

# TRAINING OF TRAINERS IN

## "INTEGRATED WATER RESOURCES MANAGEMENT"

JANUARY 16-21, 2012

### Technical Report

Submitted by:



**Institute of Water Resources Engineering and Management  
Mehran University Of Engineering And Technology  
Jamshoro, Sindh**



## NARRATIVE REPORT ON INTEGRATED WATER RESOURCES MANAGEMENT (IWRM) TRAINING PROGRAMME

**1. Background:** Pakistan possesses one of the largest irrigation systems in the world. Through this system, water is supplied to all major stakeholders which include agriculture, environment, domestic (household) and industries. Due to lack of coordination amongst these various sectors, there have been numerous issues in water distribution. Thus, coordinated water management is a crucial step towards sustainability of water resources.

Integrated Water Resources Management (IWRM) is a systematic process for sustainable development, allocation and monitoring of water resources use in the context of social, economic and environmental objectives. This promotes coordinated management of land and water, as also upstream and downstream interests in the context of river basin management. Water resources are increasingly under pressure from population growth, economic activity and intensifying competition amongst water users. Therefore, considering the importance of water, this IWRM training was organized.

**2. Objective of the Training:** To develop human resources on the concept of IWRM so that available water resources of the country are wisely and scientifically managed and resultant economic benefits of the country are optimized.

**3. Target Group:** Universities (Mehran Engineering and Technology Jamshoro, Sindh Agriculture University Tando Jam, Quid-e-Awam University of Science and Technology Nawabshah), Water and Power Development Authority (WAPDA), Irrigation Department, Planning and Development, NGO and Master's Students of IWREM

- Total number of Participants : Twenty Six (26)
- Female Participants : Four (4)

**4. Facilitators / Trainers:** Expatriate and Local (names are mentioned in the training schedule provided below).

**5. Duration:** 16-21 January, 2012

### 6. Schedule of the Training

| Timings   | Day 1                                     | Day 2  | Day 3                                    | Day 4  | Day 5   | Day 6  |
|-----------|---|--|--|--|---|--|
| 0930-1100 | Inaugural Session                         | Climate Change and IWRM<br>(Dr Kamran/ Dr. BK Lashari) | Ecosystems and IWRM<br>(Prof. Dr. Nimal) | River Basin Planning and Management<br>(Prof. Dr. Nimal)     | Water Policy and regulations<br>(Prof. Dr. Nimal) | Field Trip to Kenjhar Lake<br>(Lunch at Kenjhar) |
| 1100-1130 | Tea Break                                 |  |  |  |   |  |
| 1130-1300 | Introduction to IWRM<br>(Prof. Dr. Nimal) | Agriculture and IWRM<br>(Prof. Dr. Nimal)              | Water and Economics<br>(Prof. Dr. Iqbal) | Stakeholder Participation in Water Allocation and Management | Water Policy and Regulations                      | 0900-1700  |

|           |   |  |  |  |                   |  |
|-----------|---|--|--|--|-------------------|--|
|           |   |  | Punhwar)                               | (Prof. Dr. Nimal)  | (Prof. Dr. Nimal) |  |
| 1300-1400 | Lunch and Prayer Break                            |  |  |  |                   |  |
| 1400-1530 | Gender and Equity<br>(Ms Dragica)                 | Pollution and Waste Water Management<br>(Prof. Dr Khadeja Qureshi) | Demand Management<br>(Prof. Dr. Nimal) | Health and Sanitation<br>(Engr. Shafi Mohammad Lakho, Chief RCC) | Closing Session   |  |
| 1530-1545 | Tea Break   |  |  |  |                   |  |
| 1545-1715 | Floods and Droughts<br>(Prof. Dr. M Muneer Babar) | E-Resources for IWRM<br>(Prof. Dr. Nimal)                          | Demand Management<br>(Prof. Dr. Nimal) | Public-Private Partnerships<br>(Prof. Dr M Aslam Uqaili)         |                   |  |
| 1930-2100 |   |  | Dinner at Gymkhana, Hyderabad          |  |                   |  |

## 7. Summary of Presentation of Resource Persons

### Session Title: Introduction to Integrated Water Resources Management (IWRM)

During this session, the participants were introduced to the technical, economic, social and environmental complexities of water resources management, for them to appreciate the importance of IWRM approach for sustainable development.

The presentation was divided into various parts wherein, the need for IWRM, concept of IWRM, link with development, operationalization of the concept and the need for capacity building were covered.

The world water scenario, resources and uses, declining supply with increasing demand due to population increase, growing cities and unavailability of water due to increased pollution were discussed. The need for integration, to address these various complexities of water resources use while meeting the demand with limited supply was emphasized.

This was followed by introduction to the evolution of water sector leading to the concept of IWRM through five paradigms described by Tony Allan. The Dublin Principles and GWP definition of IWRM, conflicts within social, economic, and environmental aspects and why the water allocation is political and need for integration were discussed.

The section on development included concepts of development over time, shifts from economic growth and modernization as development to sustainable development, the role water plays in achieving the Millennium Development Goals (MDGs) and how IWRM is linked to development were introduced.

The last section covered major activities that have occurred from 1992 onwards in promoting IWRM and more specifically capacity building activities, including the role played by CapNet.

### **Session Title: Gender and Water Equity**

IWRM is a platform for strengthening water governance, established with a goal to enable a good framework for decision making on water resources. The Dublin Principles are the foundation for the change of the approach to water governance considering all water uses together. These Principles recognize fresh water as a finite and vulnerable resource, requiring involvement of all users, planners and policy and decision makers. In addition, the Principles underlined women's role in provision, management and safeguarding of water which is recognized as an economic and social good.

