

# RIVERTWIN

A Regional Model  
for  
Integrated Water  
Management  
in  
Twinned River Basins



FP 6



DG Research

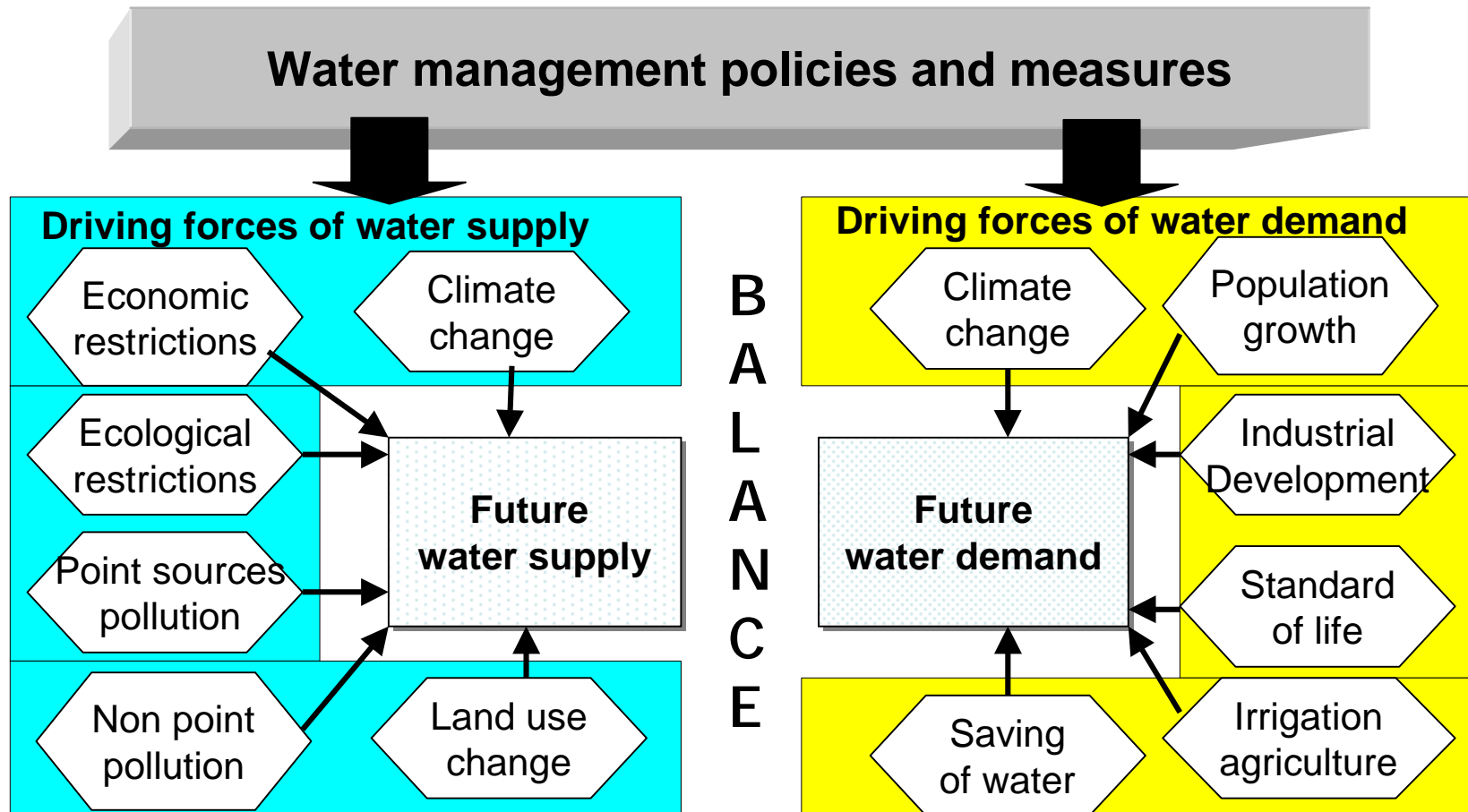


## **Background and motivation**

**Global water scarcity is expected during this century in various regions of the world due to**

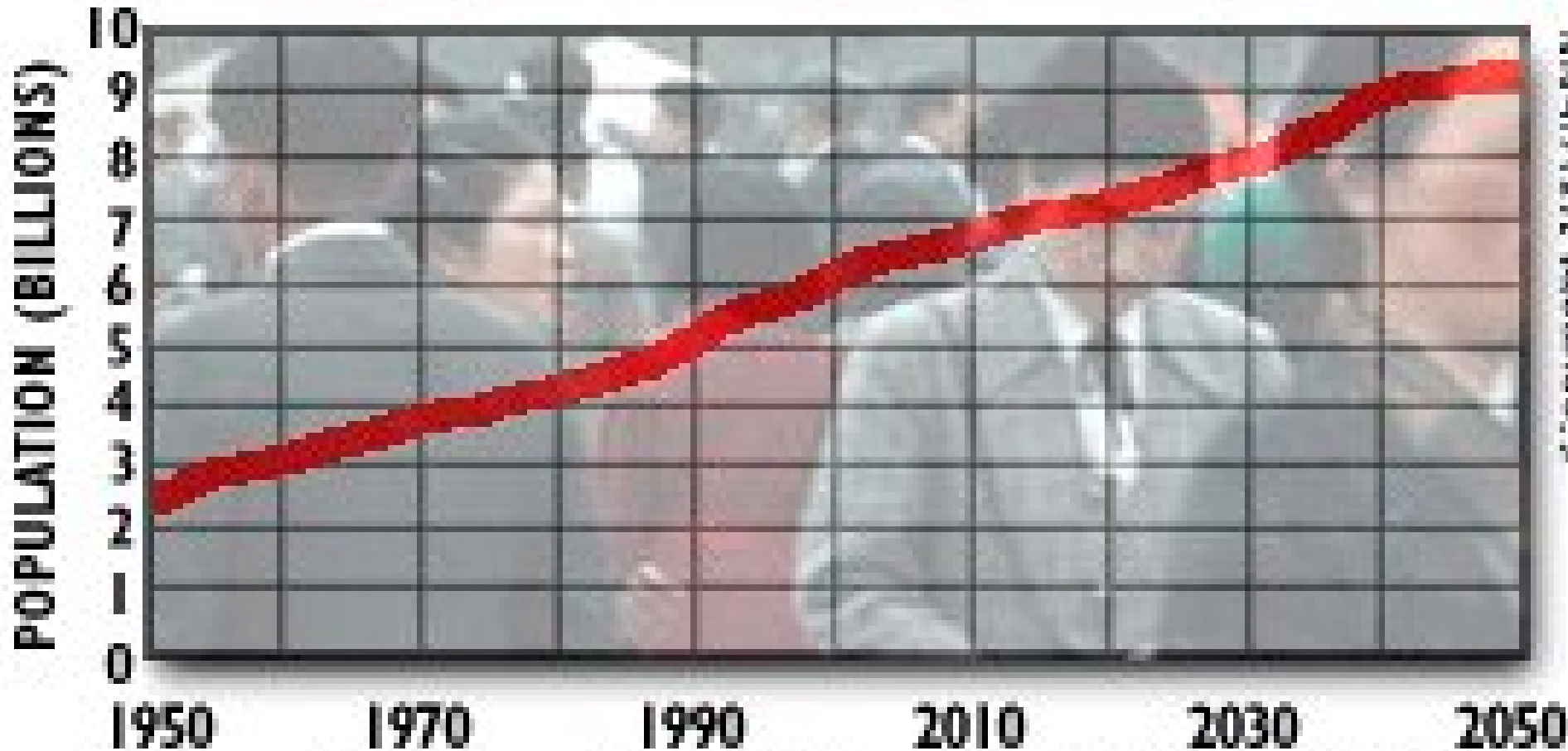
- increasing population and living standard**
- increasing proportion of irrigated agriculture**
- increasing water pollution**
- global climate change**

