

Participatory Approach in Integrated Watershed Management

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Abstract

The western part of the District of Handeni, Tanzania, is situated in the semi-arid area, close to the Massai-Steppe. Water is a scarce resource and the limiting factor for agriculture and socio-economic development. The uneven distribution of rainfall in space and time with long dry periods as well as conflicts between semi-nomadic pastoralists and farming communities were reason enough for the District to initiate a sustainable Land Use Planning process on village level. The principles of Integrated Watershed Management (IWM) were the integral part of the Participatory Land Use Planning Process.

The Handeni Integrated Agroforestry Project is a collaboration of the District Council of Handeni and the GTZ and supported the process from 1992 to 2001. This documentation is a brief description of the project's philosophy and intention with special relevance to the participatory approach as an integral part of Water Resource Management.

The paper compiles principles and strategies of the project to illustrate the complexity of a holistic approach. Participatory Rural Appraisal is pointed out as a process of understanding people and their resource based living conditions from their point of view. Watershed Management is seen as a sustainable process of socio-economic development of communities. Results from Situation Analysis and Landuse Planning Process are used for further analysis and combined with modern tools like GIS and remote sensing.

Some Principles of Integrated Watershed Management

Watershed

The watershed of a particular point on a stream is an area which contributes water to that point in the stream. Watersheds are separated from each other by water divides.

Integrated Watershed Management (IWM)

IWM is a process of conservation, development and optimal utilisation of the available natural resources in a watershed on a sustained basis. It is a process with a multidisciplinary approach with people in the watershed as chief functionaries (decision makers and main actors) in the process.

Aims and Objectives of IWM

The aim of IWM is to achieve sustainable development of the communities living in the watershed on the basis of available natural resources in the watershed. Essentially, the aim of IWM is to improve productivity of available natural resources and the production capacity of the dependent population on a sustained basis.

Components of IWM

Components include the conservation, development and optimal utilisation of the natural resources within a watershed area.

This is achieved by addressing the following:

- soil and land management (Conservation, development and use);
- water management (Conservation, development and use);
- afforestation;
- pasture development;
- agricultural development;
- livestock management;
- rural energy management;
- to enable people to build institutions for the management of the watershed. Institutions with the mandate of decision making, knowledge sharing and executive powers to act according to the decisions made.

Some of the forms of institutions could include:

- study groups or groups of paraprofessionals for knowledge sharing;
- watershed associations or catchment user groups for decision making;

- and watershed committees for carrying out the work.

How can the aim of IWM be achieved?

The purpose of IWM can be achieved through the active involvement of people, the empowerment of people to take informed decisions and act accordingly and through ensuring people's ownership of the process by using local material and skills.

Some Principles of Participatory Rural Appraisal

Participatory Rural Appraisal (PRA) is a process of understanding people, their resources, their socio-economic conditions and a process of exploring their problems, their aspirations and potentials in partnership with people themselves. PRA is an integral component of watershed management.

Watershed management is not a project, but instead a sustainable process of socio-economic development of communities. If sustainable, it has to have a source of energy within itself. The most important element of this process is the people involved.

People's power is the most decisive power in the process. Also crucial is the information available to people and the ability of people to analyse this information and act accordingly. This ability should not be underestimated; after all they have survived for years. In simple words, often it is the case that a person has a talent he himself has not discovered yet. For example, a specific person is a fantastic artist, however, he himself does not know about it until someone else introduces him to the artist within.

Similarly, people do have an art of living in difficult circumstances. In PRA the role of an 'outsider' is to explore and understand this artist and support him to become the master of his talent. Internalising this approach and practising it on the field can definitely be enriching and fun.

Integrated Watershed Management within Handeni Integrated Agroforestry Project

The Handeni Integrated Agroforestry Project (HIAP) was initiated by the Regional Authorities in Tanga and the District Council Handeni

and supported by the German Government through the GTZ. It started its activities in 1992 and continued until the end of 2000.

The project area was located in the south-west of the Handeni District, Tanga Region in the North-East of Tanzania. and covers an area of approx. 5.800 km².

Living conditions of the population are based on small scale farming activities on subsistence level, with a strongly developed pastoral component in the semi-arid northern part of the project area. The area was characterised by low agricultural productivity along with periodic occurrence of famine. Soil erosion along with deforestation have rapidly increased. Additionally, the availability of water has decreased tremendously. The access to water points was a matter of conflict, because water points were usually located within the fertile valley bottoms, which were under agricultural use. Unclear boundaries between pasture and farming land and between villages or even districts are typical for the region.

