# Coping with Competing Claims on Water in the Inkomati Basin through Interactive Science (WIBIS)

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The Hague, 9 December 2010

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# WIBIS

## Introduction

- Who are involved?
- Challenges

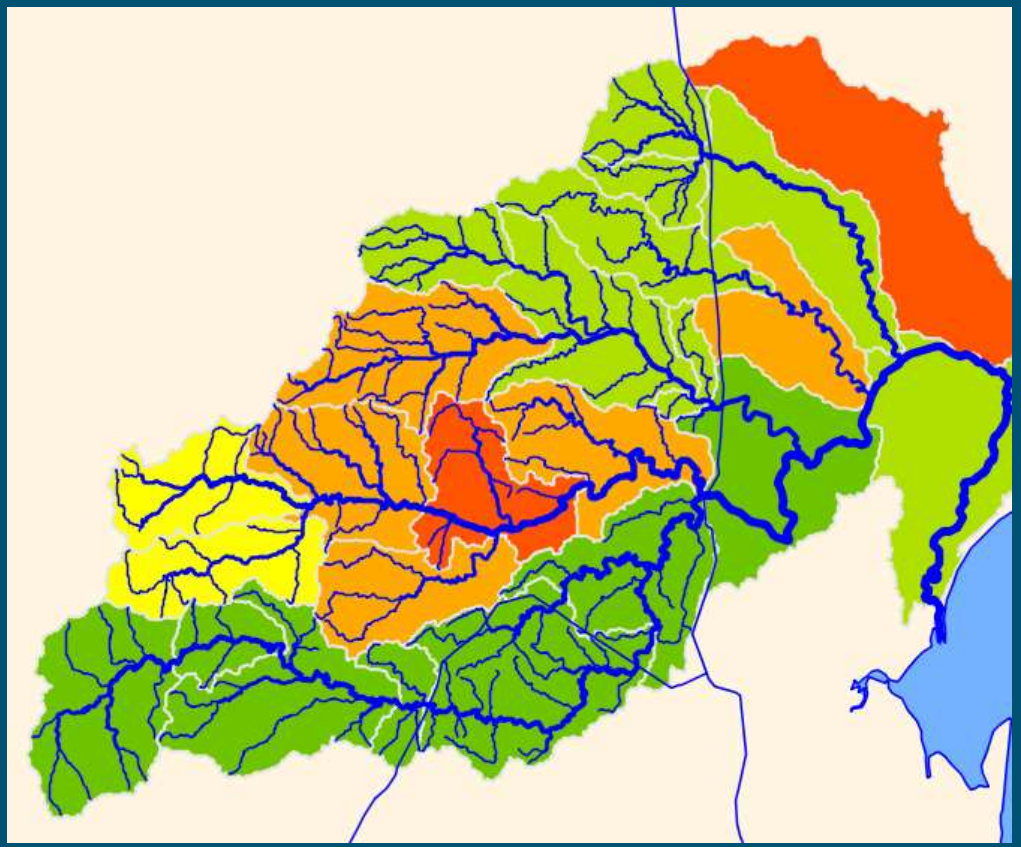
## The WIBIS project

- Objectives
- Managing water by managing land

## Results

- Tool concept and application
- Indicators
- Analyze current situation
- Identify and discuss future scenarios

## Gains



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# Who are we involved?

- Developers:
- LEI (WUR) : Agricultural Economics Research Institute
- Alterra (WUR): Research Institute for the Green Environment
- WaterWatch: Scientific Advisory firm specialised in water management using satellite data
- WE consult: Advisory firm on Water Resources and Environment (Mozambique)

- Main stakeholders
- DNA, DWAF-SA, DWA, Ministries of Agriculture
- PRIMA initiative
- ICMA, ARA-SUL

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# Challenges

The Inkomati basin experiences:

-Competing claims on Land & Water Resources (between sectors and areas/countries)

-Water variability & scarcity / over-allocation / global climate change / land development and reforms

Lomati River_Swaziland April 2009 Dana Grobler

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# Objective

Development of a Discussion Support Tool that provides transparent, impartial and verifiable information regarding the impact of land-use changes on water consumption and productivity.

