



NeWater

WORKPACKAGE 6.3 TRAINING & EDUCATION IN ADAPTIVE WATER MANAGEMENT

D 6.3.2 Report on Summer School Programme 2006

**Report of the NeWater project -
New Approaches to Adaptive Water Management under Uncertainty**

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Preamble

The purpose of this report is to inform about progress on the Summer School Series that forms part of Work Package 6.3 Training and Education in Adaptive Water Management. The summer school series is aimed primarily at NeWater PhD and postdoctoral researchers.

The NeWater Project has assembled a group of enthusiastic people with a variety of scientific and practical backgrounds. In and of itself, the project presents a major challenge and a practical lesson in social learning in order to promote and guide the research process to profit from the diversity of knowledge and experiences. We welcome feedback and suggestions from anyone reading this report since it defines the basic structure of what we intend to do in the project.

All teams involved are grateful for the support of the European Commission in providing funds for this research and to the national organisations contributing to the project.

Claudia Pahl-Wostl

Coordinator of WB6
NeWater project
January 2007

Executive Summary

This is a report of *Work Block 6, Work package 6.3 on Training and Education in Adaptive Water Management* of the NeWater Project. Specifically, this report D6.3.2 informs about progress on the Summer School Series which is intended to train NeWater and other young researchers (mainly at the PhD and postdoctoral levels) in the field of adaptive river basin management.

Specific emphasis is given in this training to interdisciplinary approaches to support the overall ambition of the project. The goal is thus to train a generation of young researchers in the integration of theory and practice through instruction from leading-edge scientists and practitioners mainly involved in the NeWater project who apply the latest ideas from a wide range of disciplines and organizations in their teaching.

This report provides a description of the summer (Autumn) school that took place in Sept-Oct 2006. In section 1 and 2 provide background and objectives of the Autumn school. Section 3 defines the concepts which form the core of the training programme. Section 4 lists the instructors drawn primarily from the NeWater project. Sections 5 and 6 outline the programme and contents of the sessions, section 7 provides a profile of the participants and section 8 summarizes the evaluation of the autumn school.

Table of contents

Preamble.....	ii
Executive Summary	iv
1. Background	6
2. Aims and Objectives of the Autumn School	6
3. Concepts and Methods Taught: Adaptive Management in IWRM	7
4. Session Leaders	7
5. Approach and Programme.....	7
6. Content of sessions.....	9
7. Participation in the Autumn School	9
8. Evaluation of Autumn School	11
10. Co-ordinator Contact Information.....	11
Annex I: Contributors to the report	13



D 6.3.2 Report on Summer School Programme 2006

“Adaptive Management in the context of Integrated Water Resources Management”

Led by

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1. Background

The Summer School on “Adaptive Management in the Context of Integrated Water Resources Management” actually took place in the Autumn of 2006 (Weds. 27 Sept – Sat. 07 Oct. 2006) at the Peyresq, France (<http://www.peiresc.org/Bienvenue/Bienvenue.html>).

The summer school series is a joint initiative of the EU-funded NeWater project (*New Approaches to Adaptive Water Management*) and the Global Water System Project (GWSP), a subcontractor to NeWater. The GWSP seeks to investigate how humans are changing the global water cycle and social feedbacks arising from these changes. Prof. Dr. Claudia Pahl-Wostl, co-ordinator of the NeWater project based at the Institute of Environmental Systems Research, University of Osnabrück and Dr. Eric Craswell, Executive Officer of the Global Water System Project based at ZEF, Centre for Development Research at the University of Bonn, are lead co-hosts of the Summer School series.

The summer school series is one component of the NeWater training programme initiated in 2006 for PhD students and postdoctoral researchers involved in these two projects, NeWater and GWSP. Although priority is given to young researchers involved in these two projects, it is open to other young scientists carrying out related research as space permits (to a maximum of 30 participants).

The 2006 autumn school was organised by Caroline van Bers, Institute of Environmental Systems Research, who is responsible for the training and education component (WP 6.3) of the NeWater project.

