



Project no. **INCO-CT-2005-003659**

Project acronym: **ASSESS-HKH**

Project title: **Development of an Assessment System to Evaluate the Ecological Status of Rivers in the Hindu Kush-Himalayan Region**

Instrument: **Specific targeted research or innovation project**

Thematic Priority: **Specific measures in support of international co-operation;  
A.2.1 Managing humid and semi-humid ecosystems**

**Deliverable No. 18 – Volume II  
Documentation about the information events at the local level  
carried out from April 2005 to September 2006**

Due date of deliverable: **Month 19**

Actual submission date: **Month 18**

Start date of project: **April 15<sup>th</sup> 2005**

Duration: **36 months**

Organisation name of lead contractor for this deliverable:  
**Universität Duisburg-Essen, Essen, Germany**

Revision [Final]

<b>Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)</b>		
<b>Dissemination Level</b>		
<b>PU</b>	Public	✓
<b>PP</b>	Restricted to other programme participants (including the Commission Services)	
<b>RE</b>	Restricted to a group specified by the consortium (including the Commission Services)	
<b>CO</b>	Confidential, only for members of the consortium (including the Commission Services)	

Authors:

**International Centre for Integrated Mountain Development (ICIMOD)**

Contact for correspondence: Mandira Shrestha, ICIMOD, Khumaltar, Lalitpur, P.O. Box 3226, Kathmandu, Nepal, e-mail: mshrestha@icimod.org

**University Duisburg-Essen (UDE)**

Contact for correspondence: Thomas Korte, University Duisburg-Essen, Faculty Biology and Geography, Dep. Applied Zoology/Hydrobiology, 45117 Essen, Germany, e-mail: thomas.korte@uni-due.de

**National Environment Commission Secretariat (NECS), Bhutan**

**Bangladesh University of Engineering and Technology (BUET), Bangladesh**

**Alternate Hydro Energy Centre (AHEC), India**

**Kathmandu University (KU), Nepal**

**Pakistan Council of research in Water Resources (PCRWR), Pakistan**

*This research work is funded by the European Commission under the 6<sup>th</sup> Framework Programme contributing to priority "Specific measures in support of international co-operation (INCO); A.2.1. Managing humid and semi-humid ecosystems".*

*Contract number: INCO-CT-2005-003659*

*Co-ordinator: Prof. Dr. Otto Moog, BOKU – University of Natural Resources and Applied Life Sciences, Vienna, Austria; E-mail: otto.moog@boku.ac.at.*

## Abbreviations and Acronyms

AHEC	Alternate Hydro Energy Centre
ASSESS-HKH	Assessment System to Evaluate the Ecological Status of Rivers in the Hindu Kush-Himalayan Region
BOKU	University of Natural Resources and Applied Life Sciences
BUET	Bangladesh University of Engineering and Technology
ICIMOD	International Centre for Integrated Mountain Development
ITN	International Training Network
IIT	Indian Institute of Technology
INGO	International Non-Governmental Organization
KU	Kathmandu University
NECS	National Environment Commission Secretariat
NGO	Non-Governmental Organization
PCRWR	Pakistan Council of Research in Water Resources
RSPN	Royal Society for Protection of Nature

## Contents

1	INTRODUCTION .....	1
2	DOCUMENTATION ON INFORMATION EVENTS .....	2
2.1	Local level information events .....	4
2.2	University level information events .....	6
2.3	Central information events.....	7
2.4	Other dissemination events .....	7
2.5	Evaluation and outcome of information events.....	8
3	CONCLUSION AND RECOMMENDATIONS.....	9
4	ANNEXES .....	10

### List of tables

Table 1: Summary of information events held in different countries from April 2005–September 2006.....	2
Table 2: Number of participants of information events by country. ....	2
Table 3: University level information events and their participants. ....	6
Table 4: Central information events and their participants.....	7
Table 5: Other dissemination events.....	7
Table 6: Category of frequently asked questions. ....	8

### List of figures

Figure 1: Information events by country .....	3
Figure 2: Number of participants in different information events by country. ....	3
Figure 3: Number of Local information events by country.....	4
Figure 4: Number of people participated in Local information events. ....	5

# 1 INTRODUCTION

Dissemination activities are an essential part of the ASSESS-HKH project and should inform about the aim of ASSESS-HKH, bioassessment of rivers based on aquatic macroinvertebrates and sustainable water management. The transfer of information is structured on different levels depending on the audience to be targeted. The target group can be divided into three major groups, i.e. a) the local public and residents, b) students and the scientific community and c) local authorities, decisions makers and stakeholders. Therefore three different types of information events are to be carried out addressing different target groups.

