# SWIM and Horizon 2020 Support Mechanism

**Working for a Sustainable Mediterranean, Caring for our Future**

# Data Management for River Basin Management Planning

Presented by:

**Mr. Eric MINO,** Director EMWIS Technical Unit

**REG-5: 2nd Regional on-site training on Decentralized Water Management**

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# Overview of the presentation

**Data needs for Integrated Water Resources Management**

**Examples from EU twinning projects:**

- **Sebou river basin**
- **Algerois river basin**

**Breakout sessions**

# Knowledge for water management

## IWRM planning cycles

Data needs at Local level (e.g. river basin)

Every 6 years for the WFD


## National and international reporting

*Upper level helps defining data/indicators need*

# SEIS – H2020 core water indicators

**Policy objective:** ➔ **Assess inland water pollution to the Mediterranean sea**

| Name | Geographical scope |
|---|---|
| 3.1: Share of total, urban and rural population with access to an improved (ISS) sanitation system<br>3.2: Proportion of population using safely managed sanitation services (SMSS), including a hand-washing facility with water and soap | Coastal watersheds & national |
| 4.1: Municipal wastewater collected and wastewater treated | Coastal watersheds & national |
| 4.2: Direct use of treated municipal wastewater | National |
| 4.3 Release of nutrients from municipal effluents (BOD, N, P) | Coastal watersheds |
| *Nutrient concentrations in transitional, coastal and marine waters* | |

Challenges:

- Data available at national level (MDG requirement) for most countries
- Definition updated to fit with SDG

# SEIS – H2020 additional water indicators

**Policy objective:** ➔ **Assess water stress**

| Name |
| --- |
| Change in water-use efficiency over time (SDG 6.4.1) |
| Exploitation index of renewable natural resources (MSSD 2.12) |
| Water Exploitation Index+ (EEA CSI 018) |
| Level of water stress - freshwater withdrawal as a proportion of available freshwater resources (SDG 6.4.2, SCP 2.1) |

Challenges:

Common definitions

Data availability and collection

# SDG water indicators (1 / 2)

| Targets | Indicator methodologies |
|---|---|
| 6.1 By 2030, achieve universal and equitable access to safe and affordable drinking water for all | 6.1.1 on drinking water. |
| 6.2 By 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation, paying special attention to the needs of women and girls and those in vulnerable situations | 6.2.1 on sanitation and hygiene |
| 6.3 By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally | 6.3.1 on wastewater treatment<br>6.3.2 on ambient water quality |
| 6.4 By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity | 6.4.1 on water use efficiency<br>6.4.2 on water stress |

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# SDG water indicators (2 / 2)

| Targets | Indicator methodologies |
|---|---|
| 6.5 By 2030, implement integrated water resources management at all levels, including through transboundary cooperation as appropriate | 6.5.1 on integrated water resources management. |
| | 6.5.2 on transboundary cooperation |
| 6.6 By 2020, protect and restore water-related ecosystems, including mountains, forests, wetlands, rivers, aquifers and lakes | 6.6.1 on water-related ecosystems |
| 6.a By 2030, expand international cooperation and capacity-building support to developing countries in water- and sanitation-related activities and programmes, including water harvesting, desalination, water efficiency, wastewater treatment, recycling and reuse technologies | 6.a.1 on international cooperation |
| 6.b Support and strengthen the participation of local communities in improving water and sanitation management | 6.b.1 on stakeholder participation |

