

# Regional South Asia Water (SAWA) Fellows Training on Integrated Water Resources Management



## Proceedings Report

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## Summary

As part of the South Asia Water Fellowships (SAWA), a training programme on Integrated Water Resource Management was organized in Kathmandu, Nepal between the 3<sup>rd</sup> and the 8<sup>th</sup> of October 2013. The training programme was entitled “*Regional South Asia Water (SAWA) Fellows Training on Integrated Water Resources Management*”. The training programme was financially supported by International Development Research Centre (IDRC), Canada and Cap-Net.

The objectives of the programme were to 1) Promote IWRM with a focus on issues such as gender, climate change and food security at sub continental level. 2) Enhance understanding of water issues and best practices for mitigation at the regional level. 3) Train participants to deal with issues of water and regional cooperation. 4) Increase exposure to water issues of the neighbouring countries. 5) Initiating and encouraging “regional co-operation” among water professional in the long run. 6) Promoting an interdisciplinary approach to water resource management and research.

The training programme targeted the twenty recipients of the IDRC- SAWA Fellowships from four institutions in four South Asian countries: Bangladesh (Institute of Water and Flood Management - Bangladesh University of Engineering and Technology), India (Centre for Water Resources -Anna University), Nepal (Nepal Engineering College) and Sri Lanka (Post Graduate Institute of Agriculture – University of Peradeniya). Five additional participants were nominated by the local host Nepal Engineering College, giving us a total of twenty five participants.

The content of the workshop explored the issues of interdisciplinary in the context of IWRM, gender, equity, climate change, as well as the different issues affecting water resource management in the four countries. Further the training programme gave the participants theoretical and field experience of interdisciplinary research methodologies as well as participatory methodologies. The sessions were interactive in nature, involving a lot of student participation. Participants got the chance to apply classroom learning in the field, with two field trips during the programme, one to Matatirtha village where, participants learned about the community managed water distribution system there. Additionally, a full day field exercise was held in NaubisePhant, where participants used various participatory methods in order to understand the functioning and impact of the irrigation system, managed by a water users association. A half day session on Leadership was also held, seeking to build capacity of the participants in this regards, as leadership skills are essential for becoming complete water professionals.

Overall, the participants were happy with the sessions, the materials, and the group exercises. They were also appreciative of the field visits and the field practicum, as it allowed them to apply classroom learning in the field.

# 1. Introduction

## 1.1 Background – The SAWA Fellowships

South Asia's agricultural economies are vulnerable to extreme environmental events. Better management of water and other natural resources is fundamental to the development of the region. Climate variability and change, food insecurity, population growth and urbanization have intensified environmental disasters in the recent past. Poor land and water resource allocation, utilization and pollution have robbed the poor, particularly women, of livelihood and dignity. Such broad, yet closely linked issues can only be effectively tackled through a holistic interdisciplinary approach. The IDRC-SAWA fellowships seek to address these issues, by providing the opportunity to train a generation of water professionals to tackle water issues using multi-disciplinary approaches that are sensitive to women, the poor, environment and sustainability.

This project continues a part of an earlier project coordinated by SaciWATERS namely the Crossing Boundaries project. This project is funded by the International Development Research Centre (IDRC) and is implemented by SaciWATERS and its four partner institutions, namely.

- Institute of Water and Flood Management (IWFM) of the Bangladesh University of Engineering and Technology (BUET), Dhaka, Bangladesh
- Center for Water Resources (CWR), Anna University, Chennai, India
- Center for Post Graduate Studies, Nepal Engineering College (nec), Kathmandu, Nepal.
- Post Graduate Institute of Agriculture (PGIA), University of Peradeniya, Peradeniya, Sri Lanka

The objectives of the project are firstly; to create a new generation of interdisciplinary water professionals in South Asia trained to deal with issues of climate change adaptation, water and food security, in order to do this, this project has instituted the IDRC-SAWA fellowships. Secondly, the project aims to generate action-oriented research in the aforementioned fields through Master's degrees in Integrated Water Resource Management in Bangladesh, India, Nepal and Sri Lanka. Thirdly, it has been noted that women and girls are often the primary users, providers and managers of water in rural and urban households, thus being the most affected by planning and policy in water resources. It has often been seen that women's voices are not taken into consideration when forming policy. Additionally, it is seen that women are underrepresented in the field of water resources engineering and policy making. This project seeks to address this imbalance by awarding 80 percent of the fellowships to women; the rest of the fellowships will be awarded to men from lower socio-economic groups. Fourthly, it aims to share knowledge and ideas about water issues in the South Asian context, through meetings and exchanges between fellows. This is especially important as it fosters the spirit of regional and trans-boundary cooperation in the fellows, which would hopefully lead to larger regional cooperation in future. Such interdisciplinary, regional and trans-boundary co-operation is essential for IWRM approaches. Fifthly, the projects supports free access to the journal "South Asian Water Studies" and encourages young water professionals to publish peer reviewed journal articles.

## 1.2 Relevance of the Training Programme

As mentioned above, in many regions in South Asia, the availability of water in both quality and quantity is being affected by climate change and climate variability. Additionally due to increase in population and urbanization, there are changes in consumption and production patterns which have huge impacts on food security, livelihoods especially in relation to gender. Thus, water issues cannot be examined in isolation or with the traditional technical driven approach. Water professionals, whether in the government or in the private sector have to make tough decisions with respect to utilization of increasingly limited water resources. In order to do this in an effective, equitable and sustainable manner, a holistic interdisciplinary approach is required, which is often lacking in traditional civil engineering curricula. This training programme, sought to impart training on interdisciplinary approaches to water resource management, inculcating an approach to examining water resources that is holistic in nature. Importantly, this training programme saw an introduction of a session completely devoted to inculcating leadership skills in the participants. This new approach, capacity building in terms of leadership skills will be extremely important in terms of creating complete water professionals.

## 1.3 Organizers

1. **Nepal Engineering College (nec):** Nepal Engineering College, was established in 1994 as a non-profit institution under private sector initiative to serve the technical education needs of Nepal in areas of engineering and technology for accelerated economic growth, reaching to wider section of Nepalese students and making the quality technical education accessible and affordable. Nec offers Bachelor and Masters level courses in engineering, technology and allied disciplines, including a Masters course in IWRM. <http://www.nec.edu.np>

2. **SaciWATERS: the South Asia Consortium for Interdisciplinary Water Resources Studies,** is a policy research institute at Hyderabad, India and working on the issue of water resources education, capacity building, research and action in South Asia. It is committed to bringing about structural changes in the dominant water resources management paradigm in South Asia by focusing on transforming water resources knowledge systems through working with universities and academic institutions. The key ideas are in interdisciplinary approach to undertaking water resources issues from a pro-poor, gendered and human development perspective and emphasis on exchange, interaction and collaboration at South Asia level. SaciWATERS is active in three domains- Education, Research and Advocacy. [www.saciwaters.org](http://www.saciwaters.org)

## 1.4 Sponsors and Co-Sponsors

- 1) **International Development Research Centre (IDRC)** is a Canadian Crown Corporation that initiates, encourages and supports research in developing countries in order to help find practical and sustainable solutions to social, economic and environmental problems that are being faced in these countries. Additionally, IDRC on the means for applying and adapting scientific, technical and other knowledge to the economic and social advancement of those regions. <http://www.idrc.ca>

