



PARTICIPATORY CATCHMENT MANAGEMENT – AN OPPORTUNITY FOR SOUTHERN AFRICA

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ABSTRACT

South Africa has hundreds of thousands of hectares of heavily populated and badly degraded landscapes. Past attempts at land management have been either through avoidance or the top-down imposition of "betterment" schemes. Participatory methods offer a new opportunity for communities living within these catchments to share their knowledge and to become involved in planning and implementing the management process. This paper discusses the use of Participatory Rural Appraisal (PRA) in a catchment rehabilitation programme in rural KwaZulu/Natal, the lessons learnt and the prospects for wider application.

KEYWORDS

Catchment rehabilitation, participation; infiltration; land management; participatory rural appraisal; soil erosion; water supply.

INTRODUCTION

South African water resources have, for the past century, been secured through the management of the high rainfall upland mountain catchment areas, and through the construction of large water supply schemes. This has successfully served industrial and urban areas and commercial agriculture.

Vegetation management, water yield and quality relationships for both forestry regions and upland nature areas ("mountain catchments") have been well researched toward establishing land management options. These lands are primarily in the hands of large corporations or state or regional authorities. The populated rural catchments, largely occupied by black non-commercial farming communities, often within traditional authority structures, have never been a significant part of the research or management equation. The implicit assumption has been, broadly, that these areas are "unavailable" for conservation management. Mountain catchment managers have argued that the best approach is to optimize the quantity and quality of upstream water yield so as to provide maximum dilution of poor quality downstream inflow. This has been a result of attitude, politics and the lack of any methodology which enables meaningful communication between rural communities on the one hand, and "land management experts" on the other.

Political and social change in South Africa have brought changed perceptions both in environmental research and management, and in communities living under conditions of extreme environmental neglect. This includes recognition by establishment managers of community knowledge and experience, and by both

managers and rural communities of the opportunity to tackle the environmental problems experienced by those communities living in fragile and erodible catchments. Together with this change has come the introduction for the first time to participatory methodologies, and specifically to Participatory Rural Appraisals (PRAs). People are our greatest resource, and these approaches offer new opportunities in the search for solutions.

This paper introduces PRA techniques and discusses the use of participatory methodologies in the development of a catchment rehabilitation programme, together with impoverished rural communities at Stoffelton in KwaZulu/Natal. Through this it is possible to assess some of the pitfalls and prospects of participation in management practice.

PARTICIPATION AS PRACTICE

The goal of participatory rural appraisal is to enable rural people to do their own investigation, to share their knowledge, to do the analysis, and to plan and own the outcome (Chambers, 1993). PRA is both an approach and a set of tools to facilitate the development process (Fig. 1).