# Background and motivation



## Background and motivation

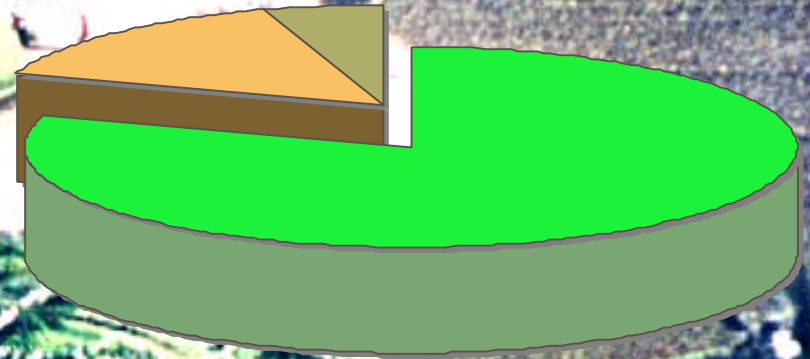
# WORLD POPULATION



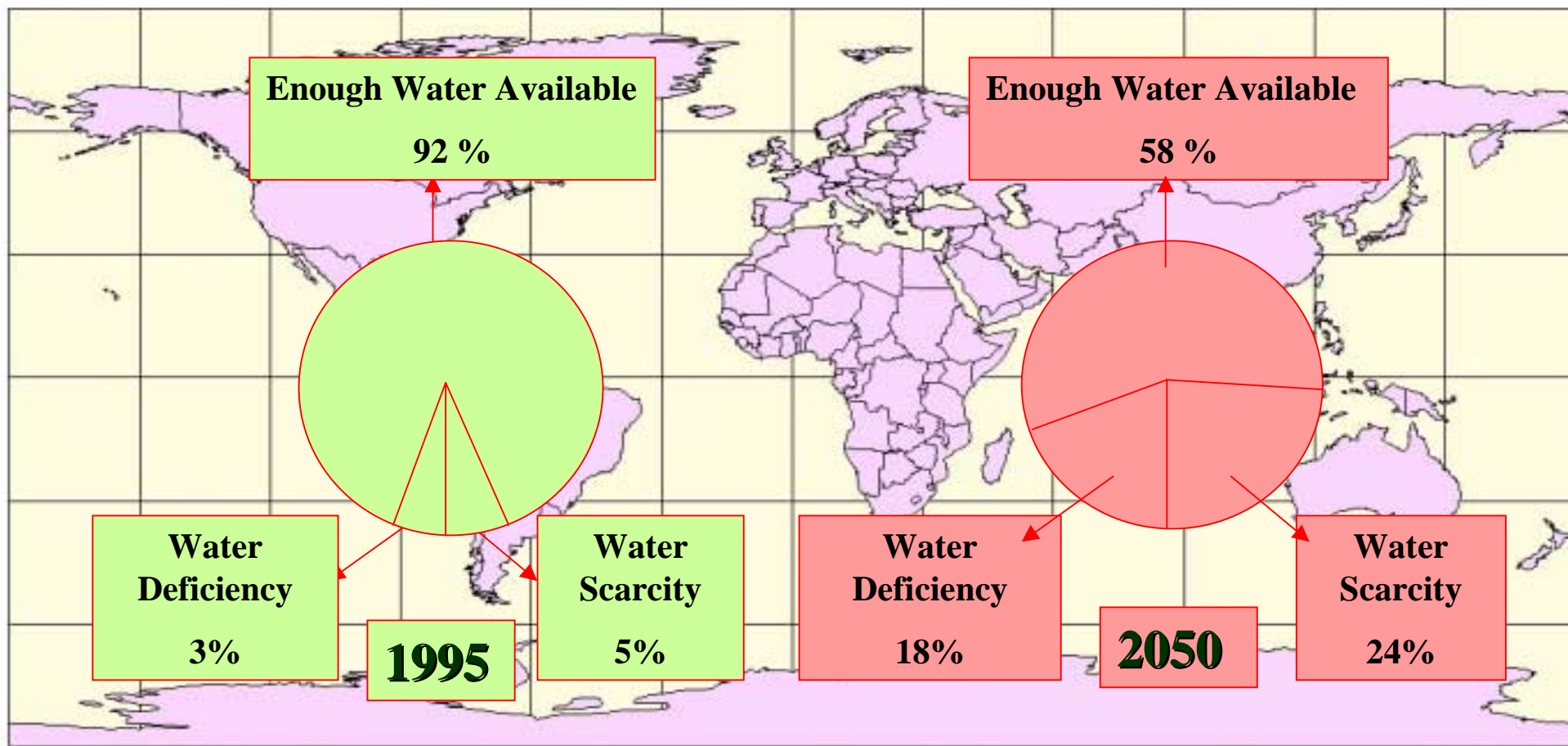
Source: U.S. Census Bureau, International Data Base, 10/10/97

# Water Use in the Developing World

- Agriculture 80%
- Domestic 15%
- Industry 5%



# PRESENT AND FUTURE WATER SITUATION FOR WORLD POPULATION



## Initiatives and policies by the EU

European level: Water Directive 2000/60/EC

Global level: **EU Global Water Initiative** in 2003:



> Establishing of regional IWRM programmes (UN/EU)

> Research on river basin twinning by the EC DG Research

<http://www.euwi.net/>

## EU Global Water Initiative

**“Water for life, health, livelihoods,  
economic development, peace and security”**

- Half the number of people with no access to safe drinking water and improved sanitation by 2015
- Action programs shall ensure a balance of the **human water needs** with those of the **environment**
- Develop **integrated water resources management** and efficiency plans by 2005