Implementation of the Dublin Principles may require focus on numerous obstacles framed by long-standing perceptions, deeply embedded into our way of thinking and behavioral patterns. While introducing IWRM, we may come across common perceptions that water will always be there, that it is not the end-users responsibility to think and take care of these resources, rather its the responsibility of the policy planners and decision makers. In addition, introducing water as an economic good may induce reaction, which is the result of intensely ingrained perception that access to water is a basic human right. This perception often lacks a degree of responsibility for water resources which should be a vital part of the right to access to water. In order to bring necessary changes to the rock-solid perceptions and behaviors, integrated awareness campaigns with obligatory programs in school curricula needs to be seriously considered. The new generation needs to grow up with a right perception that water is finite and that right to access to water goes hand-in-hand with corresponding responsibilities of every water user.

### **Session Title: Flood and Drought Management**

In this presentation various types of floods, their causes and remedial measures were discussed. Flood hazards and methods to mitigate them were also discussed. Advantages and disadvantages of floods and their control measures were presented. Besides flood management, drought management techniques, effects of droughts and preparedness to cope up with such challenges were brought into the limelight.

### **Session Title: Agriculture and IWRM**

This session was based on the presentation made by Prof. Arjen Hoekstra at the Global ToT in IWRM, held in Neuchatel in Switzerland during June 2003. The material can be downloaded from the CapNet website.

The purpose of using the above material was to introduce new concepts in relation to water use in agriculture and its relevance to IWRM. The topics covered included blue and green water, virtual water and per capita water footprint. The discussions initiated with the interaction of participants on the applicability of these concepts to the context of Pakistan has helped them realize importance of these new concepts and think innovatively about the way they plan their water development and management activities in the future.

### **Session Title: E-Resources for IWRM**

During this session, the participants were guided to go through few important websites and locate materials for learning and teaching purposes. During the time allocated for this session (90 minutes), they were able to browse through websites of Cap-Net, World Water Council,

GWP, SIWI, IWMI, UN Water and SaciWATERs. More time was spent on describing the teaching materials of Cap-Net, Tool Box and compendium of training materials of SaciWATERs.

### **Session Title: Pollution and wastewater Management**

Global overview of water resources was discussed and major pollution contributing sources along with persistent and non persistent pollutants. Wastewater treatment methods from primary till tertiary were explained along with their design, working capacity and removal efficiency. A case study of Qasimabad-Hyderabad wastewater treatment system was also discussed. Many experiences were shared and it was concluded that major emphasis should be on prevention of pollution at the source. The supply or river should be protected, people should be educated. Mobilization of community in this regard is another vital point.

### **Session Title: Ecosystems and IWRM**

The material used for this session was abstracted from slides prepared by Prof. Brij Gopal for the ToT in IWRM held in Sri Lanka during 2010. The session started with an introduction to the importance of ecosystems in maintaining nutrients and the energy flow in sustaining life on earth. This was followed by linkages of ecosystems to IWRM. The importance of aquatic ecosystems such as river ecosystem, lake ecosystem along with ecosystems functions that they provide to people were also explained.

The importance of rivers as purifiers and converters of pollutants to substances which are less harmful were discussed. This included eco-hydrology, river-floodplain and adjacent upland interaction, river continuum concept, flood pulse concept and assimilative capacity of rivers.

The last section included principles of environmental flow and how it is to be determined and included in water resources development and management.

### **Session Title: Demand Management**

The role play material on water demand management developed by Prof. Hubert Savanije at the Global ToT in IWRM in Neuchatel, Switzerland during June 2003 was used. This role play exposed participants to the multi-disciplinary character of IWRM with a focus on water demand management, to create awareness, understanding and experience with the concepts and tools of demand management, design and implementation of demand management strategies, behaviour of water resource systems and stakeholders, efficiency of water use and economic importance of water.

### **Session Title: River Basin Planning and Management**

The first session on River Basin Planning and Management (RBPM) was used to cover basic functions required for RBPM. The material developed by the CapNet, UNDP and presentations used by Prof. Ambujam at the ToT in IWRM held in Sri Lanka during 2010 were used.

The topics covered included justification of river basin as a unit for planning and operationalizing IWRM and various steps to be followed in developing a river basin plan. This was followed by essential functions such as water allocation, stakeholder participation,

pollution control, information management, monitoring and compliance, as well as economic and financial instruments. The application of different models for RBPM were also discussed.

### **Session Title: Health and Sanitation**

The session started with an explanation of issues on health in the context of sanitation. What are the major issues of health and how these can be minimized. Various case studies were discussed with the participants. Several national and global examples of sanitation management approaches were explained. Also improvement methods of sanitation which has direct health benefits were also shared. Water borne diseases due to water pollution and sanitation issues were highlighted.

### **Session Title: Stakeholder Participation in Water Allocation and Management**

This session involved explaining to the participants how, some functions of the RBPM are being practiced in the Mahaweli System in Sri Lanka. Though not all the essential functions, as described in the previous session on RBPM were present, some of its essential functions like water allocation, demand management, stakeholder participation and institutional arrangements for inclusive engagement and information management were discussed in detail. The possibilities and constraints in applying arrangements in the context of Pakistan were discussed.

### **Session Title: Water and Economics**

This session discussed water as a public or private good, water demand and supply, water pricing and water allocation. Detail discussions were focussed on importance of different dimensions of water such as social, economic and political. Further, buying and selling of water were highlighted in detail. Sustainability of water resources was explained in the context of environment, agri-business planning, operation and decision making process.

### **Session Title: Water Policy and Regulation – 1**

The objective of this session was to expose participants to various water laws and rights so that they could be used for successful implementation of IWRM. The two presentations in this session included Water Rights and IWRM policies and strategies. The materials developed and used by the training programmes conducted by SaciWATERS in Nepal and Sri Lanka were used for both these sessions on water policy and regulations.