*Support the process of the implementation of the transboundary Tripartite Interim Agreement*

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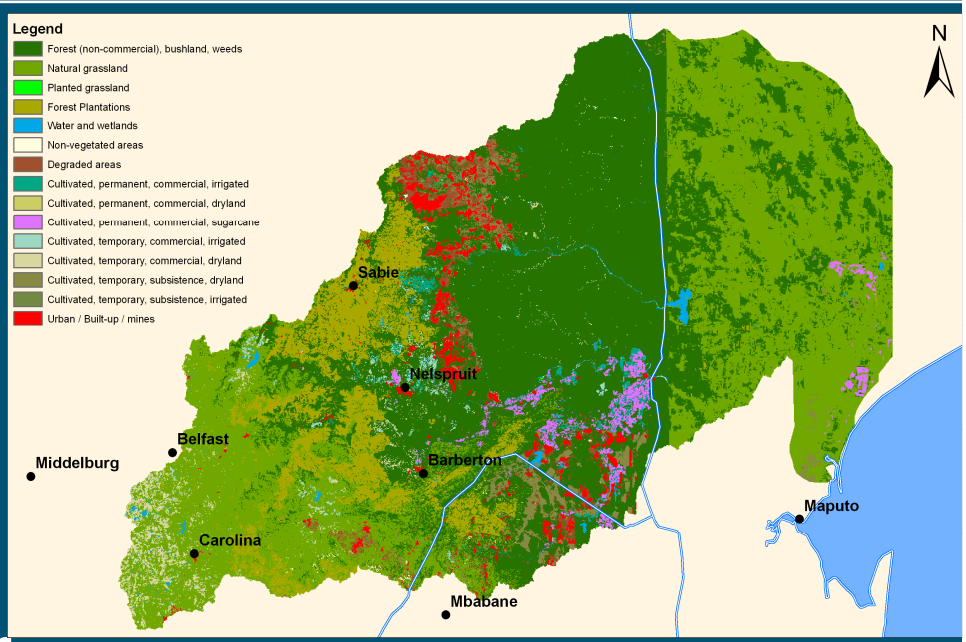
# Managing water by managing land

Emphasis on land management &

spatial planning




- The availability of surface water resources (and groundwater resources) is primarily determined by land use and management
- Water planning and management is the secondary determining factor

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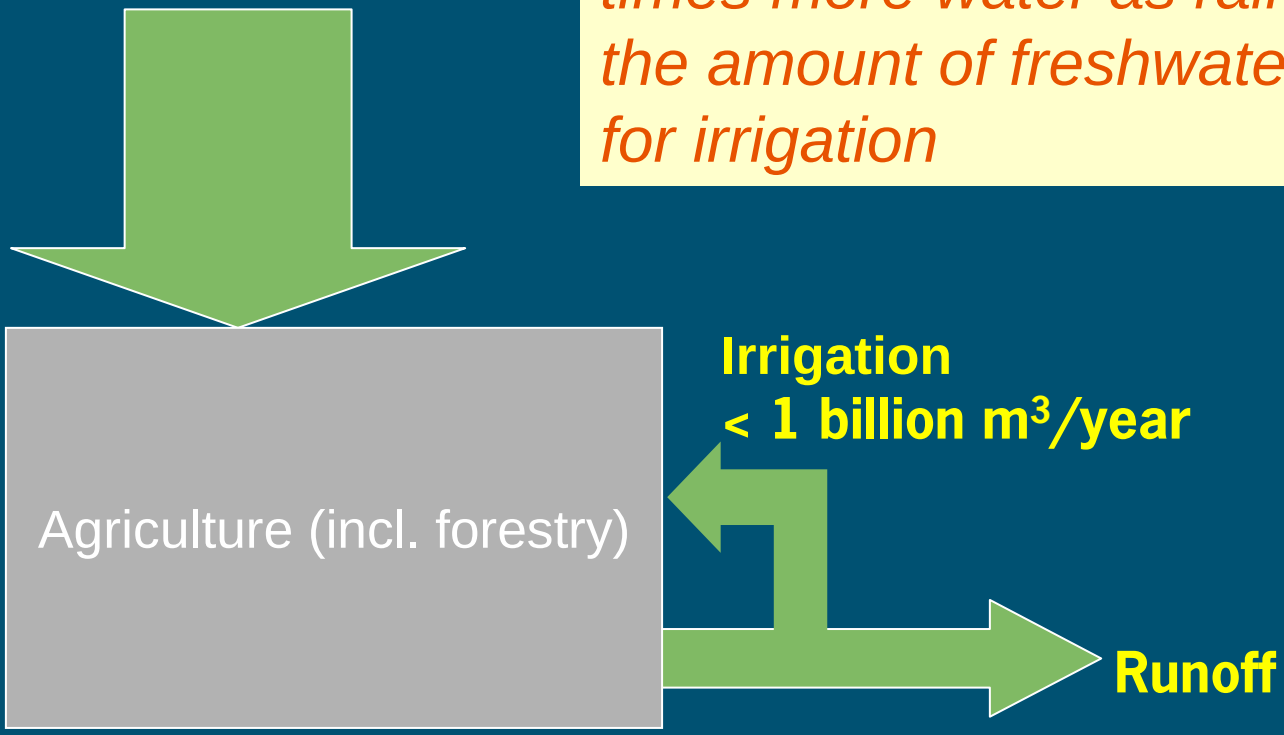
# Managing water by managing land