<http://www.euwi.net/>

## **EU Global Water Initiative**

### **Thematic/regional Working Groups:**

- **Integrated Water Resources Management (all continents)**
- **Water Supply and Sanitation (all continents)**
- **Extreme events (Latin America)**
- **Water and Agriculture (Latin America)**

### **Cross-cutting Working Group:**

- **Research (all continents)**
- **Finance**

# EU Global Water Initiative

## Approach:

- reinforce political will and commitment to action,
- promote improved water governance, capacity-building and awareness,
- improve the efficiency and effectiveness of water management through multi-stakeholder dialogue and coordination,
- strengthen coordination through promoting river basin approaches, and
- identify additional financial resources and mechanisms to ensure sustainable financing

<http://www.euwi.net/>

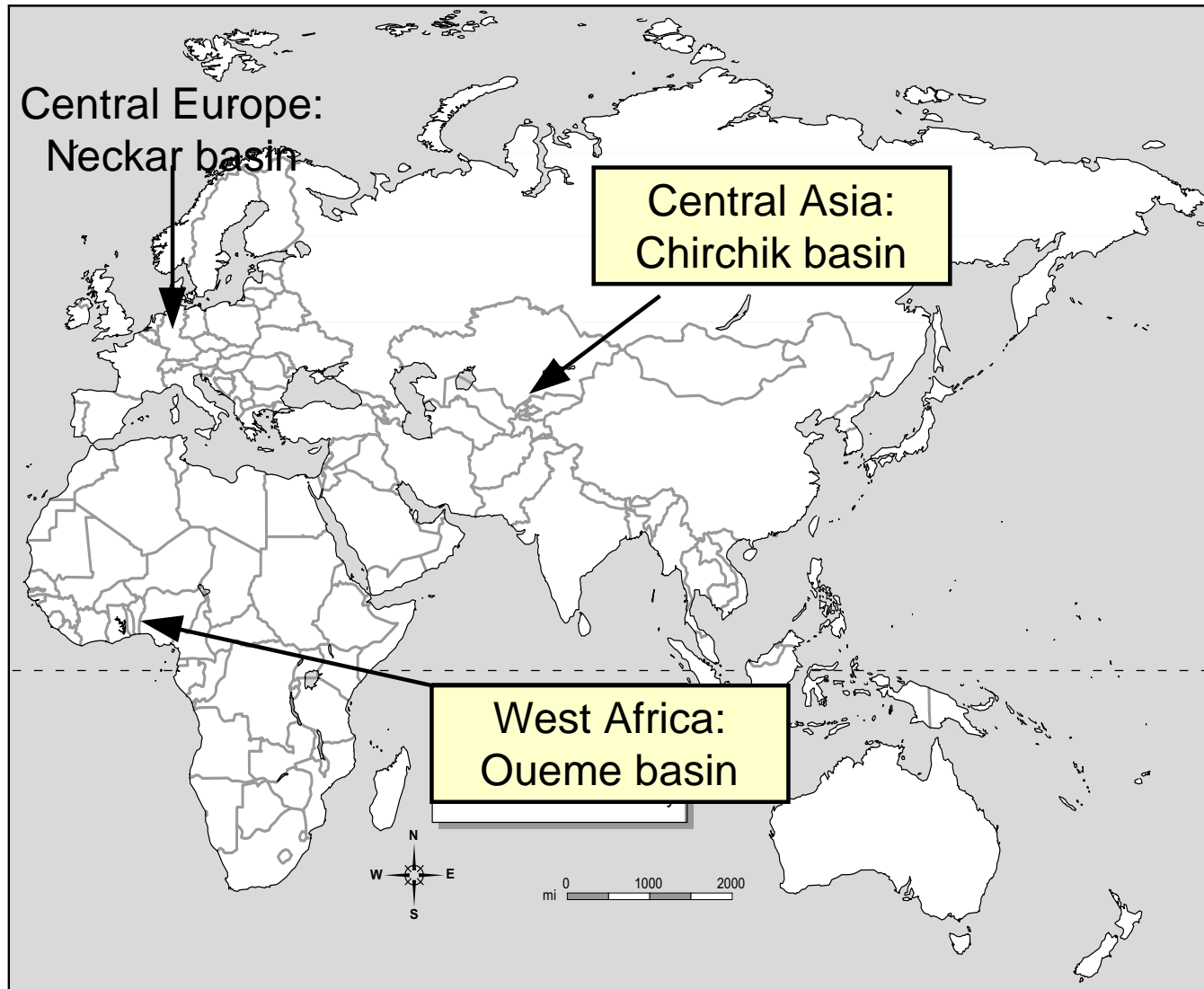
# RIVERTWIN

## Scientific and Technological Objectives

- **Building of scenarios** of integrated water resources management
- **Developing the integrated regional model MOSDEW** for scenario analysis and evaluation