The content covered under water rights included basic concept of rights, state and laws (sovereignty, eminent domain, public trust) and types of rights (user, easement, riparian). How these rights were applied to resolve water issues were also presented along with case studies.

The presentation on water policies, enabling environment and institutional reform was based on material used by CapNet for ToT in institutions. Few selected slides were used to introduce participants to the essential components which could be included in formulating water policies.

## **Session Title: Water Policy and Regulation – 2**

This session also consisted of two presentations. The first, a comparative study of water policies of four countries was used to expose participants to essential components to be included in a water policy with objectives of working towards reforms in the sector to create an enabling environment. This was followed by a longer presentation on experiences of water sector reforms being carried out in India with special reference to features of Independent Regulatory Authorities (IRAs) and its advantages and disadvantages based on experiences. This material was obtained from the ToT in IWRM training held in Sri Lanka during 2010.

## **Session Title: Climate Change and IWRM**

The presentation began with a talk on issues regarding climate change. What causes these changes being observed in the climate over the past few decades and what impacts these changes are having on the water sector were also highlighted. At the end, adaptive measures needed by the water sector to tackle climate change in the light of IWRM were also discussed. The session concluded with a discussion by the house on issues of climate change with all participants sharing their personal views on the subject.

**8. Results:** Five days of in house training and one day of field visit provided opportunities to the participants to discuss and deliberate on IWRM. The resource persons invited from various sectors of water management thoroughly explained the importance of each area of IWRM. The diversified and experienced resource persons kept themselves involved in interactive discussions. Overall learning was appreciated by all participants. Participants represented various organizations with experience in the field, academics, multi-disciplinary qualifications, and therefore the training programme became more useful.

Dr. Nimal shared several case studies from Sri Lanka which, encouraged participants to share their experiences working in various organizations.

Feedback of participants through Evaluation Form: More than 95 percent of participants rated the training as very high – very good and completed acquiring the objectives set for the training. Most of the participants were of the view that trainings to be conducted by involving various level of stakeholders. Some of them also suggested that IWRM may be included in the syllabus of Master's Degree programmes. Participants also commented that resource persons were very knowledgeable and well experienced. They also appreciated the organizers of the training programme. Participants also mentioned that logistical arrangements provided during the training were excellent.

**9. Conclusion:** It is concluded that IWRM is the best approach to manage water resources in a sustainable and coordinated manner. IWRM looks at all sectors of water resources management including gender and equity, ecology, economic, health and sanitation, climate change, agriculture, floods, and droughts etc. It was also concluded that the programme has been very successful with the objectives set out for it being completely achieved. However, as a follow up to the training programme on IWRM, a Master's Degree programme on IWRM needs to be initiated at various institutes. Training programmes should also be continued by involving stakeholders at various levels.

**10. List of Participants with Contact Details (See annex 1)**

## 11. Some Photographs of the Training







### Annex 1- List of the Participants

| S. NO. | NAME                    | FATHER'S NAME           | CONTACT NO.                  | E-MAIL ADDRESS   | DESIGNATION          | ORGANIZATION  | ADDRESS   |
|--------|-------------------------|-------------------------|------------------------------|--|----------------------|---|---|
| 1      | Prof. Ghulam Hussain    | Yar Muhammad Wagan      | 0300-3644950<br>0244-9370361 | Nil  | Professor            | Quaid-e-Awam University of Engg. Sci. and Tech. Nawabshah | Dean Faculty of Technology, QUEST, Nawabshah              |
| 2      | Ms. Asifa               | Mazharuddin             | 0301-3575991                 | <a href="mailto:asoomrosan@yahoo.com">asoomrosan@yahoo.com</a>           | Lecturer             | Sindh Agricultural University (SAU), Tando Jam            | Dept. of Land & Water Management, F. o. Agri. Engineering |
| 3      | Ms. Samina Ruben        | Ruben Yousif            | 0333-2696452                 | <a href="mailto:ennabe@yahoo.com">ennabe@yahoo.com</a>                   | M&E                  | Research and Development Foundation                       | 336-C, Block-D, unit 6, Latifabad, Hyderabad              |
| 4      | Mr. Munir Ahmed Mangrio |                         | 0300-8996321                 | <a href="mailto:munirmangrio@yahoo.com">munirmangrio@yahoo.com</a>       | Assistant Professor  | Sindh Agricultural University (SAU), Tando Jam            | Dept. of Agri. Engg., F. o. Agri. Engineering             |
| 5      | Mr. Imtiaz Ali Khoso    | Shafi Muhammad Khoso    | 0333-2703677                 | <a href="mailto:Imtiazkhoso1960@gmail.com">Imtiazkhoso1960@gmail.com</a> | Deputy Director      | WAPDA   | C/o GM (P) South, Hussainabad, Hyderabad                  |
| 6      | Mr. Manzoor-ul-Haque    | Tajuddin Rajput         | 0332-8839794                 | <a href="mailto:Manzoor_ulhaque@yahoo.com">Manzoor_ulhaque@yahoo.com</a> | Assistant Professor  | MUET, Jamshoro  | Chemical Engineering Department                           |
| 7      | Mr. Muhammad Umer Karim | Muhammad Yahya          | 0331-5546388                 | <a href="mailto:umerkarim@wsip.gos.pk">umerkarim@wsip.gos.pk</a>         | Technical Specialist | PCMU, WSIP, P&D, Government of Sindh                      | A-67, Gulshan Zealpak Site Hyderabad                      |
| 8      | Ms. Amber               | (Late) M. Moosa Leghari | 0333-2605544                 | <a href="mailto:Amber.leghari@yahoo.com">Amber.leghari@yahoo.com</a>     | Assistant Engineer   | Sindh Irrigation & Drainage Authority                     | H. No. 151, Gulistan-e-Fatima                             |

