershed management actions should give priority to satisfying the livelihood needs of the involved communities that will ultimately improve the natural resources of the catchments:

- Alleviate the severe deficiency in fuelwood materials that currently affects all communities (urban, as well as rural).
- Improve the quality of the rangelands (reduction in fuel material collection would go some way to meeting this priority) and availability of fodder.
- Reduce the velocity of flow of runoff from intermediate sloping lands and establish *in situ* conservation of moisture for improved tree, range, agricultural crops and domestic use, as well as improved reliability of *kariz* flows.

The above priorities should set the framework for interventions, although there will be a need for flexibility to reflect actual conditions in each location.

Strengths of Community Organizations

The traditional village organization, the *Shura*, is managed by the Elders. These are all men and do not necessarily represent all sectors of the community. In 2002 the Government of Afghanistan launched the National Solidarity Program (NSP). This seeks to improve local-level governance through mobilizing and authorizing parallel representative village-level organizations – Community Development Councils (CDCs). These are eligible for block grants for small infrastructure projects, subject to CDCs being adequately representative. Within the study area separate male and female CDCs have been established in each target community but real involvement of women has been less evident, exacerbated by their low levels of literacy and social invisibility. Higher up the Hari Rud catchment, mixed CDCs predominate, largely because the returning exiles have had wider exposure in Iran to more gender-balanced attitudes. Under the NSP, villagers are trained in useful maintenance skills (such as pump maintenance), with the community paying for their services as para-professionals.



In Kuchi communities, women are involved in decision-making

One of the roles of the CDCs is to seek outside funding for local development and to become community-level implementing agents. With strengthened capacity, they could embrace new activities like watershed management to improve the natural resources of their community through water harvesting, community forest and rangeland management.

In the context of community-based watershed management, the CDCs offer an initial focus for collaboration among settled communities but much effort will be required to raise awareness of watershed issues and to encourage joint actions that are inclusive of all social groups. Involving women remains a problem. However, unlike elsewhere in South Asia, although women are users of natural resources, they are not responsible for their management, a task that falls to men and children.

The social structure within *Kuchi* communities is more flexible than in the settled villages. Community decision-making and action is standard practice. Moreover, women are involved in decision-making and are not subject to the practice of separation from men (*Purdah*). The *Kuchi* have a good awareness of the importance of fodder and fuel wood. They are experts in livestock husbandry and understand the principles of rangeland management, practicing a form of rotational grazing. Consequently, the *Kuchi* communities should adopt concepts of community management more readily than the settled farmers. However, negotiation with the settled farming communities to define of land user rights remains a key issue.

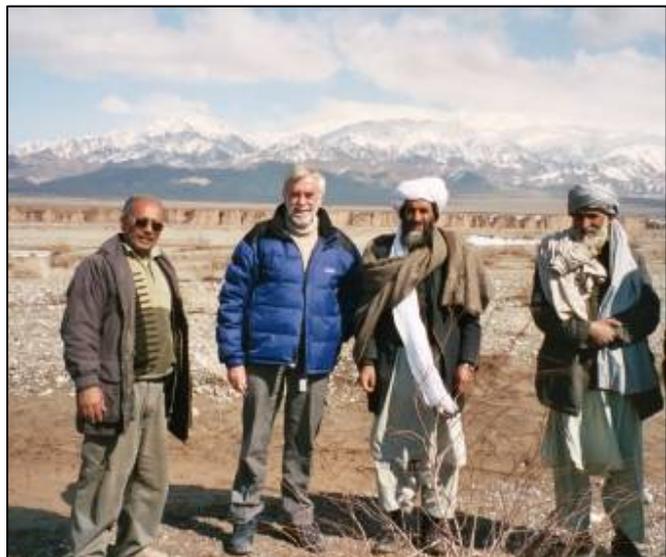
Give us the land rights and knowledge, and we will plant and protect trees.

Elders of a *Kuchi* settlement, Guzara

Previous Experiences of Participatory Approaches

An interesting example of the application of participatory approaches to natural resource management was found in Pushtun Zarghun District. The NGO DACAAR (Danish Committee for Aid to Afghan Refugees) had been working in this area since 1998, with a broad remit of rural development. In 1999 several Village Organizations were successfully established. These were later converted to CDCs under the NSP policy.