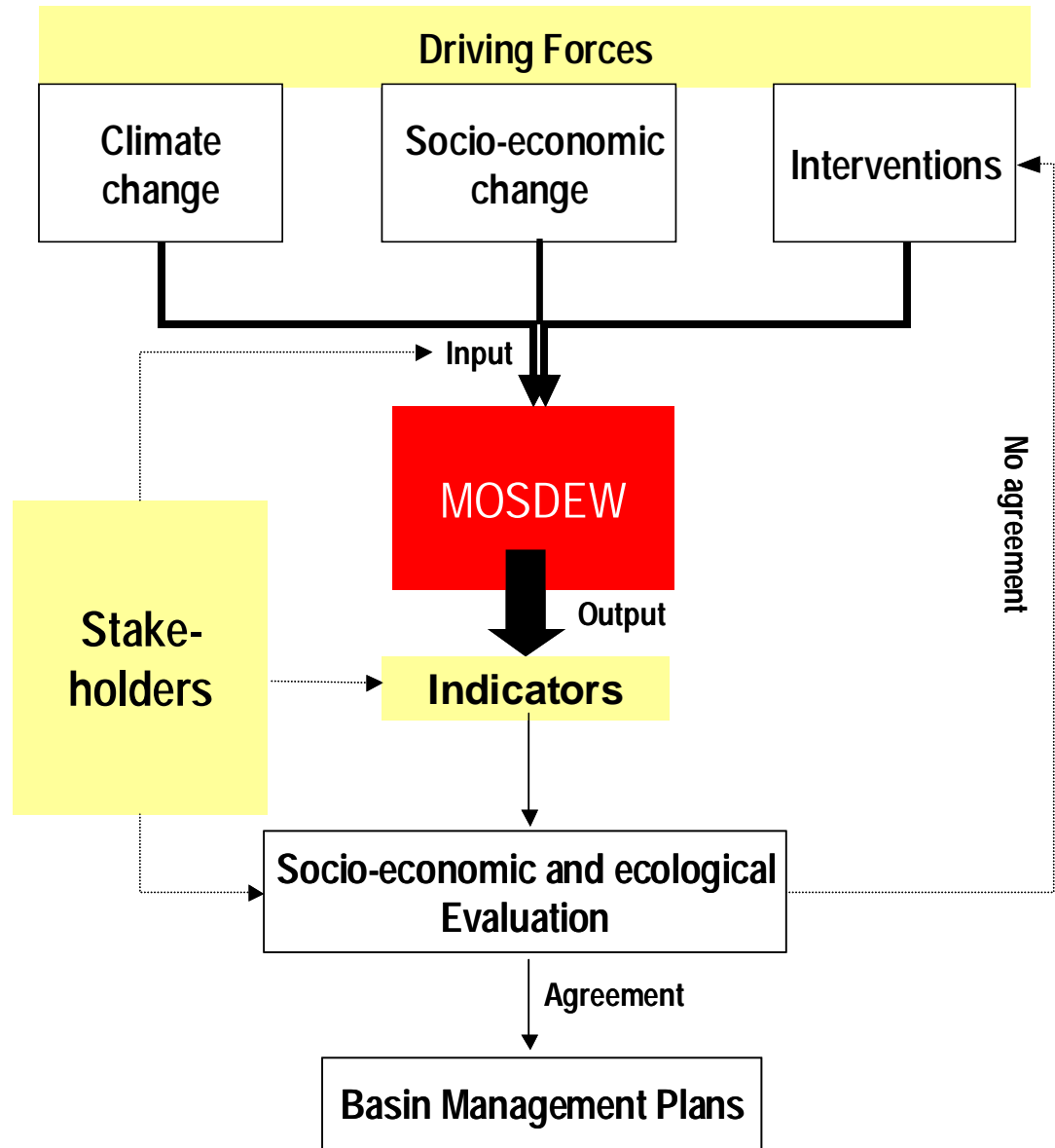
## Three selected river basins



## Comparison of RIVERTWIN basins

River Basin	Country	Climate zone	Population	River basin study area (km <sup>2</sup> )	Data availability	Water management problems
<b>Neckar (RB1)</b>	Germany	Temperate humid	5.5 Mio	13.000	High	<b>Water quality (biological), hydromorphology, flooding</b>
<b>Oueme (RB2)</b>	Benin	Tropical, subhumid	1-2 Mio	42 000	Low	<b>Water quality, flooding, Water supply (in dry season)</b>
<b>Chirchik/ Upper Syrdarya (RB3)</b>	Uzbekistan	High altitude, semi-arid	2-3 Mio	14.000	Moderate	<b>Water supply (conflicting water uses), Water quality, siltation of dams</b>