|    |                             |                            |              |  |                         |  |  |
|----|-----------------------------|----------------------------|--------------|--|-------------------------|--|--|
|    |                             |                            |              |  |                         |  | Housing Society, Phae-II, Near Baldia Colony, Hyd.           |
| 9  | Mr. Aamir Shaikh            | Mukhtiar Ahmed             | 0321-2247004 | <a href="mailto:Aamirshaikh83@yahoo.com">Aamirshaikh83@yahoo.com</a>     | Planning Officer        | P & D, Govt. of Sindh                  | H. Nop. 586, Firdous colony No. 02, Liaqut colony, Hyderabad |
| 10 | Mr. Shafi Muhammad Kori     | Loung Khan Kori            | 0334-9848762 | <a href="mailto:shafikori@yahoo.com">shafikori@yahoo.com</a>             | Associate Professor     | IWREM                                  | IWREM, MUET, Jamshoro  |
| 11 | Mr. Abdul Ghani Soomro      | Abdul Karim Soomro         | 0300-3041972 | <a href="mailto:Abdulghani120@yahoo.com">Abdulghani120@yahoo.com</a>     | Project In-charge       | Pakistan Agricultural Research Council | Ex-Sazda Banglow No.1, Thana Bola Khan, Dist. Jamshoro       |
| 12 | Mr. Sajid Ali Bhutto        | Ghulam Raza Bhutto         | 0300-3014852 | <a href="mailto:sajidbhutto@hotmail.com">sajidbhutto@hotmail.com</a>     | Executive Engineer      | Irrigation Department                  | A/76, Ghulam Shah Kalhoro Colony, Jail Road Hyderabad.       |
| 13 | Mr. Abdul Ghaffar           | Hafiz Abdul Rehman Qureshi | 0301-3144353 | ---  | M.E. Student            | IWREM, MUET, Jamshoro                  | C/12, Prince town, Phase-II, Qasimabad, Hyderabad            |
| 14 | Mr. Ajeet Kumar             | Dayal Das                  | 0333-7244211 | <a href="mailto:ajeetmandhan@hotmail.com">ajeetmandhan@hotmail.com</a>   | Junior Engineer (Civil) | WAPDA, Pakistan                        | % PD Darwat Dew, Water, WAPDA, Hussainabad, Hyderabad        |
| 15 | Mr. Niaz Hussain            | M. Yousif                  | 0300-3359407 | <a href="mailto:nsial@rdfoundation.org.pk">nsial@rdfoundation.org.pk</a> | Programme Coordinator   | Research and Development Foundation    | Qasimabad, Hyderabad   |
| 16 | Mr. Nazir Ahmed Leghari     | M. Ishaque Leghari         | 0346-3717891 | <a href="mailto:nazirlaghari@yahoo.com">nazirlaghari@yahoo.com</a>       | Sr. Engineer            | NRSP                                   | H. No. 308, A, Phase-I, SUECHS, Jamshoro                     |
| 17 | Ms. Asifa                   | Saleem-uddin               | 0342-3577870 | <a href="mailto:asifa-67@hotmail.com">asifa-67@hotmail.com</a>           | Junior Engineer         | WAPDA, Pakistan                        | % GM (P) South, WAPDA, Hyderabad                             |
| 18 | Mr. Atta Muhammad Phul      | Muhib Ali Phul             | 0300-3089583 | <a href="mailto:attamphull@hotmail.com">attamphull@hotmail.com</a>       | Assoc. Professor        | MUET, Jamshoro                         | Civil Engineering Department                                 |
| 19 | Mr. Muhammad Siddique Memon | Ahmed Memon                | 0333-2856169 | <a href="mailto:siddiqmemon79@live.com">siddiqmemon79@live.com</a>       | Inspectors Works        | SIDA, Hyderabad                        | Kaka Muhalla New Hala  |
| 20 | Mr. Abdul Fattah Soomro     | Noor Ahmed Soomro          | 0334-2620550 | <a href="mailto:enr_afsoomro@yahoo.com">enr_afsoomro@yahoo.com</a>       | Research Scholar        | MUET, Jamshoro                         | Room No. 209, Teacher's Hostel, MUET, Jamshoro               |
| 21 | Mr. M. Saffar Korai         | Deen Muhammad              | 0333-2703277 | <a href="mailto:msaffarkorai@gmail.com">msaffarkorai@gmail.com</a>       | Lecturer                | IEEM, MUET, Jamshoro                   | Phase-II Sindh University Housing Society,                   |

|    |                           |                      |              |  |               |                |                       |
|----|---------------------------|----------------------|--------------|--|---------------|----------------|-----------------------|
|    |                           |                      |              |  |               |                | Jamshoro              |
| 22 | Dr. Abdul Latif Qureshi   | Abdus Sattar Qureshi | 0301-3503012 | <a href="mailto:latif95@yahoo.com">latif95@yahoo.com</a>           | Professor     | MUET, Jamshoro | IWREM, MUET, Jamshoro |
| 23 | Mr. Bismillah Khan        | M. Hussain Mahar     | 0332-2908040 | <a href="mailto:engrbismil@yahoo.com">engrbismil@yahoo.com</a>     | M. E. Student | MUET, Jamshoro | IWREM, MUET, Jamshoro |
| 24 | Mr. Ilyas Khan            | Aamr Zada Khan       | 0345-3624556 | <a href="mailto:iknk88@gmail.com">iknk88@gmail.com</a>             | M. E. Student | MUET, Jamshoro | IWREM, MUET, Jamshoro |
| 25 | Mr. Arif Raza Mallah      | Bashir Ahmed         | 0343-3786490 | <a href="mailto:engr.raza@hotmail.com">engr.raza@hotmail.com</a>   | M. E. Student | MUET, Jamshoro | IWREM, MUET, Jamshoro |
| 26 | Mr. Ghulam Sarwar Farooqi | Hameed Khan          | 0300-3003897 | <a href="mailto:g.sarwar26@hotmail.com">g.sarwar26@hotmail.com</a> | M. E. Student | MUET, Jamshoro | IWREM, MUET, Jamshoro |