2. Aims and Objectives of the Autumn School

The programme for the autumn school took place over ten days in September-October 2006 and has drawn on scientific expertise as well as results, reports, methods developed in the NeWater project and the GWSP. The autumn school was intended facilitate an understanding of the following:

- What is adaptive management and how can adaptation in resource management take place?
- What is Integrated Water Resources Management (IWRM) and how is it practiced?
- What is the role of Adaptive Management in IWRM?
- How can we make a transition to adaptive management in IWRM?
- What are the potential performance indicators for adaptive management in the context of IWRM?

These questions were addressed with extensive reference to current water management case studies drawn primarily from the NeWater project.



3. Concepts and Methods Taught: Adaptive Management in IWRM

NeWater is based on the hypothesis that IWRM cannot be realized unless current water management regimes undergo a transition towards more adaptive water management.

Adaptive management can more generally be defined as a systematic process for continually improving management policies and practices by learning from the outcomes of implemented management strategies. The most effective form of adaptive management employs management programs that are designed to experimentally compare selected policies or practices, by evaluating alternative hypotheses about the system being managed. In the approach promoted in NeWater, adaptive management has yet another target: to *increase the adaptive capacity of the (water) system*. “Adaptive management is learning to manage by managing to learn” where learning encompasses a wide range of processes. (Pahl-Wostl et al – NeWater Paper submitted to *Water Policy*)

Integrated environmental resources management may be defined as a purposeful activity with the goal to maintain and improve the state of an environmental resource affected by human activities. The Global Water Partnership (GWP) defines IWRM as ‘a process which promotes the co-ordinated development and management of water, land and related resources in order to maximise the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.’ (GWP-TEC, 2000).

4. Session Leaders

Instructors were drawn from the range of scientists involved primarily in the NeWater project with extensive experience in Integrated Water Resources Management with specific attention to adaptive management. The instructors are listed below.

Dr. Jeroen Aerts, IVM- Free University Amsterdam

Dr. Marcela Brugnach, Institute of Environmental Systems Research, University of Osnabrück

Dr. Raffaele Giordano, Water Research Institute, National Research Council, Italy

Dr. Paul Jeffrey, School of Water Sciences, Cranfield University

Dr. Erik Mostert, Centre for Research on River Basin Administration, Analysis and Management

Prof. Claudia Pahl-Wostl, Institute of Environmental Systems Research, University of Osnabrück (and co-ordinator of the NeWater project).

Dr. Matt Hare, Seecon GbmH

Dr. María Máñez, Institute of Environmental Systems Research, University of Osnabrück

Dr. Nilifur Matin, Water and Development Group of the Stockholm Environment Institute, University of York

Prof. Roland Schulze, U. Kwa Zulu-Natal, South Africa

Dr. Jan Sendzimir, International Institute for Applied Systems Analysis, Austria

Dr. Katherina Thywissen, UN University-EHS, Bonn.

Mr. Rutger van der Brugge, DRIFT, Erasmus University-Rotterdam

5. Approach and Programme

The autumn school comprised lectures and exercise sessions as well as a group project which allowed participants to apply all that they learned over the 10 days. Working sessions followed each of the lectures allowing participants (divided into 4 groups) to carry out practical exercises in which the concepts, methods and tools were applied to specific resource management issues.



The schedule of sessions is provided in the Table 1 below. These sessions were led by instructors (listed above) with the relevant research and practical experience.

The programme was divided into three distinct parts:

Part 1: introduction to adaptive water management including basic concepts of IWRM and adaptive management, water management regimes, resilience and adaptive capacity, water policy mechanisms, and uncertainties in water management.

Part 2: methods for adaptive management including vulnerability assessment, governance regimes, participatory approaches, group model building and information gathering and monitoring systems, integrating economics into IWRM, and transitions management.

Part 3: Presentation of the final results of the group exercises and summary.