During the drought years (2000-2004), a major problem reported by the villagers was wind erosion of sand off the bare river floodplain, which was damaging fields, filling canals, contaminating grain stocks and settling in houses. The organizations of five affected villages came together to seek a solution to the problem, with facilitation from DACAAR. Then six other villages joined. Thus, a total of 13,000 people ultimately became involved. Initial proposals were to build a wall to keep out the sand or to hire a bulldozer to remove it. Finally DACAAR persuaded the villagers that a better solution would be to re-vegetate the bare floodplain areas, which were the original source of the sand. The villagers appointed a Committee (two from each affected



President and Secretary of the Soil and Moisture Conservation and Range Management Association, right; two of the authors, left

village) to implement a program of closing the source area (4,000 ha) to cutting and grazing for 5 years.

A tripartite agreement was signed by the Committee, the local government and DACAAR. The Committee became responsible for management and social fencing, the district government would provide a guard and DACAAR would provide technical advice and training. This was enshrined in the constitution of the ‘Soil and Moisture Conservation and Range Management Association’ (DACAAR, 2003). The Association members each agreed to pay an annual fee (equivalent to US\$0.20). DACAAR also gave a loan of 2,000 kg of saffron bulbs to generate income to compensate for loss of grazing and fuel materials. All the source area was ‘government land’. The Association drew up plans in consultation with all stakeholders and gained government agreement on ownership. There have been no subsequent land rights conflicts.

The community-managed closure to cutting and grazing was successful, using ‘social fencing’ alone. Attempts were made to plant *Atriplex* sp in depressions and along water harvesting channels but survival rates were often poor. *Tamarix* sp and *Ephedera* sp have been more successful. The committee is trying *Haloxylon* sp.

The result has been phenomenal (Table 1): the formerly bare areas now have a relatively dense cover of low scrub of natural species. This has lowered surface wind speeds and significantly reduced wind erosion. A side effect has been an increase in wildlife and the Department of Agriculture has declared the zone as a non-hunting ‘Nature Reserve’. After 4 years the blown sand problem had ceased and DACAAR suggested that the villagers could start controlled grazing on that rehabilitated land. The Committee, however, disagreed, proposing that they continue closure for 4 more years.

Table 1. Features of the Pashtun Zarghun Conservation Area (before intervention and after 4 years)

Features	Before	After
Vegetative cover (%)	0-5	24-48
Number of plant species	10	31
Available fodder (kg/ha)	0	110-202

Several lessons could be learned from this enterprise in the context of community-based watershed management. The villagers could be encouraged to plant trees for fuelwood, to give them additional motivation for protection. They could also consider selective harvesting of the vegetation on a cut and carry basis, each village being allocated a specific area and a limit on extraction rates. DACAAR estimates that there is now adequate grazing capacity for 15,000 sheep for a month, with a fodder value of US\$76,175. The committee would need to monitor the activities to ensure fairness of distribution and the sustainability of extraction. With careful management, the exclusion area should be adequate to meet villagers’ fodder and fuel needs in the future. However, in the meantime, the villagers have to exploit the hills for fuel material and grazing. In the short run, floodplain closure may have negative impacts elsewhere.

Interestingly, there have been other spin-offs in terms of participatory approaches. Neighboring villagers have observed the success of community cooperation and started similar groups for saffron production, seed supplies and nurseries.

The project provides a valuable local example of how community action can be successful in conservation but that it requires considerable motivation and support. The key issue is what motivated the villagers? The wind blown sand affected all, from the *Arbob* (headman) down to the poorest household. This seems to have created a common interest to unite people. Fuel material or fodder shortages do not seem to excite people in the same way, perhaps because they do not affect those with influence: it is something that is managed by children and landless men who have little say in decision-making. Awareness-raising of the elite will be essential if community-based watershed management is to succeed. Moreover, for the wider needs of CFRM or watershed management, the approach needs to expand from purely 'conservation' into 'management'.

PROPOSED MODEL FOR COMMUNITY-BASED WATERSHED MANAGEMENT

A pilot community-based watershed development project was proposed, modelled on the CFRM methodology but adapted to meet the specific needs of watershed management.

Rationale

The project aimed at initiating processes of participatory community-based watershed interventions to:

- Develop and test a suitable community-based approach to watershed development.
- Improve the natural resource conditions and livelihoods of communities in the catchments.
- Benefit downstream areas through reduced runoff and erosion.

