



# Developing a European Water Scarcity & Drought Information System (EU WSDIS)

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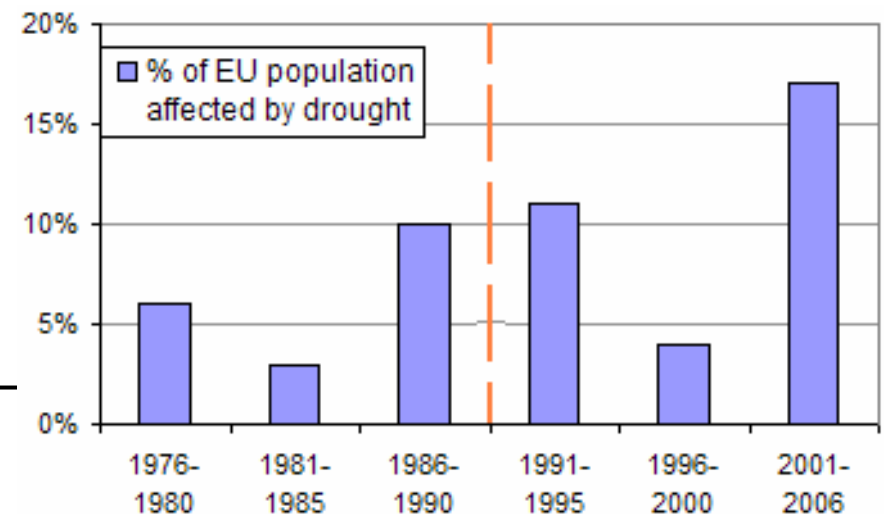
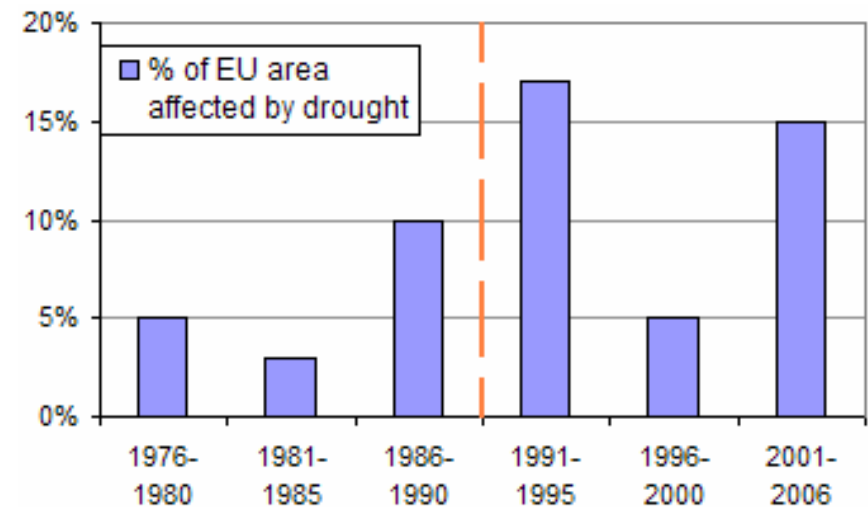
# Bringing Science closer Policy

- Integrating the science (bringing several aspect of the problem in common view – un-fragment the picture)
- Creating a comprehensive (and common) evidence base
- Understanding what the current situation is (monitor and interpret what you see – using shared definitions)
- Quantifying uncertainty – but take action.
- Involve policy makers and scientists in a creative dialogue (towards a cultural convergence?).



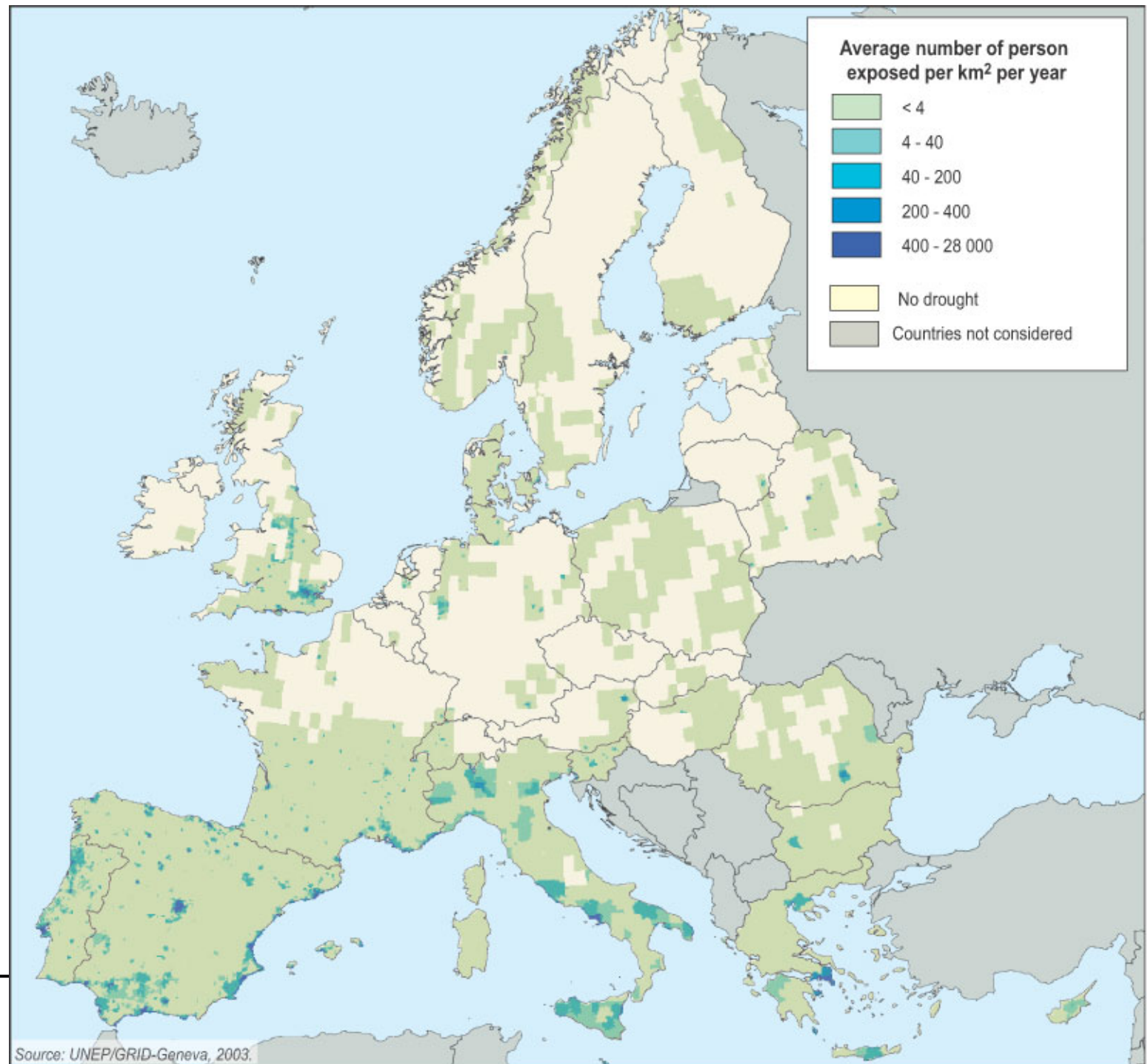
# Water Scarcity and Drought: an example of a Science-Policy interface

