



NeWater – new approaches to adaptive water management under uncertainty

**Lessons learned from the experience
of developing and piloting adaptive water
management from seven NeWater case studies**

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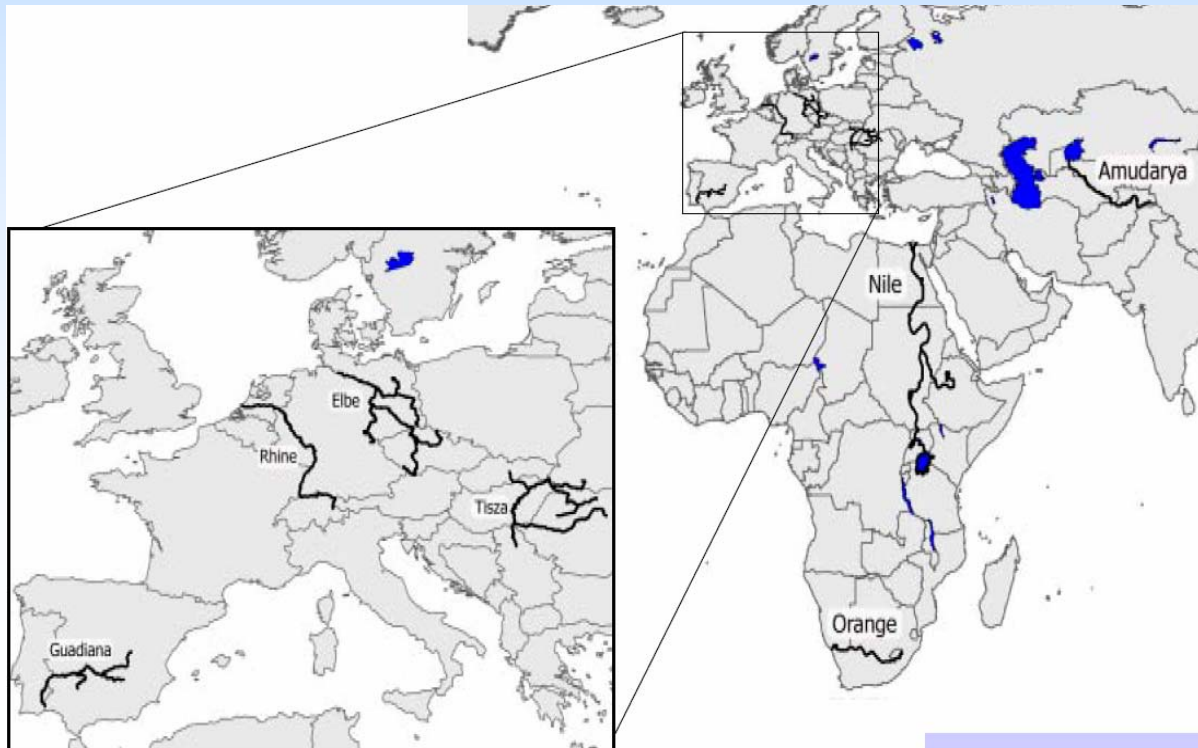
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7 NeWater case studier

Definition of Adaptive water management in NeWater:

- Adaptive management can be defined as a systematic process for improving management policies and practices by learning from the outcomes of implemented management strategies



Tab. 3.3: Properties of AWM regime

Management paradigm	Shift to a learning process with learning from the outcomes of management strategies in stead of “command and control” management approaches
Governance style	Polycentric, horizontal, broad stakeholder participation also focusing on managing uncertainties, instead of centralized, narrow stakeholder participation
Sectoral Integration	Cross-sectoral analysis. Identify emergent problems and integrates policy implementation instead of analysing sectors separately
Information management	Open shared information sources that facilitate integration. Comprehensive understanding filling gaps instead of fragmented understanding
Infrastructure	Appropriate, decentralized, diverse sources of design, power delivery instead of massive, centralized infrastructure, single sources of design, power, delivery
Finance and risk	Financial resources diversified using a broad set of private and public financial instruments instead of financial resources concentrated in structural protection
Transboundary Management	Analysis of multiple scales and transboundary issues instead of exclusive focus on analysis and management at a sub-basin and/or national level. This properties does not necessarily apply to all cases.