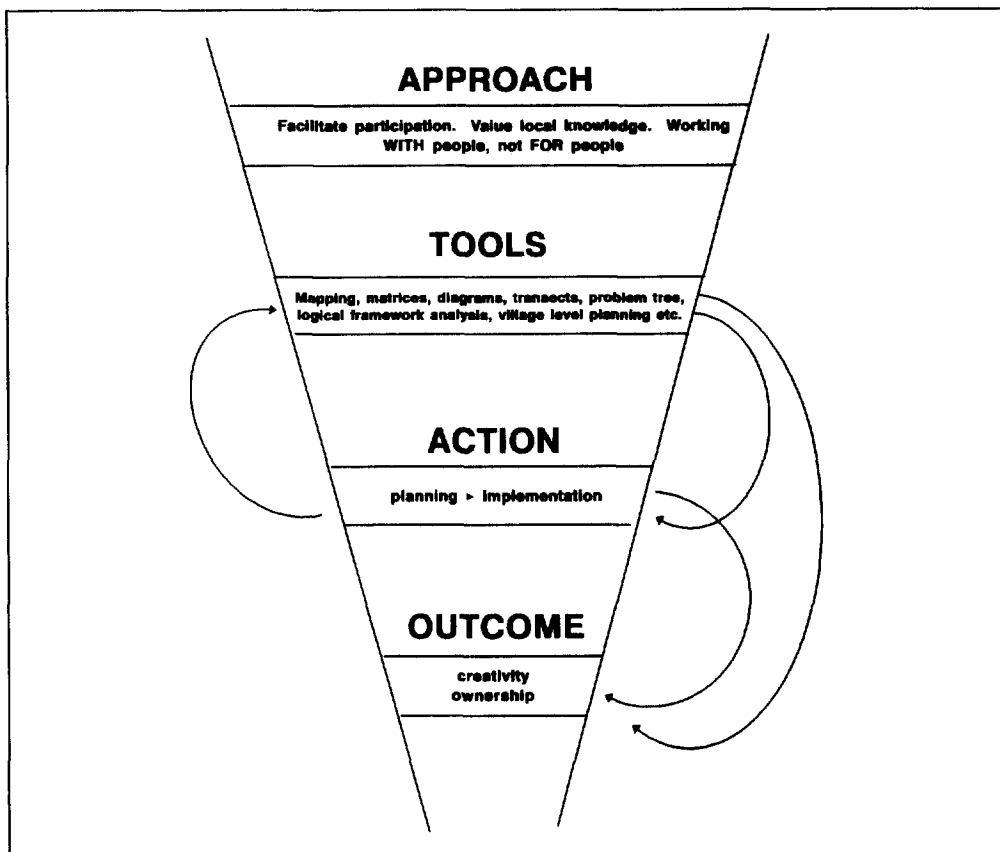


Figure 1. The participation process expressed as a design funnel.

As an approach, PRA recognizes the value of people and local knowledge ("indigenous technical knowledge"), is aimed at facilitating development rather than at introducing top-down token involvement, and emphasizes working with people rather than for people. The tools, such as mapping, diagrams and matrices, allow for the presentation of knowledge in a participatory fashion. Community members can then

analyze their own problems in a way that is easily understood. Results are immediate and action plans can be developed. This action would be one outcome of the approach; another is the unleashing of creativity (Srinivasan, 1992), and of knowledge, which also becomes community property. The practice of PRA is circumscribed by very strict guidelines, such as the importance of involving all community members and particularly ensuring the inclusion of women and the "poorest of the poor". These guidelines also serve to define the approach. Reference texts include those of Chambers (1983, 1992, 1993), Chambers *et al.* (1989), Mascarenhas (1993, 1994) and Lamb (1993).

Technology development has been described by Ison and Ampt (1992) as a lineal model with research conducted by specialist researchers, extended by specialist extension officers to users who may or may not adopt the technology. This is output rather than client driven, involves development of the product by scientists and "sale" by extension officers, rarely provides for feedback, is research station based, and is perpetuated by top-down education (from Chambers and Jiggins, 1987 in Ison and Ampt, 1992). This is a model that all have encountered. The extraction of needs information has in the past either been ignored or else achieved through formal survey methods.

Dissatisfaction with the output of formal surveys led to the process of Rapid Rural Appraisal (RRA) during the 1970s. RRA is a qualitative process of extracting knowledge, but this knowledge still belongs to the researchers. In RRA the "outsiders" remain the principal actors in gathering, processing and using the data. The knowledge of rural people counts, but only as a means to make analyses and provide solutions. PRA, which emerged during the late 1980s, has taken this process an important step further: outsiders are still involved but more as learners, catalysts and facilitators. The initiative has shifted from the outsiders to the community members.

It is only recently that we have begun to recognize that development is dependent on people and that people are a fund of knowledge, ideas and implementation capacity. Participation is now viewed as the key to success and is frequently demanded in project design. Yet we have barely been introduced to the concept of participation beyond its being a "project requirement". Researchers and managers are often daunted by the prospect of people involvement. But in practice the introduction of the local populace into the research and management process can be enormously empowering, both for "outsiders" and for local communities.

CASE STUDY: PARTICIPATORY PROCESS IN THE STOFFELTON WATERSHEDS

The Stoffelton catchments

Stoffelton comprises a freehold black community living in an area of 100 square kilometres in the Impendle district (near Bulwer), KwaZulu/Natal. Stoffelton is in the summer rainfall region (650–700 mm), experiences heavy winter frosts, and lies just within the zone of sweetveld grasses at an altitude of 1200–1400 m. There are 55 black freehold landowners, with farms averaging 200 ha. Some 13,000 people live in Stoffelton, most of whom found refuge there after being evicted from white-owned lands. The majority of these people live as tenants on the Stoffelton farms. The area was gradually deprived of all services by the previous government in an attempt to force incorporation into the homeland KwaZulu. Impoverishment and land degradation are the order of the day. Involvement has focused on two of Stoffelton's eight wards, known as Tsupaneng and Gade. Both comprise distinct catchment areas. The Tsupaneng catchment is approximately 900 ha in extent and comprises four subcatchments. Gade is smaller at 400 ha, comprising 3 subcatchments. These catchments drain into the Umkomaas River.