*In the Inkomati basin agriculture and forestry receive more than 5 times more water as rainfall than the amount of freshwater withdrawn for irrigation*

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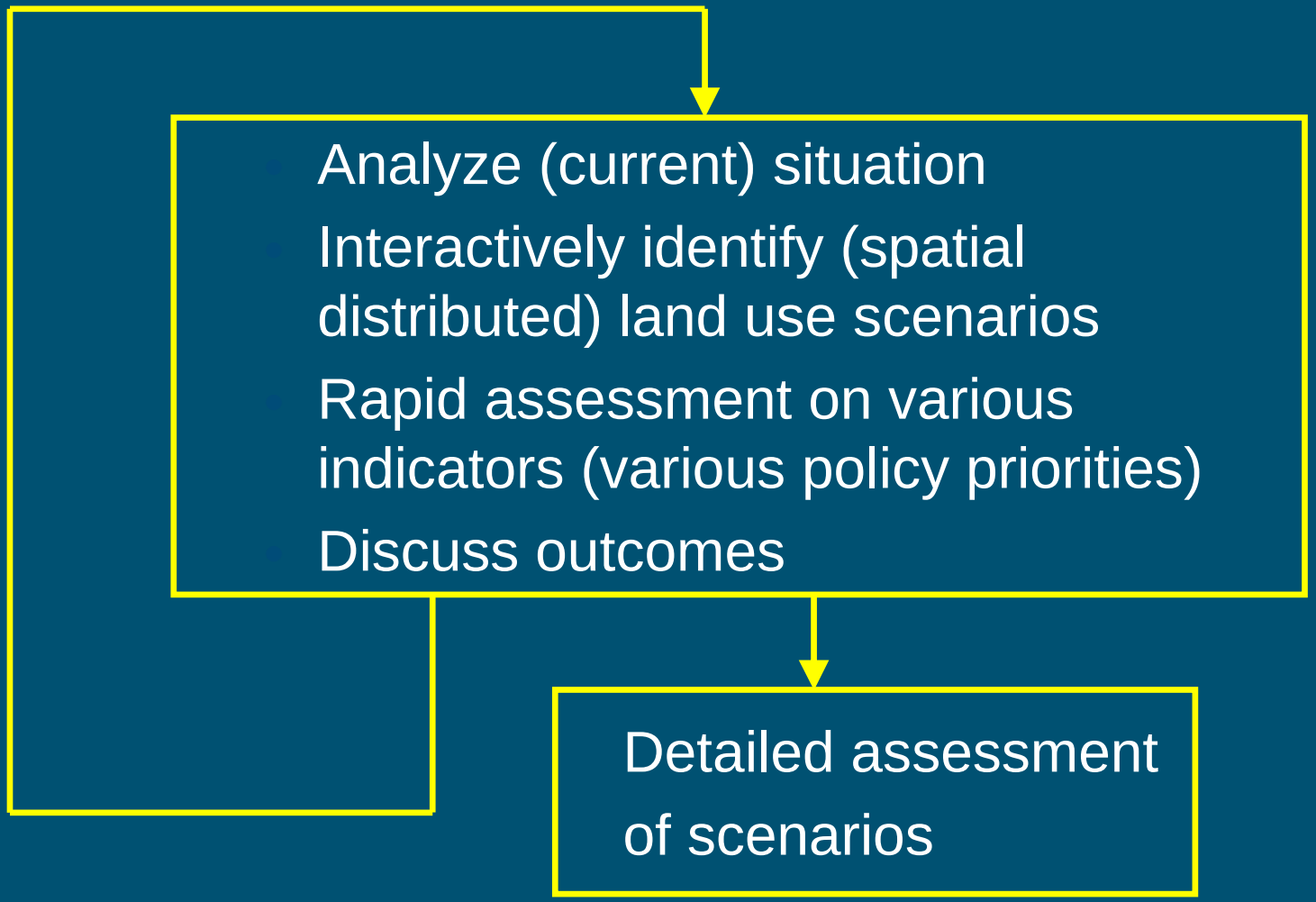
# Tool application