Action research and piloting AWM in seven NeWater case studies



How does AWM add new dimensions to IWRM?

- The central contribution of Adaptive Water Management (AWM) within the context of IWRM is that it provides added value through **explicitly embracing uncertainty**
- AWM **acknowledges the complexity** of the systems to be managed and the limits to predicting and controlling them
- This implies in particular for integrated management approaches which **adopt a systemic perspective** rather than dealing with individual problems in isolation.

Results: 12 synthesis products

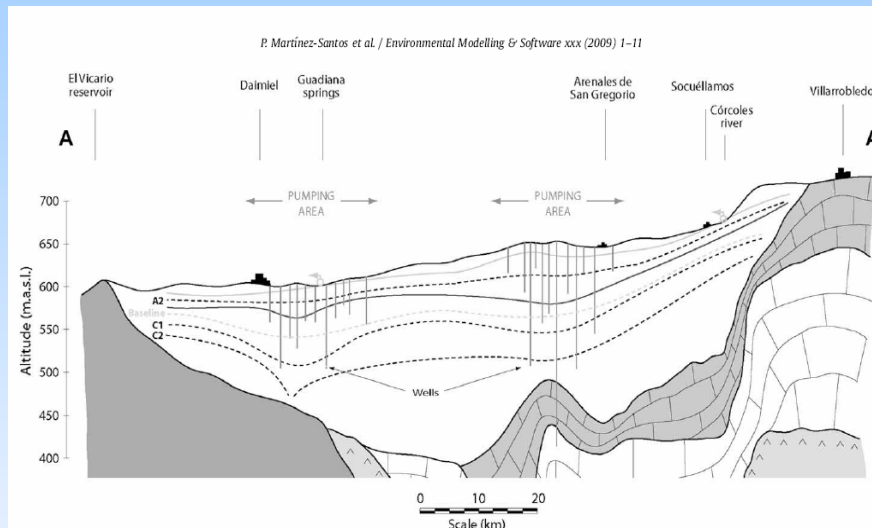
1. *Management and Transition Framework – concept and applications*
2. *Uncertainty Guidance*
3. *NeWater Insights for EU Policy Processes*
4. *Climate and water adaptation book*
5. *Water resources scenarios for CS regions*
6. *Cross comparisons of adaptation strategies across regions*
7. *Process for analysing dynamic vulnerability and adaptive capacity*
8. *Special issue on participatory water management*
9. *NeWater Guidebook on Adaptive Water Management*
10. *NeWater Portal*
11. *Guidance and training material for practitioners*
12. *Online curriculum on adaptive water management*