2) **The SaciWATERS-Cap-Net Network (Scan)** is a platform for partnership towards capacity building in Integrated Water Resources Management (IWRM) in South Asia region. It comprises autonomous regional and national institutions and individuals committed to capacity building in the water sector. The network was conceptualized by SaciWATERS, which hosts the network and acts as its legal, administrative and financial umbrella. [www.saciwaters.org/scan](http://www.saciwaters.org/scan)

2) **Cap-Net, UNDP** is a Global Network of autonomous international, regional and national institutions and networks committed to capacity building in IWRM. Cap-Net supports capacity building networks as its key partners and implementing members. These networks have proven to be effective at promoting the understanding of IWRM. [www.cap-net.org](http://www.cap-net.org)

## 2. Workshops objectives, participants profile and expected outcomes

### 2.1 Objectives

- 1) To help participants deepen their knowledge of water and issues that surround holistic water management with at the South Asian level such as gender, equity, climate change, and food security at the South Asian Level
- 2) To enhance understanding of water issues and best practices for mitigation at the regional level
- 3) To train participants to deal with issues of water and regional cooperation
- 4) Increase exposure to water issues of the neighbouring countries in order to facilitate a deeper understanding of water issues at the pan South Asian level
- 5) Initiating and encouraging “ regional co-operation” among water professional in the long run
- 6) Promoting an interdisciplinary approach to water resource management and research.
- 7) Train participants to not just be good water professionals, but be leaders in their effective fields

### 2.2 Participants profile

The participants for this training programme were those who were selected as fellows as part of the South Asia Water (SAWA) fellowships, through a competitive process from each of the four partner institutes. Five fellows from each country were in attendance, as well as an additional five people from the host institution, leading to a total of twenty five participants. All participants were pursuing post graduate level courses in IWRM. Many had a traditional civil engineering background, thus introduction to the above mentioned issues was important to them.

### 2.3. Outcomes expected

It is expected that the participants would have increased sensitivity to issues of gender and equity in the water resource management context. The participants would also have an enhanced understanding of water issues and best practices for mitigation of these issues at the regional level. Additionally, the participants would be more conscious of the different trans-boundary issues in South Asia and the importance of regional cooperation in addressing these issues. Most importantly, due to the special session on leadership, they would now understand what steps are needed in order to become effective leaders in the future.

## 3. Programme Details

### 3.1 Key Resource Persons and Facilitators.

- **Dr Neena Rao** :Director – Projects and Partnerships , South Asia Consortium for Interdisciplinary Water Resources Studies (SaciWATERS). Hyderabad, India
- **Dr Mashfiqus Salehin** :Professor, Institute of Water and Flood Management, Bangladesh University of Engineering and Technology. Dhaka, Bangladesh
- **Dr N.D.K Dayawansa**: Senior Lecturer in Agricultural Engineering at the University of Peradeniya, Peradeniya, Sri Lanka
- **Dr B.V. Mudgal** : Associate Professor, Centre for Water Resources, Anna University, Chennai, India
- **Dr Khem Raj Sharma** : Director of Nepal Engineering College-Center for Postgraduate Studies, Kathmandu, Nepal
- **Dr M. Dinesh Kumar**: Executive Director, Institute for Resource Analysis and Policy, Hyderabad, India
- **Mr Dipak Gyawali** : Pragma (Academician) of the Nepal Academy of Science and Technology (NAST) and Research Director Nepal Water Conservation Foundation, Kathmandu, Nepal
- **Dr Aditya Bastola**: Executive Director, Consortium of Social Science Researchers in South Asia. Kathmandu, Nepal
- **Dr BinodBhatta**: the Director-Research: Forestry and Natural Resources Management (F/NRM) Specialist at Alliance for Social Mobilization - Alliance Nepal, Kathmandu, Nepal
- **Dr Niraj Joshi** : Associate Professor (Research Coordinator) at Nepal Engineering College - Center for Postgraduate Studies, Kathmandu, Nepal
- **Ms Sukanya Patwardhan** :Practice Leader - Diversity, Ethics, Sustainability, Coaching, at Tata Management Training Centre, Pune, India.
- **Mr Robert Dongol** : Assistant Professor, Nepal Engineering College, Kathmandu, Nepal
- **Mr Arjun Surendra**: Research Associate, SaciWATERS, Hyderabad, India.

### 3.2 Methods used for facilitation

The workshop lasted for six days, with multiple sessions on each day. The following methods of facilitation were used.

**Interactive Sessions:** The sessions were interactive in nature. Each classroom session included class room lecture using power-point, followed by discussion of about 15 minutes. Participants were encouraged to take active part during the discussions. Some sessions were even more interactive, having exercises for each individual.

**Group Exercises:** Participants were divided into different working groups for different activities. Multiple group exercises were conducted during the programme. For the field practicum, five groups of five students each were formed. For other sessions, such as the leadership session, students were split into pairs. Participants found these tasks quite interesting and useful as it provided them with an opportunity to apply theoretical frameworks learnt during the lecture sessions in analysis and interpretation of practical situations. Other than these exercises, groups were also assigned some



tasks such as giving a recap-of the previous day’s events, In order to make the workshop more participatory.

**Field Exposure:** A half day field visit was organized to provide exposure to participants on water transfer mechanisms operating in Matatirtha village outside Kathmandu. Additionally, a full day of field practicum was also undertaken at NaubisePhant Irrigation system about 45 kilometres east of Kathmandu, where participants carried out focus group discussion, key informant interviews and unstructured individual interviews in order to understand the functioning and impacts of the irrigation system

**Evaluation:** There was an inbuilt mechanism of participatory evaluation throughout the training workshop. Instruments used for evaluation included feedback reports and questionnaire that was administered

### 3.3 Content of the Training Sessions

The programme was held for a total of six days, between 3 – 8 Octobers. Each day had multiple sessions; details of the sessions are provided in Annexure. Additionally one half day field visit and a full day field practicum were also carried out.

#### Day 1

##### 1. Inaugural Session

The training programme started with the Inaugural Session, which was chaired by Prof. Deepak Bhattarai , Founder Member, Nepal Engineering College. The Chief Guest for the inauguration was



Picture 1 : The inaugural session

Mr Pratap Kumar Pathak, Secretary, Ministry of Irrigation, and Nepal. Other participants for this session were, Dr Prachanda Pradhan and Dr Neena Rao. Dr Pradhan delivered the Key Note Address which was titled “**Integrated Water Resources Management: Way Forward**”. In this

address, Dr Pradhan gave the participants an overview of IWRM and how the concept of water management has changed over the years and how it should be taken forward. He stressed on participatory approaches in all aspects of water resource management

## **2. Introduction to the Training Programme: Dr Neena Rao and Arjun Surendra**

This session involved giving the participants an overview of the aims, objectives and structure of the training programme, as well as what the expectation from the participants were. The participants were also advised on the precautions to take while in Kathmandu. Ice breaking exercises were then conducted, through which students had the opportunity to introduce themselves to each other, as well as to faculty representatives from all the partner institutions and build a rapport with them.