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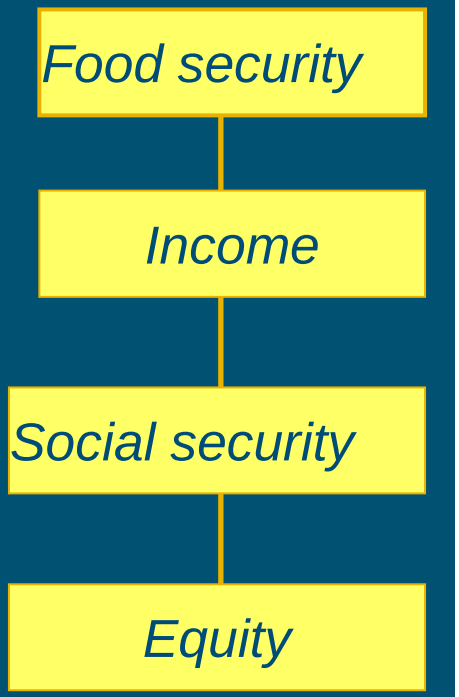
# Indicators for policy priorities

- Crop water productivity CWP (kg/m$^3$)
  yield per unit of water consumed
- Economic water productivity EWP (€, $, R/m$^3$)
  net private benefits per unit of water consumed
- Socio-economic water productivity SWP(jobs/m$^3$)
  net social benefits per unit of water consumed
- Water equity (m$^3$)
  Water available to downstream uses



# Tool application

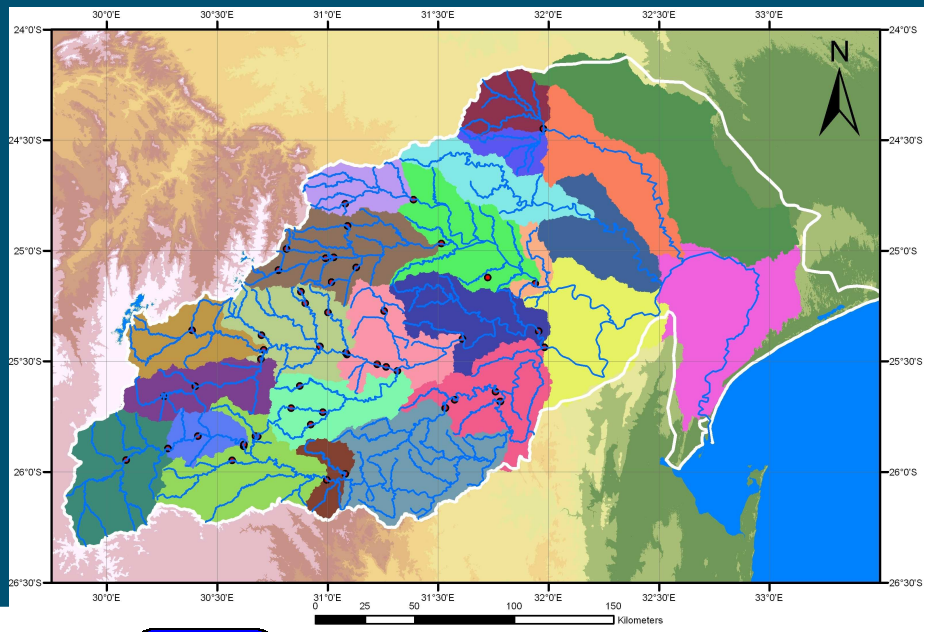
Analyze current situation and evaluate alternatives……

