

EU Water Initiative and links with research



- The 7 R+D EU Framework Programme
- Water Supply and Sanitation Technology Platform
- WFD Key Research Issues for the future

Manuel Menéndez (Spanish Ministry of Environment)

Preparations 7th FP



- The 6th EU Research FP was mainly designed as a tool to help realise the “European Research Area”.
 - Strong concentration on few themes and topics
 - Emphasis on “instruments”
 - Importance of coordination of national research activities
- 7th EU Research FP has ten themes defined in order:
 - To give continuity to the 6th
 - Broad enough to accomodate emerging topics
 - Need of simplifying and rationalising

Preparations 7th FP: Roadmap



- 04/05 Commission - Adoption of FP7 proposals
- 09/05 **Commission - Proposals on Specific Programmes and Rules for participation + dissemination**
- 12/05 Commission – Proposals under Art. 169 and 171
- 12/05 **EP – First reading**
- 01/06 **Council – Common position**
- 03/06 EP – Second reading
- 04/06 **EP – Opinion on the Specific Programmes**
- 06/06 Council and EP – Adoption of FP and Rules
- 07/06 **Council – Adoption of the Specific Programmes**

Preparations 7th FP: Themes



- Health
- Food, agriculture and technology
- Information and communication technologies
- Nonosciences and nanotechnologies, materials and new production technologies
- Energy
- Environment and climate change
- Transport
- Socio economic sciences and the humanities
- Space
- Security

Environment and climate change



Objectives:

- Knowledge on the interactions between the biosphere, ecosystems and human activities,
- Developing new technologies, tools and services, in order to address in integrated way global environmental issues and support sustainable development.
- Emphasis will be put on:
 - Improved understanding and prediction of climate, earth and ocean systems changes
 - Tools for monitoring, prevention and mitigation of environmental pressures and risks
 - Management and conservation of natural resources.

Environment and climate change



- Pressures on environment and climate, impacts and feedback:
- Environment and health :
- Conservation and sustainable management of natural resources:
- Evolution of marine environments:
- Environmental Technologies:
- Natural hazards: understanding and prevention
- Forecasting methods and assessment tools
- Earth observation

Preparations 7th FP: 4 components



- Collaborative research
 - Aim: To create European Poles of excellence in major fields
- Frontier Research
 - Aim: Support for investigator driven research in all scientific and technological fields
- Human Potential
 - Aim: To support key aspects of skills and career development (mainly Marie Curie action)
- Research capacity
 - Aim: Support to research infrastructures

Components will be subject of Specific Programmes

Preparations 7th FP: 2 main features



- Creation of a “European Research Council” supporting “frontier research projects” proposed by individual teams in competition at European Level
- Actions:
 - Joint technology initiatives (mainly private funding)
 - Co-ordination of national research programmes on a large scale (FP and national funding)
 - International cooperation and support to the creation of new infrastructures (FP, contributions from structural funds and loans from European Investment Bank)

Joint Technology Initiatives



- Mainly be created on the basis of the work undertaken by the European Technology Platforms.
- ETPs are set up within the European Environmental Technology Action plan adopted by the EC in January 2004.
- One of the ETPs is the Water Supply and Sanitation Technology Platform

Water Supply and Sanitation Technology Platform



- Open to all stakeholders and major end-user groups
- Main output is a document aimed to support:
 - Improvement of the European Competitiveness of the European Water Industry (According Lisbon Strategy)
 - Support to the definition of the 7th EC Research FP
 - Reaching the Millenium Development Goals supporting the EU initiative
- Three main sections
 - Vision
 - Strategic Research Agenda
 - Implementation Plan

Three horizons: 2010,2020,2030

Water Supply and Sanitation Technology Platform



- Governed by a Board of Stakeholders (about 25 people representing the European Water Industry)
- Five working groups (about 15 experts each) to produce the final documents
 - TWG1: Water Management
 - TWG2: Water for People
 - TWG3: Water in Industry
 - TWG4: Water in Agriculture
 - TWG5: Horizontal group
- Regional and national input is provided by the Member States Mirror Group