1. Local level information events are carried out for the interested public, residents, respectively and local decision makers, including administrators from village or “Panchayat” level to district level, local clubs, local NGOs and social activists. These information events should create awareness regarding vulnerability of aquatic ecosystems and communicating the importance of clean surface water. They inform about the benefits of bioassessment of rivers based on aquatic macroinvertebrates and introduce the aims of ASSESS-HKH.

2. University level information events address future generation of ecologists and water managers in the HKH region. Participants are mainly students of biological and technical sciences of all participating Asian universities.

3. Central information events are carried out for stakeholders in the HKH region such as water authorities, policy makers, NGOs and other interested parties from the general public. In addition the international scientific community and representatives from European companies dealing with waste water are addressed. Therefore, the aim of the project is to present the latest findings at related national meetings.

At the present time of the project the main emphasis was laid on running Local information events. Correspondingly most of these events had been carried out in this period and this report is focussing on the evaluation of these events. The carrying out of information events on University and Central level happens mainly at a later time of the project (see ANNEX I - "description of work", 2005). Nevertheless in some countries information events have already been executed on University and Central level. For the carrying out of all events posters and fliers were produced. Feedback questionnaires which were filled out by the audience helped to document and check the success of these events. Moreover, dissemination material was translated in local language (see Deliverable 18, Version 1, 2005 and ANNEXes 5-10).

This report summarizes the activities and outcomes of the information events conducted from April 2005 to September 2006 in the five participating countries Bhutan, Bangladesh, India, Nepal and Pakistan. At the beginning of the report all executed information events are described in a summary. Then, the activities in the individual countries for the different types of information events are described in detail. The evaluation of the feedback questionnaires is shown in the last part. This part shows the current state of knowledge of the audience about ecological river assessment. The expectations of the population in the HKH region for ASSESS-HKH are listed at the same time. A tabular documentation of all information events can be found in ANNEX 1-4. ANNEX 5-9 include the reports of the individual countries on the executed information events and show the appropriate dissemination material used for it (only dissemination material is shown that has not been presented already in Deliverable 18 version 1, 2005).

## 2 DOCUMENTATION ON INFORMATION EVENTS

A total of 48 information events have been held in five countries. 11 information events were held in Bangladesh, 8 in Bhutan, 12 in India, 10 in Nepal and 7 in Pakistan. More than 1760 persons participated directly in these information events with more than 320 participants in Bangladesh, more than 800 participants in Bhutan, 298 participants in India, 262 participants in Nepal and more than 80 participants in Pakistan. Table 1 and Figure 1 show the number of information events held country-wise. The number of participants and type of information events held are summarized in Table 2 and Figure 2.

**Table 1: Summary of information events held in different countries from April 2005–September 2006.**

Country	Local level	University level	Central level	Other dissemination events <sup>1</sup>	Total
Bangladesh	9	1	1	-	11
Bhutan	7	-	-	1	8
India	4	1	5	2	12
Nepal	3	-	5	2	10
Pakistan	3	2	1	1	7
<b>Total</b>	26	4	12	6	48

**Table 2: Number of participants of information events by country.**

Country	Number of Participants				
	Local level	University level	Central level	Other dissemination events	Total
Bangladesh	220	75	26	Can't be enumerated	321
Bhutan	800	-	-	Can't be enumerated	800
India	197	20	81	Can't be enumerated	298
Nepal	262	-	NA	Can't be enumerated	262
Pakistan	13	46	22	Can't be enumerated	81
<b>Total</b>	1492	141	129		<b>1762</b>

<sup>1</sup> Other dissemination events are presentations of ASSESS-HKH on TV, in newspapers and on the internet.