The overall objective of HIAP is to reduce the degradation of natural resources and to improve living conditions of the rural population through the sustainable increase of agricultural productivity.

The project focuses on the empowerment of the people in the participatory planning and management of their natural resources. The principles of IWM are an integral part of the participatory Land Use Planning process. The existing situation and opportunities for development in the villages was analysed in a participatory manner with special reference to Natural Resources Management. The concept of participatory land-use planning at village level was the main tool to address land-use conflicts and to plan the sustainable use of the available resources. Therefore, villagers were supported in the implementation of selected technical solutions with reference to their Land Use Plan. Different governmental departments, NGOs and CBOs operating complementary to HIAP in the Natural Resources Management sector were strengthened and supported.

Facts and Frame Conditions within the Area

Environmental Conditions

The project area covered 5800 km² with 52 villages. The area can be sub-divided into three agro-ecological zones (AEZ) as follows:

AEZ 1: Semi-arid zones north and west of the Nguu Mountains bordering Massai land.

Rainfall: below 600 mm/a

Altitude: 600 – 1200 m

Soils: mainly deep to shallow mixtures of yellowish red sand, red sandy loam to clay and scattered area with white sand to clay and scattered areas with white sand.

Mean monthly evapotranspiration exceeds mean monthly rainfall.

Land use recommended for the zone: livestock keeping, ranching and millet cultivation.

AEZ 2: Slopes of the Nguu Mountains

Rainfall: 800 – 1000 mm/a

Altitude: up to 1400 m

Soils: well to excessive drained shallow and moderately deep red gravely clay loam and clays. The zone has scattered areas of yellowish red sand, red sandy loam to clay and white sand.

Mean monthly evapotranspiration exceeds rainfall with the exception of one month of April.

Recommended land use: cultivation of maize production of fruits, cotton and groundnuts.

AEZ 3: Hilly plateau in the east of the project area

Rainfall: 600 – 800 mm/a

Altitude: 600 – 800 m

Soils: well drained very deep to deep red and yellowish red sandy loam to clay with moderate organic matter content in top soil and well drained light coloured sand with inclusions of dark sandy loam.

Mean monthly evapotranspiration exceeds rainfall with the exception of one month of April.

Recommended land use: livestock keeping and millet farming.

Land Use and Border Conflicts

Land tenure is mainly comprised of individual holdings and land is inherited while preference is given to the male off-springs. Consequently, conflicts mainly arise between crop farmers and livestock keepers.

Farmers occupy areas traditionally used for grazing in search of fertile land. These lands are very often not suitable for crop farming. Consequently the land will be left abandoned after a very short time causing a lot of destruction. During the time of cultivation there is a constant conflict between the livestock owner and farmers as the livestock enter the farm and destroy the crops. Moreover there is competition over water resources, especially drinking water - hence there is a high conflict potential.

Additionally, boundary conflicts between villages are equally

The mobile land use (pastoralism) does not recognise village boundaries. Administrative boundaries of the villagers were fixed without consultation of the villagers.

The project concept was formulated to intervene and assist in finding local appropriate solutions to these problems making use of available opportunities for development.

Socio-Economic Parameters

Table 1: Demographic and Socio-economic conditions include:

Total population:	180'000 (projected 1997 census)
Sex ratio:	1:0.964 (Male/ Female)
Annual population growth:	3.1% for the district (1988 census).
Average household size:	6 people.
Population distribution:	90% in rural area, 10% in urban area.

Ethnic groups include the Wazigua, Wanguu, Wamaasai and others from other parts of Tanzania.

The main sectors within the economic structure include agriculture and livestock production. The main sources of income include crop and livestock sales; small scale business and small scale mining.

