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Pillar 3: Monitoring and accounting toolbox **MONITORING INDICATORS**

Kick-off meeting

Ferbruary 15-16th, 2023, Salamanca, Spain

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Task 4.2: Monitoring Indicators

Aim:

Identify and define the **key indicators of water use, water availability, water-related impacts** (both socio-economic and environmental), and **institutional performance** (including transaction costs)

that are needed to support the design, evaluation, implementation, and enforcement of TAP

- ☐ In consultation with stakeholders in the labs
- ☐ Also consider existing monitoring and reporting obligations
- ☐ strong links with tasks 4.1 and 4.2
- ☐ Timeline: M1-M12



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Identification/assessment of needs

- Identify types and status of existing monitoring infrastructure (e.g. water metering, hydrometeorological monitoring networks, socio-economic or household surveys, etc.)
- Identify types and status of existing data systems (e.g. water rights inventories, land cover mapping) that can support TAP design and performance evaluation from various sources/actors (local, regional, global, EO, etc.)
- Identify types and status of existing monitoring indicators (type of indicators, frequency of calculation, purpose of use, dataflow process, etc.)
- Develop an inventory of key data gaps, monitoring deficiencies, and current indicators' weaknesses across all labs (relevant to the context of each lab), including known challenges (e.g. illegal abstractions)

Design and testing of Indicators



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- **Operational, decision-making**

Precipitation – drought indices

Water levels and flows

Water abstractions

Water demand and consumption per sector/node

PWSS (production & consumption, coverage, cost-recovery, operational costs, etc.)

Alternative water resources potential (reuse, desalination)

Water quality (various

- **Policy design, ex-post analysis of TAP/measures**

Changes in water availability

Water balance

Unmet demand

Water losses, non-revenue water

Water imports/exports

Water efficiency per sector

Economic Impact indicators (crop production, farmers' income change, inability to pay loans, etc.)

Environmental impact indicators

- **Awareness, reporting requirements**

WFD

SEEAW

SDG 11 indicators

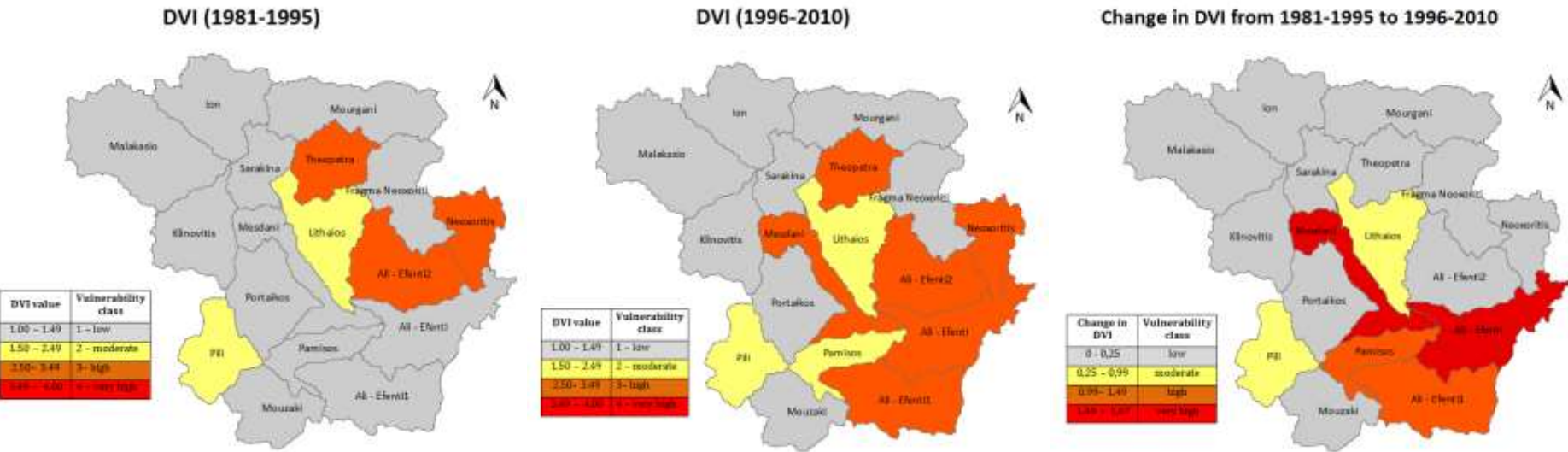
International or transboundary Conventions