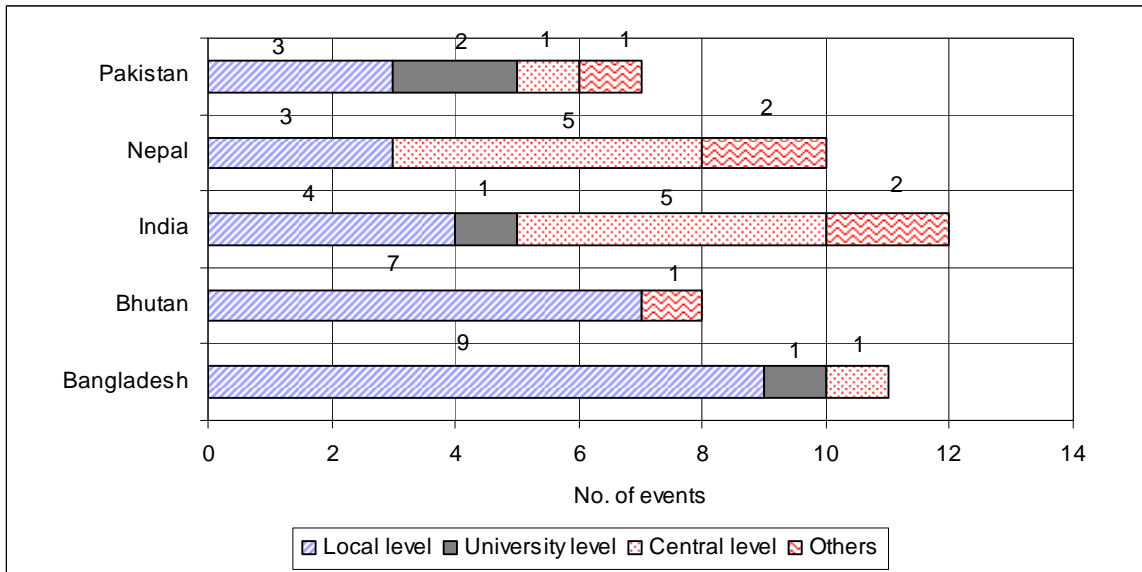


Figure 1: Information events by country

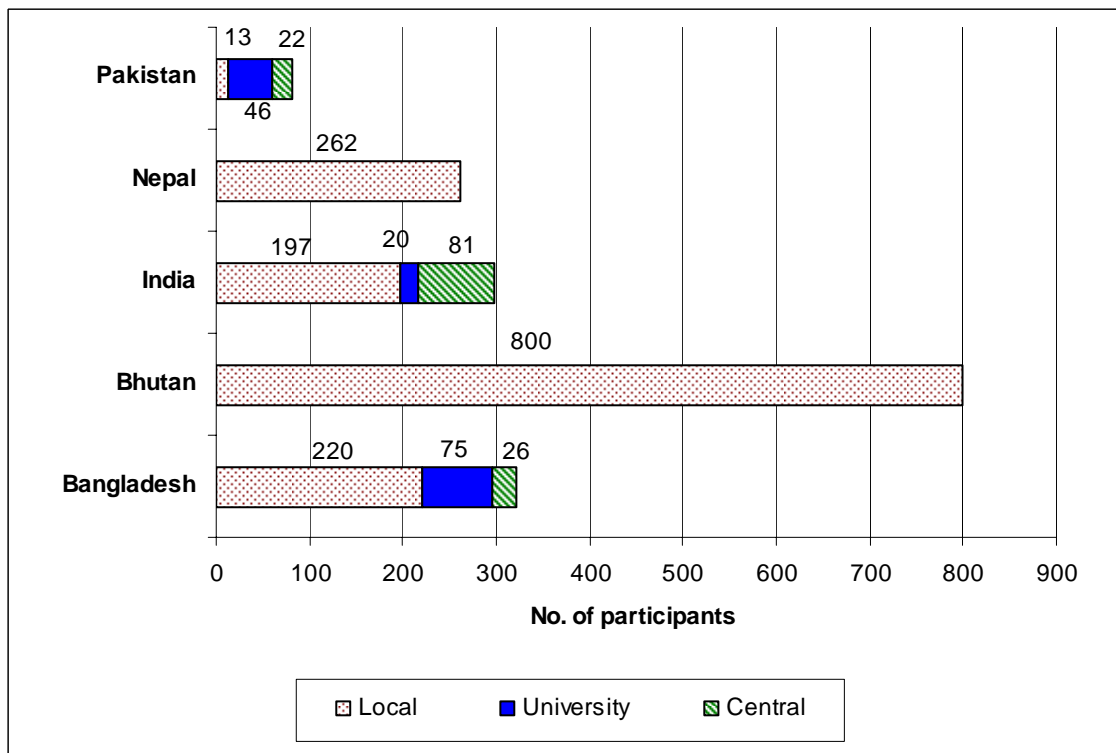


Figure 2: Number of participants in different information events by country.

## 2.1 Local level information events

Local information events were carried out for the local residents and decision makers including administrators from village to district level, local clubs, local NGOs and social activists, mainly near the sampling area. A total of 26 Local information events were carried out with 9 in Bangladesh, 7 in Bhutan, 4 in India, 3 in Nepal and 3 in Pakistan (see Figure 3, for precise information of each information event see ANNEX 1). During the information events, posters and fliers in local language, i.e. Urdu, Hindi, Nepali and Bengali, and English language were used. Similarly, power