The rationale was that by adopting a community-based approach, the interventions should be more sustainable. Moreover, by using the CFRM approach the process will conform to government strategy, which will facilitate its adoption by other agencies and replication to other areas in future.

The Process

Contracted NGOs were proposed to facilitate field implementation, working under the Provincial MAAHF and its district offices. The NGO Facilitating Partners would motivate and mobilize the communities, the primary stakeholders, to form Watershed /CFRM Committees (WCCs) to plan, implement, maintain and monitor interventions. A key element of the facilitation process would be negotiation with other users of the land. The district administrations would monitor activities, legalize user rights against approved plans and intervene to settle any disputes.

Participatory Watershed Management

Utilization and conservation of land, water and forest resources at farm household and community (or given watershed) level for continuously improved livelihood and overall human development.

(Sharma, 1997)

The Pilot Project would need to foster linkages between the communities and the private sector to encourage a market-led approach (e.g. for inputs, NTFPs, livestock and income-generating enterprises). It would provide technical assistance (TA) support and minor investment to strengthen the capacity of the local stakeholders (especially the communities). This would enable the concerned agencies to expand the process elsewhere. The pilot project was intended to initiate the process, not to provide 'blanket' watershed development over entire catchments. As noted in the CFRM proposals (Scanagri, 2004), despite the urgency to address current national forestry and rangeland problems: "*It is right first to try the new techniques in selected places,*

learn from the experiences gained and adjust the methodology before applying it throughout the nation”.

Three sub-areas were identified for the Pilot Program. The key determinants in selecting target communities would be to favor those that:

- Are socially cohesive.
- Demonstrate a willingness to participate.
- Are located in upstream areas.
- Have seriously denuded lands that contribute excessive erosion/ runoff.
- Possess high levels of relative poverty.
- Do not have internal political constraints or security hazards.

At least one *Kuchi* community would be included in each pilot sub-unit area.

Interventions in a village/ community would be for 3 years. The numbers of villages to be addressed would be phased, to facilitate learning by the implementers and the communities during the initial years. The 3-year time period would be clearly explained at the start, so that communities are prepared to take over at the end of interventions.

Implementation at Community Level

This would focus on the communities and the sustainable development of their capacities to implement strategies for watershed development, especially as related to forestry and range management. The aim would be to develop capacities among community members themselves for managing their forest, range and watershed resources in improved ways. The processes and stakeholder involvement would be sequential (as illustrated in Fig. 2):

- Create community awareness of the problems and opportunities.
- Develop community institutional and organizational capacity.
- Undertake small-scale entry-point activities to meet immediate needs.
- Discuss development and management options and allocate responsibilities, including training of a para-professional cadre.
- Multi-stakeholder negotiations over land user rights.
- Finalize plans for management and investment, for approval.
- Approval of development plans and release of funds.
- Implement investment and management plans through community actions.
- Monitor implementation progress, amend plans if necessary.
- Prepare a take-over procedure and longer-term development plan.

The actual approach would need to be flexible, to accommodate subsequent progress on developing the strategies and institutional changes. An anticipated outcome of the process is that WCCs would be empowered to cooperate and collaborate in managing natural resources and in jointly exploiting market potentials for new products.

A fundamental prerequisite for success would be successful negotiation among stakeholders of user rights to land, demarcation of community user rights and the formal recognition of these rights by government and other land users. Giving communities formal user rights would provide them with an incentive to invest in natural resource improvement and, by initiating a sense of ‘ownership’, encourage future maintenance.

DISCUSSION

People and their flocks are the main cause of degradation. The communities therefore must be fully involved in management of the catchments. Watershed management should be community-based and favor processes and actions that give priority to satisfying the livelihood needs of the involved communities, who will ultimately manage their natural resources.

