



Two continents, eight countries, ten institutions, dozens of scientists-one goal

Development of an ASSESSment system to evaluate the ecological status of rivers in the Hindu Kush-Himalayan region



Rising river pollution is expected for the Hindu Kush-Himalayan region.



Scientist looking for benthic invertebrates on the stream bottom.

A step forward to river quality assessment

The Hindu Kush-Himalayan region is one of the largest storehouses of fresh water in the world. Its mountains feed the major river systems and provide water for some 500 million people in South Asia. However, even if the theoretical availability of freshwater is high, it remains a finite and vulnerable resource and is subject to several sources of deterioration today. Domestic water supply, hydropower, industrial production, irrigation, and navigation represent only part of the multiple pressures threatening a sufficient water quality and quantity. Facing an increasing consumption of water as a consequence of population growth, urbanisation, intensive agriculture, and waste disposal, the maintenance of sufficient clean water becomes a major challenge of future water policy.

ASSESS-HKH represents one of the first research activities in the Hindu Kush-Himalayan region that aims river for quality assessment using aquatic bio-indicator organisms, i. e. benthic macroinvertebrates. Bio-indicators are capable of accounting for impacts of multiple deteriorations over space and time. Therefore, bio-indication plays a central role in present river quality assessment, e. g., in the USA, Europe, and Australia. By transferring bio-indication to the Hindu Kush-Himalayan region, a fundamental step towards a better understanding of freshwater ecosystems is undertaken.

The objectives of ASSESS-HKH are:

- establishing scientific partnerships between Europe and Asia to contribute to international sustainable development;
- achieving a better understanding of ecosystem dynamics in the rivers and streams of the Hindu Kush-Himalayan region;
- developing and applying an ecological assessment system with benthic invertebrates;
- developing tools for ecological water management and river basin planning.



Ten partners, eight countries:

University of Natural Resources and Applied Life Sciences, Vienna (BOKU), Austria (co-ordinator)

Kathmandu University (KU), Dhulikhel, Nepal

International Centre for Integrated Mountain Development (ICIMOD), Kathmandu

Pakistan Council of Research in Water Resources (PCRWR), Islamabad, Pakistan

Alternate Hydro Energy Centre (AHEC), Roorkee, India

Bangladesh University of Engineering & Technology (BUET), Dhaka, Bangladesh

National Environment Commission Secretariat (NECS), Thimphu, Bhutan

University of Duisburg-Essen (UDE), Germany

Otto-von-Guericke University Magdeburg, Germany (UMag)

Masaryk University Brno (MasUniv), Czech Republic

ASSESS-HKH is funded under the 6th Framework Programme by the European Commission (INCO-CT-2005-003659).

How can you benefit from ASSESS-HKH?

ASSESS-HKH will facilitate and establish the understanding of the rivers, their functions, and their invertebrate fauna in the region. Thus, ASSESS-HKH aids the maintenance and protection of river quality as an essential resource of life for future generations.

Which impacts does ASSESS-HKH focus on?

Pollution is supposed to predominantly affect the river quality in the Hindu Kush-Himalayan region. Pollution significantly reduces the biodiversity in both rivers and floodplains. The water quality deteriorates, which compromises its usage for drinking water supply.



Extensive foam formation often indicates pollution by waste water.



Unregulated waste disposal causes severe river pollution.

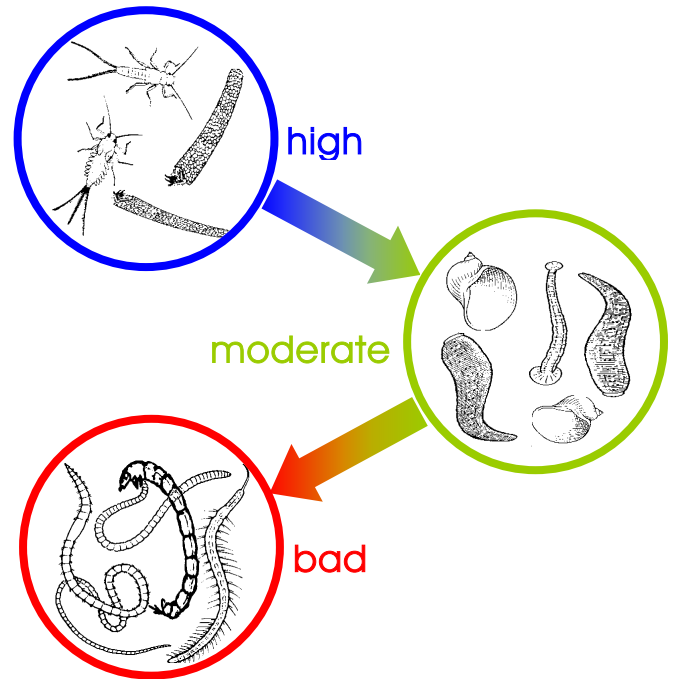
New tools are needed to detect and measure the degree of pollution. Within ASSESS-HKH those river quality assessment and management tools are going to be developed. Moreover, the tools will aid the definition of concepts in association with sustainable usage of rivers and their water.

The main innovation of ASSESS-HKH is its application of aquatic bio-indication.

Keep in touch at: www.assess-hkh.at

What is bio-indication?

Bio-indication means the usage of organisms (plants, animals) to detect and measure the impact of environmental stress. ASSESS-HKH focuses on benthic macroinvertebrates, i. e. animals without a backbone (worms, snails, mussels, crayfish, insects, and others) that live on the river bottom.



Typical benthic macroinvertebrates capable of indicating the impact of pollution: Several mayflies, stoneflies, and caddisflies indicate high river quality, whereas the abundant presence of snails and leeches is linked to moderate degradation. Bad conditions are likely, where worms and the larvae of non-biting midges dominate the community.

Benthic macroinvertebrates are widespread and common in streams and rivers worldwide and, thus, are broadly used for bio-indication. They are easily caught and can be seen with the naked eye.

Try it yourself! Search after benthic macroinvertebrates in shallow areas of your local river. Turn round a stone and watch the animals attached underneath. They tell you about the river quality. Be careful with the fragile organisms! And don't forget to take care of yourself and mind deep water!

For further information visit our website or contact:

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