point presentations, and demonstration material of preserved specimens of aquatic macroinvertebrates were used to support these events. The approach of the information events was mainly interactive discussion. In addition the audience provided their feedback by filling up the questionnaire provided by the project team.

More than 1490 persons participated directly. Figure 4 shows the number of participants per country for the Local information events. In addition to these information events, direct communication with the residents close to the sampling area has been carried out when opportunity arose during the sampling. Most of the participants in Local information events were local residents and students.

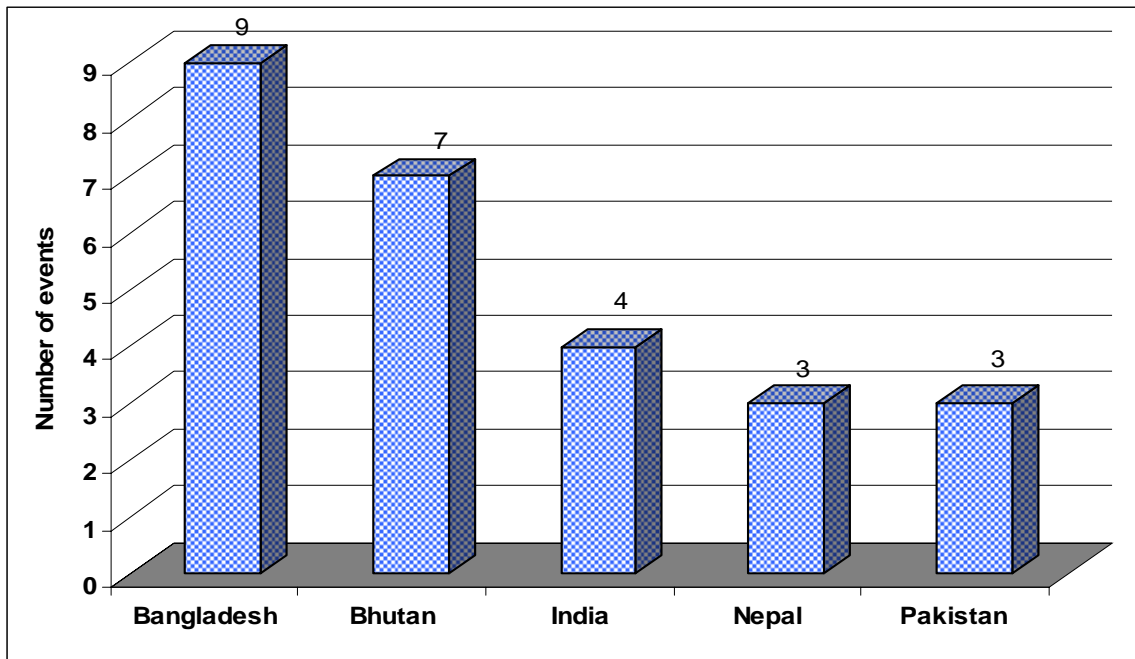


Figure 3: Number of Local information events by country.