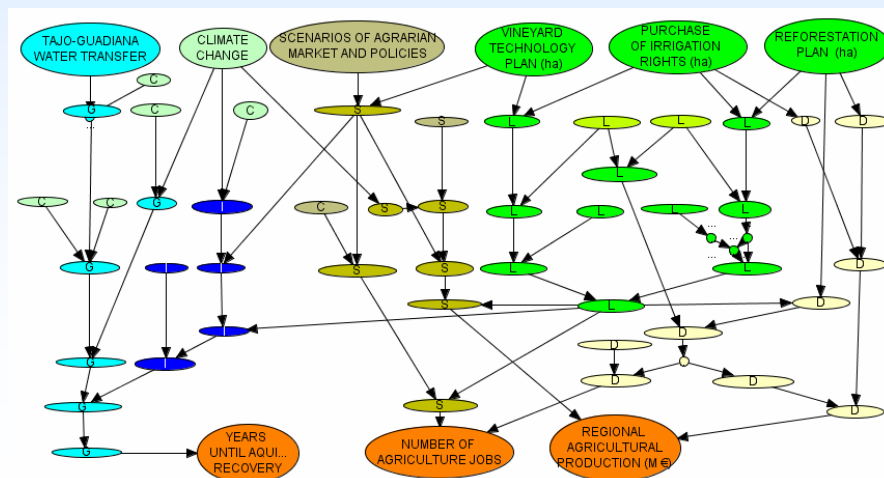
AWM themes and issues in case studies

Outputs and benefits in NeWater cases	Amudarya	Tisza	Guadiana	Rhine	Elbe	Orange	Nile
<i>AWM properties</i>							
Management, learning	x	x		x	x		
Transboundary		x				x	x
Uncertainty	x	x	x	x	x	x	x
Scenarios		x	x			x	x
Monitoring	x	x					
Farmers knowledge	x	x	x				
Stakeholders involvement	x	x	x	x	x	x	x
Public participation		x	x				
Info management		x	x				
Sectoral integration	x	x	x	x		x	x
Non-technical		x			x		
Planning, measures				x	x	x	
Capacity building, aware	x	x	x			x	x
<i>Issues</i>							
Water shortage	x	x	x		x	x	x
Floods		x		x	x		x
Groundwater			x				
Water quality	x			x			
Ecosystems, wetlands	x	x	x			x	

Guadiana : Two subsequent processes



- NeWater addressed the challenges by setting up two main activities:
- 1) Stakeholders defined the research objectives, asking for implementation of a **groundwater flow model of the aquifer**, in order to carry out a **vulnerability analysis** of the hydrological system under a series of plausible management scenarios
- 2) A second participatory modelling initiative followed. This second process focused on the **development of a Bayesian belief network**, and obeyed to the need to evaluate the social and economic consequences of the implementation of the Special Plan of the Upper Guadiana basin