WG1 Water Management Vision summary (draft) page 1

By the year 2030 :

The European water industry and water profession - with its ability to deploy a range of innovative, knowledge-based, tailor-made system solutions, based on new environmentally friendly technologies - will have secured leadership of the world market and have contributed to delivery of the Millennium Development Goals

Integrated multi-sectoral water management policies and tools will be used as standard practice:

- *Internal and cross- sectoral knowledge will significantly improve understanding of complex natural and human systems.*
- *Many water management problems which are currently "internalised" within different water use sectors will mitigated using "external" solutions.*
- *By 2020, there will measurable indicators of the effectiveness of IWRM in delivery of development and implementation of policy.*

New generations and increased harmonisation of instrumentation, monitors, data and meta-data standards, telemetry, Earth Observation, distributed computing and interfaces, harmonised spatial reference systems will be in use:

- *A range of new field instruments and monitors to measure entirely new determinands, (e.g. ecosystem energy inputs), adapt to changes in concentration levels, and sudden, short term events (flash floods, pollutant pulses), map/monitor groundwater and aquifers.*
- *By 2020, operational systems will use highly integrated freshwater and terrestrial ecosystem, land use, transport and water quantity and quantity models.*
- *Citizens will be able to access on-line, detailed information about their local water environment in new visual simulation formats.*

On-line, intensive data and refined modelling tools will improve the accuracy and reliability of water management:

- *Significant improvements in the accuracy of climate, inter-annual and weather forecasting will be complemented by similar improvements in water management (flood drought) systems for agriculture, industry, energy, navigation and water supply.*

WG1 Water Management Vision summary (draft) page 2

A new generation of decision support systems will optimize water management choices (e.g. accounting of water allocations from resource, to nature, abstraction, treatment, supply, usage, and discharge):

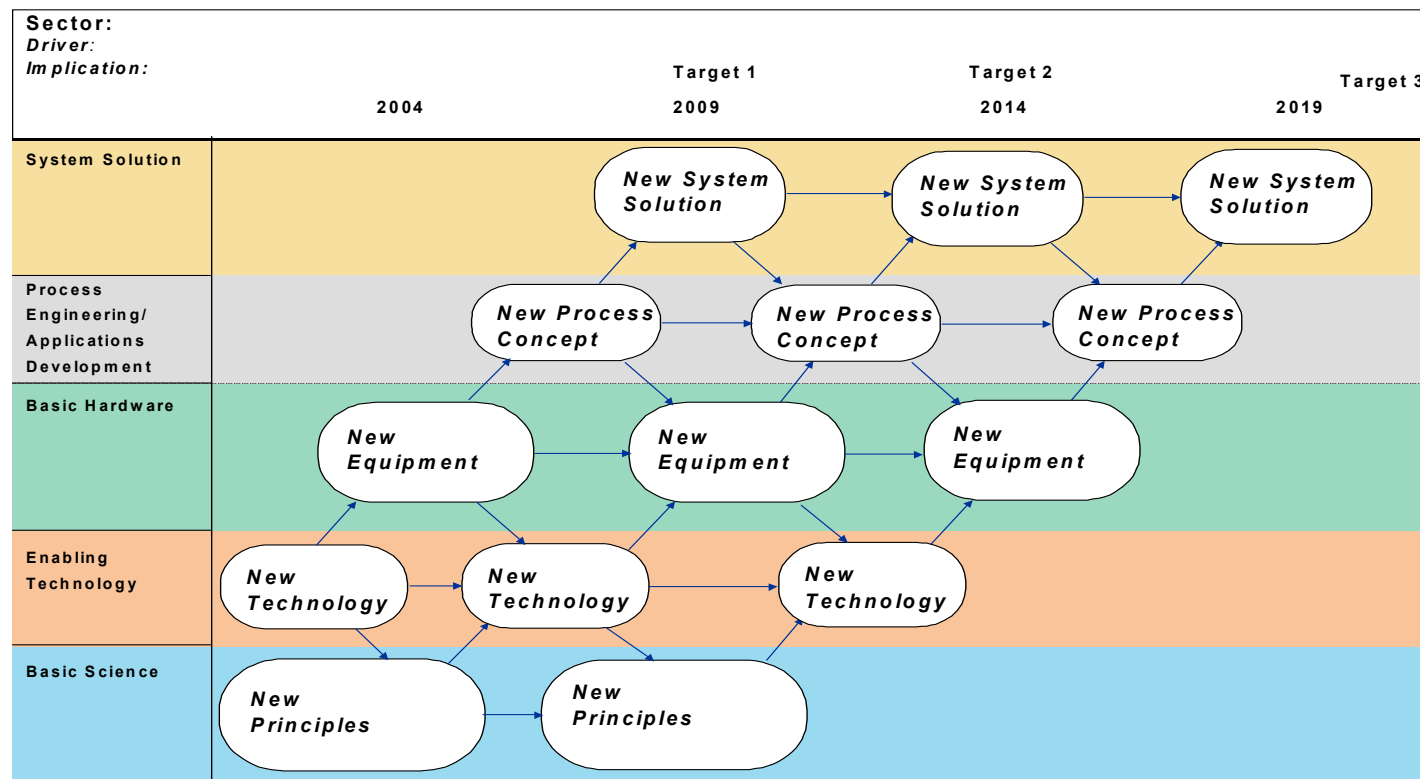
- *The management of ecosystems will be supported by a new generation of models allowing improved understanding of threats (abstraction, chemicals, invasive species, scarcity) to, and remediation and restoration of affected surface and groundwater.*
- *Decision support systems in 2030 will improve output validation, and integrate the propagation of uncertainties through the monitoring/data/modelling chain.*
- *New monitoring / modelling tools will enable decision making at more local levels, and the integration of these decisions into the wider catchment, trans-boundary and global dimensions.*
- *By 2010, new integrated socio-economic tools will be used to improve "valuation" of environmental assets.*
- *These new tools will provide inform citizens / decision makers of the feedback from life style choices.*