**Training for Trainers  
on  
“Integrated Water Resources Management”  
January 16-21, 2012 MUET Jamshoro, Pakistan**

**Evaluation Report**

**Submitted by  
Institute of Water Resources Engineering and  
Management  
Mehran University of Engineering And  
Technology Jamshoro, Sindh**



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## 1. Introduction

Pakistan possesses one of the largest irrigation systems in the world. Through this system, water is supplied to all major stakeholders which include agriculture, environment, domestic (household) and industries. Due to lack of coordination amongst these various sectors, there have been numerous issues in water distribution. Thus, coordinated water management is a crucial step towards sustainability of water resources.

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**Target Group:** Universities (Mehran Engineering and Technology Jamshoro, Sindh Agriculture University Tando Jam, Quaid-e-Awam University of Science and Technology Nawabshah), Water and Power development Authority (WAPDA), Irrigation Department, Planning and Development, NGO and Master's Students of IWREM.

- Total number of participants : Twenty Six (26)
- Female participants : Four (4)

**Facilitators / Trainers:** Expatriate and Local

**Duration:** 16-21 January, 2012

## 2. Methodology

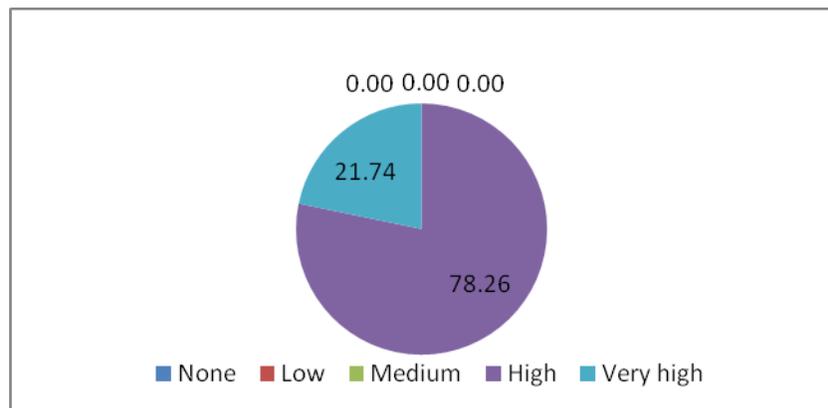
The evaluation of the training programme was carried out through a structured questionnaire provided by the SaciWaters and the Cap-Net. This feedback questionnaire was provided to all participants at the end of the last day of the training programme.

### 3. Outcome

This section presents the response of all the participants.

#### a. Relevance of the Course to Your Current Work/Function

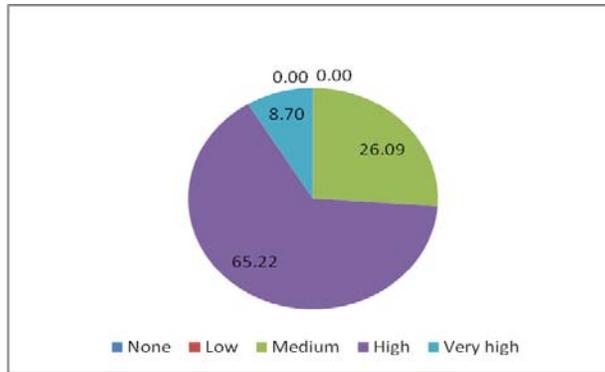
| None | Low  | Medium | High  | Very High |
|------|------|--------|-------|-----------|
| 0.00 | 0.00 | 0.00   | 78.26 | 21.74     |



Evaluation of all twenty six (26) participants has indicated that training was high to very highly relevant to the current job of individuals.

#### b. Extent to Which You Have Acquired Information/Content that is New to You

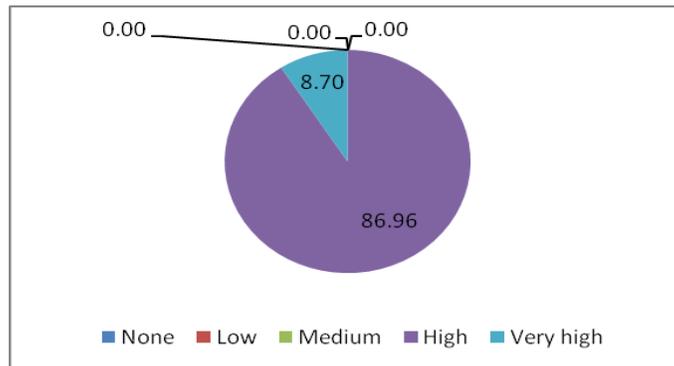
| None | Low  | Medium | High  | Very high |
|------|------|--------|-------|-----------|
| 0.00 | 0.00 | 26.09  | 65.22 | 8.70      |



65% of the participants response was rated high in acquiring the knowledge and 9% rated very high. However, 26% considered responded as medium. Thus, 76% were of the view that knowledge acquiring was high to very high.