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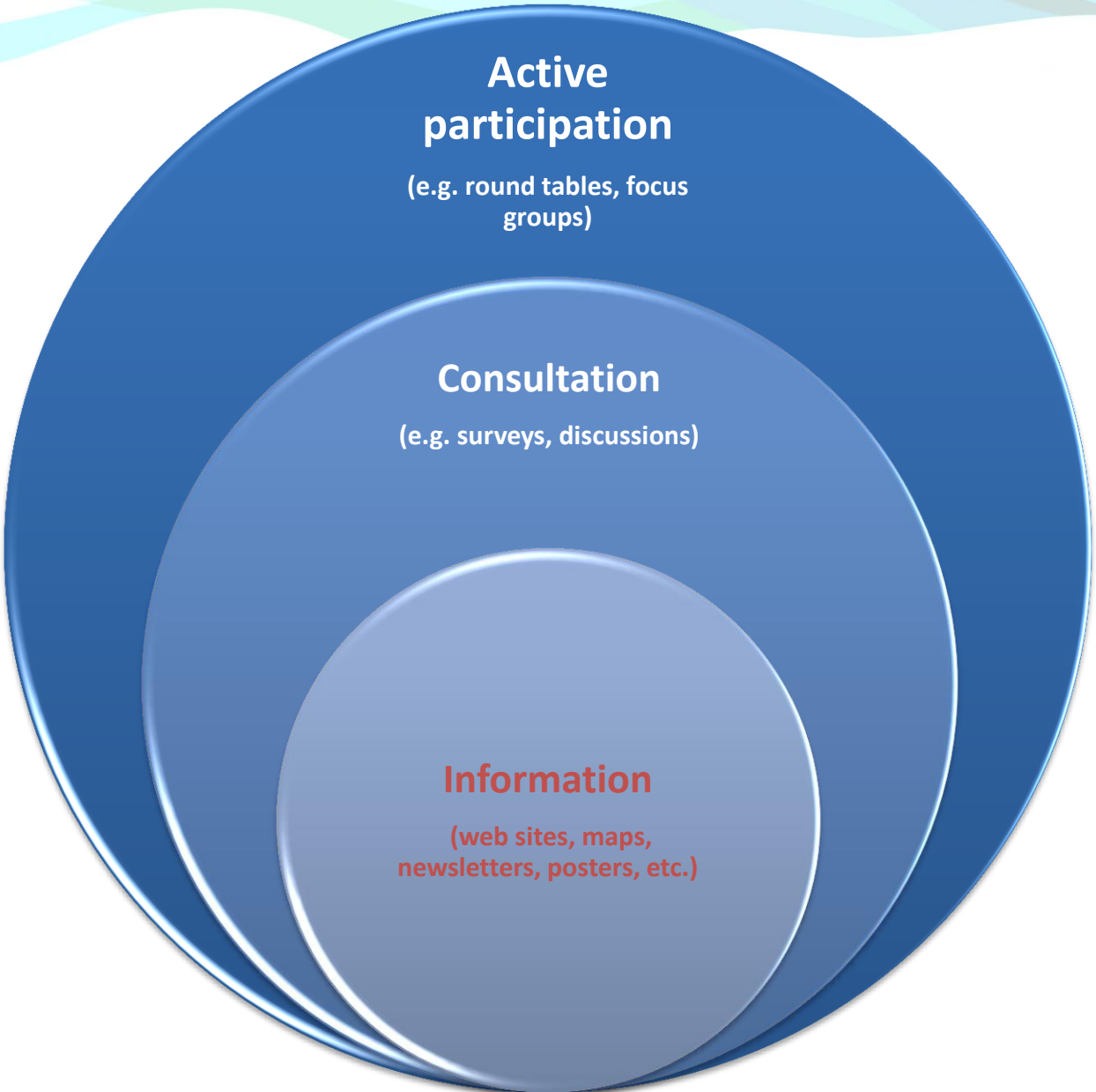
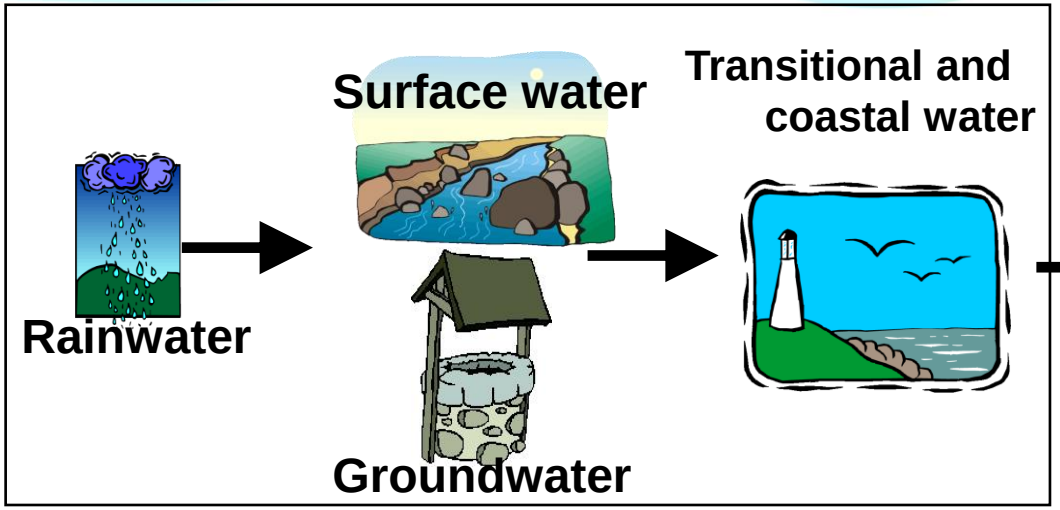
# Typical content of River Basin Management Plan (RBMP)