Water will be managed in more economically and environmentally sustainable and democratic manner:

- *Economic, environmental and democratic indicators will be used as routine in water management decision making (thorough the WFD).*
- *By 2020, new methods and tools will support delivery of all water-related MDGs integrating competing demands with available resources for the poor.*
- *By 2010, a new generation of IWRM deliverables will enable operational local to river basin scale IWRM appropriate to the needs and resources of developing countries.*
- *New standards will be developed to measure the environmental footprint of the imports they purchase upon the water environment in countries of origin.*
- *The use of "reverse design" processes will be commonplace, where environmental outcomes determine the design of new developments.*

By 2030, more rapid and reliable Environmental Impact Assessments of products upon the water environment will be available, and required for all new industrial products.

Strategic research agenda and implementation plan: The road map approach



FOR TECHNOLOGY-BASED SOLUTIONS:

Technology Roadmapping Terminology		THIS MEANS...
System Solutions	New System Solution	How the new technology will be used to deliver benefits
Process engineering/ Application development	New Process Concept	The context within which the new equipment will be deployed
Basic Hardware	New Equipment	How the new technology will be made available
Enabling Technology	New Technology	What technology we need to develop to meet principle(s)
Basic Science	New Principles	How we will address the need

Challenge : Balancing Supply and Demand
Need : Reduce domestic raw water consumption

<i>System Solutions</i>	Reduced flow domestic systems
<i>Process engineering / Application development</i>	Low water washing
<i>Basic Hardware</i>	New taps
<i>Enabling Technology</i>	Flow control technology
<i>Basic Science</i>	Hydraulics Hydrodynamics