**c. Relevance of the Information/Content that you have Acquired for Your Work**

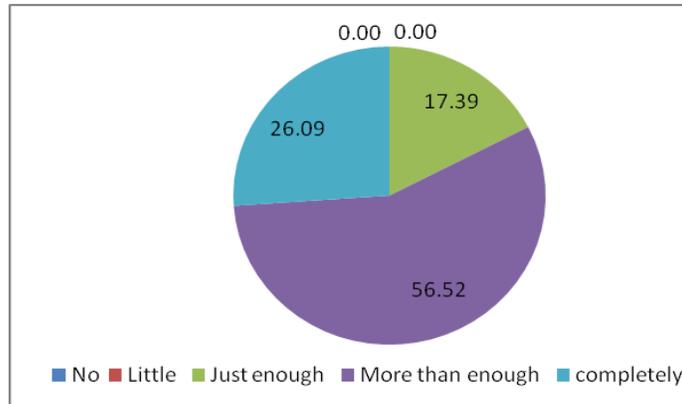
| None | Low  | Medium | High  | Very high |
|------|------|--------|-------|-----------|
| 0.00 | 0.00 | 0.00   | 86.96 | 8.70      |



As mentioned in the background information, all participants were from various organizations and institutions having good experience in the field and education. Assessment indicates that most participants (87% high, 9% very high) expressed that the training was highly relevant to their work and work experience.

**d. Did the Course Reach Your Expectations and Objectives?**

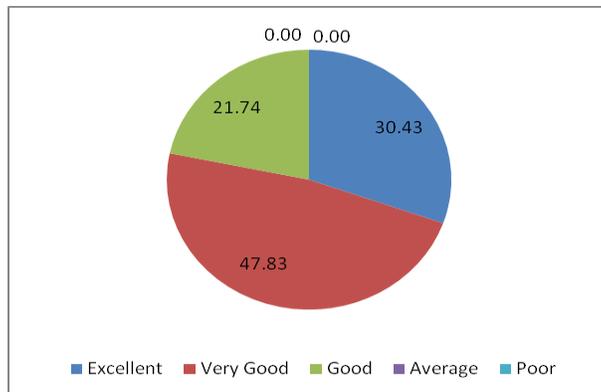
| No   | Little | Just Enough | More than Enough | Completely |
|------|--------|-------------|------------------|------------|
| 0.00 | 0.00   | 17.39       | 56.52            | 26.09      |



57% participants have expressed that their training objectives and expectations from the training were achieved (more than enough), while 26% of participants responded that the course had completely achieved their expectations and objectives. However, 17% considered it just enough.

**e. The Presentation of the Different Sessions Was**

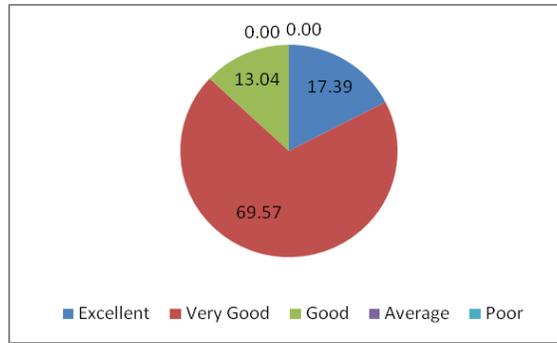
| <b>Excellent</b> | <b>Very Good</b> | <b>Good</b>  | <b>Average</b> | <b>Poor</b> |
|------------------|------------------|--------------|----------------|-------------|
| <b>30.43</b>     | <b>47.83</b>     | <b>21.74</b> | <b>0.00</b>    | <b>0.00</b> |



About 48% of the participants responded that the session presentations were very good and 30% said excellent. Thus, it can be considered that the overall session presentations and discussions were up to the mark.

**f. Participation Possibilities During the Course Were**

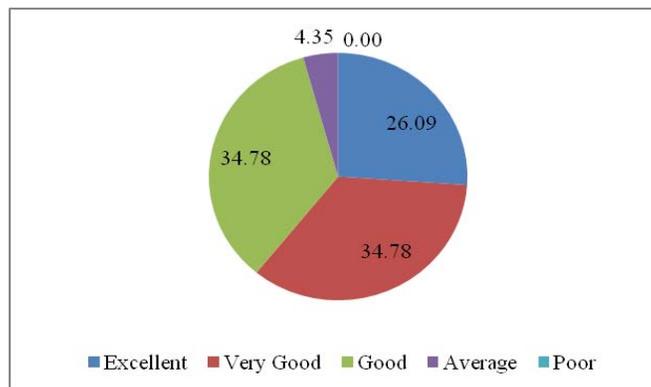
| <b>Excellent</b> | <b>Very Good</b> | <b>Good</b>  | <b>Average</b> | <b>Poor</b> |
|------------------|------------------|--------------|----------------|-------------|
| <b>17.39</b>     | <b>69.57</b>     | <b>13.04</b> | <b>0.00</b>    | <b>0.00</b> |



Participants evaluated this section from very good to excellent. None of the participants responded to the query as being poor or average.

**g. Supporting Material for the Different Sessions Were**

| Excellent | Very Good | Good  | Average | Poor |
|-----------|-----------|-------|---------|------|
| 26.09     | 34.78     | 34.78 | 4.35    | 0.00 |



The query elicited mixed responses from the participants. About 95.65% of the participants assessed the material as good, very good and excellent. 4% have responded the material to be average. It may therefore be concluded that this section of the training programme was also appreciated.

### **What Action Will You Take Now to Implement the Knowledge Gained from this Course?**

The comments and respond to this section by the participants have been narrated in the following paragraphs.

- (i) Training course will be shared with my colleagues and also efforts to be made to implement into the field with sincerity and hardworking.
- (ii) Will try to take action to implement the knowledge gained from IWRM to student at the University.
- (iii) Will apply this knowledge in to field and spread it to others.
- (iv) First of all (From today) I shall minimise the wastage of water, which I use for myself and in my home. Secondly I would like to share my views regarding importance of water with the people who live in the vicinity of my natives.
- (v) In this action I got the idea about water resource technology and its management. Thus the knowledge gained will be utilized during field management so as to control the losses of water.
- (vi) -----
- (vii) Try to incorporate in my field.
- (viii) I will try to organize such types of seminars in different departments, which are related to the water organization and distribution and monitoring.