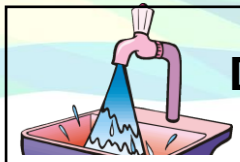
- Characterisation: river basin context
- Significant pressures and impacts of human activities
- Protected areas
- Status of water resources and monitoring networks
- Environmental objectives (if any)
- Economic analysis
- Programme of measures (i.e. action plan)
- Public information & consultation
- Competent authorities (i.e. responsibilities/stakeholders)

# Participatory approach



# Data management: Thematic Scope (resources)

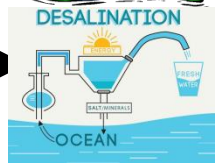


Drinking water

Waste water

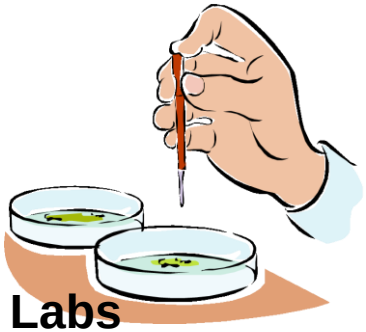
Collection, treatment & reuse




Desalination

Dams / weir

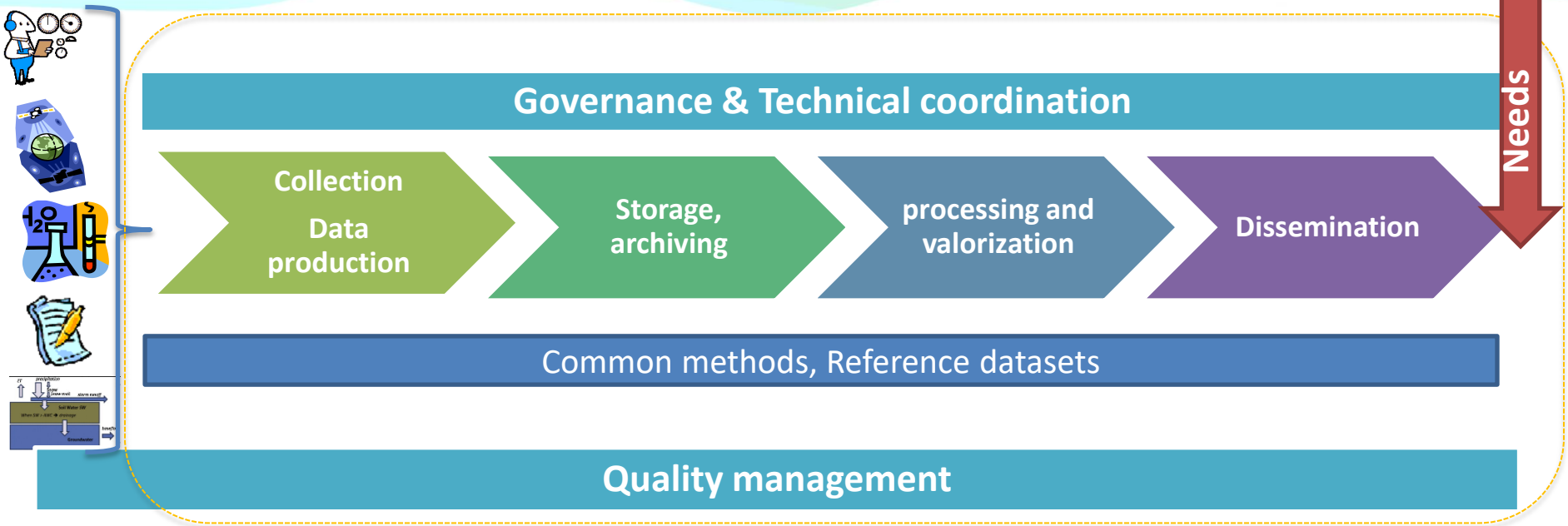
Biota



Labs

Monitoring Facilities

# Water Information Needs vs Water Information System Data Flow




## Data flow reverse engineering

From information dissemination ……

To data produced and available for reuse

Or not!

➔Proxy solutions

➔planning actions to improve knowledge (measures)

# Data for IWRM planning: Characterisation

***Overview of the basin characteristics and main challenges***

- **Hydrographic network with river basins delineation**
- **Administrative management units** (regions, provinces, cities, …)
- **Climate** (e.g. rainfall, temperature) **, bio-climatic regions, trends**
- **Topography** (DEM, slopes)
- **Hydrogeology**
- **Water infrastructures** (e.g. dams, desalination, WWTP, transfers)
- **Water bodies** (surface and ground water)
- **Soil and geology**
- **Wetlands**
- **Land use and trends**
- **Population breakdown and long term trends**
- **Main industries**
- **Agriculture**
- **Risks** (e.g. floods)