## **3. IWRM concepts and principles: experiences of Bangladesh by Prof. Mashfiqus Salehin**

This presentation further elaborated on the concepts and key issues of IWRM with a special focus on Bangladesh. It gave an overview of the key issues in water management in the world and in Bangladesh, especially in the Ganga BhramaputraMeghna (GBM) basins. Further, an important point that was discussed the differences between inter-disciplinary approaches and multi-disciplinary approaches in tackling these issues. The issue of climate change and its effect on water resources was also discussed. The presentation also touched upon previous water management approaches, and what was lacking in them –such as lack of equity, fragmented approaches and lack of people’s participation in project designs and implementation. It also mentioned how IWRM would address these issues, and how it can be applied in the Bangladesh context.

## **4. Overview of water resources management in Nepal – Prof.Khem Raj Sharma**

The session discussed the current stated of water resources management in Nepal. It was pointed out that Nepal was a water rich state in terms of availability of water resources, even if calculated on a per capita basis. An overview of the various plans and policies related to water instituted by the government of Nepal was given. The patterns of water use in the Nepal context were mentioned next, after which the presentation moved to the challenges faced in water resource management. The presentation points to Climate change, Water resources degradation, Equity concern, and Political instability being the biggest issues impacting effective water resource management. The presentation closed after mentioning a few initiatives in IWRM taken up in Nepal.

## **5. Overview of Water Resources Management in Sri Lanka- Dr N.D.K. Dayawansa**

The presentation gave an introduction into the climate and water balance of Sri Lanka, as well as a brief look into historical practices of water management therein. It mentioned the importance of minor irrigation systems such as small tank systems to water security in Sri Lanka. A historical overview of the evolution of water policy in the country was also presented. The presentation then mentioned the water allocation and distribution mechanism and policy at the central and local levels. The session ended after the issues faced in Sri Lanka in large scale water resource development were discussed.

## **6. Overview of water resources management in India – Dr B.V. Mudgal**

A brief overview of the status of water resources available in India was give, with the help of maps and data. The presentation then delved into the causes of water related problems in India, such as the uneven distribution of water, pollution of freshwater resources, over extraction of groundwater etc. Additionally, problems such as flood and droughts, ground water management, lack of drinking

water resources were elaborated on. Also mentioned were attempts by policy makers to address these issues, and what existing gaps were. The important aspect of climate change and its impacts in the Indian and Tamil Nadu contexts were discussed. The session concluded on a lighter note, by sharing cartoons appearing in the media illustrating how important the issues of water resource management are.

#### **7. Climate Change and its impacts on water security, food security and vulnerability – Dr M Dinesh Kumar.**

The session discussed the variability in major climate parameters in India, using historical data at the macro as well as micro level. It provided theoretical understanding of major climate parameters, the various (terrestrial and extra-terrestrial) physical processes which influence these parameters, and how variability in each parameter can induce changes in the physical and bio-physical processes which have implications for water management. The session also provided hard empirical data on several climate variables such as rainfall, humidity, temperature, and wind speed, to illustrate the point about climate variability.

#### **8. Groundwater crisis in South Asia. – Dr M. Dinesh Kumar**

The session discussed the importance of ground water as a source in South Asia. The rationale for increasing use of groundwater resources was stated. Also stated were the ecological and hydrological impacts of excessive groundwater use i.e. the dangers of over-exploitation, and thus the benefits of interventions in this context. The various physical options for groundwater management in the context of semi arid and arid regions of South Asia, and their scope and limitations were mentioned, the presentation ended with a summary of various options that could be used in the South Asian context in order to better manage groundwater resources.

### **Day 2**

The day began with a recap of the previous day's sessions by student group 1.

#### **1) IWRM – Who does the integrating and how? - Mr Dipak Gyawali**

The session initially started by providing examples of cases where the IWRM framework has not worked as well as expected. The presentation examined the problems of having a fixed framework in these regards. The presentation went on to say that apart from flawed policies, there are also flawed approaches to examining issues related to water resources holistically. The presentation pointed out the differences between “eagle –eye science” and “toad-eye science” and how both were necessary in conjunction. The presentation introduced the concept of “Desakota” as a theory and went on to examine water resource management from the lens of Culture Theory. The presentation ended by talking about how assumptions about how consensus building was changing, and new realities were emerging as an example, the pluralizing of Nepal's power system was mentioned.

#### **2) Gender Water Rights and Equity. – Dr. Aditya Bastola.**

This session started at the basic level – defining the term Gender, and differentiating it from sex. Gender roles and social relationships were examined. As part of this session, the participants were given an individual exercise, where they were to examine their roles and responsibilities at the household level, the community level and as water professionals. The session then examined the

issues of Gender and Equity in the context of water resources – listing the various barriers that were prevalent in society that prevented equitable access to and benefits from water resources in South Asia including Gender Barriers. The session then examined the seriousness of issues relating to lack of access, and how traditional education in water resource management does not adequately equip water professionals to handle these issues with sensitivity. Participants were asked to once again their roles as in the first exercise. The session then examined the ways in which the principles of gender sensitivity and equity should be included in water resource management. The session concluded by stating the benefits that could be derived from an inclusive approach.

#### **4. Student group presentations on Study area and issues faced therein**

This session had four presentations on the respective study areas, carried out by groups of participants from each country. As part of their educational requirements, each student has to carry out original research. Thus, a general overview of the areas under study was given for each country.

Participants from Bangladesh gave an overview of the impacts of climate change on the South-West region of Bangladesh. They explained how their research topics fit in with the problems facing Bangladesh. Participants from Sri Lanka gave an overview of the DeduruOya river basin flowing through Kandy, Matale, Kurunegala and Puttalam Districts of Sri Lanka and the issues, problems and success stories in water management therein. Like the participants in Bangladesh, they too showed how their research fit in with the issues mentioned. Participants from Nepal, gave an overview of the Bhagmati river basin and the issues of water quality and water resource management that were seen there. Participants from India, gave an overview about the TheVellar river basin lies in the Northern part of Tamil Nadu state in South India

#### **3) Interdisciplinary research design–Prof. Mashfiqus Salehin**

The session provided an introduction to research design- or how one must “prepare” for research and how the research concept is developed. It went on to how, in order to get a good idea of how to move forward in research design, it is essential to develop a SPQR (Situation, Problem, Question and Response). An example of SPQR from a case in Bangladesh was given for better understanding. Similarly, using examples, the session explained how conceptual frameworks are devised and how socio-technical research tools and methods are used in order to attempt to answer the research questions.

#### **4) Introduction of field study sites – Prof Khem Raj Sharma**

As part of the training programme, a field visit and a field practicum were organized. This session gave an overview of both the selected sites. The first site, which would be the location of a half a day field visit, was Matatirtha VDC, a peri-urban area on the outskirts of Kathmandu. The first part of the session, gave a background of the VDC, and elaborated on the urbanisation occurring therein and changing modes of water transfer that were happening. The session also covered the implications of unchecked water transfers and initiatives being taken at the VDC level in order to tackle these issues.

The second part of the session covered the NaubisePhant irrigation system, located around 45 kilometres east of Kathmandu. The system is managed by a water users association. The session explained the structure and functioning of the water users association as well as how increased irrigation coverage has led to changes in agriculture and livelihood amongst beneficiaries.