e.g.: WEI+, SDG 4.2.1, Eflows

Some examples of indicators



DVI: Vulnerability to Water Scarcity



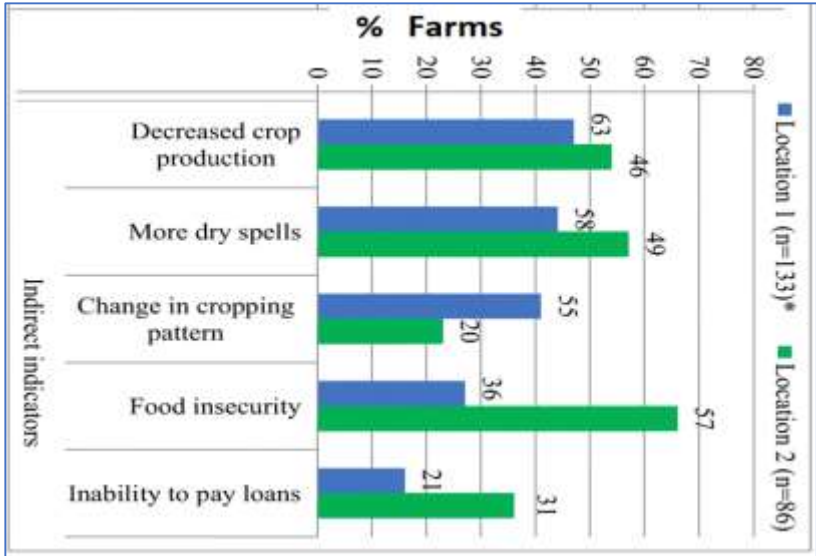
- Blending 3 sub-indicators:
- % years with unmet demand (reliability)
 - Average unmet demand as % of total (distance to target)
 - MAX unmet demand as % of total (extreme conditions)

Change in DRI from 1981-1995 to 1996-2010

DRI: Drought Risk Index

Classification of the Drought Risk Index (DRI)