- (ix) Shall try to include such types of material/ knowledge to our institute because it is the key need to sustain the water for the different purposes and to reduce the polluted environment from the agricultural land and municipal areas.
- (x) After getting enough knowledge from this training, first of all I myself further understand and then will give to others i.e. my students, friends etc.
- (xi) I will be utilized in the organization decision making.
- (xii) We try to develop a degree program in the discipline of IWRM. Develop curriculum and courses programmes and bring IWRM principles best suit to our conditions.
- (xiii) We are implementing different projects that are relevant to IWRM. This knowledge will be useful for our work.
- (xiv) I will try to implement this knowledge gained from this training within my department with the sincerity.
- (xv) I incorporate in my Ph.D research work and to design some thesis projects.
- (xvi) As trainee, I will try my best to implement such new things to my parent department even though it is quite difficult. Because there are several problems.
- (xvii) Actually this knowledge will help us particularly for a University teacher to redesign course for the subject of water resources management.
- (xviii) Being a university teaching faculty members my efforts would to supply and provide the information and importance of Integrated Water Resources Management to the others faculty members as well as graduating students, to make this viable resource as sustainable.
- (xix) We will try to utilize in our ongoing projects in the guideline of this training. It is helpful for pointing out drawbacks/ failure of the projects. So it is quite helpful for future.
- (xx) Actual our Government have initiated to start some reforms on it but the public is unaware, so I will play a key role in arranging workshop/gathering to explain IWRM to my colleagues in the department.
- (xxi) I try to share this knowledge with other stakeholders at grass root level.
- (xxii) I will share the acquired knowledge with the other staff and the people whom I am working with. Some actions will be taken to include the policy makers and implementers so that better results would be achieved.
- (xxiii) I learn a lot from this training. My technical knowledge is enhanced and now I must try to implement on these very good ideas and technical solutions, which were given by the experienced people here.

**Please Comment or Make Suggestions on the Following**

## Course Content

- (i) IWRM training course was very informative and good to improve my knowledge. It would benefit to me in my life.
- (ii) Course was very informative and discussed the recent issues and problems and gave knowledge how to come up the issues and problems regarding the IWRM.
- (iii) The course content was very good and it was given at most important time when the country is facing water management problems.
- (iv) For me, being a first experience of attending such type of training session, the course was far enough. But for hydraulics and irrigation professional it might be very important in my opinion. But I would personally suggest to involve some more guests / speakers/ experts who have real/ practical experience like Mr. Shafi Muhammad Lakho. No doubt every speaker including the Dr Nimal was good at its field but we still need much more.
- (v) The course of integrated water resources management is very good and gain knowledge from this training.
- (vi) As far as the course is concerned, it had very good information and so many things learned. It had covered almost all fields of water management. I can say the contents were comprehensive.
- (vii) Excellent references from present status of Pakistan must also be incorporated.
- (viii) These types of training may be arranged in future as well. Our country is agriculture, therefore farmers may also be given such type of training. Also high level officers and relevant politician may be given this type of training.
- (ix) Course was very good. If some more knowledge from the case studies of more other countries would have been included.
- (x) Course contents should be according to new innovative technologies.
- (xi) More examples from the Regions where we belong should be included i.e. Pakistan.
- (xii) Very good.
- (xiii) Course content was relevant to IWRM and we learnt more in training. It will be useful when practically implemented.
- (xiv) The course content was very good. However, it may be improved further, because the subject regarding the water sector issue in our society is not included in this training.

- (xv) Content should be more specific than general particularly addressing Pakistan especially 'Sindh' perspective. Content should also include 'Case Study' if manageable. These case studies should be based on all relevant fields.
- (xvi) The whole training was good, we acquired lot of new techniques and knowledge from that training. My humble suggestions regarding that training program must be conducted on regular basis.
- (xvii) Most appropriate and useful a country like Pakistan.
- (xviii) The current course was designed very well, containing relevant material, but some other / extra topics were also included which seemed to less relevant with the management of water. In brief the contents were very useful for the trainees.
- (xix) It is good but it should be improved in sense of international level, it mostly belongs to Sri Lanka, but we want to know what practice made on international basis.
- (xx) The course content was very good but the teaching / present material could be provided in advance (means before start of training). In addition, the ephemeral rivers (spate irrigation) should be covered in course contents.
- (xxi) The course contents were completely based on water resources. I suggest training to be divided in portion considering different dimensions such as social, environmental and economic.
- (xxii) It was good and the contents included full information and relevant materials of IWRM.
- (xxiii) The course content was very much relevant to IWRM. But still there is a need to include some topics to explain the real condition of water supply and water distribution especially in the context of Pakistan and Sindh.

### **Facilitation**

- (i) All the facilities provided were well organized.
- (ii) Provided good material and overall good environment.
- (iii) Facilities like Transport, refreshments, lunches and class environment provided by the organizer were timely and excellent.
- (iv) We were excellently facilitated during the whole session with each aspect, more than our expectations.
- (v) -----
- (vi) The whole program is well organized and properly facilitated. Very good environment and good facilities.
- (vii) Excellent

- (viii) -----
- (ix) All refreshments, lunches, transport were well arranged.
- (x) Excellent.
- (xi) It should be further improved.
- (xii) Very good
- (xiii) Very good.
- (xiv) Facilities were good.
- (xv) Ok
- (xvi) Overall it was wonderful and have provided each and every thing accordingly to the requirement of the participants.
- (xvii) -----
- (xviii) Better facilitations provided to the participants, but still there is needs to be improved, like seating arrangement in training hall.
- (xix) It is quite good.
- (xx) The types of Training should be conducted on high level throughout the foreign countries. Some special courses should be taught through water side institutions from all over the world. In the last the training should be enhanced on visit level to watch out the actual development through out the world.
- (xxi) There were proper facilities.
- (xxii) Facilitation of the course was good. The facilitators provided interactive lectures during the sessions.
- (xxiii) Facilitation was excellent at all, but apart from lectures or presentations. Some activities must be done, such as group discussion, etc. I am very thankful to all administration and the organizing committee.