# RIVERTWIN - Stakeholder Participation



# RIVERTWIN - Challenges

**Development of river basin  
scenarios in cooperation with  
stakeholders**

## Scenario components:

- Climate change
- Socio-economic changes
- Water management interventions



# Definition of sustainability indicators



**Water quality indicators**



**Water supply indicators**

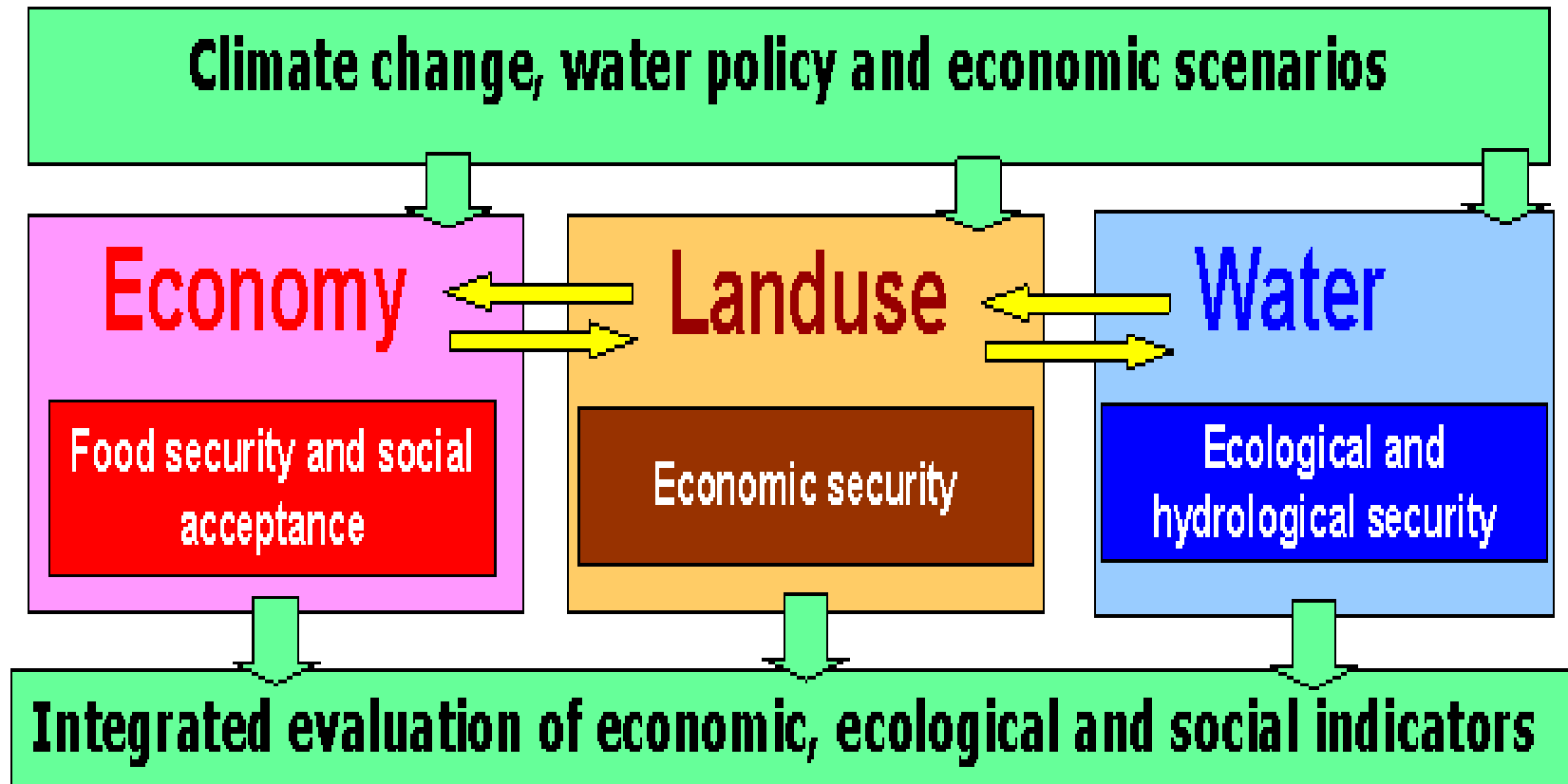


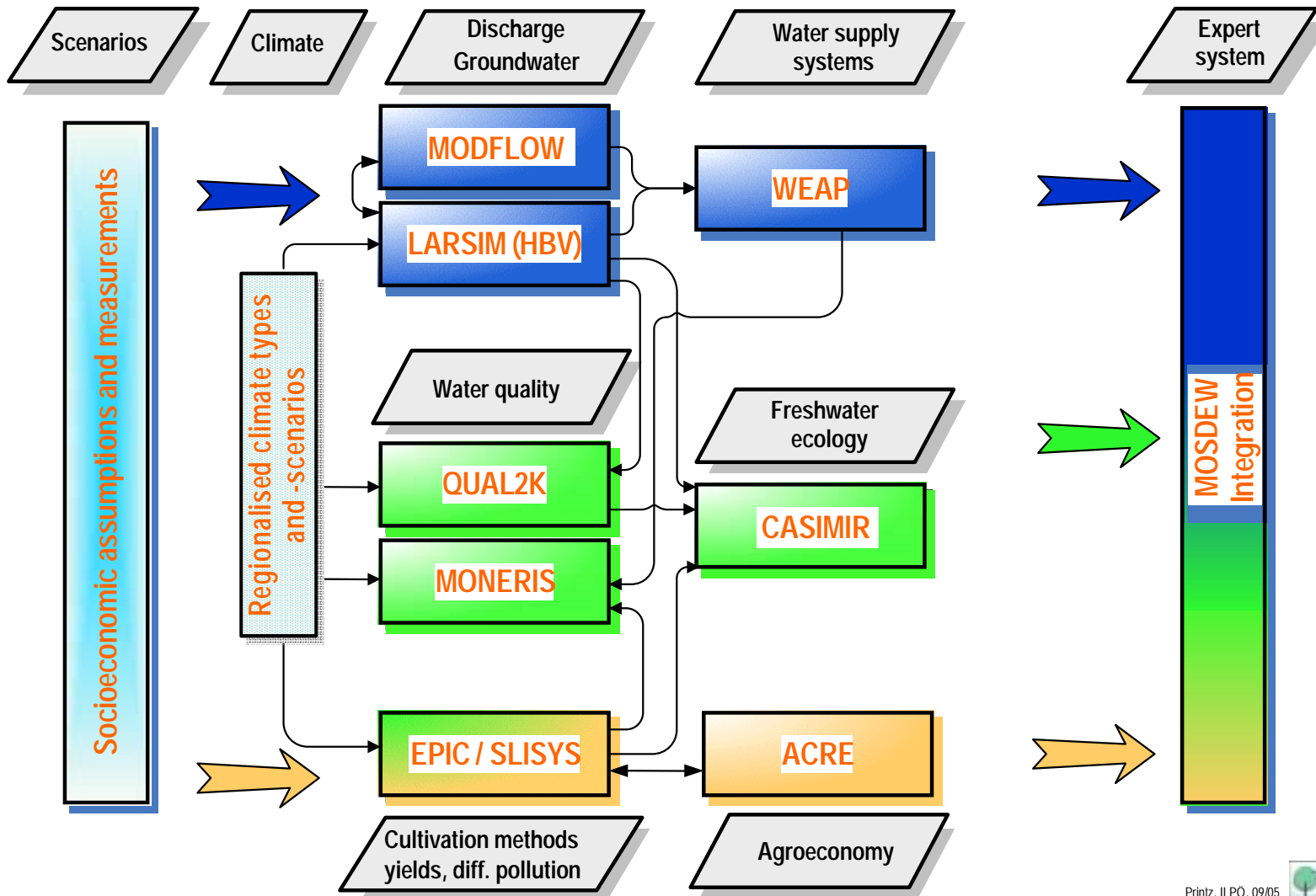
**Land use indicators**

# RIVERTWIN - Challenges

**Building the regional model  
MOSDEW  
for integrated water resources  
management**

## Integration of economic, ecological and water related issues

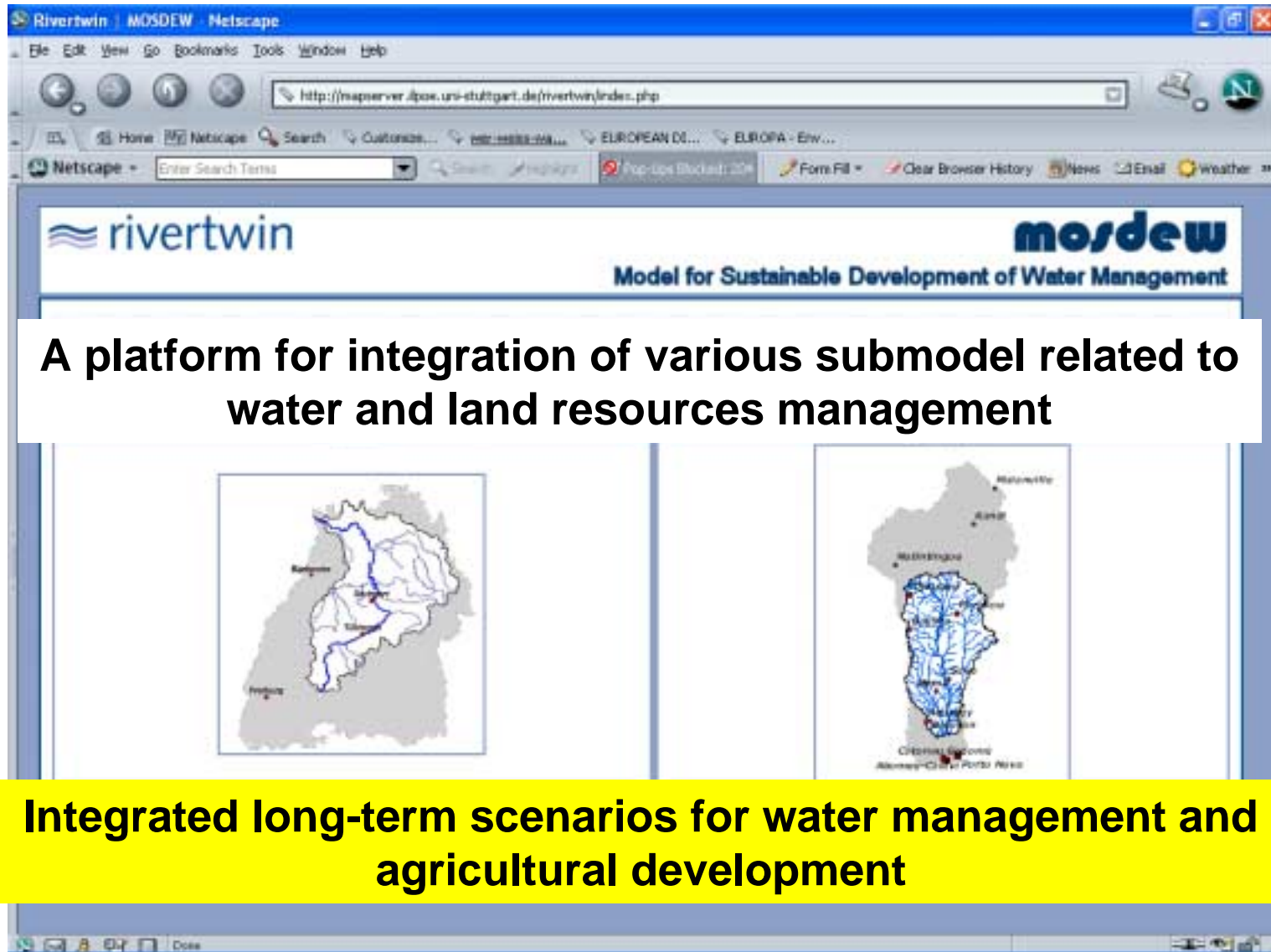




Printz, ILPO, 09/05



# Results

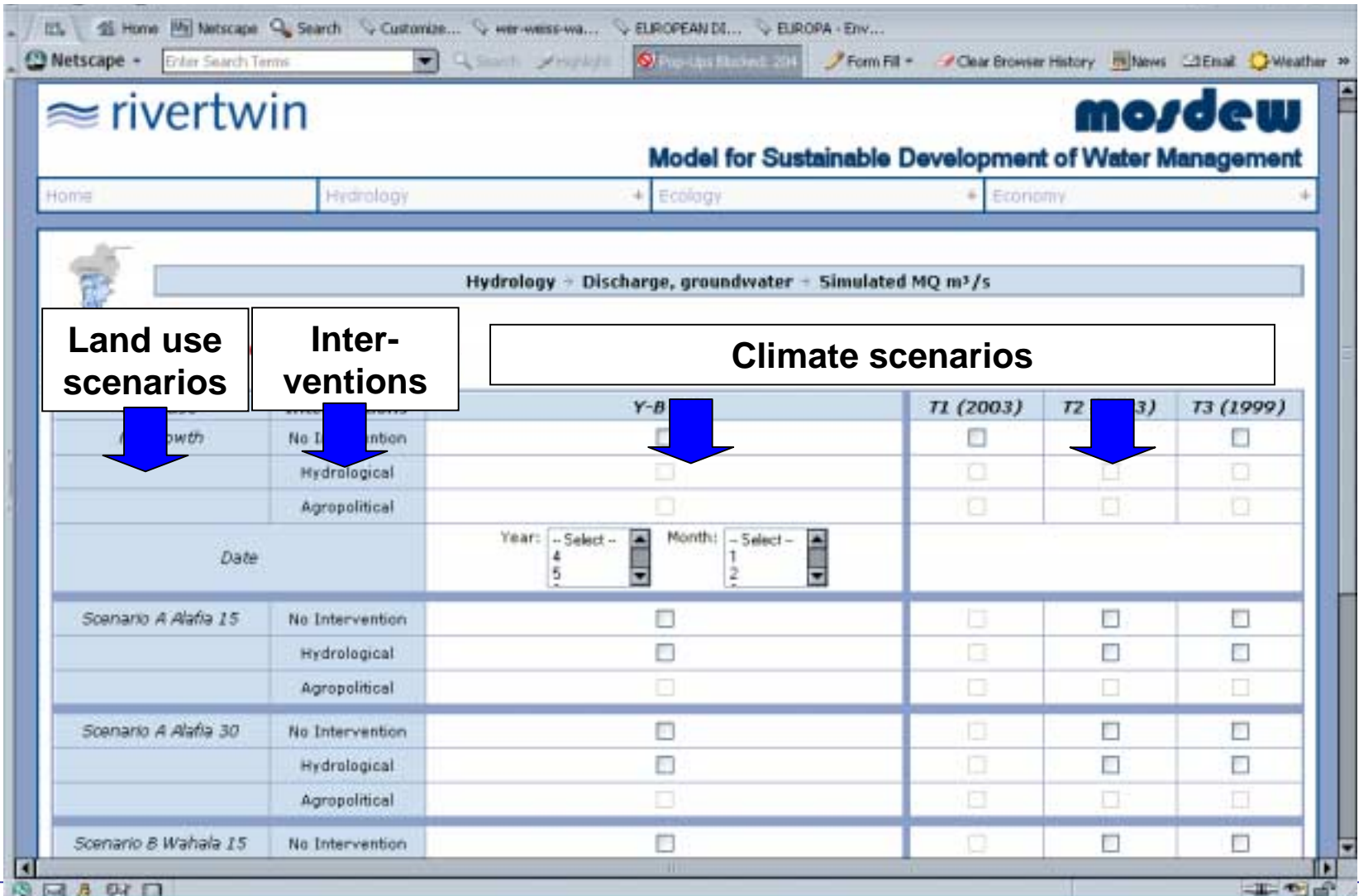