- **Is the EU affected by droughts?**
- Between **1976-1990** & **1991-2006**
  - **Increase in annual average EU territory** (from 6% to 13%)
  - **increase in population** (from 6% to 13%)



## A South European Problem?

(UNEP: 2007)



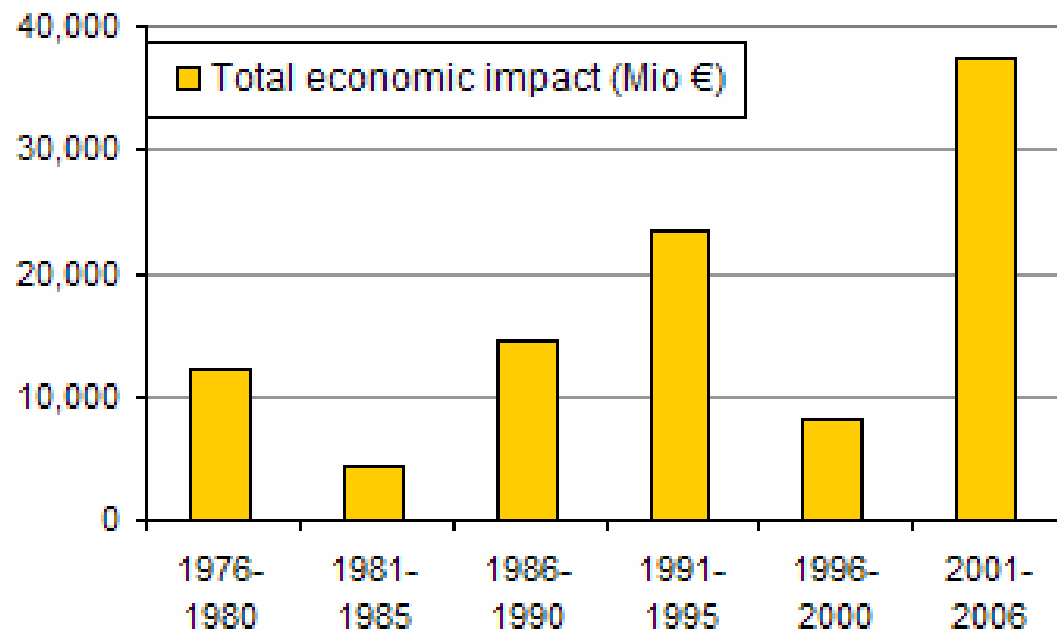
Overall economic impacts of drought events in the past 30 years:  
**100 billion € at EU level**

The annual average impact **doubled** between the 1976-1990 period and the next 1991-2006

Up to 6.2 billion €/year in the most recent years, exceptional cost of 8.7 billion € in 2003.



only purely economic costs are covered (social & environmental costs not included)



WS & Droughts 2<sup>nd</sup> Interim report,  
June 2007, DG ENV



Water Scarcity and Drought Communication 18<sup>th</sup> July 2007  
Communication from the COM to the EU Parliament & the Council addressing the challenge of WS & drought in the EU {SEC(2007)993}{SEC(2007)996}

2.3.1. *Developing drought risk management plans*

2.3.2. *Developing an observatory and an early warning system on droughts*

2.7.1. A *Water Scarcity and Drought Information System* throughout Europe

## Overall objectives:

- reliable information base (at the appropriate temporal and spatial resolution) required for decision-making,
- shared interpretations/definitions are necessary (ie common understanding of what the information shows)
- present an annual EU assessment, based on agreed **indicators** and **data** provided by MS and stakeholders to the COM or EEA on a yearly basis

# Water Information System for Europe WISE



<http://water.europa.eu>

**WISE** provides the ideal platform to integrate and disseminate such information

EEA





ETC/W + ETC/LUSE

### A. Assessment of ongoing activities and Gap Analysis

*with the purpose of identifying:*

- ✓ main institutional/organisational and knowledge related problems in tackling WS&D
- ✓ Key issues to be covered by a European Drought Observatory and a WS&D information System

### B. Development of a coherent WS&D indicator System (WSDiS) as central part of the information system (WSDIS)

- ✓ Indicators capable of integrating the fragmentary picture (DPSIR)
- ✓ The indicators' system is highly dependable on data, thus is linked to WISE and the WISE data collection process (and hence SoE Reporting).