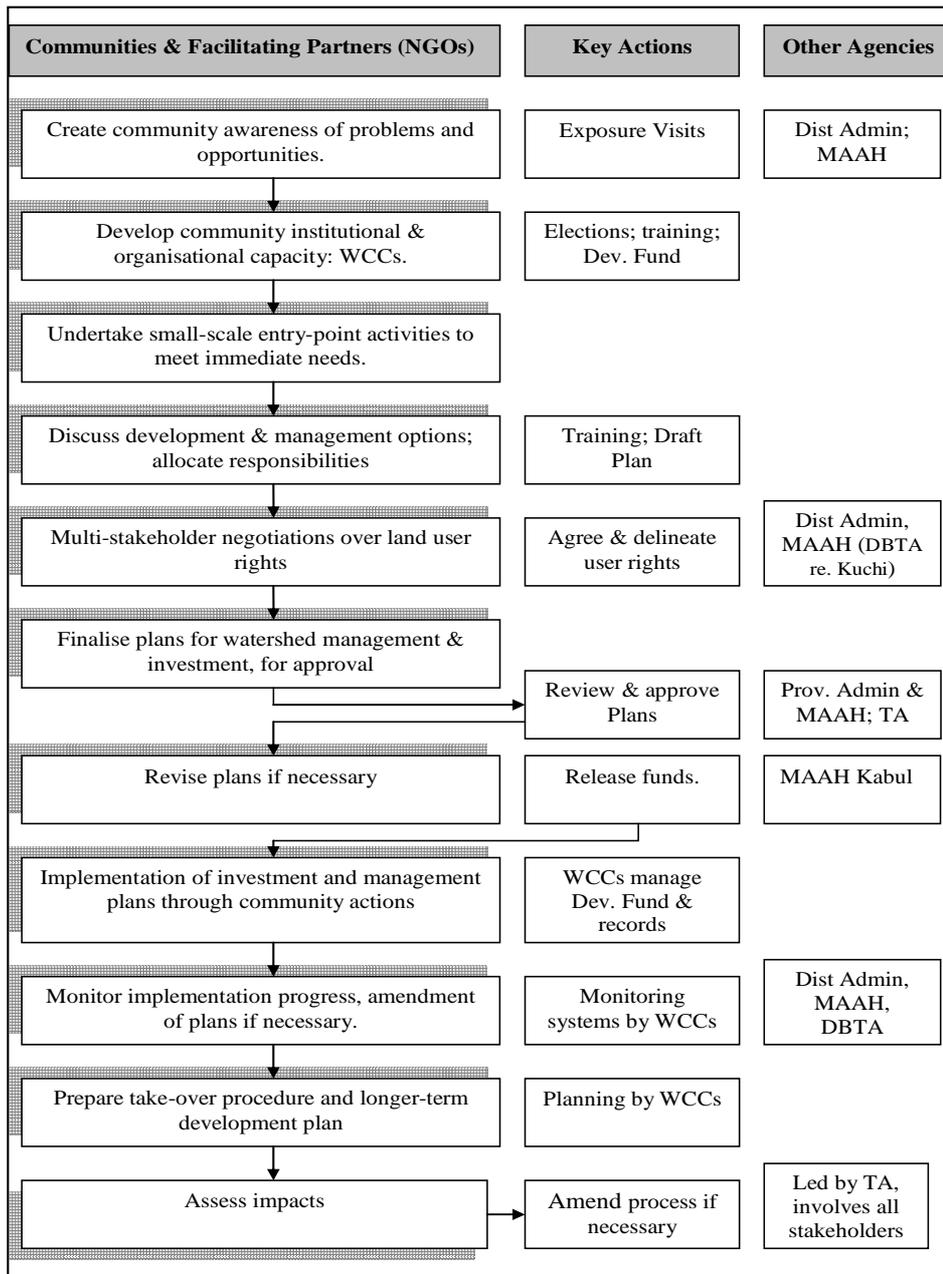


Figure 2. Processes and stakeholders in Pilot Scheme.

Lack of availability of fuel material is a principal watershed-related concern of the rural communities, although there is minimal reference to this issue in published information. In the context of the Indian Himalaya, where up to 80% of rural energy needs derive from firewood, Banerji and Baruah (2006) note that “*Energy is neither explicitly recognized as a basic human need nor as a cause of poverty. Yet it is clear that efficient and uninterrupted supply of energy facilitates the forces of development, enables a better quality of life and builds human capacity*”. In a recent analysis of livelihoods in villages of the adjacent district of Sharak (McNeil et al., 2006), villagers cited ‘numbers of trees’ as a criterion of wealth but this seemed to relate to fruit or nut yields: the fuel potential of the trees was not directly mentioned.

Jansky and Pachova (2005) allude to the increasing use of woody scrub for fuel in the High Pamirs that is leading degradation of the slopes and increasing vulnerability to natural disasters. Fuel material supply would therefore be a key issue to be addressed by the pilot project.