…….by visualizing geographical, temporal and sectoral distribution of the indicators as well as thematic information (land use, rainfall, evapotranspiration, biomass production)

⇒ *Geographical: 24 land management areas*

⇒ *Temporal: 3 years: dry, average, wet*

⇒ *Sectoral: 15 land uses*

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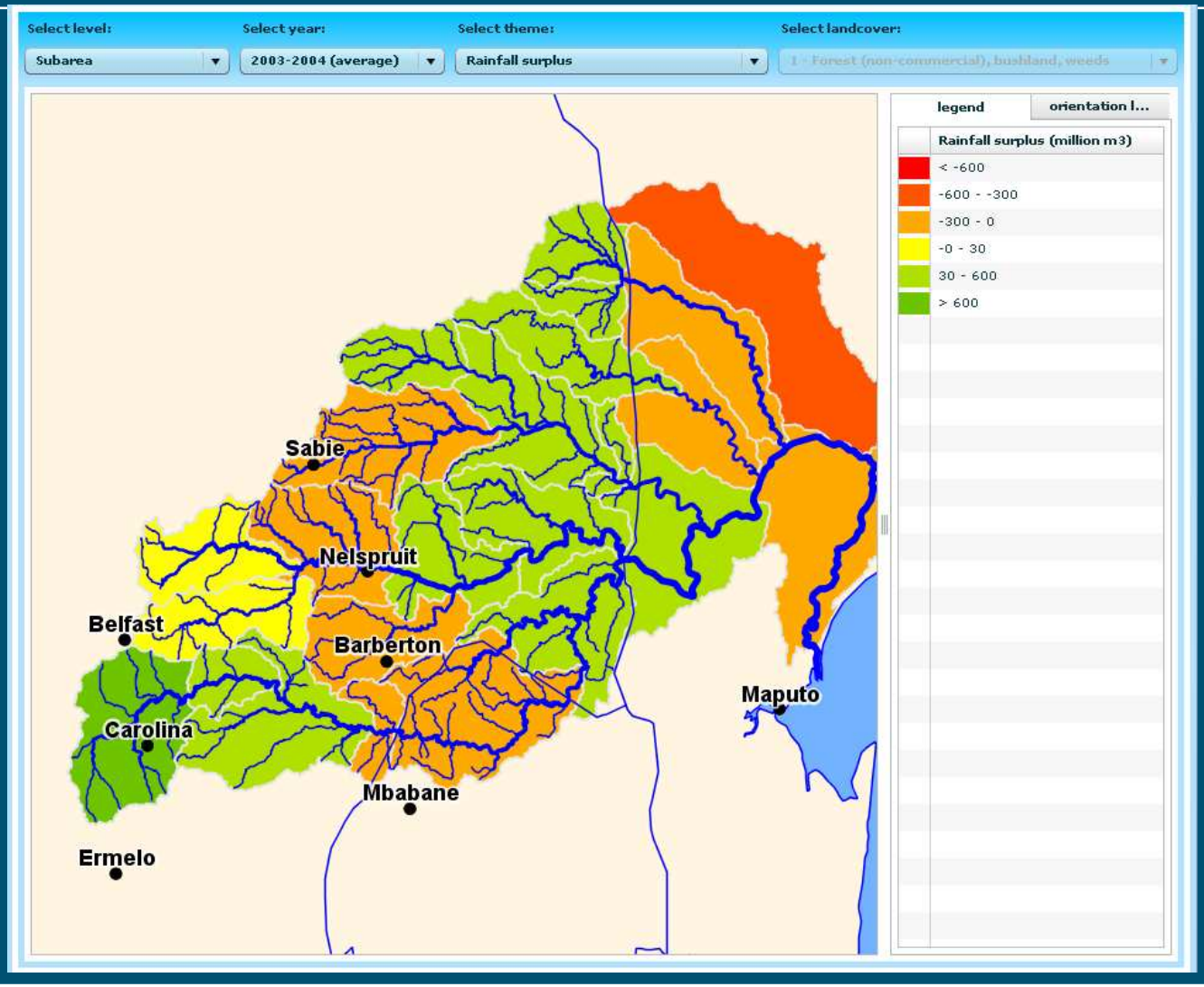
# Analyze present situation. Example: Rainfall surplus