### **C. Networking Activities**

- setting up a core network (EEA/ETC, JRC, DG, experts)
- setting up of a wider network (MS representatives, RBD authorities etc.) for consultation on the activities, dissemination etc.
- enhance EU internal and international information exchange through an accessible information platform

### **D. Defining the overall framework of a WSDIS**

- definition and outline of WSDIS (under discussion)
- identification of next steps to be taken on all institutional and organizational levels

## Potential Components of a WSDIS

<b>W S D I S</b> a web platform under WISE ( <i>or, stand alone but feeding from/to WISE</i> )	
<b>1. WS&amp;D Information</b>	⇒ General Information
<b>2. WS&amp;D Observation</b>	⇒ EDO: Drought Watch, Drought Forecast ⇒ WS&D indicator system
<b>3. WS&amp;D Impacts</b>	⇒ General Information ⇒ Actual Reported impacts for different categories/users (impact reporter)
<b>4. WS&amp;D Planning</b>	⇒ MS Drought Management Plans (DMPs) ⇒ Drought Policies (existing and recommendations)
<b>5. WS&amp;D Education</b>	⇒ Targeted education for different stakeholders and end users ⇒ Water saving potential/ smart technologies ⇒ Outreach Activities ⇒ Specific Training ⇒ Creation of training/educational programs (such as e-learning MS program)
<b>6. WS&amp;D Research</b>	⇒ portal to projects, programmes (national or international) ⇒ Scientists exchange blog ⇒ International cooperation and Funding Opportunities
<b>7. Networking, Dissemination, Forum</b>	



## 2. WS&D Observation

(GIS based, linked to WISE, GMEs)



### 2.1. EDO (→JRC) Drought Watch & Drought Forecast

- ➔ Current condition maps (e.g. P, T, drought indices –SPI, etc-)
- ➔ Historic maps for comparison
- ➔ Forecasting maps:
  - short term outlook -based -e.g. P, T, cumulative runoff- showing the evolution of a drought condition for the next few months
  - long term prediction based on climatic models scenarios
  - short/long term forecast based on soil moisture anomalies

*The optimum goal of the EDO is to evolve into a Drought Early Warning System (DEWS)*

### 2.2. WSDiS (→ EEA) WS&D Indicator System

- Scientifically sound and representative indicators within a clearly defined DPSIR framework
- Data for these indicators
- Operationally useful indices based on multiple indicators

Ultimately a basis for assessment of WS conditions (supporting decision making) taking into account both demand, supply and availability issues (ie both socioeconomic and environmental components)



## Towards a WSD*i*S as part of the WSDIS

*The issues:*

- diverse geographical and temporal distribution
- wide variety of disciplines affected
- many scales on which drought operates on

**make it difficult to develop an index to measure it**

→ **Rather a WS & Drought Indicator System (WSD*i*S)**

*Concept:*

- ✓ could nicely fit into the WISE platform
- ✓ follow the DPSIR framework
- ✓ define appropriate level of disaggregation
- ✓ Define selection criteria, evaluate adequate triggers & thresholds
- ✓ establishment of a stable data flow to ensure maintenance of the indicator set
- ✓ stepwise approach, start w/selected pilot RBDs/RBs ~ data availability
- ✓ Be informed by international experience: e.g. the US Experimental Objective Blends of Drought Indicators



## Towards a WSDiS as part of the WSDIS

*So far:*

- ✓ Questionnaire to the countries to identify the most “popular” indicators (both for WS and Drought)
- ✓ Creation of SoE Reporting Sheet #3 on Water Quantity to capture data availability and needs (availability + abstraction)
- ✓ Test data Exchange 2008 (based on SoE#3) to identify the reporting capabilities of the countries and bridge the data gaps & data uncertainty (also EIONET workshop for that purpose)
  - Some demonstration examples (maps based on test data exchange 2008 in the following slides)
- Position paper on the adopted approach in developing the WSDiS (to be discussed within the Core Group on WS&D next week)
- DPSIR framework refinement and population (in progress)

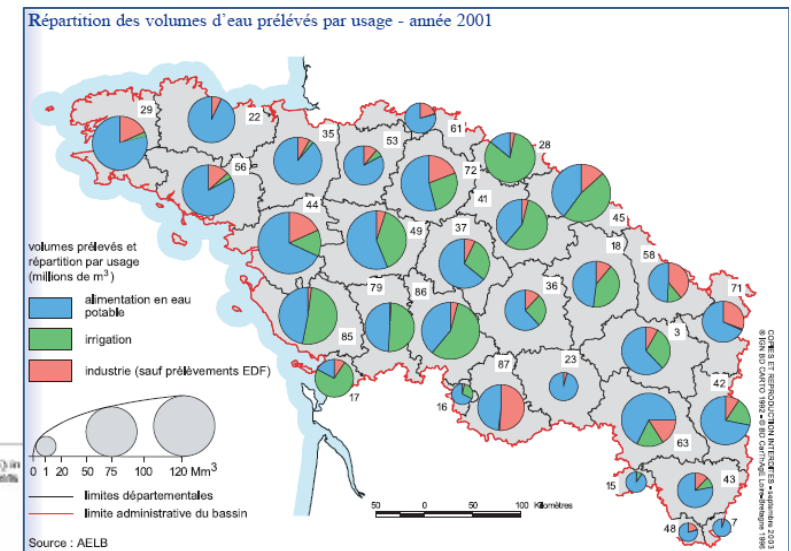
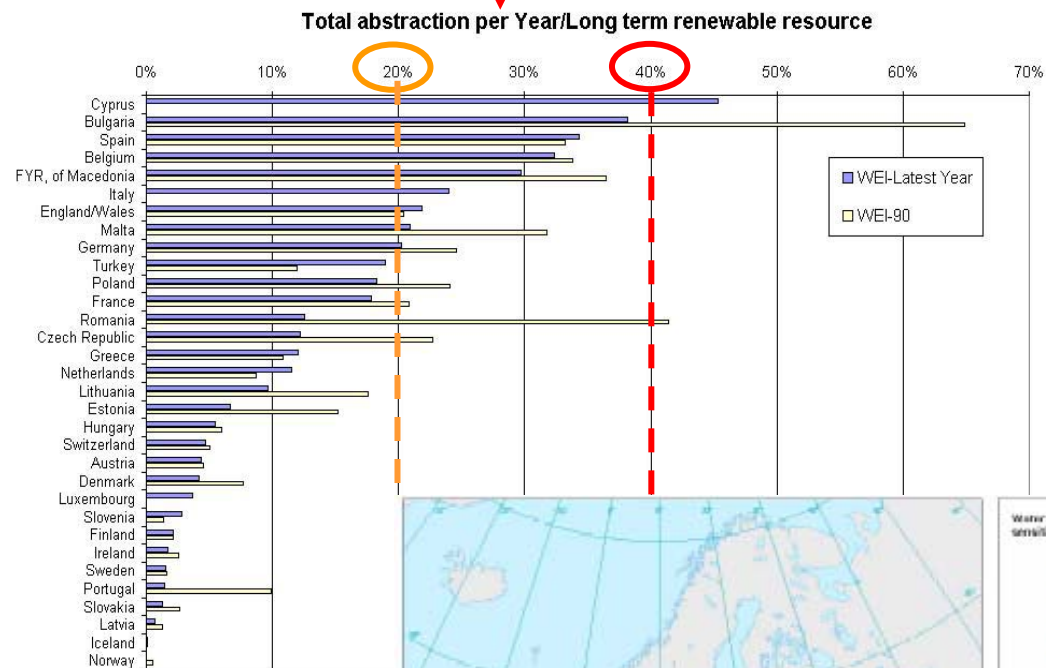