**A platform for integration of various submodel related to water and land resources management**

**Integrated long-term scenarios for water management and agricultural development**



<http://mapserver.ilpoe.uni-stuttgart.de/rivertwin/index.php>

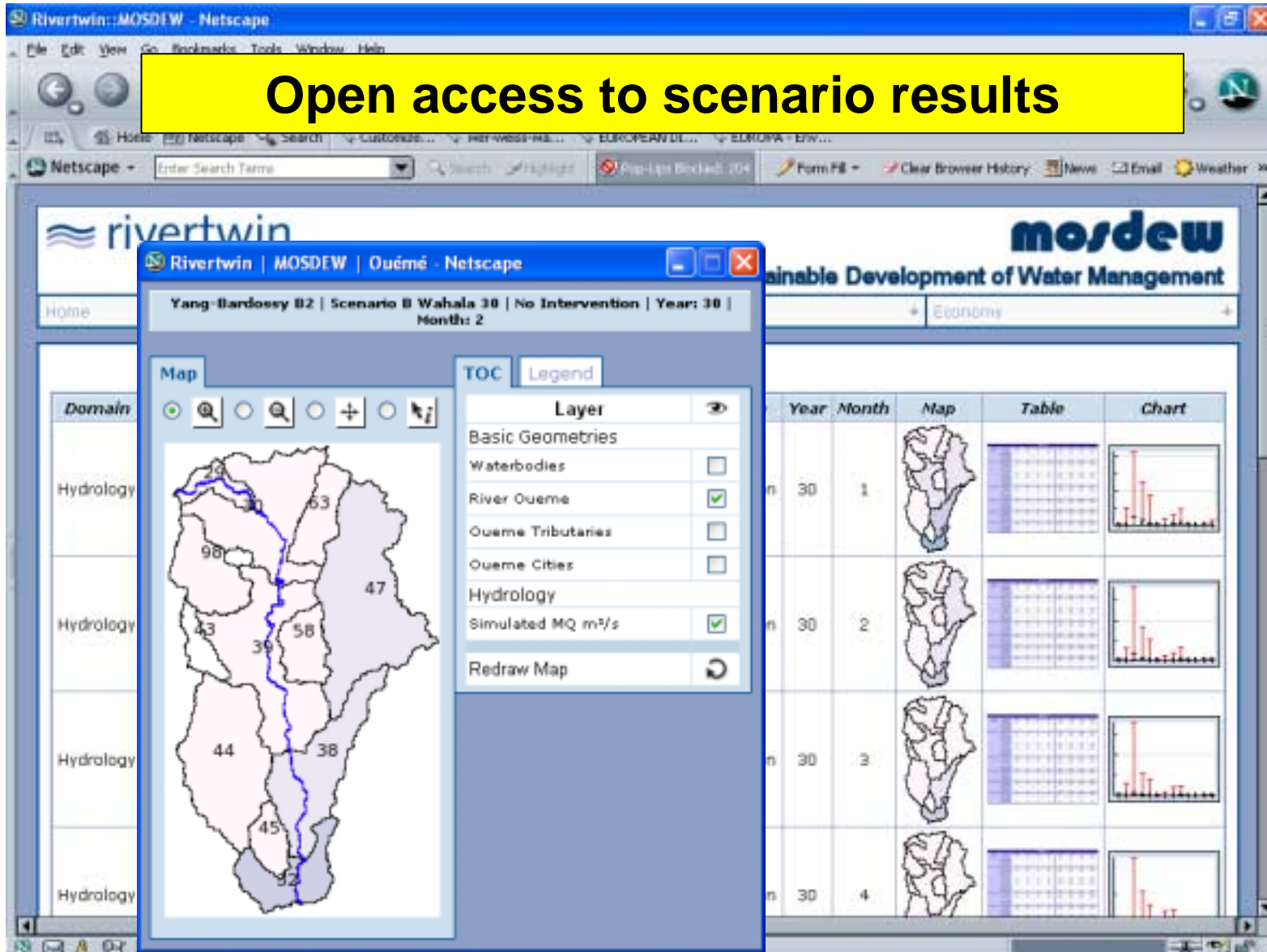


The screenshot shows the 'rivertwin' and 'mosdew' web interface. The main content area is titled 'Hydrology > Discharge, groundwater > Simulated MQ m³/s'. Below this is a table with columns for 'Y-B', 'T1 (2003)', 'T2 (2033)', and 'T3 (1999)'. The table rows represent different scenarios and interventions. Annotations with blue arrows point to specific parts of the table:

- Land use scenarios:** Points to the 'Scenario A Alafia 15' and 'Scenario A Alafia 30' rows.
- Interventions:** Points to the 'No Intervention', 'Hydrological', and 'Agropolitical' options for each scenario.