Initial PRA exercises

Participatory involvement has been through a number of phases. This commenced in April 1993 with a district level training exercise in the methodology (the first of its kind in South Africa). This exercise was aimed at developing skills in PRA within organizations from across the country, in addition to building

capacity within the Stoffelton community. From this week-long involvement with the Stoffelton community a number of issues were identified, among which water supply, soil erosion and catchment degradation were prominent (PRA Training Handbook, 1993). While water supply was a top-ranked need, other problems such as health, jobs and service provision may have rated higher than catchment degradation. This did not mean that all problems had to be dealt with in order of the prioritized ranking, and the Stoffelton community were quite willing to accept that, given the strengths and skills of outsiders, catchment rehabilitation should be explored further.

Arising from this exercise the communities of Tsupaneng and Gade both agreed to continue exploring the problems they were experiencing in the catchments, together with the team of "outsider" participants. This process was facilitated and supported by the Farmer Support Group of the University of Natal in Pietermaritzburg. The Farmer Support Group sought the involvement of Forestek CSIR, together with a number of NGOs, state and other organizations. The team therefore comprised an interdisciplinary blend of social and technical skills, which could be called upon where and when needed, to work alongside community members.

Using PRA Methods in Catchment Planning

Modelling catchments. In the first workshop directed at catchment rehabilitation, repeated in each of the two wards, residents constructed models of the catchments in which they lived. This was facilitated by the PRA team. The tools were simple – picks, shovels, string for fencing and coloured powders to mark roads, rivers and erosion scars. Convenient sites were fortunately available thanks to the recent ploughing of nearby fields. Involvement was intense, as participants built their environment around them. This broad, introductory method provided the foundation upon which further participatory exercises could be built.

Transect walks. Some members of the project team and community separated from this group and completed zigzag transect walks through the catchments. They discussed salient points and were always ready to listen and learn. From these walks it was learned that much of the eroded landscape had once been arable and planted to maize. Also, once-perennial streams now flowed only for a few days after heavy rain. Water within the catchments was no longer available to cattle in the dry season and a long trek to the Umkomaas River was required, further exacerbating erosion. It was clear from this exercise that the hydrological functioning of these catchments was seriously impaired. Loss of vegetation, compaction and erosion have reduced infiltration and available storage, resulting in ephemeral stream flow and soil drought.

Matrix analysis. Participatory engagement allows us to explore far more than the mechanics of soil erosion control and catchment rehabilitation. The process allows issues to be placed in a systemic context, as opposed to a focus on isolated interests. Grazing practices and stock numbers are an obvious issue both to outsiders and to the community, and this could now be raised in the context of land management. Through a "historical matrix analysis" of grazing conditions, the Tsupaneng community revealed that both available grazing and the numbers of cattle have reduced, at least in community perception, by a factor of ten since 1940.

Problem Tree. The matrix analysis was followed by the compilation of a "Problem Tree", followed by an "Objectives Tree", a process in which problems were first listed and then categorized into causes and effects (e.g. "overstocking" as a cause, and "too little grass" as an effect). Community members then took each problem and reconstructed the tree, with problems reversed to become objectives. In this way effects became ends and causes became means. So for example "overstocking", a cause, became "correct stocking", a means, giving rise to an end of "enough grass". Action plans are now being built on the results of this analysis.

Planning for Development

Using the model and transect information, the PRA team first discussed the principles of catchment hydrology – primarily in terms of floods, infiltration and soil drought – and then elicited suggested

interventions from the community (for example, planting of trees, construction of erosion control works, and stock control). Through the model it was clear to the communities that any physical conservation works should be aimed at cutting off problems at source, i.e. erosion control works must be constructed in upslope positions first. Further interventions such as the introduction of vetiver grass and alley cropping techniques were introduced by the team of outsiders, in recognition of the fact that isolated communities might be rich in "indigenous technical knowledge" but were also hungry for new advances in scientific knowledge.

The communities then revisited their models and planned future scenarios – actively planting lines of trees and vetiver grass, and building erosion control structures. Available materials such as branches, grasses and stones were used as representative objects. PRA was demanding of both the team and community participants and this process was unfortunately but necessarily hurried, which did not allow the group to explore local solutions to full potential. Nevertheless the process ensured that the community was not only enabled to recognize and present the problems it was experiencing, but could also take ownership of the solutions offered, making successful implementation far more probable. Local "ownership" is critical, as implementation inevitably places obligations on both individuals and the community.