# The need for better WS&D indicators (and information) at EU level

Current EU water stress picture based on the WEI

Suggested



Water use by sectors RBD Loire-Britany

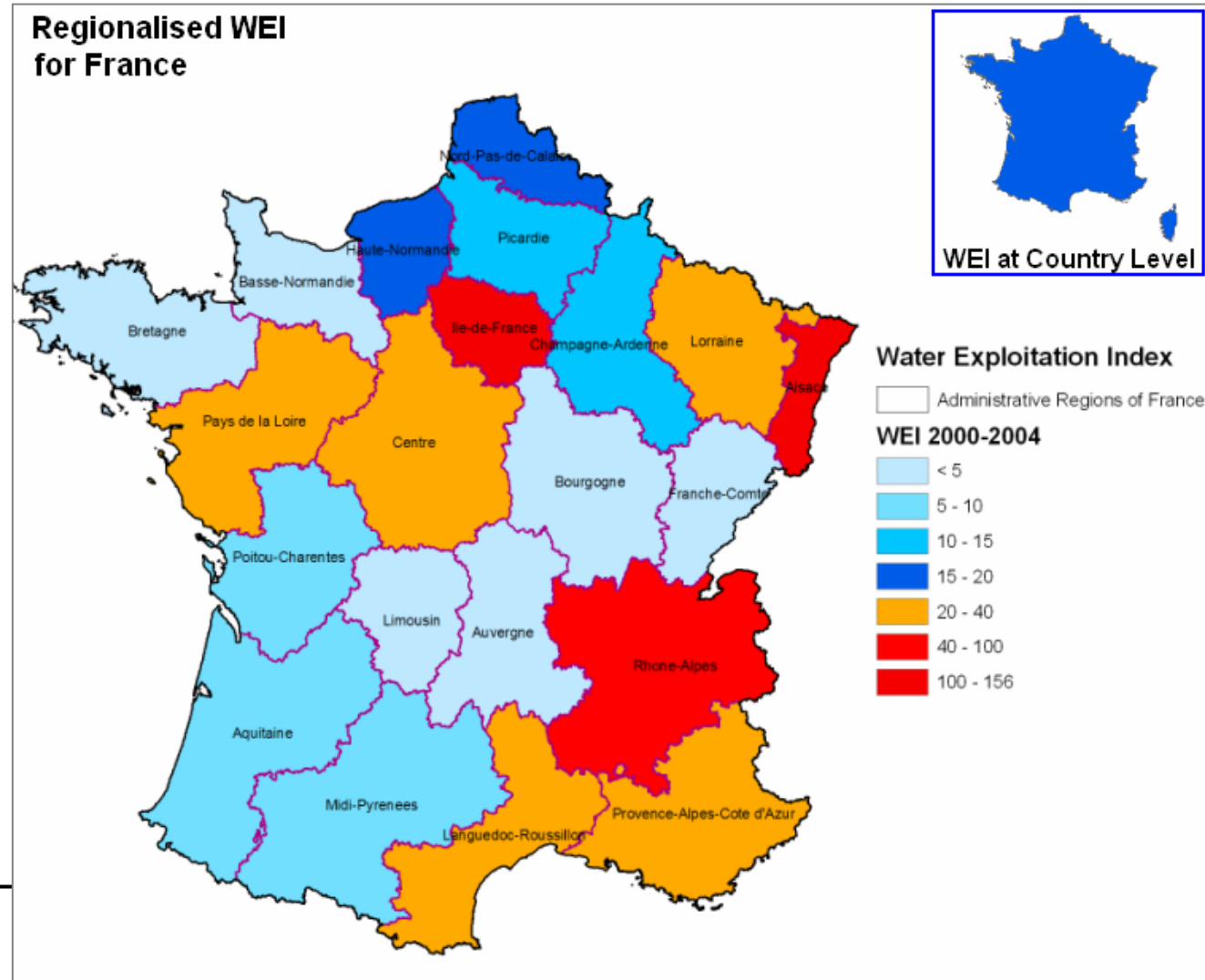
WEI Assessment  
DRAFT created  
12/2007



## Some examples in this direction based on the Test Data Exchange 2008

Modified WEI\_regional per administrative region:  
FW Abstractions / Internal Flow