Table 2: Employment per economic sector

Agriculture, Horticulture, Livestock and Forestry	90%
Services	10%

Development Goal and Mandate of the Project

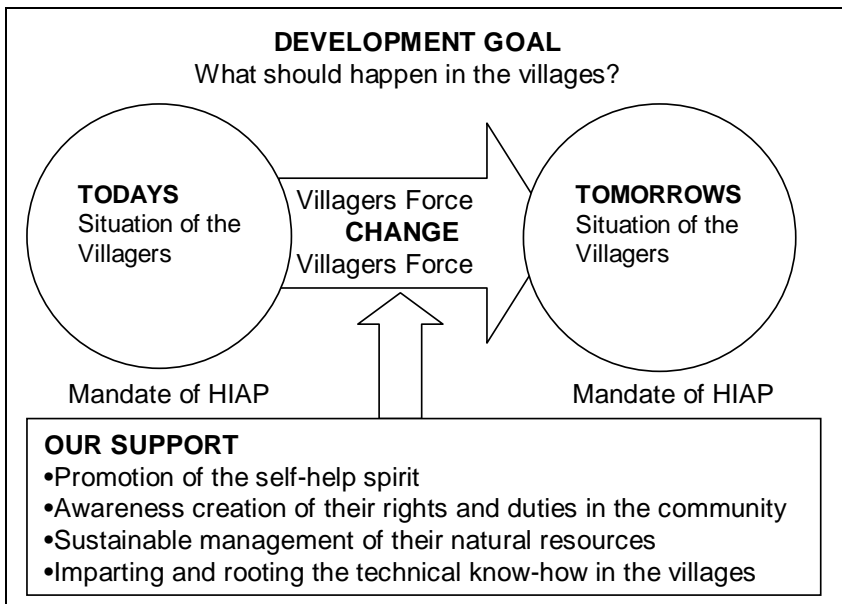


Figure 1: Development Goal of the project (HIAP, 1998)

Mandate of the Project

The mandate of the project is natural resource development via self-help promotion. The approaches developed to address the problems within the mandate of the project are also useful to address all other problems.

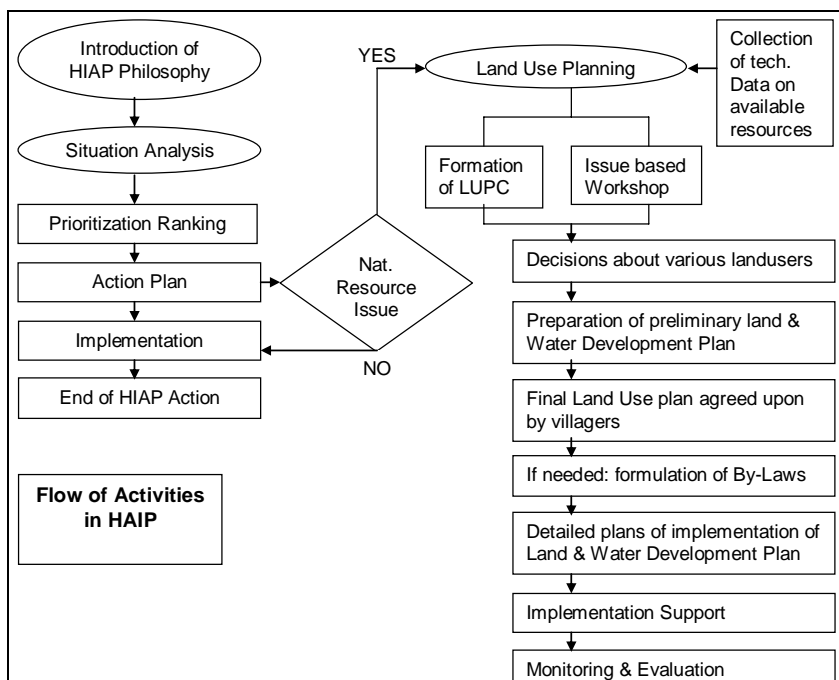


Figure 2: Fields of activities and their flow (HIAP; 1998)

Approaches Applied in HIAP

Situation Analysis

Participatory situation analysis includes the active involvement of villagers (men and women of all ages and social classes) in assessing their resources with regard to their availability utilisation as well as problems and opportunities for development. The project staff mainly fulfil the role of facilitation during this process.

Why Situation Analysis?

Situation analysis is used to generate consciousness for development amongst the participating villagers. In order to achieve this aim facilitators have to take charge of the following:

- elaborate the objective of the exercise with the villagers;
- introduce the contents of every session;

- use visual aids to motivate the participants;
- give equal opportunity to each participant to voice their views;
- guide the participants with relevant questions in order to analyse the situation thoroughly;
- ensure the participation of all groups (men and women) in the process;
- create awareness on the importance of natural resource conservation and Land Use Planning as a tool for sustainable natural resource management;
- promote self-help spirit as a means to development;
- empower the villagers to address their problems and to find their own solutions;
- involve the majority of villagers in decision making process;
- and generate information to be used for decision making and preparation of action plans.