#### **5) Group work –SPQR presentation.**

In this session the participants were tasked with forming groups and preparing a research proposal based on the information gained in the previous session. This was done with the guidance of project faculty. Each group had to come up with a research question and identify qualitative and quantitative methods they would use in order to attempt to address the question.



Picture 2: Participants during a session

### Day 3

#### 1) Interdisciplinary research tools/methods: Bio-physical investigation/ measurements –Dr B.V. Mudgal

This session gave the participants an overview of bio-physical measurements that are needed in order to accurately determine the sources, extent, dependability and quality of water resources for their utilization and control: supporting sustainable economic and social development whilst addressing the maintenance of environmental quality. An example of a water balance for a wetland was given along with the kind of data that was needed to estimate the water resource potential of the wetland. The various primary and secondary sources for such data were also discussed, including free and reliable data sources that could be found online. The presentation ended with the statement “That which cannot be measured, cannot be managed”.

#### 2) Quantitative Methods: Questionnaire Survey – Dr Niraj Prakash Joshi

The session gave an introduction into how to design an effective questionnaire survey. The session started with an explanation on the difference between qualitative and quantitative data, and how depending on the research question, either or both data could be used. Under the topic of quantitative data collection, the session examined the various steps involved in the process, from design, to execution to coding and data entry. The different types of questionnaires and survey instruments that could be used were also discussed. It was explained that even before getting to the questionnaire stage, it is important to have clear objectives and hypotheses. The various pitfalls to avoid in this process were explained in great detail. A brief explanation on conduct of interviewers/ enumerators during questionnaire surveys was also given.

### 3) Introduction to Participatory Research Tools- Dr BinodBhatta.

The purpose of this session was to introduce the participants to tools and methods of participatory research as well as to highlight the importance of using participatory research methods. The session started by describing the differences between the traditional technology led approach to water resource management and how it is changing now to a more participatory approach –blending technology with local knowledge. It explained what participation was, why it was important and how there were multiple forms and levels of participation. The session went on to explain the principles of Rapid/Participatory Rural Appraisal (RRA or PRA) and list the various tools that could be used as part of this. The session also pointed out how a participatory approach is more inclusive, and leads to sharing of information, as opposed to traditional interview methods, where the relationship between the interviewer and the person being interviewed is more extractive. The important issue of ethics principles involved in such work were discussed. The session ended with a detailed look at how to carry out timeline analysis and focus group discussions.



Picture 3 : Simulated Focus Group Discussion as part of in class exercise on Participatory Research Tools

#### In class exercise

After this session was completed the participants were split into groups in order to hold a simulated focus group discussion. One group of participants were assigned the role of inhabitants in a village, while one group were assigned the role of facilitators. The facilitators were given some time to organize their thoughts and plan the discussion, in order to elicit information from the “villagers” about the problems of water resources related to their village. After this mock exercise, feedback was given by members of the faculty about approaches and ways of taking the discussion forward, as well as ideas on how to diffuse potentially difficult situations that may arise in the course of a focus group discussion.

### 4) Field Visit to Matatirtha VDC

Participants were taken to study the water transfer occurring at Matatirtha VDC on the outskirts of Kathmandu. At the location they were able to see how the local community harnessed and distributed water from mountain springs. They interacted with members of the water users association in the village, and obtained information about pricing, distribution structure, structure and functioning of user associations and also about how water was shared with neighbouring water scarce villages. In addition, they gained information about the system of supplying water into urban areas of Kathmandu through water tankers. They also understood that due to lack of adequate

public water supply infrastructure was exacerbating the water withdrawals and water transfers from this peri-urban area in order to transfer it into urban Kathmandu.

## Day 4

### 1) Field Practicum – Naubise Phant Irrigation System.

Full day field practicum at the Naubise Phant Irrigation system was carried out. The participants had the opportunity to put into practice all that they had learned in the preceding three days. The area is about 45 kilometres east of Kathmandu. Here the irrigation department of Nepal had constructed the irrigation system by diverting water from a river with the first siphoned irrigation scheme in Nepal. Participants were split into five groups with different research questions that were to be answered. Participants then engaged members of the local community,



Picture 4 : Participants, Faculty and Local Inhabitants at Naubise Phant Irrigation system

the water users association, and other key informants in discussions and interviews with the help of the Nepali students for translations. After collection of information, participants went to visit the source of the water intake. This proved to be an interesting experience for the students, some of whom had never been involved in participatory research in this manner before, thus this exercise went a long way in building capacity in this regard.

## Day 5

### Leadership Session –Ms Sukanya Patwardhan

The half day session focused on the development of leadership skills of the participants. Considering the age group and profile of the participants the session was delivered in a highly interactive manner to engage them constructively and maximize learning in a short time. The Learning objective of this session was to sensitize the participants to the necessity of developing the leadership skills as they engage with various stakeholders in the larger community to achieve their objectives. The session covered topics



Picture 5 : Exercises as part of the session on

- What makes a leader - special qualities of a leader - through various examples
- The leadership qualities required by a sustainability professional and in particular the participants
- The importance of holistic approach to leadership through the well-being of the individual
- Assessment of one's well-being

- Drawing and action plan as a future leader for water management

As part of the session multiple exercises were conducted, including a trust in leadership exercise shown in Picture 5.

## **2) Data analysis and report/presentation preparation**

This session was time was given to participants in order to analyze the information collected through interviews and discussion during the previous day's field exercises. Students were expected to carry out analysis and present their findings on the next day.

## **Day 6**

### **1) Group Presentations**

This session completely involved presenting the results of the field exercises that were held. Participants were charged with making a presentation of their research findings and to describe the methodology they used in order to carry out the analysis.

- Group 1 presented on Gender roles in the study area and their relation to water accessibility.
- Group 2 examined the water distribution inefficiency in the NaubisePhant Irrigation System
- Group 3 studied the Impact of NaubisePhant Irrigation System on Agricultural Productivity
- Group 4 examined the Impact of the NaubisePhant Irrigation System on Livelihoods of the beneficiaries.

After the presentations, each group was given feedback as to improvements and further steps, as for most of the participants this was the first experience of such participatory and qualitative research work, it proved beneficial to have this kind of field practicum.

### **2) Opportunities for Transboundary Water Management in GBM basins – Prof. Mashfiqus Salehin**

The session sought to provide an introduction into issues involved in transboundary water management, using the case of the Ganga, Meghna and Brahmaputra basins as an example as collectively, these basins extend to cover 5 countries. The session explained water management issues in the GBM basins, in terms of the spatial and temporal inequalities in flow of water leading to both floods and droughts. Other water management issues in each of the countries were discussed. The session described water management plans and policies of the different countries and about history of regional cooperation between the nations. The session explored different water management interventions, existing as well those proposed in the future and their regional implications. An example given was the proposal to link rivers in India, which was looked at with some concern in Bangladesh. The session described various opportunities and road blocks to regional cooperation, and showed examples of places where regional cooperation would be beneficial. Also shown were examples of successful transboundary agreements regarding water sharing in different parts of the world. The session concluded after speaking of the way forward, as



well as the lessons that should be learned by GBM countries from past experiences, and from other places in the world.

### 3) Closing ceremony

The training programme thus drew to a close with the closing ceremony. Representatives from each partner institution, both students and faculty said a few words about the training programme. Prof Khem Raj Sharma proposed the vote of thanks, after which certificates of participation were distributed to each participant. The session drew to a close with a final few words from Dr. Neena Rao.