### a. WEI Regionalization



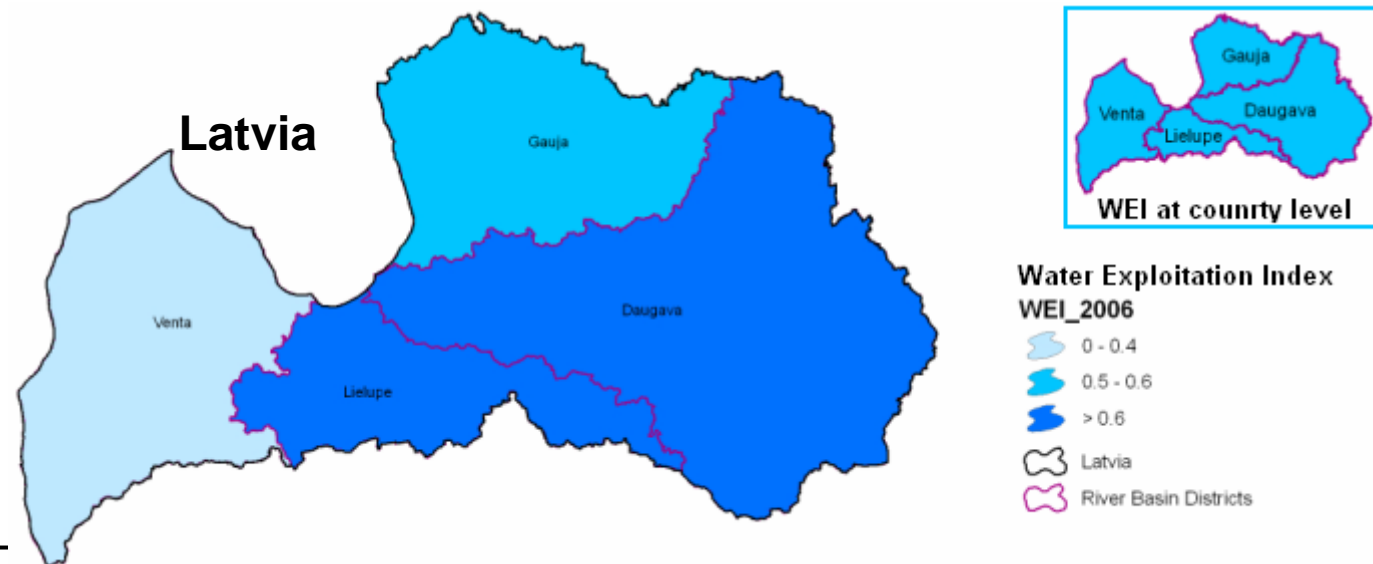
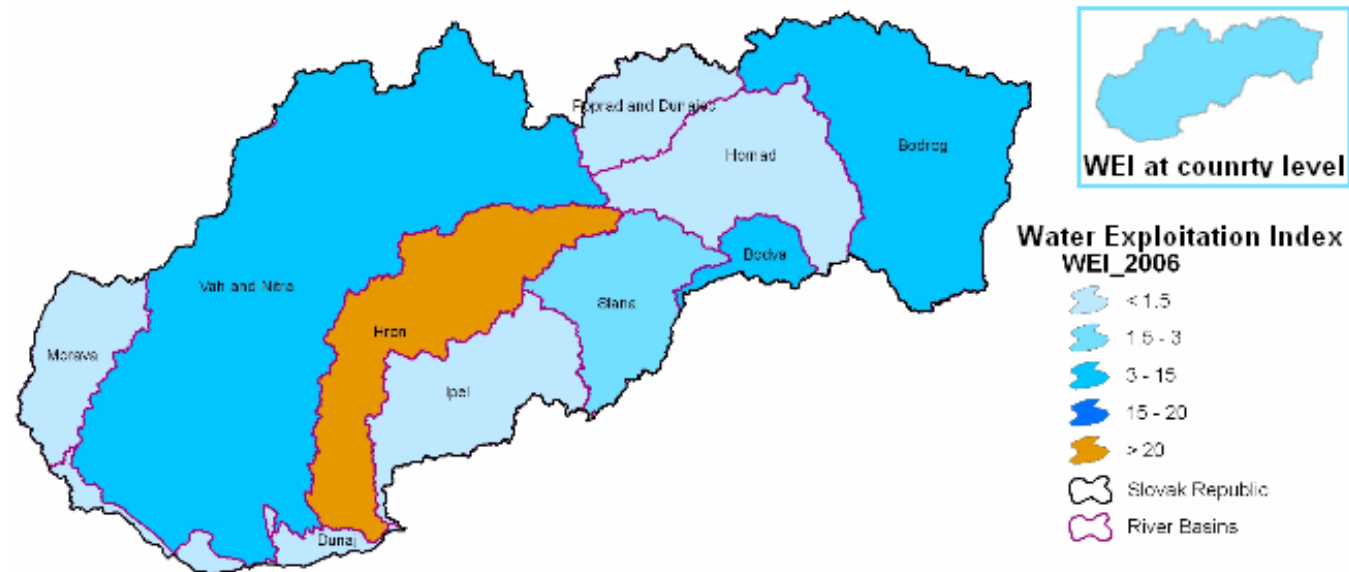
Note:

ExIn = 30,000  
mainly in Rhone-  
Alpes → need for  
RBD/RB scale

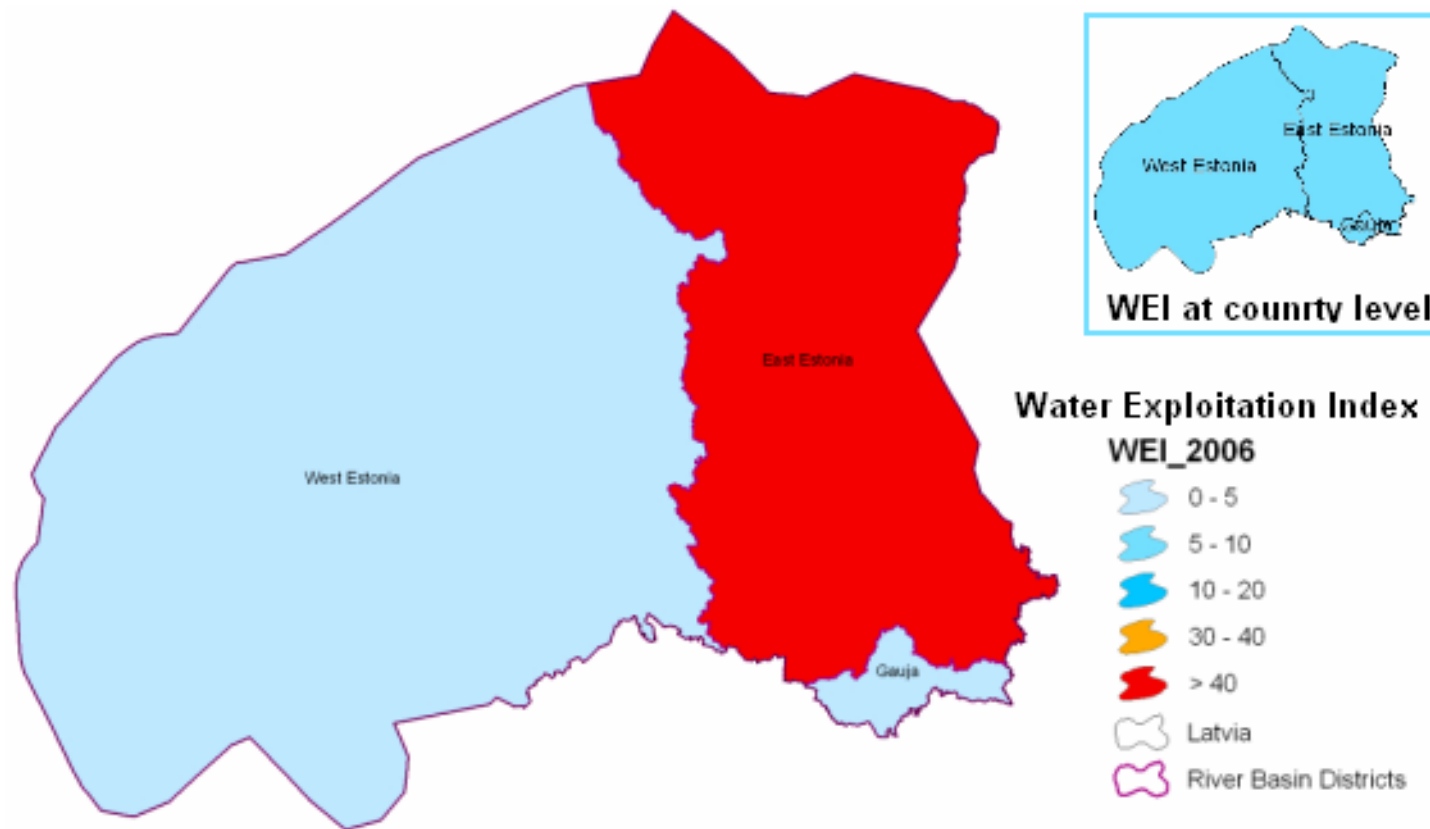


# Slovak Republic

Modified WEI\_regional:  