Definition of AWM outcomes

Short term AWM outcomes

Properly identified, characterised, propagated and disclosed uncertainty

Well designed and informed set of future scenarios

Awareness-rising, dissemination, capacity building and knowledge transfer

Medium term AWM outcomes

Diversified and overlapped solutions and instruments to reach them

Learning organisations, carefully designed experiments

Decentralised investments and infrastructure with multiple design

Ultimate AWM outcomes

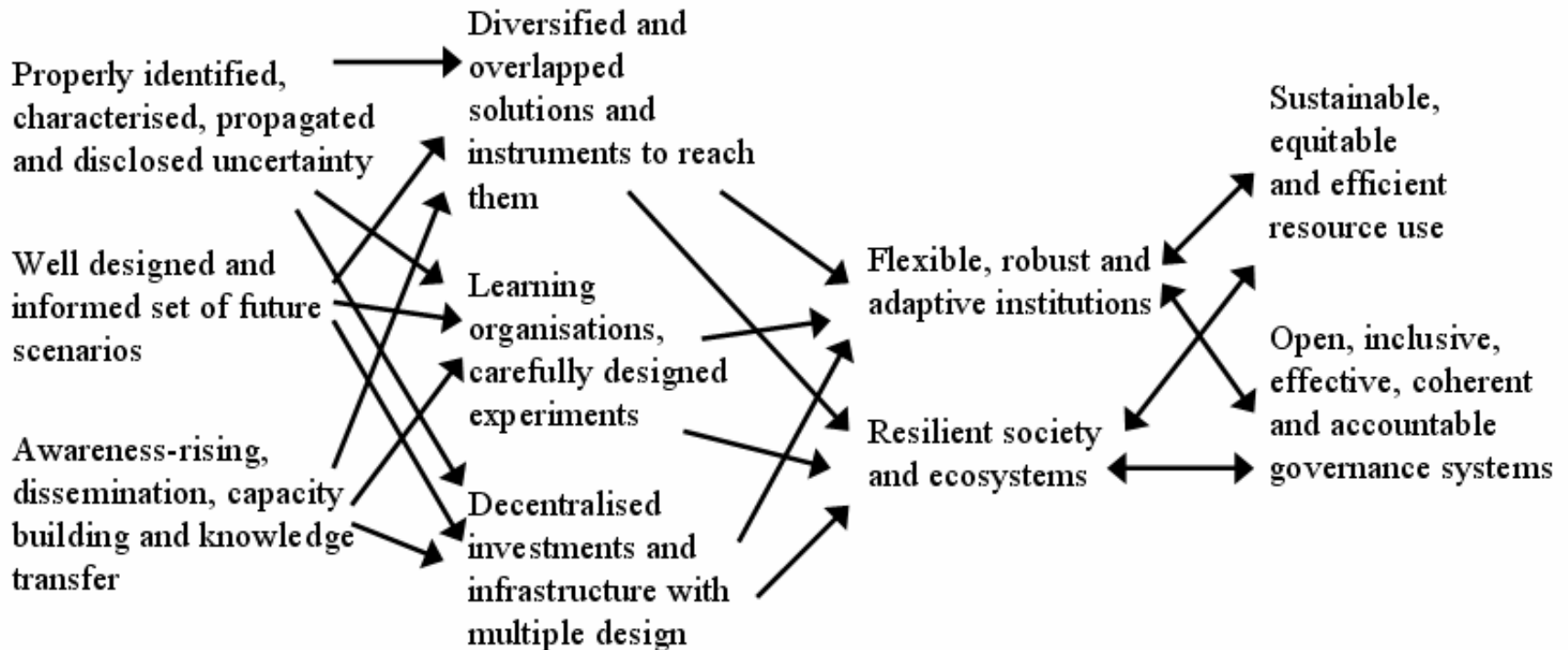
Flexible, robust and adaptive institutions

Resilient society and ecosystems

Overarching goals

Sustainable, equitable and efficient resource use

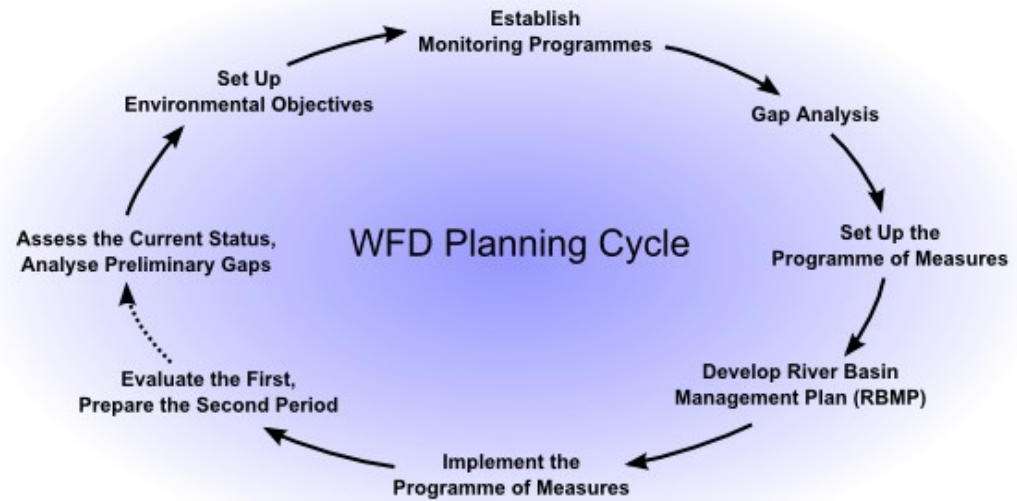
Open, inclusive, effective, coherent and accountable governance systems



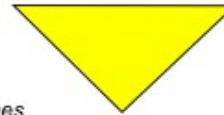
Inputs -> Process -> Outputs -> Outcomes -> Goals
 (lessons learned are based on short term AWM outcomes)