Table 1: Programme

Weds. 27 Sep 15.00 – 18.00	Participants arrive Tues evening and Weds. morning PART 1: INTRODUCTION TO ADAPTIVE MANAGEMENT Water Management Regimes – (conceptual foundations) Introduction to basic concepts of IWRM & Adaptive Management (C. Pahl-Wostl/ P. Jeffrey) Definition of a Water Management Regime (Claudia Pahl-Wostl)
Thurs. 28 Sep 09.00 – 12.30 14.30 – 18.00	Introduction to Resilience and Adaptive Capacity (Jan Sendzimir) Water policy mechanisms for Adaptive Management (Paul Jeffrey)
Fri. 29 Sep 09.00 – 17.30	Role of uncertainties in water management (Marcela Brugnach, Roland Schulze) Concepts of uncertainty, uncertainty analysis Increased uncertainties due to climate (global) change Climate and hydrological modelling in the context of uncertainty analysis
Sat. 30 Sep	Free
Sun 01 Oct.	Free
Mon. 02 Oct 09.00 – 17.30	PART 2: METHODS FOR ADAPTIVE MANAGEMENT Vulnerability assessment and its role in water management Introduction into basic concepts and methods (Katharina Thywissen) Role of poverty and social disruption (Nilufar Matin)
Tues. 03 Oct 09.00 – 15.30 16.00 – 17.30	Introduction to basic concepts of governance and governance regimes (Erik Mostert) Role of participation, social learning, methods for stakeholder participation (Matt Hare) <i>(Continued on Weds. Oct 4)</i>
Weds. 04 Oct 09.00 – 16.00 17.00 – 19.30	Continuation of Participatory Approaches (Matt Hare) Performance Indicators of Adaptive Management (Jeroen Aerts)
Thurs 05 Oct 09.00 – 12.30 14.30 – 18.00	Group model building (Claudia Pahl-Wostl, Matt Hare) Information gathering and monitoring systems (Raffaele Giordano)
Fri 06 Oct 09.00 – 12.30 14.30 – 18.00	Integrating Economics into IWRM (María Máñez) Introduction to Transitions Management (Claudia Pahl-Wostl, Rutger van der Brugge)



Sat 07 Oct	PART 3: FINAL RESULTS FROM PROJECT
09:00	Presentations by working groups (led by Claudia Pahl-Wostl) Discussion including potential questions directly related to projects of the participants
11.45	Wrap-up and Close: What have we learned? What can we do with this? What are the limitations and areas that require further development? (Claudia Pahl-Wostl)
12.30	Lunch
14.00	Coach departs for Nice Airport

Examples from NeWater case studies were used to illustrate approaches and areas of application.

6. Content of sessions

The sessions of the NeWater Autumn School can be found on the NeWater website: <http://www.newater.info/everyone/2508> primarily in the form of powerpoint presentations. In some cases, instructions for exercises are included in the presentation itself, while in other cases these are included as separate documents. Results of the final project are also available here.

In order to carry out the project, a case study team was formed for each basin: the Amudarya, Guadiana, Rhine or Orange Basins in order to develop a deeper understanding of the concepts and tools taught. The task given was to carry out an assessment of the performance of the water management regime in the basin to cope with present and future challenges of water management as a base for a plan for future action. Teams were asked to address the following:

- What type of knowledge/data are needed to make an assessment of the management regime in the basin?
- How would the methods taught in Adaptive Management Modules be used in this case?
- Are the methods appropriate to make an assessment leading to decisions on further action? How would they be integrated?

Each group reported results of the working group session back and were judged by an 'expert panel' and provided with advice on how to improve their assessment. These results are also available on the autumn school webpage: <http://www.newater.info/everyone/2508>

7. Participation in the Autumn School

The 25 participants of the Autumn School are listed below. All but 7 participants were at the time of the autumn school working with the NeWater project.