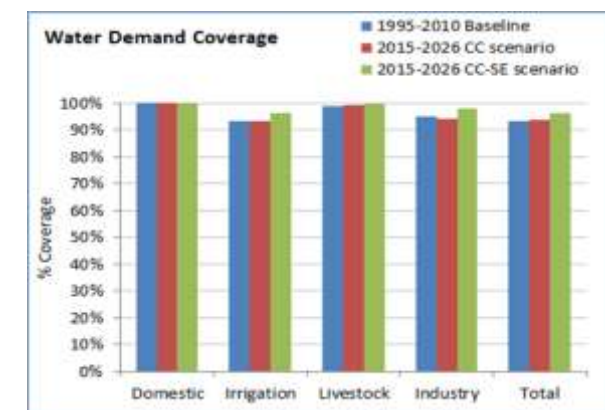
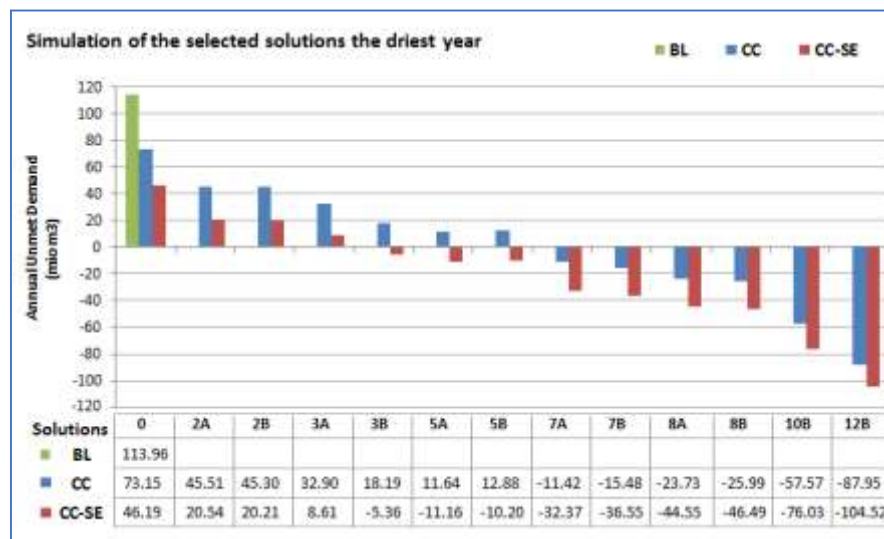
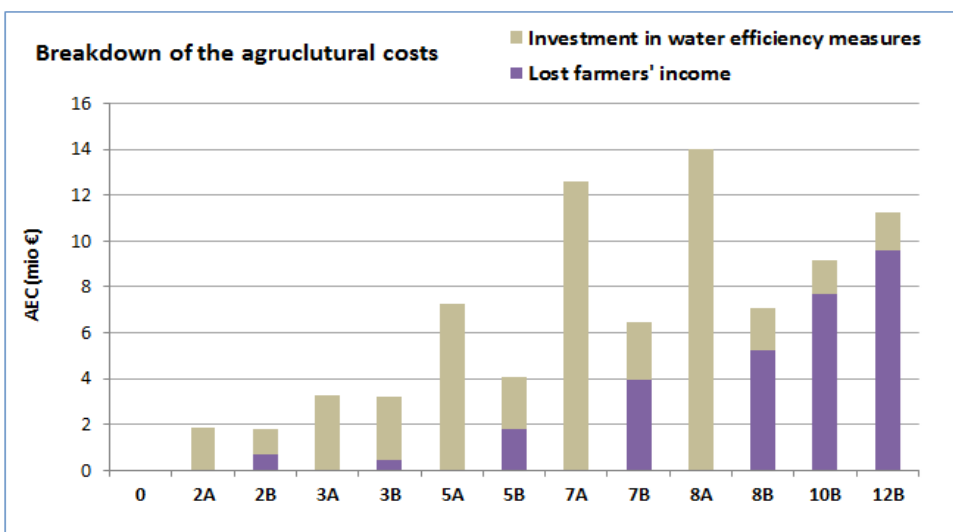
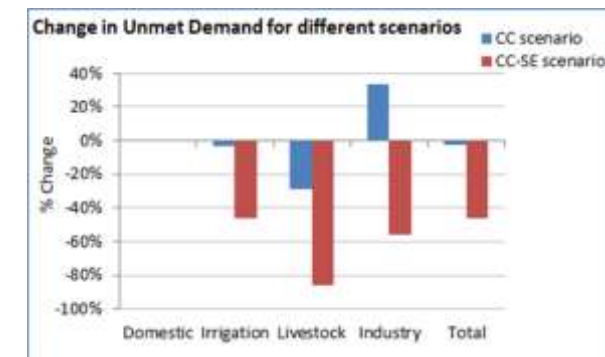
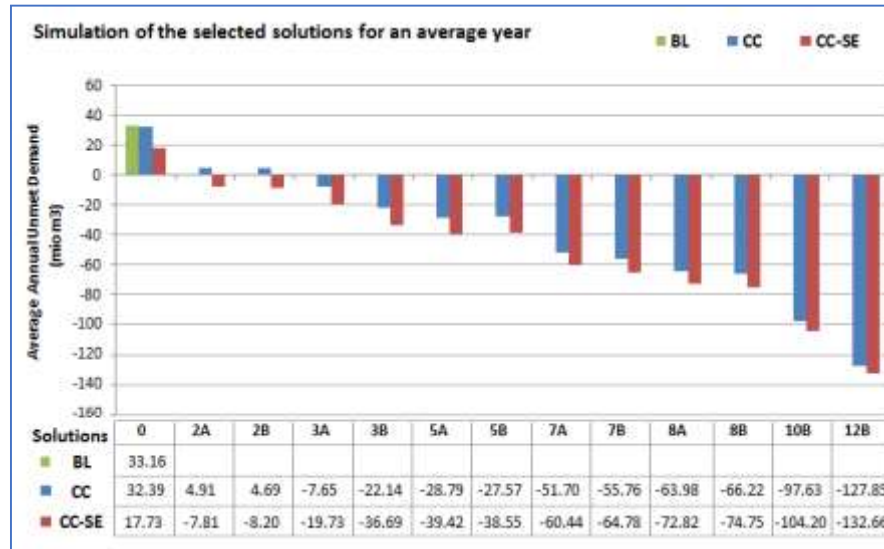
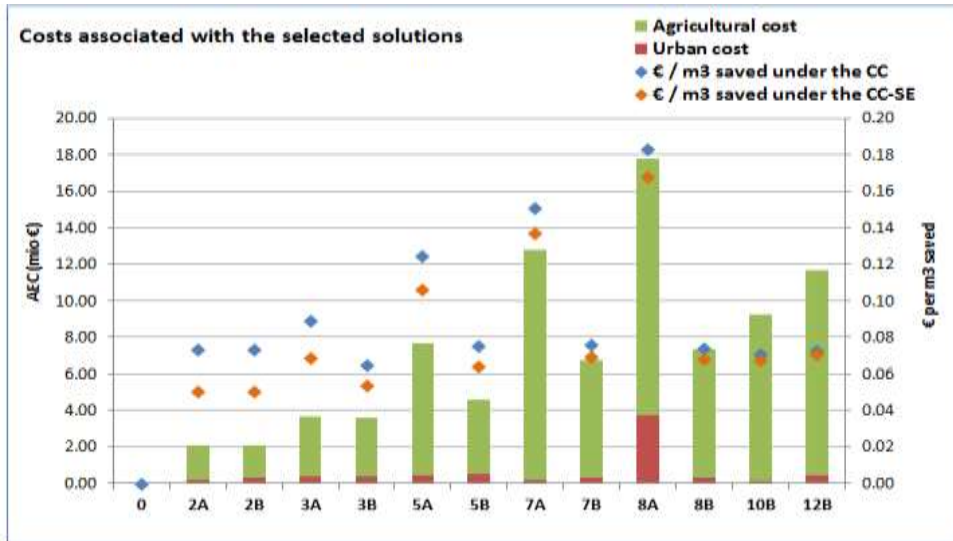
DRI value	Drought Risk class
1.00 - 2.00	1 - low
2.10 - 5.00	2 - moderate
5.10 - 8.00	3 - high
≥ 8.10	4 - very high



Indicators (results after applying TAP solutions and scenarios)



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Dissemination of Indicators

- Purpose: improve the understanding and use of existing and new data and indicators by different stakeholders and end-users in the labs, for various purposes
 - Purpose: facilitate the users'-driven analysis (possibilities for selection of driver and/or TAP scenarios and visualization of related risks, impacts and uncertainties)
 - Static vs. dynamic Indicators Dissemination System (integrating data from a range of sources, frequent updates)
 - Tools: Dashboards, GIS-based platforms, storymaps, etc.
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- <https://waterloupe.deltares.nl/en/cali/ssp3/2604#1.-overview-of-water-scarcity-risks>
 - [Oil and Gas production Dashboard](#)
 - Performance Assessment System, Center for Water and Sanitation India [Toolkit](#), [Interactive Dashboard for water supply services](#)



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Key development issues

- Integrating data from a range of disparate sources, interoperability, QA/QC
- Commitment of stakeholders to data input
- Ownership of the Indicators Dissemination System (IDS), maintenance and updating
- “Interpretation” aspects – what does this indicator tells us?
- “Trusting” the indicators among stakeholders