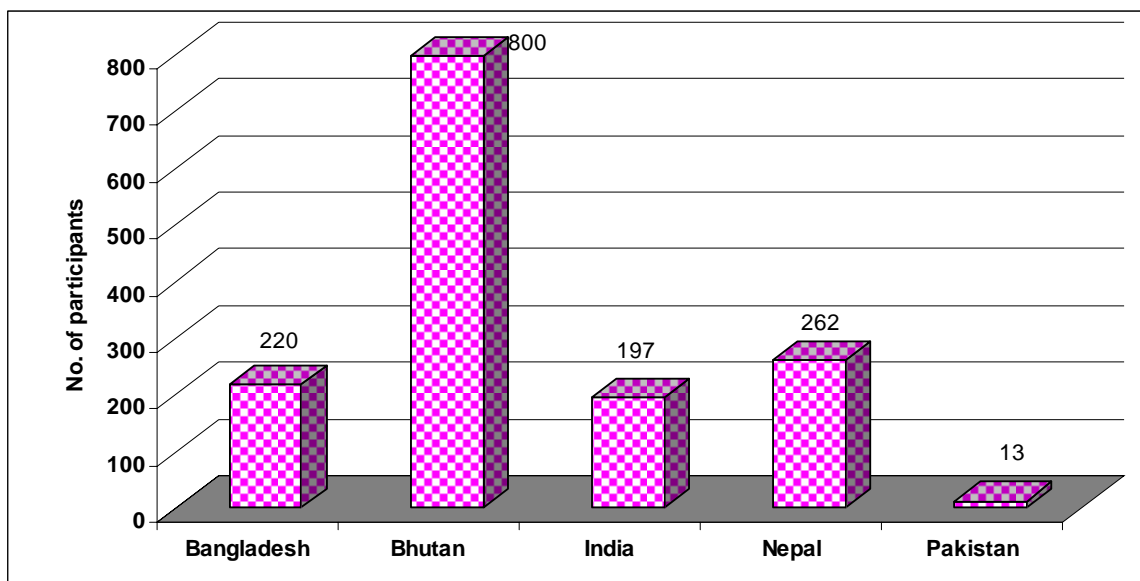


Figure 4: Number of people participated in Local information events.

## Country-wise brief description of Local information events.

### Bangladesh

Nine Local information events were held in Bangladesh. More than 220 locals participated in these events. Most of the participants were residents. The events were carried out during the field sampling at different locations along the rivers. During information events fliers, posters, and power point presentations were used to inform the public about the aims of the project, the aspects of sustainable water use with emphasis on ecological understanding and the use of aquatic macroinvertebrates for bioassessment of rivers. If necessary the latter dissemination material was displayed in local speech. In addition samples of aquatic macroinvertebrates and sampling gear were shown and explained to the audience.

### Bhutan

In Bhutan, seven Local information events were carried out and more than 800 people participated in Local information events. The participants were mostly graduate students and school students. Prof. Dr. Otto Moog (BOKU, project co-ordinator), Dr. Subodh Sharma (KU) and Executive Director of the Royal Society for Protection of Nature (RSPN, NGO that aids NECS in the effort of preserving and conserving the natural environment) introduced bioassessment of rivers in several schools. In the nature clubs of schools demonstrative sampling of aquatic macroinvertebrates was shown and rapid field bioassessment was introduced to the pupils. In addition, two training workshops were organized. In the workshops NECS explained the aims and activities of ASSESS–HKH project and the role of aquatic macroinvertebrates as bioindicators for river quality. Cleaning campaign for the National graduates of 2006 was also organized in Thimphu City where ASSESS-HKH project and briefing of its aims and preliminary results occurred.

The co-ordinator of the RSPN was entrusted with informing, educating and disseminating the school children on aspects of bioassessment. Similarly, the immediate impact of the sampling on the community was that the village representatives and also the National Assembly executed different meetings as well.