<i>Heading</i>	<i>Topic</i>
1 Multi-sectoral approach	1.1 General/Competitiveness
2 Process Understanding	2.1 Groundwater-surface water interaction
3 Data and Decision Making	3.1 Data acquisition 3.2 Monitoring networks 3.3 Credibility of data and models
4 Understanding, Mitigating and Adapting to Change	4.1 Climate change 4.2 Land use change 4.3 Planning in a changing world
5 Environmental Management and Remediation	5.1 Environmental flows 5.2 Valuation of water resources and ecosystems 5.3 River basin management plan 5.4 Groundwater protection 5.5 Restoration of water systems
6 Governance	6.1
7 Dissemination and Uptake	7.1 Measurable achievements 7.2 Capacity

Heading: **2 Process Understanding**

Topic: 2.1 Groundwater-surface water interaction

<i>Current Position</i>		<i>Future Position</i>	
<i>Groundwater and surface water are managed as separate resources. There is a lack of knowledge and tools for describing mechanisms and processes at the physical interface between these water bodies</i>		<i>Integrated management of groundwater and surface water on the basis of detailed knowledge and reliable tools for describing flows, transport and ecological processes in the zone that couples surface water and groundwater</i>	
Science	Concepts & Methods	Application	Outcome
<ul style="list-style-type: none">• <i>Hydro- geology</i>• <i>Hydraulics</i>	<ul style="list-style-type: none">• Better understanding of basic processes in the non-saturated zone• Basic data requirements to define the water recharge to the aquifers• Characterisation of drainage mechanisms between aquifers and surface water.	<ul style="list-style-type: none">• New tools for evaluating the behaviour of the aquifer-river system under different scenarios of climatic and water demand conditions.• Improvement of basic understanding of the water cycle through new realistic approaches adapted to the availability of data	<ul style="list-style-type: none">• Evaluation of minimum flows and thus characterisation of droughts.• Evaluation of the influence of groundwater in wetlands.• Better joint use of groundwater-surface water taking advantage of exploiting groundwater in dry periods and increasing surface abstraction in the wet ones to avoid overexploitation and to reduce marine intrusion in coastal areas

Water Supply and Sanitation Technology Platform



Every input is wellcome

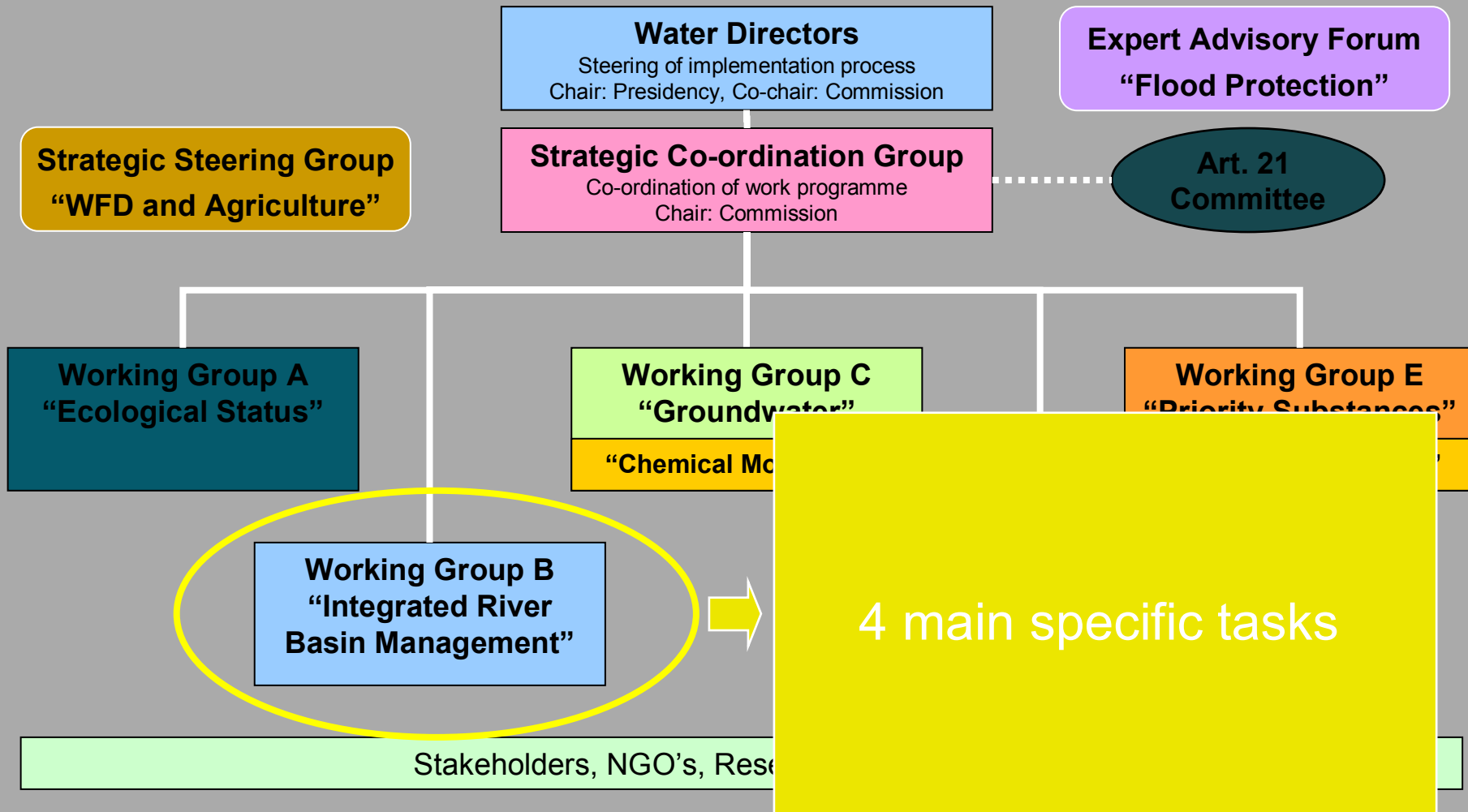
Join the platform in:

www.wsstp.org



European Commission, DG Environment
Unit B.1: Water, the Marine and Soil

New organisation 2005/2006



WG B IRBM: MAIN TASKS



- **Cost-effectiveness assesment (France)**
Contacts: Thierry Davy (French Water Agencies), Stéphanie Croguennec (Ministry of Ecology and Sustainable Development)
- **Pilot River Basins Exercise (JRC)**
Contacts: Giovanni Bidoglio (JRC), Lorenzo Galbiati (JRC), Francesca Soma (JRC)
- **Water scarcity (France, Italy)**
Contacts: Claire Grisez (Ministry of Ecology and Sustainable Development), Giorgio Pineschi (Ministry of Environment)
- **Information exchange and research needs on key issues of Integrated River Basin Management (The Netherlands, Spain)**
Contacts: Marc de Rooy (RIZA), Gerard Broseliske (RIZA), Manuel Menéndez (CEDEX)



Information exchange and research needs: Aims



- Information exchange and research needs: Aims
- Identification of issues that need further elaboration in the WFD process
- Identification of key issues with relevance for EU-level and prioritisation
- Identification of knowledge gaps that need further research
- Mandate endorsed by the WD in Amsterdam

Schematic:



Step 1

All issues

Step 2

Issues with
EU relevance

Policy issues and
Research needs

Step 3

Research
needs

Issue
via (Jar

- Further elaboration during 2nd half of 2005
- Endorsement by SCG (end Oct) and WD (end Nov)

community (what has been done already?)

to be
lorsed by SCG
y) and WD
ne)

Information obtained with the questionnaire:



- What are the most important driving forces and pressures that prevent a good status?
- What obstacles did countries face in the process of producing an Article 5 report, and what obstacles do they expect to face in the future?
- What issues (both driving forces, pressures and other obstacles) would merit an international approach?
- What issues would need extra research?