	Last Name	First Name	Department	Institution	Country
Mr.	Arnold	Thorsten	Institute for tropical agriculture	University of Hohenheim	Germany
Ms.	Carmona-Garcia	Gema	Department of Economy and Agrarian Social Sciences	Polytechnical University of Madrid	Spain
Ms.	Ernst	Sabine		GreenVisions Consultancy	Germany
Ms.	Esteve-Bengoechea	Paloma	Department of Economy and Agrarian Social Sciences	Polytechnical University of Madrid	Spain
Dr.	Fung	C. Fai		Centre for Ecology and Hydrology	UK
Mr.	Fernández-	Pablo	Mediterranean Institute of	IMEDEA	Spain



	Méndez			Advanced Studies		
Dr.	Forkutsa	Irina		Consultant		Uzbekistan
Mr.	Grill	Guenther			Ifanos Water and Landscape Ltd.	Germany
Ms.	Herrfahrdt	Elke			Deutsches Institut fuer Entwicklungspolitik	Germany
Mr.	Huntjens	Patrick		Institute of Env. Systems Research,	University of Osnabrück	Germany
Ms.	Isendahl	Nicola		Institute of Env. Systems Research,	University of Osnabrück	Germany
Dr.	Khalmirzayeva	Madina		Tashkent Institute of Irrigation and Melioration,	Ecology and Water Management Dept.	Uzbekistan
Mr.	Knoesen	Darryn		School Of Bioresources Engineering And Environmental Hydrology	University Of KwaZulu-Natal	S. Africa
	Lorenzen	Rachel		Resource Management in Asia-Pacific Program, Research School of Pacific and Asian Studies	Australia National University	Australia
Ms.	Mazurkewitz	Eva			Max-Planck-Institute for Meteorology	Germany
Ms.	Moellenkamp	Sabine		Institute of Env. Systems Research,	University of Osnabrück	Germany
Dr.	Nagabhatla	Nidhi		Remote Sensing and Natural Resource Management	International Water Management Institute (IWMI)	Sri Lanka
Mr.	Nagabhatla	? (husband of Nidhi)				Sri Lanka
Mr.	Nhemachena	Charles		Center for Environmental Economics & Policy in Africa	University of Pretoria	South Africa
Mr.	O'Regan	Dermot		Water Policy and Management Group	Centre for Ecology and Hydrology	
Ms.	Rasche	Karina		-	Seecon GmbH and University of Osnabrueck	Germany
Ms.	Shale	Moliehi		Stockholm Environment Institute and UCT	Oxford Univ.	S. Africa
Mr.	Stein	Christian		Stockholm Environment Institute	Oxford Univ.	UK
Ms.	Taylor	Anna		Stockholm Environment Institute	Oxford Univ.	U.K.
Dr.	Webb	Carol		School of Applied Sciences	Cranfield University	U.K.
Ms.	Zavgorodnyaya	Darya		Institute of Env. Systems Research,	University of Osnabrück	Germany



8. Evaluation of Autumn School

The success of the autumn school was determined by detailed evaluations completed by participants at the end of the programme. Evaluation results of the general aspects of the autumn school are provided below. Total respondents = 16. Note that not all participants responded to all questions below.

General Aspects	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
The summer school met my expectations.	4	9	2		
The summer school was relevant and useful to my research.	5	10	1		
The sessions followed logically from and complemented previous sessions.	3	4	8	1	
The topic of adaptive river basin management was comprehensively covered.	0	10	4	1	
The group project (bringing methods together by application to a case) was useful and worth doing.	10	4		1	
There was sufficient opportunity for me to present my views during sessions.	4	4	3	2	
There was sufficient time for informal discussion outside of sessions.	3	2	3	6	1
	Too high	High	About Right	Low	Too Low
The number of topics covered was...	1	7	7		
The level of difficulty was on average...		1	13	1	

Detailed evaluation of each session is also available but not provided here. For more information, contact Caroline van Bers, cvbers@usf.uos.de. The results of the evaluation through generally very favourable pointed to some areas for improvement at the next summer school including reducing the amount of time in sessions and enforcing a more stringent restriction on the length of lectures. The group project could also be a little less demanding next time. Also the level of generality needs to be considered. The curriculum has to cater to a very diverse audience with different levels of background in the topics, so achieving the right balance is an art.

9. Additional Products

Most of the material presented in the autumn school will also be incorporated in an online teaching curricula on adaptive river basin management which can be used to supplement existing Master's and PhD level academic programmes (see WP 6.3.2).

10. Co-ordinator Contact Information

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Annex I: Contributors to the report

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