### India

Four Local information events and several intensive information conversations with residents were held in India. Altogether there were more than 190 participants. During three information events for local residents participants were introduced to ASSESS-HKH by poster presentations and handing over of ASSESS-HKH fliers and brochures in local language. Another Local information event was held at 'Science day 2006' for pupils at D.A.R. public school, Muzaffarnagar. During this event Dr. M.P. Sharma (AHEC) introduced ASSESS-HKH to the pupils and provided information regarding the necessities and benefits of ecological river assessment. This event was reported in the local newspaper. From all information events feedback of the participants was collected through questionnaires prepared in local language (Hindi). Similar, information conversations were held during both sampling periods.

### Nepal

A total of three Local information events were carried out in Nepal. Altogether 262 participants visited these events. Most of the participants were students and teachers. Two Local information events were organized by KU whereas one Local information event was jointly organized by KU and ICIMOD. The participants were invited through official letters, e-mail, and telephone. In these events Dr. Subodh Sharma (KU), Ms. Mandira Shrestha (ICIMOD) and Mr. Rajendra Shilpakar (ICIMOD) described activities of the ASSESS-HKH project, the role of ICIMOD in the project and river quality assessment based on aquatic macroinvertebrates. Fliers and posters in local language (Nepali) were used to support these events. Audit questionnaires were filled in by the audience and evaluated by KU.

### Pakistan

In Pakistan, three Local information events were carried out. Posters and fliers were used to introduce the ASSESS-HKH project. In these events, there were more than 15 participants. The participants were mainly representatives of local NGOs. The aim of ASSESS-HKH was introduced by using a Power Point presentation and a brochure designed by PCRWR.

## 2.2 University level information events

These information events were carried out for the future generation of ecologists and water managers in the HKH region. The targeted participants were the university students of biological and technical sciences in participating countries. Four university level information events were carried out that include 1 in Bangladesh, 1 in India and 2 in Pakistan. In total there were 141 people participating in these events (see Table 3 and ANNEX 2). The participants were invited by correspondence through postal services, telephone, official notification, and e-mail. The aim of ASSESS-HKH and various aspects of bioassessment were discussed. ASSESS-HKH information fliers, posters and Power Point presentations were used as dissemination tools in these events. The feedback was collected through questionnaires.

**Table 3: University level information events and their participants.**

Country	No. of Events	No. of Participants
Bangladesh	1	75
Bhutan	-	-
India	1	20
Nepal	-	-
Pakistan	2	46
<b>Total</b>	<b>4</b>	<b>141</b>

### 2.3 Central information events

Central information events were carried out for stakeholders in the HKH region such as water authorities, policy makers, NGOs and other interested parties from the general public. Additionally, ASSESS-HKH was presented at national and international workshops, seminars/conferences attended by members of the project team. A total of 12 Central information events were carried out: 1 in Bangladesh, 5 in India, 5 in Nepal (2 events by KU and 3 events by ICIMOD) and 1 in Pakistan. More than 130 people participated in these events (see Table 4). For further information see ANNEX 3. People were invited by mail, telephone, official notification, and e-mail. The participants were informed by using fliers, posters, Power Point presentations and samples of macroinvertebrates about the aims of ASSESS-HKH, Multi-Habitat Sampling (MHS), bioassessment methodology, the aspects of sustainable water use with emphasis on ecological understanding and the use of simple biological monitoring of river health and water quality. The number of events and participants by country is provided in Table 4.

**Table 4: Central information events and their participants.**

Country	No. of Events	No. of Participants
Bangladesh	1	26
Bhutan	-	-
India	5	81
Nepal	5	NA
Pakistan	1	22
<b>Total</b>	<b>12</b>	<b>&gt;129</b>

### 2.4 Other dissemination events

Besides the above described information events dissemination events were also carried out through publications in newspaper, briefing through television, and conversation with various personnel of different organizations regarding the objectives, activities, and possible outcomes of ASSESS-HKH. In this category a total of 6 dissemination events were carried out until September 2006. These dissemination events include 1 in Bhutan, 2 in India, 2 in Nepal (by KU and ICIMOD) and 1 in Pakistan (see Table 5 and ANNEX 4).

