



Interlink

International Cooperation in Environment

ASSESS-HKH - Development of an Assessment System to Evaluate the Ecological Status of Rivers in the Hindu Kush-Himalayan Region

Geographic area: The Hindu Kush-Himalayan region is the home of a series of the highest mountains on earth, including the world's highest and prominent peaks, Mt. Everest (8,850 m, Nepal) and K2 (8,611 m, Pakistan). From the Pamir Mountains plateau at the border of Afghanistan and the North-West Frontier Province of Pakistan, the Hindu Kush-Himalayan region extends over some 3,500 km to its south eastern borderline in Bangladesh, Bhutan, and Myanmar.

Period: 04/2005 - 04/ 2008

Environmental issues addressed: Rivers in the Hindu Kush-Himalayan region are subject to manifold pressures (e.g. organic pollution, waste dumping, river damming). Pollution significantly reduces the biodiversity in rivers. The water quality deteriorates and the self purification capacity diminishes, which finally compromises its usage for drinking water supply.

To guarantee a sustainable water management new, integrative tools are needed to detect and measure the degree of the various sources of pollution. Due to the lack of bio-assessment in Asia the ASSESS-HKH project can be regarded as a pilot study for the HKH region in the field of biological river quality monitoring.

FP7 R&D Axis: Earth Observation and Assessment Tools (activity 6.4.) - Forecasting methods and assessment tools for sustainable development taking into account differing scales of observation (sub-activity 6.4.2.)

Website: <http://www.assess-hkh.at/>: <http://www.assess-hkh.at/>

Cooperating countries: Austria, Bangladesh, Bhutan, Czech Republic, Germany, India, Nepal, Pakistan

Partners:

University of Natural Resources and Applied Life Sciences, Department Water-Atmosphere-Environment, Vienna (Coordinator)	Research organization	Austria
University of Duisburg-Essen Centre for Microscale Ecosystems	Research organization	Germany
Massaryk University, Faculty of Science, Brno	Research organization	Czech Republic



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Kathmandu University, Dhulikel	Research organization	Nepal
International Centre for Integrated Mountain Development, Kathmandu	NGO	Nepal
Pakistan Council of Research in Water Resources, Islamabad	Institution	Pakistan
Alternate Hydro Energy Centre Indian Institute of Technology, Roorkee	Institution	India
Bangladesh University of Engineering & Technology, Dhaka	Research organization	Bangladesh
National Environment Commission Sekretariat, Thimphu	Institution	Bhutan
Otto von Guericke University Magdeburg	Research organization	Germany

Abstract

ASSESS-HKH is a research project with European and Asian partners mainly aiming at the development of tools for river quality assessment and river basin management for the HKH region.

Context and objectives

The primary aim of ASSESS-HKH was to develop a simple and standardised methodology for using benthic macroinvertebrates as bio-indicators to evaluate the quality of water in the rivers of the greater Himalayan region. Its design is based on the currently employed methodology developed for European rivers. The technique enables large-scale mapping of river quality, support intervention planning, and aid the development of concepts for sustainable use of rivers and their water.

The project ran from April 2005 to April 2008. Both river quality assessment and management tools were developed under the project. The main outcome is an HKH Eco-data Management Tool (ECODAT) that assists scientists to evaluate the ecological status of rivers. It consists of a catalogue of taxa of macroinvertebrates and corresponding ecological information, together with a programme for assessing ecological status by entering information on macroinvertebrate taxa present at a sampling site.

Three different levels of precisions were planned from the beginning: a rapid field bio-assessment, a biotic score, and a multimetric index. The tool was developed and tested in partnership among scientists and water quality managers from Europe and Asia. After the investigation of pressures and impacts, water quality maps for five selected areas were produced using the ASSESS HKH methodology. Based on the outcome of these maps, mitigation measures were elaborated.

Sound scientific results need to be based on sound project management

The project did not encounter major problems as risk management was done before these could arise. The thoroughly planned kick-off meeting was a major step for the success of the project. European resource



persons were sent to Asian partner countries for capacity building and harmonisation of laboratory work and for assistance during the field work. Two capacity building workshops – one on taxonomic determination of benthic invertebrates and one on application of the rapid field bio-assessment (screening) – were held to ensure harmonised and sound effort.

From the administrative point of view it was a bit less easy, as the Asian partners did not have any experience with EU-funded projects and EU administration. In order to counteract these difficulties, an internal quarterly reporting system was established to ensure the detection of problems at the earliest stage possible. At each project meeting, a specific session was dedicated to financial questions and financial reporting. In spite of thorough communication through several thousand skype and telephone calls and emails between partners and the co-ordinating institution, it became quickly clear that personal visits are the most effective way to solve problems.

8097 species help to keep their rivers clean

As main scientific achievements, three methods for monitoring the ecological status of rivers with different levels of precision were developed: a rapid field bio-assessment, the HKHscreening; a region specific biotic score, the HKHbios and the multimetric based HKHindex method, which represents the highest level of precision.

A software for data input and calculation of results (ECODAT) was computed. The “scientific heart” of the software is the HKH taxa catalogue which is the first activity to collect a zoological species inventory of the rivers and streams in the HKH region. Besides its contribution to the knowledge on biodiversity and zoogeography, this taxa list provides the state of the art of taxonomic information in the background of the software.

The taxa catalogue currently comprises 8097 taxa (about 5400 species or working names, for those species which are not described up to now). In the field of implementing the project results, several activities beyond the project have already been undertaken or are in progress (e.g. Pakistan and Bhutan explore the possibilities to establish regular water quality monitoring, a “Benthological Society of the Hind Kush-Himalayan Region” has been established which promotes research in aquatic ecology).

All products of ASSESS-HKH are freely available for the public via the ASSESS-HKH web page (www.assess-hkh.at).