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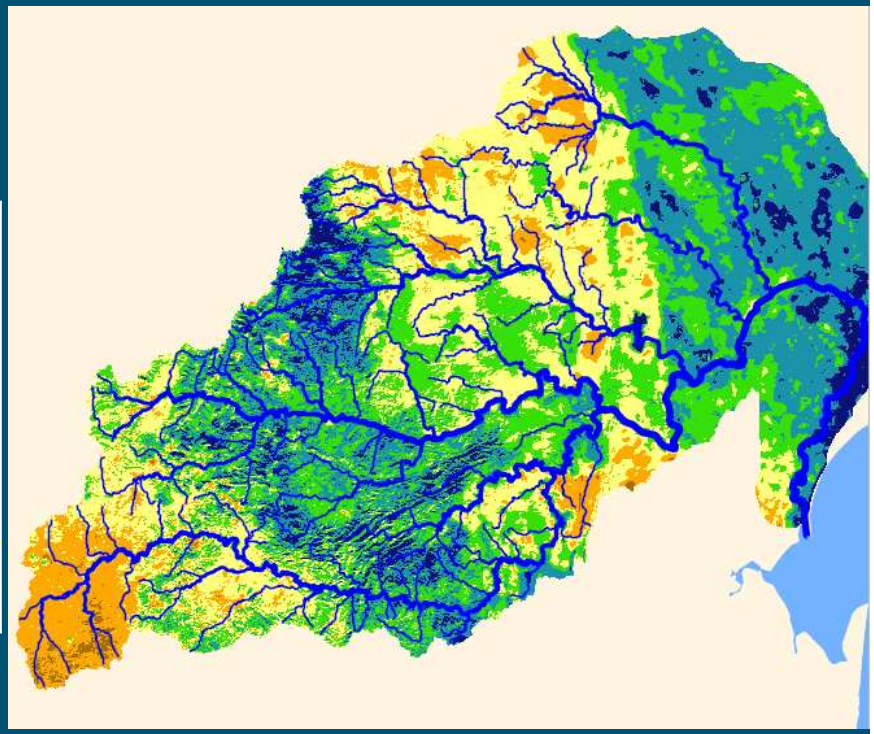
# Analyze present situation

## Example

Average year Evapotranspiration (mm/year)

| | Forestry | Sugar |
|---|---|---|
| Mozambique | 777 | 1001 |
| Swaziland | 939 | 808 |
| South-Africa | 802 | 765 |