FW Abstractions / Renewable water resources 2006

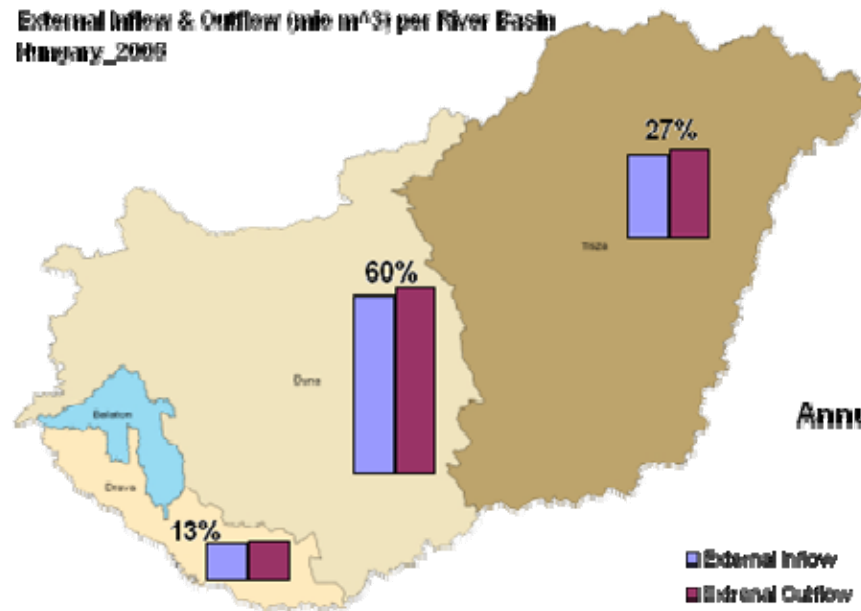


# Estonia

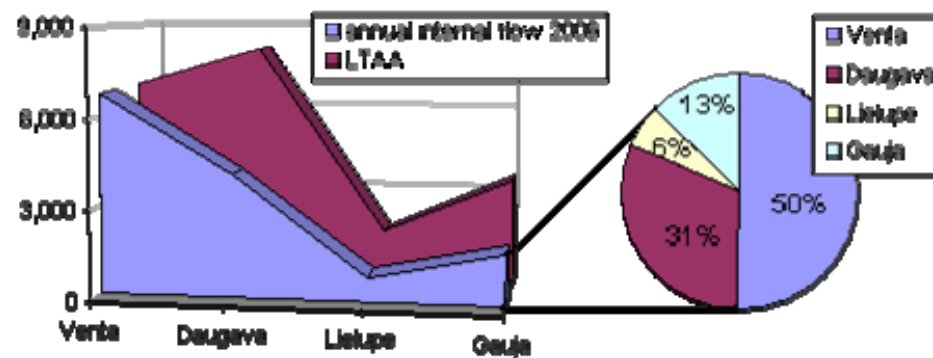
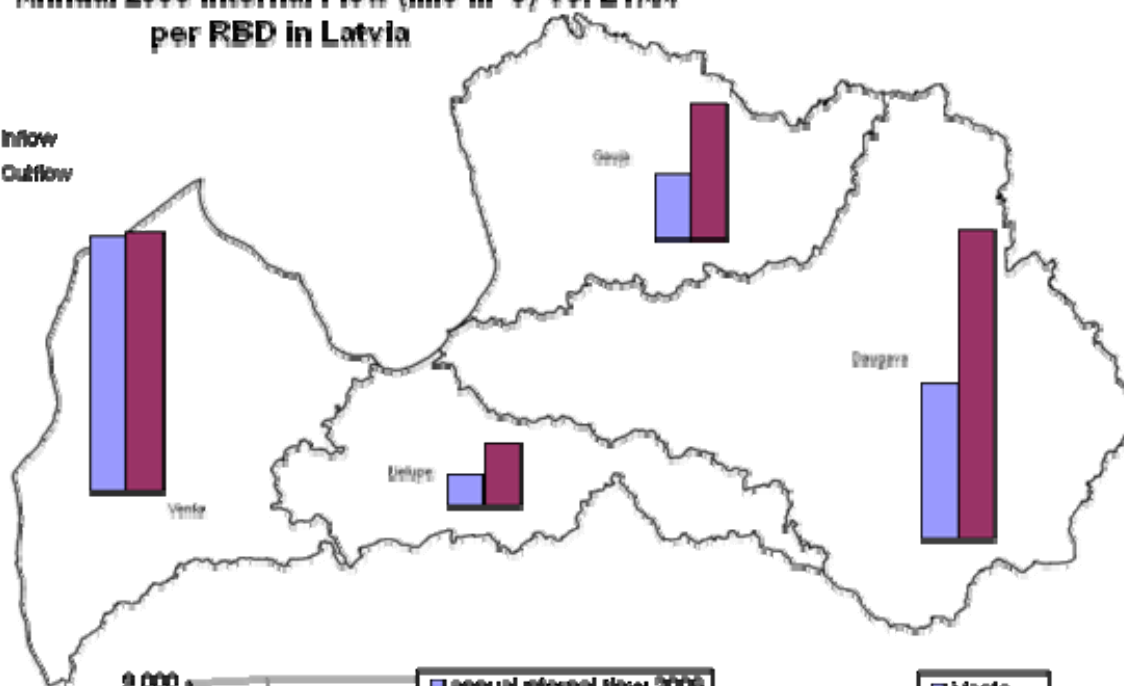