Project Implementation

With an implementation plan in place both on the model and in the minds of the community, the Farmer Support Group successfully raised funding from the National Economic Forum for a labour-intensive, community-driven catchment rehabilitation programme. The driving objective behind this work was to maximize infiltration, minimize overland flow and encourage the hydrological recovery of the catchments. This programme commenced in mid-1994. Most of the effort in the first months of the programme was in the physical construction of soil erosion works, such as digging level contour bunds (swales), constructing micro-catchments, laying brushpacks, and building stonepacks. The invasive black wattle (*Acacia mearnsii*), seen to be harmful to the grass cover, was also removed by the community, despite its value for them as a fuelwood. The achievements of these physical interventions are very striking but it is also apparent that the area treated is really just a scratch on the surface of the problem. Of the 13 wards at Stoffelton only two have seen any attention, and of these only a small percentage of the land area has seen erosion repair work. It is clear that effort will also have to be directed at basic land management principles.

Other achievements which will have a wider influence have been the first introduction of a variety of multi-purpose trees and agroforestry species, and the introduction and first plantings of vetiver grass for bank stabilization. More important perhaps has been the training of fence makers and subsequent repair of old fences and the fencing off of new areas, together with the training of "community agricultural facilitators" who will play an important role in future extension work.

Despite the apparent success of the Stoffelton process not all has gone smoothly. Work teams have not been equally committed, and some landowners are clearly keen to maximize benefit from the programme without showing any willingness to make sacrifices for the benefit of the land. Residents of other wards have asked for an expansion of the programme but this is driven more by the desire for jobs than for catchment rehabilitation. This leads one to question the long-term sustainability of the programme, despite the understanding brought through participation.

LESSONS FROM THE PARTICIPATORY APPROACH

The PRA process creates opportunities to research intervention activity. In addition to action research opportunities – such as the effectiveness of different erosion works put in place, and the monitoring of recovery once areas have been fenced or brushpacks laid – formal opportunities are created for agroforestry trials, grass establishment and survival, hydrological monitoring, etc. A consequence of the legitimization process has been that research is an accepted activity.

Rural communities need to own the basic concepts of catchment hydrology and function – and there is a real challenge in how to make this knowledge common property. There are also apparent opportunities for the

introduction of standard agricultural tools to communities which have always been deprived of even the most basic of technologies. These include the introduction of raingauging, and community use of topocadastral maps for farm planning.

PRA is well developed as an information gathering and needs assessment methodology, and has proved most successful in bringing communities into the planning process. But once one is through this phase there would seem to be a risk that the "outsiders" and "experts" again slip into a top-down and prescriptive mode. Sometimes this may even be appropriate: as one Stoffelton resident put it "When one is sick one goes to the doctor..." and accepts the treatment! But we seem to be ill-equipped to understand the nature of the participatory process in the implementation phase and beyond. This may prove to be a critical problem if we are to continue successfully, not only with implementation but also in achieving long-term sustainable land management.

A number of questions can be posed at this time; the following are typical.

- To what extent does one need to be fully "participative" during the implementation phase?
- When does it become acceptable to "impose" knowledge and ideas?
- How does one share technical knowledge in a participatory way?
- How can one better capture local knowledge?
- How sustainable is the process which has been put in place? Or, at what point does it become self-sustaining?
- If success is achieved will this generate further success? Is there is prospect of catchment rehabilitation becoming a spontaneous process?

Within the current framework participative planning does not obviate the need for intervention with regard to the raising of finance and technical assistance in implementation. But the process makes obvious the potential for conservation involvement by communities in catchments over hundreds of thousands of hectares. The challenge is to develop the skills, methods and people necessary to deal with the vast areas in need of conservation and management inputs, without losing the participatory approach upon which this development must be based. The ideal that is striven for is the evolution of sustainable conservation management as a socially driven process.

CONCLUSIONS

The land management aspect of rural development is one of the most explosive sectors in South Africa today and, while outsiders are knowledgeable about the environment, this knowledge is firstly very one-sided, and secondly there is much that is not yet known about putting technology in place. Very little effort has gone into understanding, learning and applying local knowledge.

The use of participatory appraisal methodologies in heavily peopled South African watersheds carries with it many lessons. The most important of these is the realization that there is not only a need but also a real, people-based, demand for sound land management. This offers visionary scope to the potential scale for people-driven land rehabilitation. The successful hydrological recovery of watersheds in the western United States (Korte and Pearl, 1993) encourages the belief that the process of degradation can be reversed. Participatory methods are likely to be the only way of successfully matching needs with acceptable solutions. PRA has application wherever people are involved in, or affected by, decision making.

Participatory Rural Appraisal is itself now seen as an outmoded term, even though scarcely five years old. The process goes beyond "appraisal", and provides planning, implementation and evaluation tools. It is also not confined to rural situations. But while the boundaries of PRA are still being extended, the fundamental principles and approach remain. This approach needs to be known and understood and it is hoped that PRA will immediately be accorded widespread adoption within research and training curricula.

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