Return (score at April 1st)



- 24 of the 25 Member States
 - Portugal is missing
 - Return from Belgium only concerns Flanders
 - Return from France only useable qualitatively
- 2 EFTA countries
 - Norway and Iceland
- No Accession countries
 - Both Bulgaria and Romania missing
- Total return 26

Driving forces and pressures



- Based upon the list from IMPRESS
 - Is the topic of concern to your country?
 - If yes, add an indication of the weighting (1= less important – 5= top priority)
 - Indicate water category concerned
- To analyse responses:
 - Percentage of countries reporting an issue; score of 70% and higher marked orange
 - Average weighting once a topic was reported; score of 3 and higher marked green
 - In individual return; weighting 4-5 marked yellow

Section A1	Time taken to complete the assessment	Times mentioned		Average ranking (by threat type)	Average ranking (important or mentioned?)	Belgium (Flanders)		Cyprus	Czech republic	Denmark	Estonia	Finland	Germany	Greece	Hungary	Ireland	Italy	Latvia	Lithuania	Luxembourg	Malta	Netherlands	Norway	Poland	Slovakia	Slovenia	Spain	Sweden	UK	
		Austria	Portugal																											
COLLECTION	201	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	101	
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TRANSPORT	231	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	131	
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WASTE MANAGEMENT	241	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	141	
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OTHER ANTHROPOGENIC RISKS AND IMPACTS	251	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	151	1												

Obstacles



- Data (18 countries)
- Knowledge gaps (13)
- Resources (8)
- International Co-ordination (7)
- WFD process (7)

WFD Key Issues summarized



- Agriculture “biggest issue”
- Morphological issues also important (relates to hydropower, flood defence, building of reservoirs and agriculture)
- Pollution from “households” (municipal wastewater) broadly reported
- Pollution from “industry” in individual cases
- “other sources of pollution”: “diffuse sources”, “transport”, “long range transport of air pollution”, and “historic pollution” issues of concern
- Climate change is considered an issue; effects not well understood

Research needs (First list)



- Water resources management
- Groundwater management
- Knowledge on physical processes
- Knowledge on ecological processes
- Monitoring
- Pressure impact relations
- Data management
- Measures assessment
- WFD policy questions
- Policy assessment
- Socio economic issues

Inputs from the research society



- Attempt to start matching the issues for research identified by the WFD policy side with existing research output.
- Comments made by Harmoni-CA meeting (Guent, 5-6 April)
- Very first step of a process with presentation of results planned to be at WD meeting in London (end of 2005)



No	Issue	No	Sub-issue	Question 1 Kind of topic	Question 2 Own product	Remarks
1	Water resources management	1.1	Water saving			
		1.2	Water saving in irrigation			
		1.3	Water conservation			
			g. treated wastewater)			
			ces (e.g. desalination)			
			ment in drought prone regions			
2	Gr		common approach for			
			diffuse pollution – expressed			
			other parameters (i.e. heavy			
			organic pollution)			
3	Kr		ndwater - surface water -			
4	Kr		tween hydromorphological and			
			tions			
			standards for annex VIII and X			
			to define reference conditions			
			of assessment methods for			
			y elements			
			ydrology (minimum flow)			
			ology and morphology –			
			These need to be quantified so			
			to address these pressures,			
			required degree of			
			ecological improvement, can			
			cerning the connection/effect			
			rological, hydromorphological,			
			il factors/processes and the			
			cosystems			
			common EU-wide biological			
			thods (option 1 of			
			ATION process guideline)			
5	M		rent monitoring network's			
			ng and modelling			

NEEDS

A. Long term research;

B. Assembly of different sorts of knowledge (bringing together existing knowledge, e.g. the results from several research projects);

C. Development of common practices (e.g. working in pilots in order to gather experiences on international river basin management);

D. Exchange of knowledge (e.g. knowledge already exists but is not commonly known over Europe);

E. No specific research is needed; it is a matter of developing policy statements (e.g. conclusions on the application of certain principles).

AVAILABILITY OF PRODUCTS

a. Concepts (description and understanding of physical, biological, social, etc., processes);

b. Data (gathering, storage, management)

c. Modelling (what type, high/low data needs)

d. Requirements for models (on qualitative aspects, exchange of outcomes, etc.)