## 4. Results

### 4.1 Participants Evaluation

For the overall evaluation of the training programme, a questionnaire provided by Cap-Net was administered on the participants on the last day of the workshop. The questionnaire asked participants to give their opinion on: a) relevance of the course; b) extent to which new information is acquired; b) whether the course reach their expectations; c) content and quality of the presentations and training material compendium; d) participation possibilities during the course; and e) the action which they intend to take to implement the knowledge gained from the training workshop. A sample copy of the questionnaire is given in Annexure.

In response to the question relevance of course to current role 44% of responses stated that it was High, and 36 % of responses stated that it was very high, while 16% of the responses were medium. One response stated that it was not applicable. From this it can be seen that the training programme

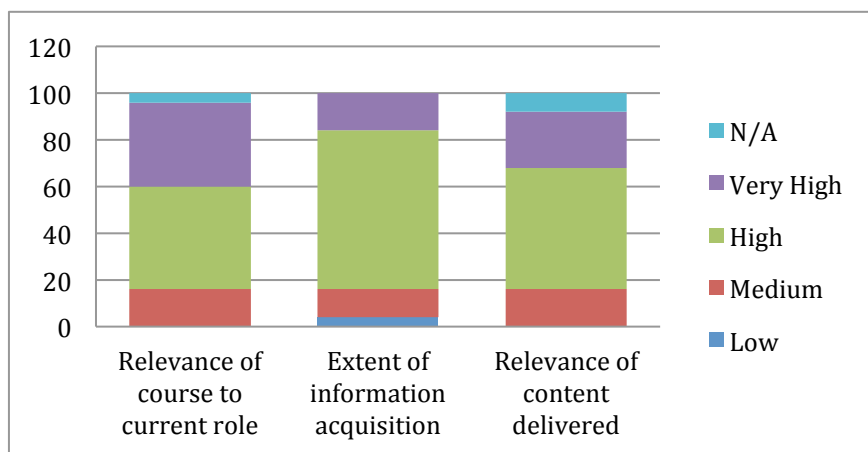


Figure 1: Responses to questions 1, 2 and 3 in %

benefited a large number of participants. On being asked the extent to which the participants have acquired content that was new to them. 68 % of the responses said it was high, 16% stated that it was very high, 12% rated it as medium and only one response stated that it was low.

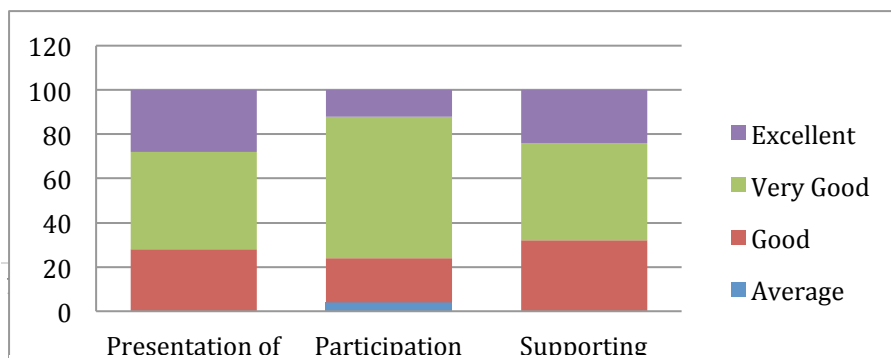


Figure 2: Responses to questions 5, 6 and 7 in %

Thus majority of the participants were able to acquire at new information. When asked about the relevance of this programme to current work, 52% stated that

## ***Selected quotes from participants***

***“Knowledge gained from this course will help me be a better water professional. The leadership, transboundary skill/knowledge will help me manage water resources in a broader perspective for a better future”***

***“I came to know that similar water situations existed in other countries”***

***“Through the Leadership Training Programme, I gathered what the important features of a leader are and how to be a leader”***

the relevance was high 16% stated that the relevance was medium and 24% stated that it was very high. All participants felt that their expectations and objectives from this training were met. Presentation of sessions, 28% of participants found it good, while 44% found it very good, and 28% found it excellent. For participation possibilities 64% found it very good, 20% good and 12 % excellent. One person felt the avenues for participation were average. For supporting materials, 32% of the participants found them to be good, 44% found them to be very good and the remaining 24% found them to be excellent.

*Participants’ plans regarding taking actions to implement the knowledge gained from the training programme?*

Many of the participants felt that they have gained a great deal from the training programme, and that they had “all round learning” .As expected the learning is different for different individuals. Some participants, who were from a background of Civil Engineering, realized the importance of the concepts of gender and equity into their thinking process. Some were exposed to the issues of water management in different countries for the first time, and were struck by how similar issues are across South Asia. The leadership training programme was received well, one respondent stated that the importance of leadership skills for water professionals, cannot be over stated. Selected comments can be seen in the text boxes.

*Comments or suggestions on course content; facilitation; support materials; and course organizations*

Most of the participants felt that the course content was very good, quite comprehensive, well-structured and appropriate. Some stated that sessions were informative, and that some resource persons made their sessions entertaining, while being extremely informative. However, one participant felt that there should be more sessions on water issues and more field visits to varied places in order to understand the difference within one country.

Participants enjoyed the course facilitation and rated it as very good. They found the discussions very interactive and enriching. Participants were also appreciative of the way the group exercises as they provided them an opportunity to engage and apply classroom learning to real world problems.

Participants were very happy to get the training materials, some shared as handouts, while others shared online. However, some participants suggested that it should have been shared a few days before the commencement of the training programme.

Overall, participants rated the organizations of the workshop to be well coordinated, and the accommodation to be good.

## 5. Conclusions

*“Regional South Asia Water (SAWA) Fellows Training on Integrated Water Resources Management”*, was organized jointly by Nepal Engineering College, Kathmandu, Nepal and South Asia Consortium for Interdisciplinary Water Resources Studies (SaciWATERS), Hyderabad, India. The participants were post-graduate level students at partner institutions in Bangladesh, India, Nepal and Sri Lanka. There were 25 students in all, with 10 students from Nepal and 5 each from the other institution. The programme involved many resource persons, who are experts in their fields. The training included classroom sessions, group activities and field visits.

As evident from the results of the evaluation, the training programme was able to achieve its goal in inculcating in the participants various facets of IWRM. They were made aware of the issues in each of the four countries, issues of climate variability, ground water exploitation, participatory research, gender and equity and so on. Further field visits and practicum, were conducted.

Participants were very appreciative of the overall organization of the training workshop and were quite satisfied with the kind of content and new information that they were able get from 6 days of intensive and interactive programme. Some recommendations that were made by students have been noted, and it hoped that they will be addressed in future programmes. All in all, this programme could be considered a success.