- Climate scenarios:** Points to the 'Y-B' column.

Additional annotations include a 'Date' section with 'Year' and 'Month' dropdown menus, and a 'T2 (2033)' column with a blue arrow pointing to it.



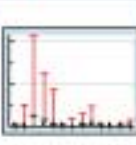


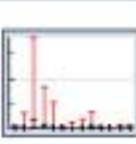


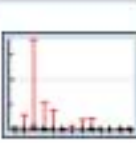


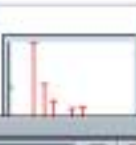
**Open access to scenario results**



**Legend**

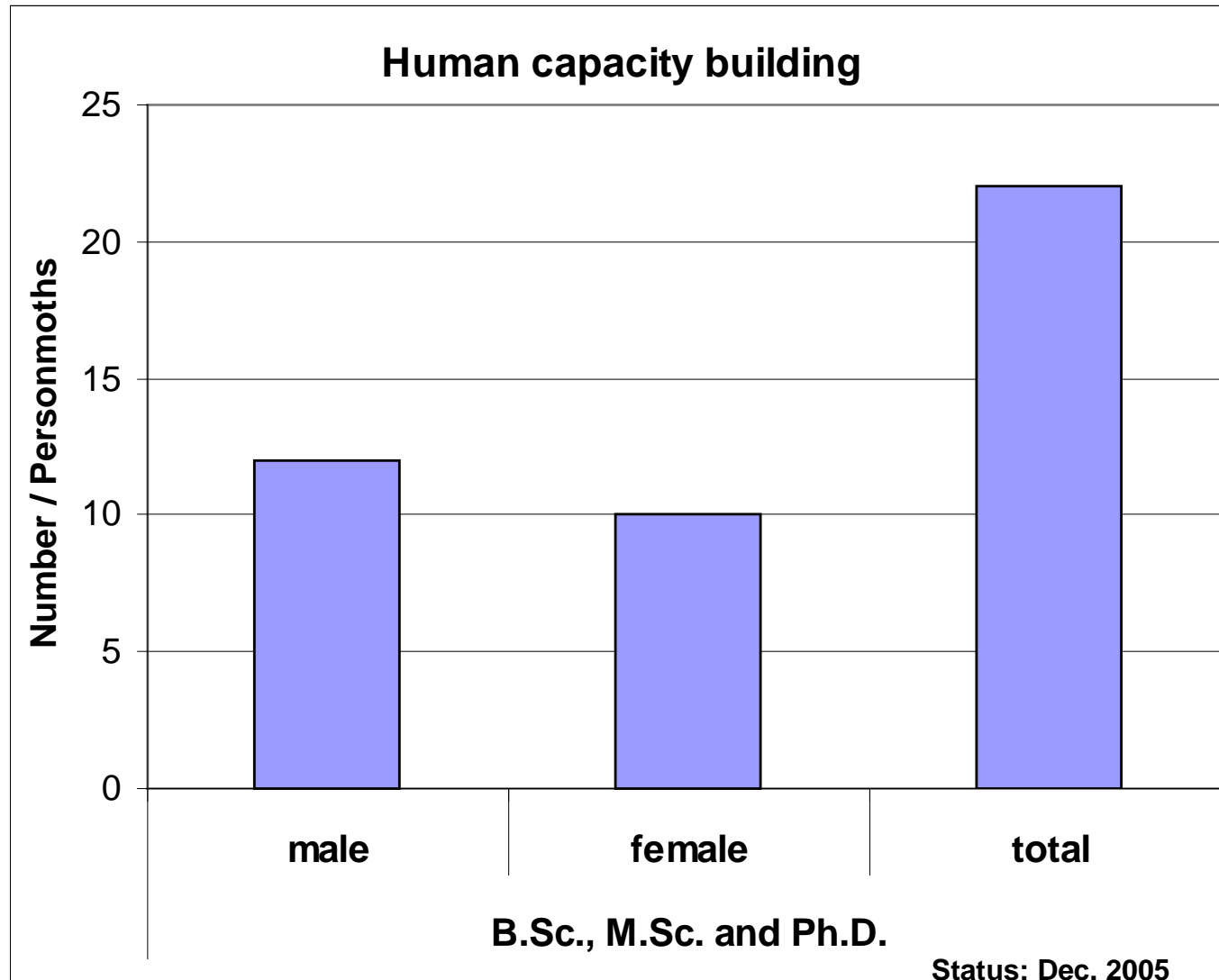
Layer	Visibility
Basic Geometries	<input type="checkbox"/>
Waterbodies	<input type="checkbox"/>
River Oueme	<input checked="" type="checkbox"/>
Oueme Tributaries	<input type="checkbox"/>
Oueme Cities	<input type="checkbox"/>
Hydrology	<input type="checkbox"/>
Simulated MQ m³/s	<input checked="" type="checkbox"/>
Redraw Map	<input type="button" value="↻"/>

