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DAAD Alumni Summer School 2005
Topics of Integrated Watershed Management
- Proceedings -

Editors

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Responsible

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Participants of the Summer School



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Preface

Integrated Watershed Management (IWM) – management of natural resources in catchment areas – has gained significance internationally over the past 10 years. Particularly development cooperation has increasingly focused on the issue with the aim to protect and sustain resources of a region, at the same time make these resources utilizable for the population and in the long run decrease worldwide poverty. Hence, the concept is a consequence of central international conferences on issues such as *Environment and Development* that determine the actions of many governments in industrial- as well as developing countries. IWM contributes to the internationally recognized *Millennium Development Goals* that aim at halving the worldwide level of poverty by 2015. Special emphasis is given to the water sector, seeing as the ever-growing world population has developed a growing demand for drinking water and water for food production, while the availability and accessibility of resources has remained the same and their quality has drastically declined.

Resource management cannot solitary focus on water, but should rather include resources such as soil and biomass that are interdependent in their availability. Continuous deforestation for the expansion of agricultural areas and the production of firewood leads, especially in tropical countries, to an escalation of soil erosion and decreased plant growth, which in turn reduces the infiltration rate of rainwater and hence the renewability of ground water. Consequently, the number of dry-weather-flows of many rivers declined while simultaneously during the rainy season intensive precipitation leads to an intensification of soil erosion, flooding and thus to the damage of agricultural surfaces.

These ‘homemade’ problems that find their origin in inadequate resource utilisation and often archaic agricultural tilling methods are further intensified by the consequences of climate change. The frequency of extreme events – catastrophic precipitation as well as droughts – apparently increases. This could be observed in the East African Region, the origin of the majority of the participants of the Summer School.

The simultaneous management of three resources – water, soil and biomass – requires a complex approach that is neither taught by

typical formal education of the partner countries nor is typical for the traditional sectoral focused disciplines. Water Resources Management is based on the resource water as well as the optimal availability of water for private and public use; the agricultural sector aims at developing the optimal utilization of the resources soil and biomass for food production; the energy sector is only interested in the energy-potential of a resource and its utilization for e.g. electricity supply. These partially conflicting demands have to be balanced in the interest of a sustainable utilisation and development. This holistic approach has already been included in the water laws of many of the countries that are represented in the summer school. However, the implementation of this complex approach is very problematic and was therefore discussed within the framework of the summer school.

Within the EU *Water Framework Directive* the concept of integrated management of water catchment areas has been made a standard obligation. The aim is to raise the water quality of all EU member states to an equally high standard until the year 2015. Implemented measures that focus on reaching this aim were discussed in the summer school. The Sieg River was taken as an example for the implementation of the EU *Water Framework Directive*; the establishment of *Guidelines* for assessing the ecological quality of surface and ground water resources was introduced; the implementation process for this ambitious process was highlighted by the contributions of the environmental authority in Siegen.

As conceived by many experts, the German Water Management Sector can be seen as exemplary. More than 5000 public and private companies sell drinking water cost-effectively and of first class quality with a near to 100% certainty for supply: the demand for a decentralized, self-reliable/ sustainable water supply system – as currently discussed in many developing countries – has long been a reality in Germany. The communal forest users associations in the Siegen-Wittgenstein district served as an example.

The simultaneous utilisation and management of different resources in river basins and catchment areas, the collaboration with consumers within the decision-making process of the suppliers (Water Users Associations and Co-operatives), as well as the resource management itself has long been daily routine of the numerous water, waste water,

soil, drainage and dam associations. Hence, associations and representatives of the Sieg-neighbouring associations have been integrated into or visited by the summer school (e.g. *Ruhr-Verband*).

Programme

The programme was divided into the following main subject areas:

- Resource Management
- IWM Tools
- Monitoring and Evaluation
- Governance
- Conclusions and Workshop Evaluation

Each subject area was introduced through a presentation by an expert. Working groups thoroughly worked on presented examples and issues. Parallel, each example was compared to the current status of the Sieg catchment area based on given documents and verified through excursions. The EU *Water-Framework-Directive* and the Sieg catchment area formed the basis of the summer school. Discussion groups on different topics took place in the evenings including external experts and students of the University.

Target Group

The target group included experts from Ethiopia, Kenya, Tanzania and Uganda who already collaborate through the network of the *Integrated Watershed Management Eastern Africa* programme. The programme is mainly targeted at persons working in ministries (water, energy and agriculture), specialised authorities (River Basin Administration) and companies (water supply companies, Water User Associations). The academic participants were planned to be in the minority. Not only DAAD alumni, but also those that have been supported by Germany during their education (e.g. through InWent, DED, GTZ und KfW) or have self-sufficiently studied in Germany.

Learning Targets

- To get to know IWM concepts in Germany including the organisational structures of water associations
- Registration of the differences between the German and African concepts, projects and politics e.g. for the utilisation of/ management of resources, in order to record weaknesses and potential solutions
- Exchange of experiences made during the implementation of complex concepts.

Major Topics

Resource Management (RM)

IWM is presented as a holistic concept (Förch); further concepts of integrated resource management are presented; especially renewable energies (Jensen) are emphasised. Traditional resource management knowledge (Schütt) is presented through comparing examples from Europe and Africa and is discussed for future implementations (Förch) Participatory approaches taken from development cooperation are also presented (Winnegge).

Integrated Watershed Management (IWM) Tools

Several instruments are relevant for the registration, presentation and evaluation of natural processes influenced by human intervention in catchment areas. This includes geomorphological field assessments (Thiemann), data collection and data management, particularly networks and data bases (Bekele), the use of data derived from the remote sensing such as satellite images and aerial photographs, presentation of results through GIS (Thiemann, Winnegge), and centrally the scenario modelling (Moges). Water quality (STUA Siegen), status quo assessment of rivers (Glagau) etc. underline the status of the implementation of the EU Water Framework Directive (Winnegge).

Monitoring & Evaluation (M&E)

Without the regular measurement/ evaluation of environmental parameters (Förch); the collection of information needed for the unitisation of resources (Shisanya); the evaluation of data and information (Thiemann); the documentation and availability of data

and results; and the evaluation of circumstances and changes (Moges) the important exercises of monitoring and evaluation become impossible. How are these exercises implemented in today's sciences (Garbe)?

Governance

Modern laws on the utilisation and management of resources exist in many countries. Yet, procedures and concepts for their implementation are unknown. Hence, the implementation of necessary procedures for the sustainable utilisation of resources as part of day to day actions of government/ state institutions as well as public and private users remains a severe problem. The practical implementation of modern concepts therefore was a central point of discussion. Examples were given from technical cooperation (Huppert, Wolf) as well as case studies from developing countries (Döring, Obando). Concepts such as *Demand Management* (Förch), *Water Dialogue* (Petermann), *Water Tariffs* (Shisanya) etc. were discussed and compared to the current circumstances given in the Sieg catchment area (Winnegge). Organisations such as the local water user associations were given special emphasise.

Workshop Results and Evaluation

The results of the summer school, particularly the results of working groups and excursions were summarized in a common document that was discussed in the University Forum in Munich (26.4.). The visit of IFAT (27.4. plus following PPP Workshop) was organised and the Summer School itself evaluated.