**Annexure I**  
**Programme Schedule**

**SAWA Training Programme on Integrated Water Resources Management**  
**03-08 October 2013**  
**NEC, Kathmandu, Nepal**

Organized By  
IDRC South Asian Water (SAWA) Fellowship Project  
Nepal Engineering College (NEC), Nepal and the SasiWATERs, Hyderabad, India

Venue : Park Village Hotel and Resort, Budhanilkanta, Kathmandu

<b>Date</b>	<b>Activity</b>	<b>Remarks</b>
02 October 2013	Arrival of SAWA fellows	Accommodation at Hotel Park Village Resort, Kathmandu, Nepal
<b>03 October 2013</b>		
8.30 -09.00	Registration	
09.00 – 10.00	Inauguration -Chief Guest: Secretary of Ministry of Irrigation, Nepal Dr. Prachanda Pradhan –Key note speech Dr. Neena Rao, Director, Projects and Partnerships – SasiWATERs and Coordinator IDRC-SAWA Fellowships, Chair: Prof. Dr. Deepak Bhattarai	
10.00 – 10.30	<i>Refreshments</i>	
10.30 – 11.45	Introduction to the training programme	Dr. Neena Rao
11.45 – 12.30	IWRM concepts and principles: experiences of Bangladesh	Dr. Mashfiqus Salehin, IWFM-BUET
12.30 – 13.00	Overview of water resources management in Nepal	Prof. Khemraj Sharma, NEC
13.00 – 13.30	Overview of water resources management in Sri Lanka	Dr. Dammi Dayawansa, PGIA
13.30 – 14.30	<i>Lunch</i>	
14.30 – 15.00	Overview of water resources management in India	Prof. BV Mudgal, CWR
15.00 – 15.45	Student Recap: brief discussion on water related issues in all four nations	Dr. Neena Rao and Arjun Surendra
15.45 – 16.30	Climate Change and its impacts on water security, food security and vulnerability	Dr. M. Dinesh Kumar ( IRAP)
16.30 – 17.00	<i>Refreshments</i>	
17.00 – 17.45	Groundwater crisis in South Asia.	Dr. M. Dinesh Kumar (IRAP)
<b>04 October, 2013</b>		
09.00 – 10.00	Interdisciplinary concepts and IWRM	Dr. Dipak Gyawali

10.00 – 10.45	Challenges and Opportunities in Transboundary Water Governance	Prof. Mashfiqus Salehin
10.45 – 11.45	Gender, Water Right and Equity	Dr. Aditya Bastola
11.45 – 12.00	<i>Refreshments</i>	
12.00 – 13.30	Student group presentations on Study area and issues faced therein: PGIA, NEC, CWR, BUET	Dr. Mudgal, Dr. Dayawansa , Prof. Salehin, Prof Sharma
13.30 – 14.30	<i>Lunch</i>	
14.30 – 15.00	Interdisciplinary research design (SPQR, conceptual framework, introduction to socio-technical research tools and methods)	Prof Salehin
15.00 – 15.30	Introduction of field study site	Prof. Khemraj Sharma
15.30 – 16.30	Group work: SPQR/research proposal	
16.30 – 17.00	<i>Refreshments</i>	
17.00 – 18.00	Presentation of SPQR/research proposal	
<b>05 October 2013</b>		
09.00 – 09.30	Interdisciplinary research tools/methods: Bio-physical investigation/ measurements	Dr. BV Mudgal
09.30 – 10.00	Quantitative methods: Questionnaire Survey	Dr Niraj Joshi
10.00 – 11.00	Participatory research tools/methods: Resource/ social mapping, Focus Group Discussion, Timeline Analysis	Dr. BinodBhatta
11.00 – 11.30	<i>Refreshments</i>	
11.30 – 12.30	In-class exercise of research methods	Dr. BinodBhatta
12.30 – 17.30	Field work/ Visit to relevant Research Institute.	Packed lunch to be provided
<b>06 October 2013</b>		
08.30 – 16.00	Field work	
<b>07 October 2013</b>		
09.00 – 13.30	Leadership skills for water professionals	Ms. Sukanya Patwardhan
13.30 – 14.30	<i>Lunch</i>	
14.30 – 16.00	Data analysis and report/presentation preparation	
16.00 – 16.30	<i>Refreshments</i>	
16.30 – 17.30	Data analysis and report/presentation preparation	
19.30 – 21.00	<i>Cultural Night</i>	
<b>08 October 2013</b>		
09.00 – 11.00	Group presentations	
11.00 – 11.30	Closing Ceremony	
11.30 – 12.00	Refreshments	
13.00 – 14.00	Lunch	
14.00 – 17.30	Partner Institutions' Meeting (PIM)	
<b>09 October 2013</b>		
	Departure	

**Annexure-II**  
**List of Participants**

**Training: “IDRC-South Asian Water (SAWA) Fellowships” Program**  
**Venue: Hotel Park Village Resort, Budhanilkantha, Kathmandu**  
**Date: 3 -8<sup>th</sup> October.**

Partner Institution: Institute of Water and Flood Management (IWFM), Bangladesh University of Engineering and Technology (BUET), Bangladesh

S.N	Name of the Participants	Gender
1	DebanjaliSaha	Female
2	Md. GulamKibria	Male
3	Sultana Maliha	Female
4	Tamanna Kabir	Female
5	Taznin Naher	Female

Partner Institution: Postgraduate Institute of Agriculture (PGIA), University of Peradeniya, Sri Lanka

S.N	Name of the Participants	Gender
1	AsuramuniChaturikaSewwandi Perera	Female
2	PelpitiyageSandeepanieKaushalyaPelpitiya	Female
3	ThusyanthiSellathurai	Female
4	RanthePathirannehelageSumuduPrasanthiChandrasiri	Female
5	Diyawadanage Mahesh NilanthaDiyawadana	Female

Partner Institution: Nepal Engineering College, Nepal

S.N	Name of the Participants	Gender
1	DurgaAdhikari	Female
2	PratikshyaNeupane	Female
3	Rajendra Shrestha	Male
4	SangeetaDandekhya	Female
5	Shristi Pradhan	Female
6	LajanaSreshta	Female
7	Prajwal Bhandari	Male
8	BishnuDev Pandey	Male
9	Bipana Sharma	Female
10	Kailash Shrestha	Male

Partner Institution: Centre for Water Resources (CWR), Anna University, India

S.N	Name of the Participants	Gender
1	AnbuVidhya	Female
2	PaneerselvamAnitha	Female
3	ArumugamEllakiya Priya	Female
4	ShanmuganathanMonisha	Female
5	AnandharajMalarmathiDivinya	Female

## Annexure III

### Detailed profile of resource persons and facilitators

**Dr. M. Dinesh Kumar** did his B-Tech in Civil Engineering in 1988, M. E. in Civil (Water Resources Management) in 1991 and Ph. D in Water Management in 2006. He has nearly 22 years of professional experience in the field of water resources, in undertaking research, action research, consulting and training in technical, economic, institutional and policy issues related to water management with several prestigious national and international organizations. Since August 2008, he is Executive Director of the Hyderabad based Institute for Resource Analysis and Policy, which he founded. He has nearly 135 research publications to his credit, including three books. He is the author of three books. His most recent book is titled “Managing Water in River Basins: Hydrology, Economics and Institutions”, by Oxford University Press, New Delhi. He is also the lead editor of the recently published book titled Water Management, Food Security and Sustainable Agriculture in Developing Economies, by Routledge/Earthscan. He has published extensively in many international peer reviewed journals, such as Water Policy, Energy Policy, Water International, Journal of Hydrology, Water Resources Management, Resources, Energy and Development (REaD) Journal. He is member of several professional associations, including International Society for Ecological Economics (INSEE), International Association for Study of Commons (IASC), Asia Pacific Association of Hydrology and Water Resources (APHW) and International Water Resources Association (IWRA). He is one of the founding members of the Society for Integrated Land and Water Management (SOFILWM), a non-profit organization based in Gujarat working on sustainable groundwater management in arid and semi-arid regions of India, and is at present its Member Secretary. Currently, he is also Associate Editor of *Water Policy* journal.