External Inflow & Outflow (mio m<sup>3</sup>) per River Basin  
 Hungary\_2006

## b. Water Balance

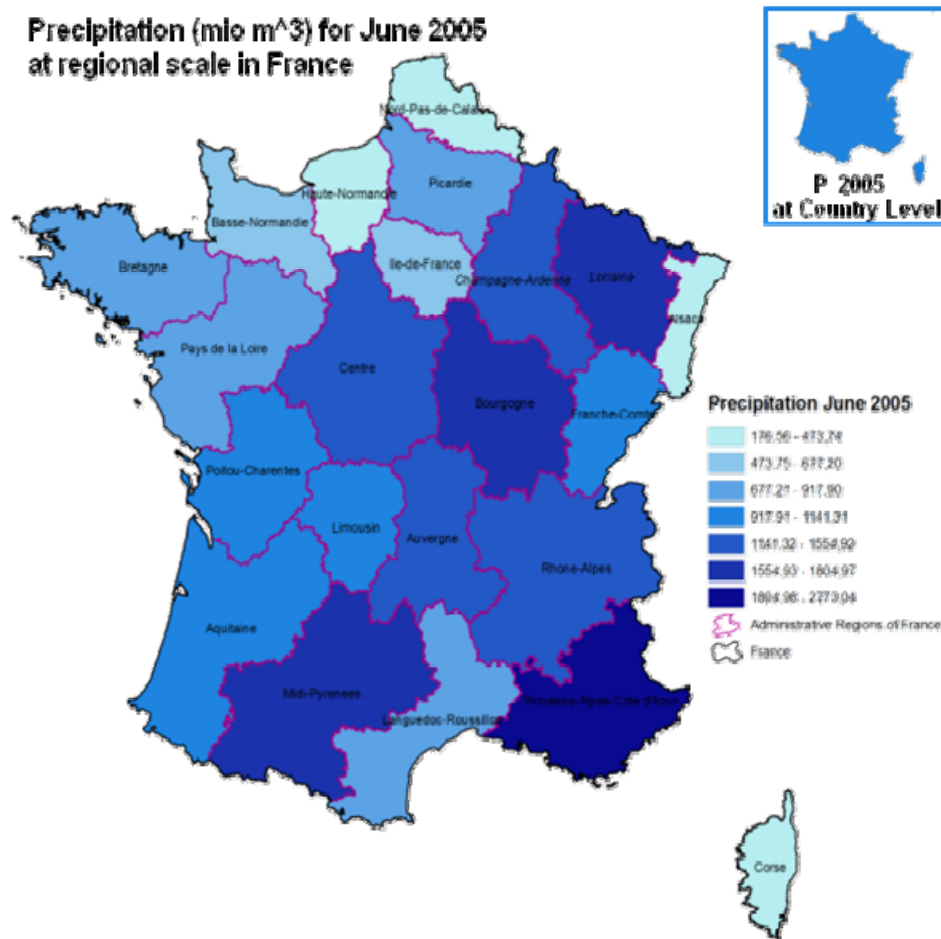


Annual 2006 Internal Flow (mio m<sup>3</sup>) vs. LTAA per RBD in Latvia

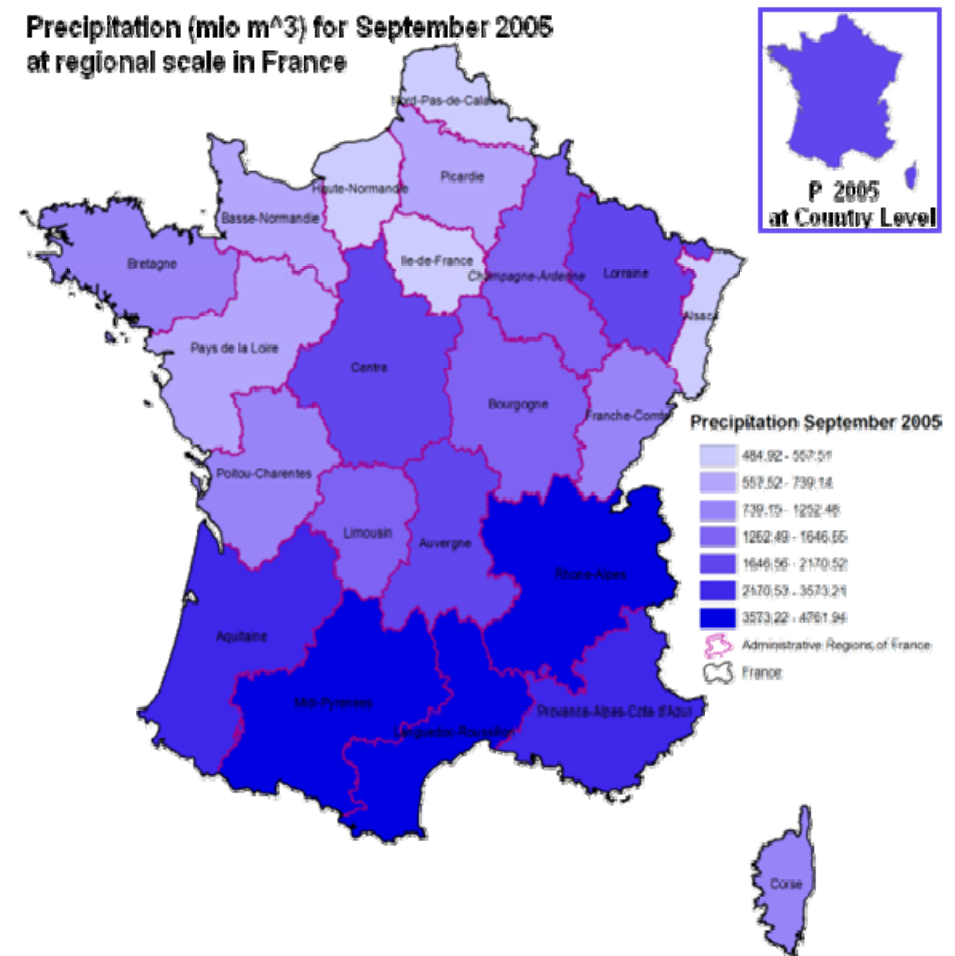


## c. Precipitation

Precipitation (mio m<sup>3</sup>) for June 2005  
at regional scale in France



Precipitation (mio m<sup>3</sup>) for September 2005  
at regional scale in France



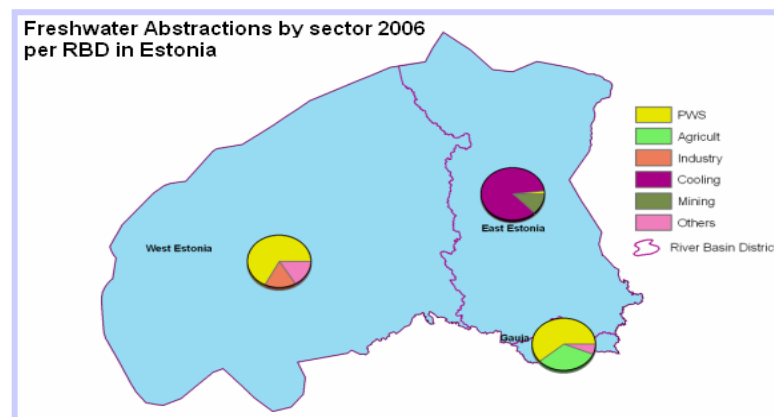
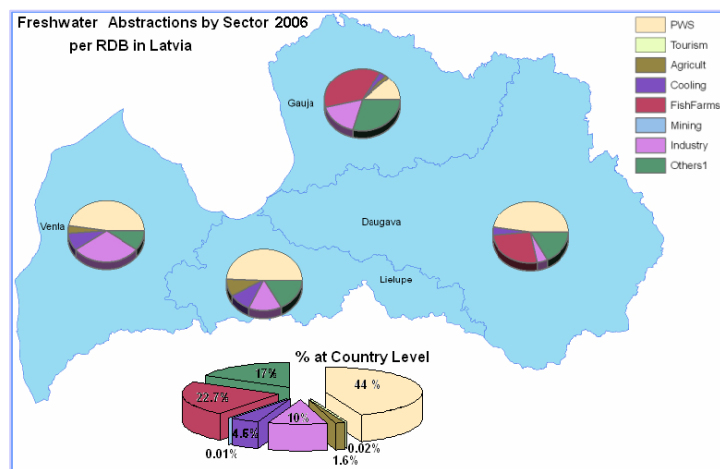
Regional and Temporal resolution...

# Bringing Science closer Policy?

- Bringing several aspect of the problem in common view: [WS&D Information System \(Info, Observation, Education, Training, Dissemination etc\)](#)
- Creating a comprehensive (and common) evidence base: [WISE/ WSDIS \(and its EDO\)](#)
- Understanding what the current situation is (monitor and interpret what you see – using shared definitions): [a common WSDiS and a common DPSIR framework](#)
- Quantifying uncertainty – but take action: [part of the indicator \(and indices\) development process \(and fact sheets\)](#)
- Involve policy makers and scientists in a creative dialogue (towards a cultural convergence?): [The core group and wider stakeholders](#)



- *An ongoing process...*
- *So watch this space!*



*Thank you for your attention!*