It is important that the generated information should be documented in a way that is accessible to the villagers to make sure that they are the owners of the process.

Problems Outside the Mandate of HIAP

Experience has shown that villagers face so many problems that are outside the mandate of HIAP. Some of these problems rank quite high. The role of HIAP is to support villagers in finding appropriate solutions that are within their reach and realistic. In cases where additional help is needed, HIAP will link the villagers to the relevant government organisation, NGO etc. Since these agencies are few and not well qualified the project is also involved in capacity building and strengthening of co-operation.

Village Level Land Use Planning

The approach is an implementation-oriented process of technical and political dimensions for decision making on sustainable land uses that are ecologically sound, socially acceptable, gender sensitive, technically appropriate, economically feasible and locally manageable. The process is based on a dialogue amongst all land users

and ultimately reaches agreements on sustainable land uses in the village. The approach is used as:

- a planning and implementation tool for the sustainable management of the natural resources in/ around the village by the villagers themselves;
- and a tool for solving land use conflicts.

The approach is facilitated mainly through capacity building, empowerment and enabling the villagers to analyse and identify their problems and to be better equipped to solve them by themselves.

The Contents of the Village Land Use Plan

The Village Land Use Plan includes agreements on boundaries of the various land uses; the land and water development plan; village by-laws; the design of technically appropriate interventions; and a work-plan for implementation.

The Procedure

In order to initiate the Land Use Planning process in the village, the project assists the villagers first with a Situation Analysis to analyse their existing situation (problems and opportunities for development) and in the preparation of an action plan. The Land Use Planning process can only start, if natural resource issues are mentioned in the action plan. The collection of technical data on the available resources is a pre-condition for the Land Use Planning process. A village Land Use Planning committee has to be formed and installed within the village structure.

The feasibility studies of the various sectors have to be discussed and merged into a common scenario. The outcome of these discussions include technical proposals/inputs towards the Land Use Planning.

Rules, regulations and by-laws are formulated if needed in order to enforce or safeguard the agreements. The by-laws have to be endorsed by the village general assembly.

Finally, the agreements are documented in village maps and in the minutes of the village meetings.

The Actors

The villagers form the village Land Use Planning committee that facilitates and maintains the Land Use Planning process in the village.

The sectoral extension officers, these are sectoral staff who are working within the project. They prepare a technical data base by field assessment and evaluation of existing data sources. This will become the foundation/input in the Land Use Planning.

The authorities, formal and informal leaders from the village to the national levels are involved. They support the formulation and enforcement of by-laws, laws, land policies and boundary issues.

The para-professionals, these are villagers (male and female) who are capacitated in technical know-how during their participation and involvement in project activities. They then steer up the process and deliver technical messages on Land Use Planning.

Monitoring and Evaluation

A continuous monitoring and periodic evaluation of the implementation of the agreements on land uses in the village was necessary to assess whether the agreements meet the intended goal/objective. Any adjustment to be made has been discussed, agreed and endorsed by the village general assembly before they were implemented.