**Professor Mashfiq Salehin** did his B.Sc in Civil Engineering and MSc in Water Resources Engineering from BUET, and PhD in Civil and Environmental Engineering from Northwestern University in Illinois, U.S.A. Prof. Salehin has 18 years’ research and teaching experience at IWFMM, BUET. He teaches postgraduate courses on Integrated Water Resources Management, Interdisciplinary Field Research Methodology in Water Management, Hydrogeology and Groundwater, and Groundwater Resource Assessment. His research activities are focused on interdisciplinary water resources management, socio-eco-technical approaches to water management, water resources systems modeling as a decision making tool for water resources management, eco-hydrology and ecohydraulics, and coastal hydrogeology and groundwater. He also has a keen research interest in transboundary river water management issues. A significant number of postgraduate students have conducted their research on interdisciplinary aspects of water resources under his direct supervision. He received formal training in IWRM and Interdisciplinary Field Research Methodology in Water Management organized under the CB project. Prof. Salehin acted as the main resource person for numerous training programmes on IWRM organized by BUET and other water sector institutions for water and environmental academicians of public and private universities, water professionals working in government and NGOs. He was a key resource person in the Training of Trainers on IWRM organized by SaciWATERS and BUET, which resulted in a training module on IWRM.

**Dr. B.V. Mudgal** has done his Ph.D. from the Indian Institute of Technology, Powai, Bombay, in Hydraulics Engineering. He has over 15 years’ teaching experience, including four years (1998-2002) at Jimma University, Ethiopia. He was involved in setting up the hydraulics laboratory, and participated in the novel Community Based Education program in Ethiopia. Since December 2003, he is with the Centre for Water Resources, Anna University. He teaches subjects related to water resources engineering, both in the undergraduate and postgraduate programmes. He was actively involved in the Crossing Boundaries Project from 2006, initially as Finance Manager, and later as the Project Coordinator at CWR. He has undergone staff training and a Training of Trainers on Integrated

Water Resources Management at the University of Peradeniya, Kandy, Sri Lanka. He has guided over 20 post graduate students' research projects. He has also supervised two Ph.D. scholars under the Crossing Boundaries project.

**Prof. Khem Raj Sharma** has a PhD in Soil and Water Engineering from Central Luzon State University, Nueva Ecija, the Philippines. He holds an M.S in Land and Water Resources Engineering from the University of the Philippines. He was awarded fellowships from the government of Switzerland for his M.S and the International Rice Research Institute for his Ph.D. Dr. Sharma completed his Bachelor's from the University of Udaipur, India, for which he was granted a fellowship from the United States Agency for International Development. He has worked in the Department of Irrigation (Dol, Nepal) in various positions, and contributed to various development organisations, prior to joining Nepal Engineering College (*nec*) as a visiting professor in 2008. In 2009, Dr. Sharma became full time Program Coordinator for the M.Sc. Interdisciplinary Water Resources Management, before being appointed Director of Nepal Engineering College-Center for Postgraduate Studies. Dr. Sharma's responsibilities include planning and implementing programmes on postgraduate studies, guiding students in their thesis work, along with teaching various subjects related to water development and management. He has worked as a development and research consultant for various international agencies, including the UN Food and Agriculture Organization, International Fund for Agriculture Development, International Labour Organisation, US Agency for International Development, Winrock International and International Water Management Institute. Besides Nepal, he has work experience in the Philippines, Cambodia, Bangladesh and India.

**Dr. N.D.K. Dayawansa** did her B.SC. in Agriculture (Specialized in Agricultural Engineering) from the University of Peradeniya, Sri Lanka, M.Sc. in Remote Sensing and Geographic Information Systems (GIS) from the Asian Institute of Technology, Thailand, and a Ph.D. in Water Resources Management from the University of Newcastle upon Tyne, UK. Presently she is a Senior Lecturer in Agricultural Engineering at the University of Peradeniya. Her responsibilities include teaching and research supervision for undergraduate and postgraduate students. She has supervised more than 30 undergraduate and postgraduate student researches in water resources management and agricultural engineering related fields, and has published a number of research papers and articles. In addition, she has served as a collaborative scientist in research projects funded by local institutions. Dr. Dayawansa served as the Research Programme Manager of the Crossing Boundaries Project supported by SaciWATERS and Wageningen University, and also served as the Project Coordinator for nearly two years. At present, she is serving as the Secretary of the Board of Study in Agricultural Engineering.

**Mr Dipak Gyawali** is currently Pragma (Academician) of the Nepal Academy of Science and Technology (NAST) and research director of the non-profit Nepal Water Conservation Foundation. He is a hydroelectric power engineer and a political economist and was Minister of Water Resources, Nepal. During his term as Minister, he initiated reforms in the electricity and irrigation sectors focused on decentralization and promotion of rural participation in governance. He has been involved, as guest scholar and researcher at various institutions such as the Queen Elizabeth House in Oxford, the Norwegian Center for Research in Organization and Management, the International Environmental Academy in Geneva, and at the London School of Economics. Mr Gyawali has been conducting interdisciplinary research on the interface between technology and society, and has published numerous articles on the topic of water, energy, dams, and climate change issues.

**Dr Aditya Bastola** has a PhD in Women's Studies, from the University of Pune, where his research work focussed on women and drinking water access. He is currently the Executive Director of Consortium of Social Science Researchers in South Asia (CROSS South Asia) which is a non-profit organization that seeks to create space and build networks of like-minded people to provide a platform to conduct research in the South Asian region.



**Dr BinodBhatta** has a Ph. D. (forestry) in Silviculture and Forest Influences with a focus on social forestry and community Development from the University of the Philippines at Los Banos and Masters in Social Forestry. He is currently the Director-Research: Forestry and Natural Resources Management (F/NRM) Specialist at Alliance for Social Mobilization - Alliance Nepal. He has been involved in various development project evaluations (projects mainly related to poverty alleviation, inclusive development, and empowerment of vulnerable and socially excluded communities, education). He has worked as Project Director for the “National survey on Impact Study on situation of Goitre and Iodine Deficiency Disorders (IDD) and availability of Iodized salt in Nepal”. Dr.Bhatta joined PAARRM (Policy Analysis of Agriculture and Related Resources Management) Program of Winrock International in March 1999 as the Resource management Specialist and continued until August 2005. In this position he had been involved in the Policy analysis of Forestry Sector in general and more specifically in the Policy Analysis of Nepal’s Community Forestry Program. He was also involved in the project on resolving second generation issues (mainly the issue of governance) in NRM users groups. Before this he served as the Program Coordinator and Planning and M+E Coordinator for the GTZ supported Nepal-German Churia Forest Development Project (1996-1999), Head of Natural Forest Silviculture and Management Section at Forest Research and Survey Center of Ministry of Forest and Soil Conservation (1993-1996) and Training Officer at the Training Division of Ministry of Forest and Soil Conservation (1984-1993). Besides, he has contributed in several studies as a consultant. He resigned from the HMG’s service in 1996. Dr.Bhatta has been involved in the studies related to silvicultural aspects, policy aspects, institutional aspects and equity aspects of community forestry program in Nepal. He has also been supervising or co-supervising research of a few students pursuing Master of Science and Ph D degrees program in Forestry and Natural Resources Management Program in various Universities.