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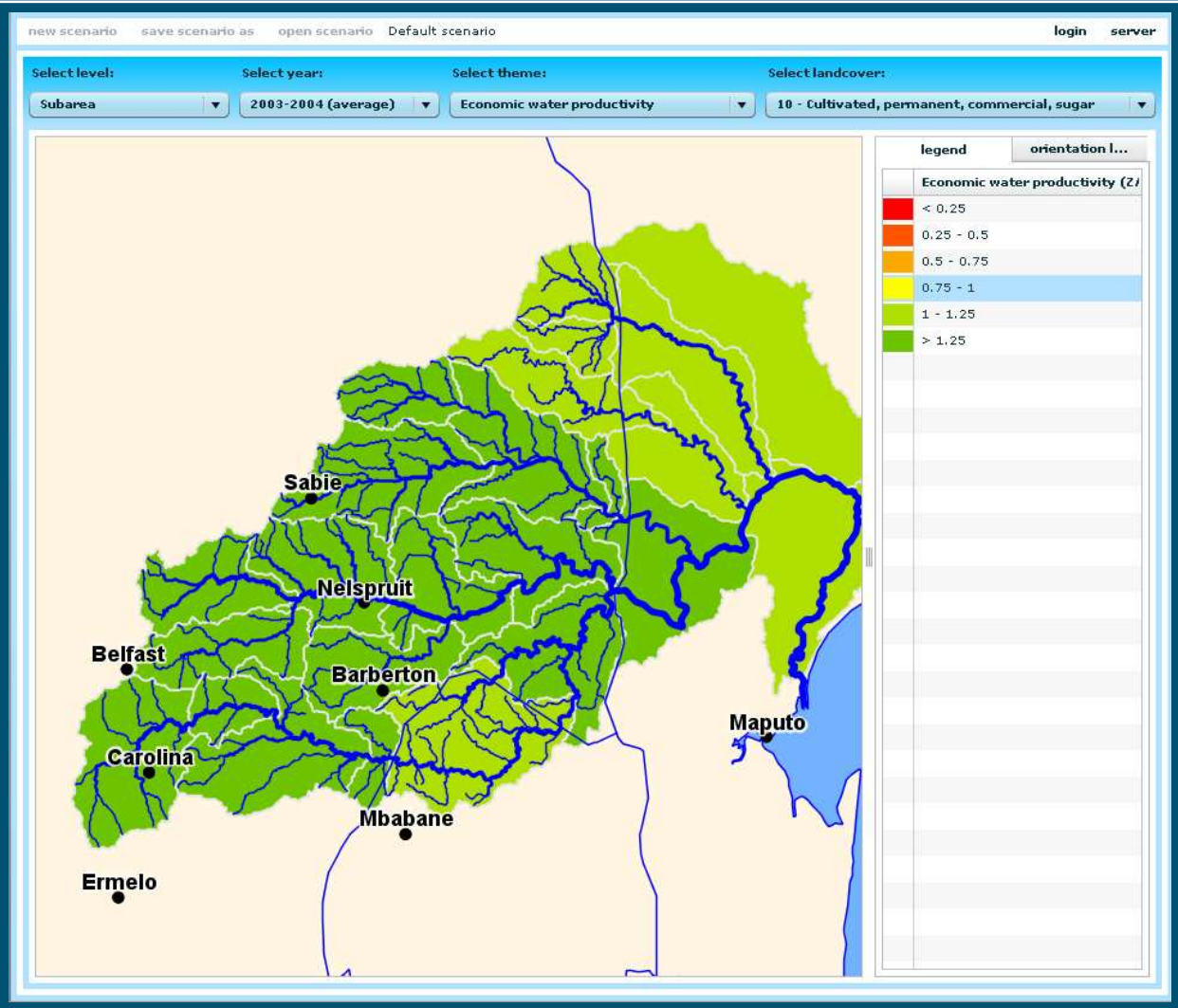
# Example: Economic water productivity sugar

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# Example: 25,000 ha sugarcane in Mozambique

| Area 5 | Average year | |
|---|---|---|
| | Before | After |
| CWP ($kg/m^3$) | 0.023 | 0.164 |
| EWP ($ZAR/m^3$) | 0.003 | 0.116 |
| Production value (million ZAR) | 8 | 321 |
| Water use related jobs | 1086 | 18028 |
| $ET_{act}$ (mm) | 672 | 691 |
| Commercial area (ha) | 2450 | 27401 |
| Rainfall surplus (million $m^3$) | 62 | 10 |
| Water availability to downstream areas (million $m^3$) | 1727 | 1675 |

# Gains

Stakeholders discussions are now based on impartial and verifiable information

Tangible indicators for policy development

Support to discussions during the following meetings:

- Task Team of the TPTC meeting May 2008 Swaziland
- LOGO-South twinning April 2009 Mozambique
- PRIMA water allocation workshop Nov 2009 Swaziland
- African Water Week Nov 2009 South-Africa
- REMCO Conference October 2010 Swaziland