Participation and Women

Although there is no tradition of participatory village organizations in settled communities, the concept of sharing does exist, whereby households will lend assets to neighbors. A strong sense of charity also exists, whereby wealthier people provide services for the poor or donate assets to the community through the *Aqaf* (charity) system. The sense of land rights within villages, if not formal title, is very strong. People will not encroach on land recognized as ‘owned’ by someone, so social fencing can be maintained successfully. However, at present this does not apply on common ‘government’ lands.

The Pushtun Zarghun experience shows that participatory soil conservation is feasible despite conflict, social disruption, a new government and disputed land ownership. What is needed is a common interest, which may be obvious to all in the case of wind-blown sand but will require intensive awareness-raising in the case of fodder, fuel material and their watershed management issues.

A major issue remains “How to include women?” For settled communities, with strict rules on women’s participation, a solution will be difficult. If women are excluded from the WCCs, it could be necessary to form a Women’s WCC Sub-committee to give them a voice in planning and implementation and to ratify decisions from a woman’s perspective.

In settled villagers, the management of grazing and fuelwood collection is solely in the hands of men and children. Consequently the pilot project would not directly benefit or involve women. However, as managers of domestic activities and small livestock, any improvement in the quality and availability of fodder and fuelwood would directly benefit women, although any success in encouraging more stall-feeding could adversely impact on their work load. *Interestingly, an unexpected benefit from enforced exile during the conflict years is that some returnees have brought back new skills and attitudes, including knowledge of soil conservation and greater gender sensitivity.*

Within *Kuchi* communities there is a sharing of responsibilities between women and men, in livestock management and decision-making. Any improvements to livestock productivity and fuel access, and in reducing conflicts over land, would therefore directly benefit women and men. Women also stand to gain from any incremental benefits to income-generating activities, such as carpet-making, that derive from the project.

***Kuchi* Community Land Rights**

The *Kuchi* pastoralists present a complex issue for watershed management and land user rights allocations. Communities rely on rangeland for their livelihood: small groups migrate with their flocks over long distances during the spring and summer months. The migration routes are determined by availability of grazing, water sources and access negotiated with settled villagers, and may change each year. Few conflicts arise over access during the migrations, although there is overlap with villager transhumant pastoralists. However, access to winter camps and grazing along the riverine areas is causing increasing conflict with villagers, where they compete for land with village flocks and rainfed land users.

As major users of the rangelands, the *Kuchi* communities must be fully incorporated into the watershed development program. As the maximum carrying capacity of the rangelands for goats and sheep is probably less than 0.60 animal/ ha, an average community with 2,000 goats/sheep would require at least 3,500 ha of grazing land. Demarcating, negotiating and granting user rights over such large areas to a single community would present a special challenge to the implementers.

On the positive side, the *Kuchi* pastoralists have a sound understanding of rangeland management and rotational grazing. If granted user rights, which are respected by other stakeholders, they could become competent managers of the rangelands. A pilot project would develop and test suitable approaches. Initial planning would need to be in winter, when communities congregate. A key issue would be to negotiate winter grazing and settlement entitlements. This would need to reflect the competing grazing 'rights' of transhumant village pastoralists.

Risks

Several risks are inherent in the proposed pilot project. These would need to be recognized by the implementers, calling for intensive awareness raising and participatory negotiation:

- The WCCs would need to be representative, motivated and capacitated to plan and manage their watershed management activities. Communities would need to perceive a common livelihood benefit from the project.
- Settled villagers may use any increased fodder and fuelwood to increase numbers of free-grazing livestock and continue to collect fuelwood from communal areas.
- Additional land conflicts could result between *Kuchi* pastoralists and villagers, unless all stakeholders are fully involved in the program.
- Decisions on the extent of land to be managed by a community will be critical. If settled communities are over-ambitious, they may not be able to manage their CFRM lands adequately. Similarly, unless granted adequate land user rights, the *Kuchi* will be constrained and conflicts will re-emerge. Granting user rights to *Kuchi* for the extensive areas that they need will inevitably be politically sensitive, especially for their winter settlement areas, where competition for land is greater.
- The pilot project is dependent for success on continuance of the new policy on hand-over of usufruct rights to qualifying communities.
- Although government policy envisages hand-over of user rights to land, subject to approved plans, the district administration will have difficulty in handling the issues without prior training.

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