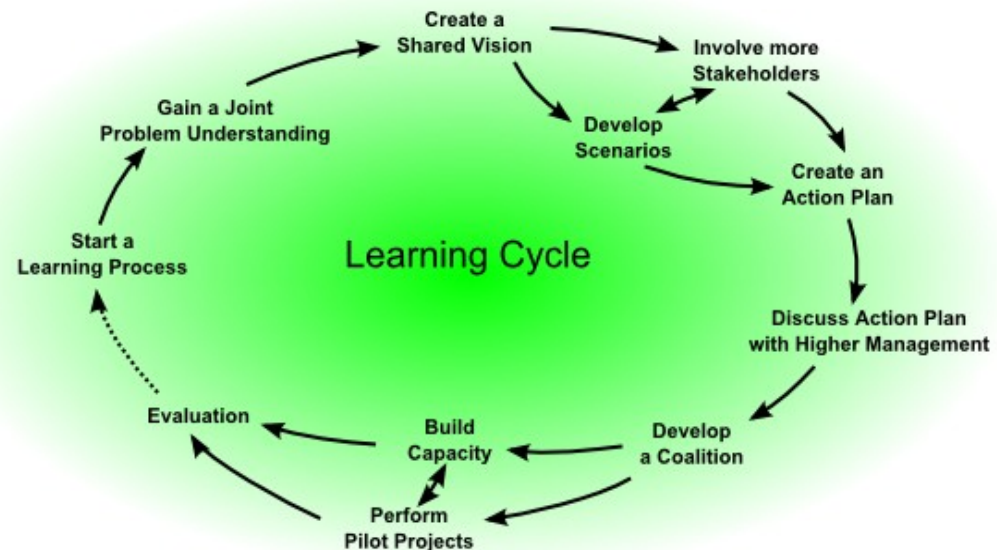
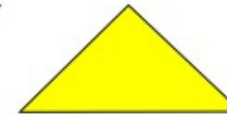
Regular planning cycle and learning cycle



Start a learning cycle to tackle problems you could not solve by conventional approaches



Integrate solutions in your management process



Outcomes

Table 3.1 Examples of AWM outcomes (outputs and benefits of AWM)

Definition of outcomes	AWM outputs (short-term) (Intermediate outcomes)	AWM benefits (long-term) (Ultimate outcomes)
AWM learning cycles	Awareness about ambiguity, frames and uncertainties. Scenario planning, hypothesis and experimental approaches	Viable pilots and innovative measures have been implemented and performance evaluated based on monitoring and learning.
AWM management regimes	System is in a transition toward a more mature AWM management regime. Experiments and monitoring is initiated.	System has reached a more mature AWM management regime (more resilient/adaptive). System performs better in situations of change.

Examples:

- ...two important innovations, that is the adoption of a multi-scale approach, and the investigation of management actions' impacts on different components of the socio-environmental system (Amudarya)
- The whole process contributed to transparency, sectoral integration encouraged social learning by the exchange of information and views as a result of the stakeholder involvement (Guadiana)