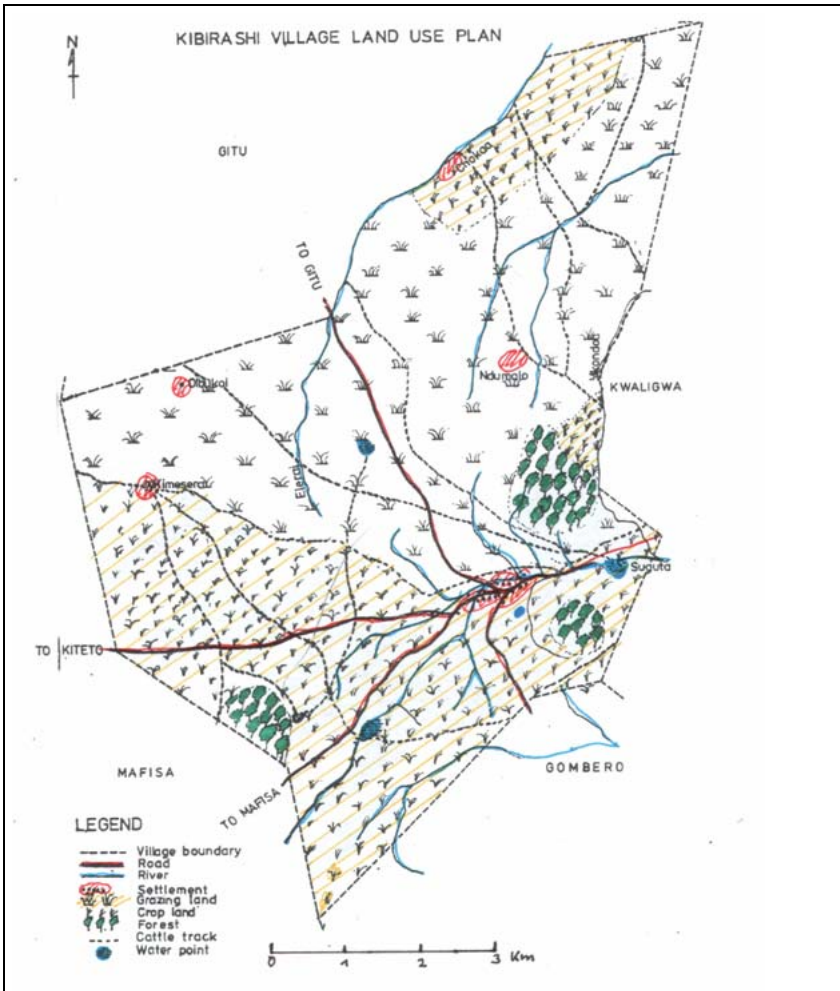


Figure 3: The Kiberashi Land Use Plan is mainly demarcating the different land uses which have been agreed upon by the villagers. (HIAP, 1998)

Implementation Support

Land Management

The land management referred to here basically includes the soil and water conservation and agroforestry practices carried out on the farms to conserve them and increase their productivity such as excavation of *cut-off* and *fanja juu* trenches; planting of grass strips and Vetiver hedgerows; agroforestry tree planting in farms (nitrogen fixing and fruit trees); tree planting in homesteads and home gardens; as well as the establishment of fodder lots.

To implement land management practices, groups of 15-40 villagers unified by common interests of either crop farming or livestock keeping are addressed instead of individuals, with the aim to economise scarce project resources of man power and transport facilities. These groups are referred to as Catchment User Groups (CUGs). The CUGs are expected to spread the technologies given to wider geographical areas in order to achieve a greater impact on conservation. Each CUG has to select their committee and three para-professionals.

Range Management

The major constraint, which is water scarcity within this area, has forced the livestock keepers (mainly the Parakuyu – Massai) to develop a pattern of seasonal movement for their cattle herds. This includes almost the whole project area. This **mobile land use** has increased the competition between the two major land uses e.g. cultivation (crop farming) and grazing (livestock keeping).

Considering these patterns of mobile land uses that vary between rainy and dry season and cut across village boundaries – even district boundaries – it was recognised that the Land Use Planning must relate not only to individual villages. With proper range management practices the area is large enough to sustain the animals projected for. A Range Management Strategy has been developed to safeguard the interests of the village communities and the existing system of seasonal movements of the cattle owned by the pastoralists.

Water Development and Integrated Watershed Management

According to the definition of Integrated Watershed Management, activities concentrated on the development and introduction of measures to keep the water within the catchment. Small earthen dams were built to store water and to enrich the subsurface groundwater flow. Under the embankment a trench was cut and filled with impermeable soil to store the water in the sandy ground. Subsurface dams were also constructed without any visible structure on ground. The dam building activities were accompanied by various measures such as brushwood dams and gully plugging.

All activities are a good example for the flow process of water in the catchment. Seeing and using the structure increased the understanding of the people on the principles of Integrated Watershed Management. The Village Land Use Plan has been used as a basis and a link to activities in soil and land management (e.g. afforestation, pasture development, agricultural development, and livestock management). A Geographic Information System has been used to integrate, visualise and manage the data.

Institutional Building

According to the project set-up, the grass root institutions were Community Based Organisations (CUGs), Village Land Use Plan Committees (VLUPC), Village Water Committee (VWC), only to mention a few. The project empowered these institutions by rooting technical and managerial know-how with them through village para-professionals.

At District level the project collaborated with several actors. These included Non-Governmental Organisations (NGO's), the District Natural Resources Management Committee (NRMC), Religious Organisations (churches, mosques), and District Departments related to natural resource management and other projects. Special collaboration is established with private companies (promotion of alternative cash crops) and research institutions.

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