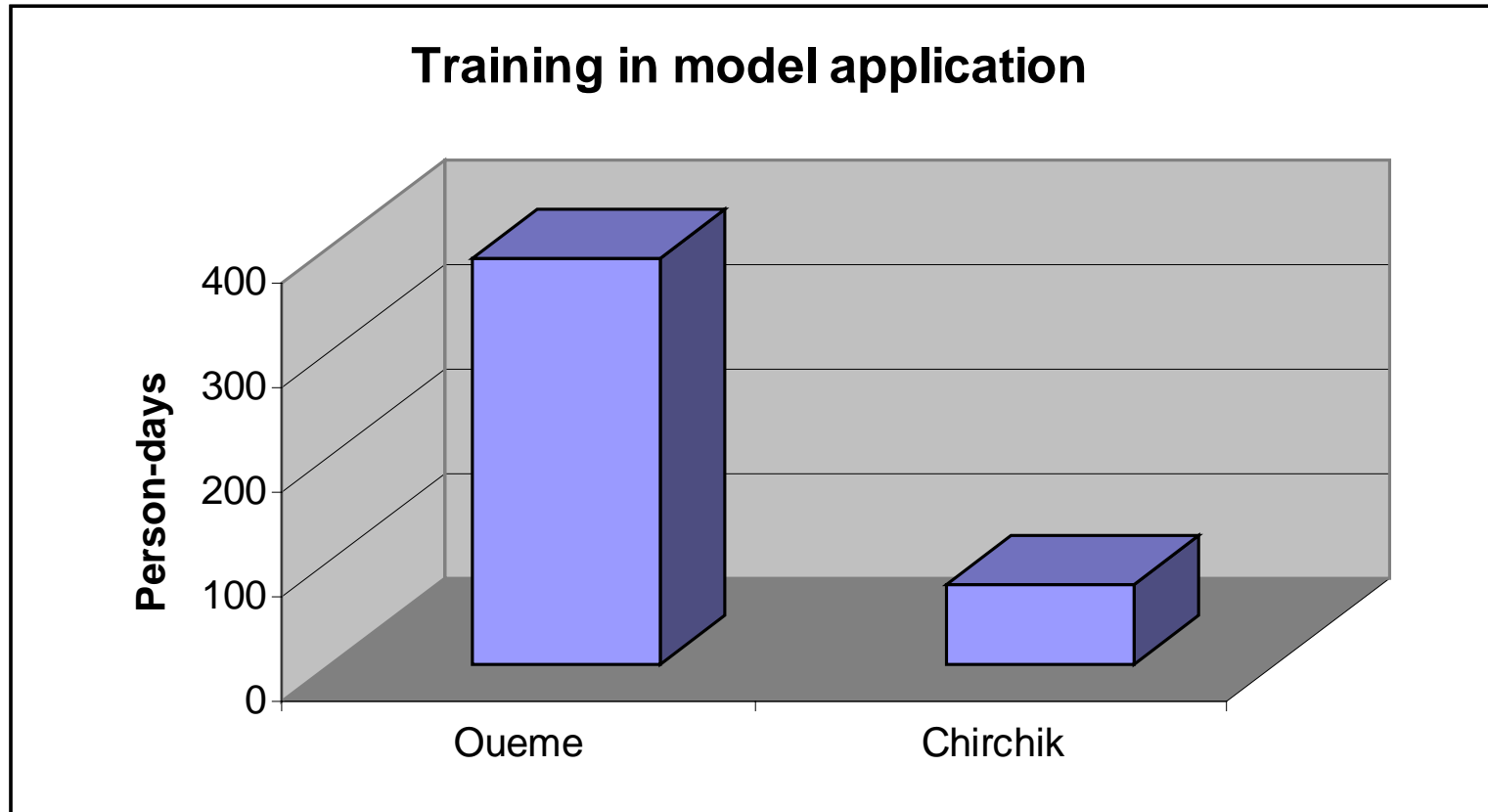
Year	Month	Map	Table	Chart
n 30	1			
n 30	2			
n 30	3			
n 30	4			

# Human Capacity building





# Human Capacity Building



Status: Dec. 2005

## Consortium

- ◆ University of Hohenheim - Germany (Coordination)
- ◆ University of Stuttgart - Germany
- ◆ Centre for World Food Studies - The Netherlands
- ◆ Stockholm Environment Institute - Sweden
- ◆ Aristotle University of Thessaloniki – Greece
- ◆ Terra Fusca - Germany
- ◆ Schneider und Jorde - Germany



◆ Interstate Commission for Water Coordination - Uzbekistan



◆ Institut National des Recherches Agricoles du Bénin - Benin Republic

◆ Université Abomey-Calavi - Benin Republic

◆ Direction Générale de l'Hydraulique - Benin Republic

## ◆ Neckar:



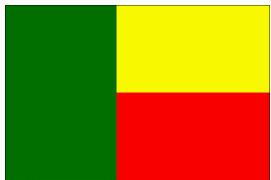
- >Ministry of Environment
- >Environmental Protection Agency
- >Regional Commission Stuttgart
- >Water supply companies and associations

## ◆ Chirchik:

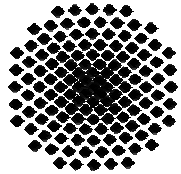


- >BVO Syrdarya
- >Interstate Commission for Water Coordination
- >Global water partnership programme CACENA

## ◆ Oueme:



- >Direction Générale de l'Hydraulique
- >Institut National des Recherches Agricoles du Bénin
- >Université d'Abomey-Calavi
- >Research programme IMPETUS



Thank you for  
your attention