**Dr Neena Rao** is the Director - Projects and Partnerships at SaciWATERS. She is a Board Member of the Cap-Net, UNDP Global Network for Training and Capacity Building in IWRM. She is also the Project Leader and International Coordinator of the IDRC-SAWA Fellowships programme. She has varied and diverse national and international experience in academia, research, training and implementation in the development field. She has multidisciplinary training -spanning Economics, History, Natural Resource Management Policies and Environmental Governance. Having worked with diverse groups ranging from American Indians (Indigenous people of Americas), African Americans, and Latin Americans in the US to the indigenous peoples of Nagaland, Andamans , interiors of AP and MP in India she is also very alive to diversity (geographical and cultural) concerns and sensitivities while designing and implementing developmental projects. She is especially interested in and incorporates Systems Thinking approach in her research, training, design & implementation of various projects in the development field.Her book, "Forest Ecology of India: Colonial Maharashtra" has been published by Foundation Books Cambridge, University Press, India. She has also published several papers in Journals and Books of national and international repute. Her recent publication has been a chapter: Muslims of Hyderabad: land locked in the walled city / in a book, Ed by Laurent Grayer & Christophe Jaffrelot, Muslims of Indian Cities : Trajectories of Marginalization, Ed: by Harper Collins, India & Hurst Publishers UK.

**Dr Niraj Joshi** has a PhD in rural/agricultural economics from Hiroshima University. Dr Joshi is currently Associate Professor (Research Coordinator) at Nepal Engineering College - Center for Postgraduate Studies. Previously he has been an Assistant Professor at Hiroshima University, as well as a Research Assistant there. He is intensively engaged in research related to poverty food insecurity, rural livelihoods and climate change in developing countries with a particular focus on the far western hills of Nepal, as well as the marginalized community Chepand in Nepal’s central remote

hills these published 18 research articles, and has presented papers related to poverty, food insecurity, rural livelihoods and climate change at several national and international conferences.

**Ms. Sukanya Pathwardhan** has a Masters degree in Inorganic Chemistry and a Masters degree in Human Resources from the Tata institute of Social Sciences (TISS), where she was a gold medallist. In the past she has worked at the University of Pune, where she carried out research in material science. She has taught at the National Defence Academy and has worked for IBM India Ltd for 10 years. She currently works with the Tata Leadership Development Centre where her work areas include learning and development, career paths and professional development, talent management, technical vitality, employee value proposition, largescale initiatives, leadership development, and diversity. She has been the recipient of many national and international awards and fellowships. She has worked in manufacturing, sales & marketing & IT companies. She was awarded scholarship by Rotary International to be a member of the prestigious Group Study Exchange program to Australia in 1998, where outstanding professionals are selected from a country & are given an opportunity to visit their area of interest in the other country. She was a recipient of the scholarship in Oct 2002 by Government of Japan for International training program at Tokyo, Japan on cross-cultural management. She has participated in five IBM Academy of Technology studies – a virtual body in IBM that decides the company direction world wide. She is identified as a thought leader and was invited to attend “Services Innovation Workshop” to the USA. Her name has featured on the IBM intranet in the women achievers series. She is regularly invited to speak within and outside of IBM on varied topics in management and has publications to her credit. At IBM she has been awarded special contribution award, 3 Bravo awards for focus & passion for work, Long term performance award in terms of stock options. She currently working for IBM based out of Pune. Her expertise is in the area of Technical Leadership Development aspect. Her interests include Gen Y, Virtual Learning, Coaching, People Innovations, Productivity at collaborative workplaces, Service Science, Business Value through People, Conceptualization to Delivery of People Initiatives, and Leadership

**Mr Robert Dongol** has a Masters Degree in Environmental Engineering and Management from the Asian Institute of Technology in Bangkok, Thailand. He also has Bachelors Degree in Environmental Science from Kathmandu University. He has been with Nepal Engineering College since 2008, and is now an Assistant Professor at the Department of Civil Engineering. His research interests include Sustainable Development as well as Water & Waste Water.

**Mr Arjun Surendra** has a Masters Degree in Environmental Science from Rutgers, The State University of New Jersey. He also has a Masters Degree in Inorganic Chemistry and a Bachelor’s degree in Life Sciences. He works as a Research Associate at SaciWATERS. As part of his graduate work, he has been a part of a Material Use, Science and Engineering (MUSES) project funded by the National Science Foundation entitled: "Self Sufficient Urban Buildings". As part of this project he was involved in post occupancy evaluation studies in two buildings in the North-Eastern United States, additionally he was involved in developing analytical techniques for analysis of compounds from Pharmaceutical and Personal Care Products (PPCP) in domestic wastewater. During his graduate work, he was a recipient of the "Excellence Fellowship" from Rutgers University's Graduate School - New Brunswick. Prior to joining SaciWATERS he has been involved in diverse projects ranging from water accounting to being a Research Associate for a project studying the mechanism of political interest representation across Brazil, India and China. In addition he has been involved with education and outreach.

## Annexure IV

### Course Evaluation Form

Course Title \_\_\_\_\_ Date: \_\_\_\_\_

We invite you to complete this course-evaluation form to help us improve our training activities. Please be frank and open with your ratings and comments. Your opinion – whether positive or negative - is valuable to us and will be considered in the preparation of future activities.

**1. Relevance of the course to your current work or function.**

None	Low	Medium	High	Very high

**2. Extent to which you have acquired information / content that is new to you.**

None	Low	Medium	High	Very high

**3. Relevance of the information / content that you have acquired for your work.**

None	Low	Medium	High	Very high

**4. Did the course reach your expectations and objectives?**

<b>No</b>	<b>Little</b>	<b>Just enough</b>	<b>More than enough</b>	<b>Completely</b>

5. **The presentation of the different sessions was**

<b>Excellent</b>	
<b>Very Good</b>	
<b>Good</b>	
<b>Average</b>	
<b>Poor</b>	

6. **Participation possibilities during the course were**

<b>Excellent</b>	
<b>Very Good</b>	
<b>Good</b>	
<b>Average</b>	
<b>Poor</b>	

7. **Supporting materials for the different sessions were**

<b>Excellent</b>	
<b>Very Good</b>	
<b>Good</b>	
<b>Average</b>	
<b>Poor</b>	

8. **What action will you take now to implement the knowledge gained from this course?**

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9. Please comment or make suggestions on the following

**Course content** \_\_\_\_\_

**Facilitation**

\_\_\_\_\_

**Support materials**

\_\_\_\_\_

**Course organization**

\_\_\_\_\_

**Any other comments** \_\_\_\_\_

\_\_\_\_\_

Thank you for taking the time to fill out this survey. Your inputs will be considered to improve the quality and relevance of future activities and they are highly appreciated.