### **Support Material**

- (i) The material provided us will support us to understand the objectives, method, types of the IWRM and very much informative and good to improve our knowledge.
- (ii) Relevant material is informative and useable for further communities
- (iii) The organizer provided material with a full kit like lectures in soft copy. The material was very helpful and knowledge.

- (iv) According to planned schedule, the supporting material was fair enough to describe the importance of subject.
- (v) -----
- (vi) As far as the supporting material is concerned, there is little bit space to improve it. e.g. there should be more practical examples to show the ground realities.
- (vii) Excellent
- (viii) Material (presentation) would have been provided in USB.
- (ix) Was good and sufficient.
- (x) Satisfactory.
- (xi) It should be enhanced.
- (xii) Very good
- (xiii) Very informative and relevant to IWRM. We will explore more to get other knowledge from the support of this material.
- (xiv) Supporting material is referring the objectives of training.
- (xv) This should be more updated e.g. C.D, published book or manual.
- (xvi) Good enough
- (xvii) Very nice, if utilized properly in the field and capacity building.
- (xviii) Enough supporting material provided.
- (xix) It is good and knowledgeable
- (xx) The supporting material was not enough for training process in the very short tenure of training. The training should be availed on whole day basis maximise for fifteen days and in the last all the participants should be evaluated through one general MCQ paper about the whole awareness.
- (xxi) Which were more supportable for our knowledge and further education
- (xxii) Support material was not providing as much knowledge and information as it should. Reference or E material would have be suggested for the readers and leaders information.
- (xxiii) Supporting materials are enough to understand. The handouts CDs etc are enough to understand.

## Course Organisation

- (i) The course design was in very good manner and step debates improved our knowledge smoothly.
- (ii) Course was organized very well that is informative and relevant to IWRM.
- (iii) -----
- (iv) \_\_\_\_\_
- (v) -----
- (vi) Course was well organized.
- (vii) Excellent
- (viii) Different organization must be involved.
- (ix) Well organized.
- (x) Satisfactory.
- (xi) It is all appreciable but more contacts should be made with other segments of society.
- (xii) Very good
- (xiii) Course organization was in series and related to one another. It was easy to understand.
- (xiv) Need to be improved.
- (xv) Lecture should be given max. 1 hr. duration and separate time given for video session for different topic, e.g. Policy, Planning, O & M etc.
- (xvi) Good enough
- (xvii) I must appreciate the organizers, who did all the best in trainers in all services. They facilitated all the participants in a better environment.
- (xviii) Course was well organized.
- (xix) -----
- (xx) Very good.
- (xxi) Very Good.
- (xxii) Course was organized in good manner. Topic which were covered and the selection of the facilitators, time management, all were good which showed good course organization.
- (xxiii) It was good and informative.

## Any Other Comments

- (i) These types of International training must be continued for future management planning.
- (ii) All resources person were knowledgeable. We learnt a lot from Dr. Nimal. He gave us knowledge regarding the experiences and current issues.
- (iii) -----
- (iv) I would appreciate the oragnizers of the training session, whom I would like to congratulate that they have succeeded to convey the message to the audience up to considerable extent.
- (v) -----
- (vi) -----
- (vii) Policy makers at Macro levels may also be invited to attend this kind of training.
- (viii) I got very much knowledge.
- (ix) Such types of courses frequently be arranged and the participation of policy makers may be ensured.
- (x) The given suggestions and comments may be implemented with due consideration.
- (xi) Such type of training should be conducted at some interval basis in regular manner.
- (xii) Dr. Nimal delivered his lectures very keenly in a nice manner. Participants were taking very much interest.
- (xiii) -----
- (xiv) -----
- (xv) Should be repeated such type of training course. Resource person like Dr. Nimal has lot of information.
- (xvi) Being a part of participant, I must suggest you to conduct same training and invite every department which is related to the topic like, Irrigation, Agriculture, etc.
- (xvii) Such activities must be continued frequently to produce the skilled people in the field of water sector. As we need lot of work for managing our water resources management and development, which are depleting at high level with thanks to organizers.
- (xviii) This type of course may be organized after every six months for water professionals to refresh among themselves regarding the current issues and

- management options to make this resource sustainable. Training on pure engineering course/ Modelling on water related topic may also be organized.
- (xix) Course needs little bit improvement. One or two lectures must be included on modelling with computer practices.
  - (xx) Arrange maximum two training per year. Hold workshop at grass roots level to aware farmers. Produce Ph.D on IWRM.
  - (xxi) .....
  - (xxii) The training was great experience for all the participants and facilitators. It provided good plate form to speak openly and share information.
  - (xxiii) I just want to suggest that these types of trainings must be conducted regularly, so we can get chance to learn.

## **Conclusion**

Based on the comments given by the participants following conclusions are drawn.

Five days in house (classroom) discussions and one day field visit provided a comprehensive knowledge of IWRM that covered all dimensions of water resources development and management. Participants were of the view that the training was very successful, resource people were knowledgeable; material provided is very comprehensive and useful for future reference. All arrangements including training material, timings, food, transport and lodging were very well organized and arranged. Most of the participants have suggested that these types of trainings need to be continued at various levels of water resources management managers/stakeholders. Also suggestions were given that IWRM may be included in the Master's programme.