**Table 5: Other dissemination events.**

Country	No. of events	Description of the event
Bangladesh	-	-
Bhutan	1	- Newspaper article
India	2	- Integration of Central Pollution Control Board (CPCB), Delhi by information talks, workshops, and field sampling - Newspaper article
Nepal	2	- News clips about ASSESS-HKH
Pakistan	1	- Media briefing through TV
<b>Total</b>	<b>6</b>	

## 2.5 Evaluation and outcome of information events

ASSESS-HKH information events have been mainly evaluated by the use of questionnaires that had to be filled in by the audience. A list of these frequently asked questions (FAQ) are provided in each country report (see ANNEX 5-9). Among the FAQs, about 31 % address the use of macroinvertebrates as bioindicators; 33 % sampling methodology, 18 % water quality, water pollution and its control, 8 % drinking water and ground water and 10 % the sustainability and the benefits of the project for the society, which is presented in Figure 6. The FAQs are grouped as shown in Table 6.

**Table 6: Category of frequently asked questions.**

Question category	Number
Use of macroinvertebrates as bioindicators	29
Sampling methodology	31
Water quality, water pollution and its control	17
Drinking water and ground water	7
Sustainability and benefits of the project to society	9
<b>Total</b>	<b>93</b>

Thus, most questions were related to sampling methodology and use of macroinvertebrates as bioindicators. Exemplarily the most important and most frequent remarks and suggestions are listed in the following.

- The majority of participants have not heard about ecological river assessment before independently from the audience (local residents, students and stakeholders). But in all countries audiences showed great interest to increase knowledge about river quality assessment based on aquatic macroinvertebrates.
- Participants expected that the methodology should be disseminated to the local level for controlling the river quality and its degradation. Therefore, they expected that the methodology which is to be developed by the project will be simple so that the community can use it easily.
- Participants emphasized their interests on regular monitoring of river quality and regular conduction of awareness.
- Participants also suggested extending the assessment to the larger rivers.
- Teachers, students and pupils, especially in Bhutan, Nepal and Pakistan, suggested including bioassessment of rivers based on aquatic macroinvertebrate in the curriculum. They expressed their willingness to propose the same to the concerned education department.
- It was proposed to make few additions in the posters and fliers to make clear about the comparative advantage of physico-chemical analysis and use of benthic macroinvertebrates for river assessment.
- NGOs asked how the community could prepare ground for creating more publicity about ASSESS–HKH project and strict implementation of laws and provisions regulating river water quality.

### 3 CONCLUSION AND RECOMMENDATIONS

Altogether, 48 information events were carried out in Bangladesh, Bhutan, India, Nepal and Pakistan. About 1760 people participated directly, of which nearly 1500 participated in Local information events. Another 141 people participated in University events and nearly 130 in Central information events. The participants were informed about the project and sensitized to the vulnerability of aquatic ecosystems and aspects of sustainable water use with emphasis on ecological understanding, biological monitoring and drinking water quality. Through the interaction and the feedback provided by the participants during the information events, it can be said that most of them realized the importance of good river water quality which is essential for the availability of safe drinking water. Thus, information and dissemination events carried out up to now have been very effective to introduce ASSESS-HKH and bioassessment of rivers based on aquatic macroinvertebrates.

Specific recommendations for the future that may increase effectiveness of ASSESS-HKH and understanding of ecological river assessment are:

- Local events on creation of public awareness about the vulnerability of aquatic ecosystems and sustainable use of water should be conducted regularly.
- Development of a mechanism in collaboration with the government/local administration to conduct the awareness programme regularly.
- Showing advantages of river quality assessment based on bioindicators over physico-chemical methods should be taken into account in the dissemination material.

## 4 ANNEXES

- ANNEX 1 Table: Documentation about Local information events
- ANNEX 2 Table: Documentation about University information events
- ANNEX 3 Table: Documentation about Central information events
- ANNEX 4 Table: Documentation about other dissemination events
- ANNEX 5 Report on information events carried out in Bangladesh, BUET
- ANNEX 6 Report on information events carried out in Bhutan, NEC
- ANNEX 7 Report on information events carried out in India, AHEC
- ANNEX 8 Report on information events carried out in Nepal, KU
- ANNEX 9 Report on information events carried out in Pakistan, PCRWR