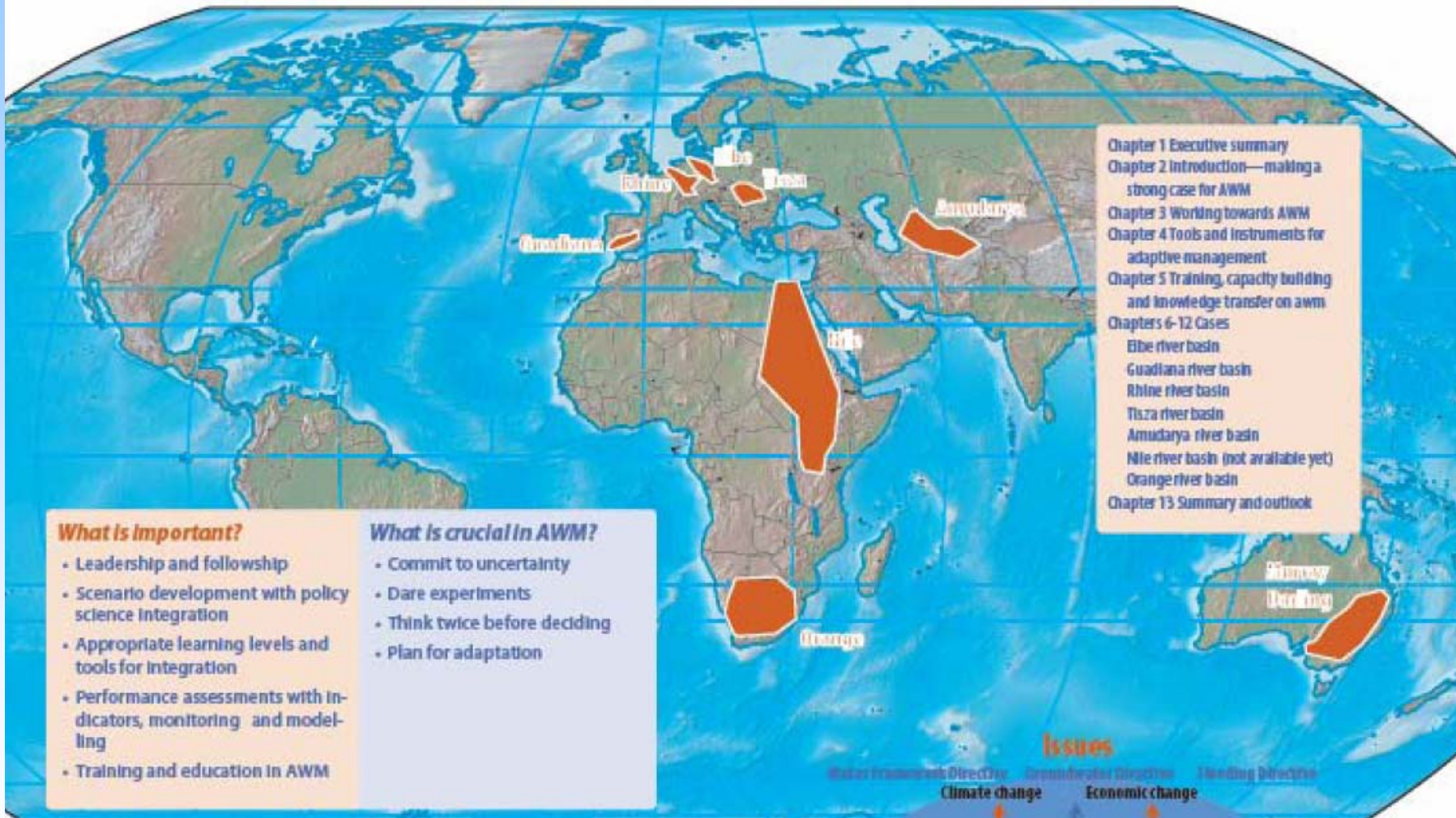
Five lessons learned from NeWater

- Leadership is needed and broad support from institutions is of crucial importance
- Scenario development and analysis has an important role in making uncertainty more tangible
- Engagement of stakeholders and not solely information and consultation is required for AWM
- Social learning and application of a diversity of tools used in combination is needed for integration and uncertainty analysis
- Trust, transparency and sense of ownership is paramount important in AWM

Five more lessons learned from NeWater

- Integrated performance assessment by use of appropriate indicators, monitoring and modelling is important in AWM
- AWM require explicit acknowledgement of a broad range of uncertainties, scientific as well as policy uncertainties, throughout the scenario development and decision making process
- Awareness raising regarding multiplicity and various knowledge frames is a long-term issue which must be part of AWM
- Innovation in management approach are needed at all levels and scales
- Select an appropriate inter-scale approach for applying AWM

NeWater guidebook on Adaptive Water Management



Target group: Policy makers, water managers, and civic society organisations