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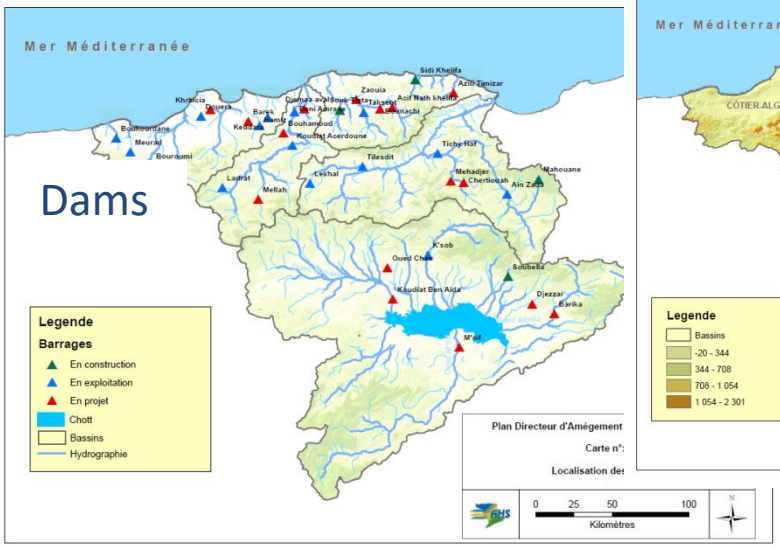
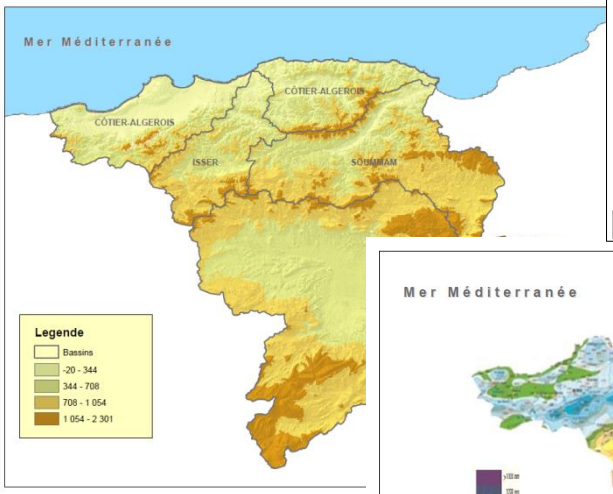
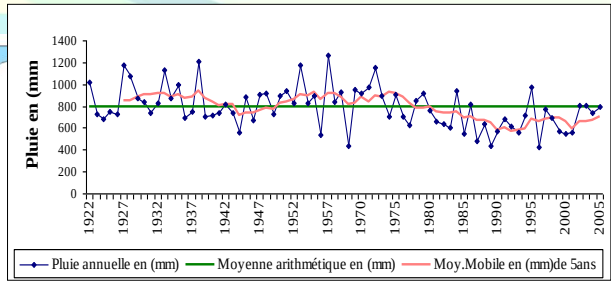
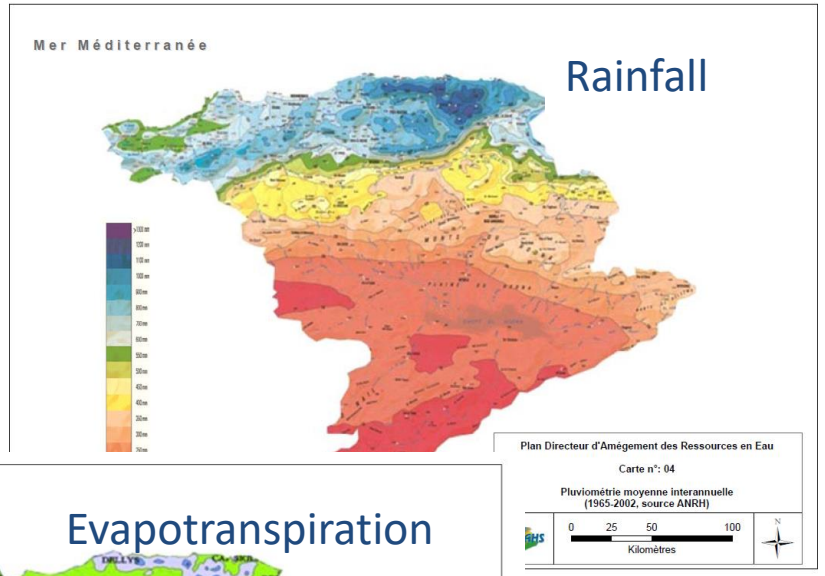
# Characterisation: Examples

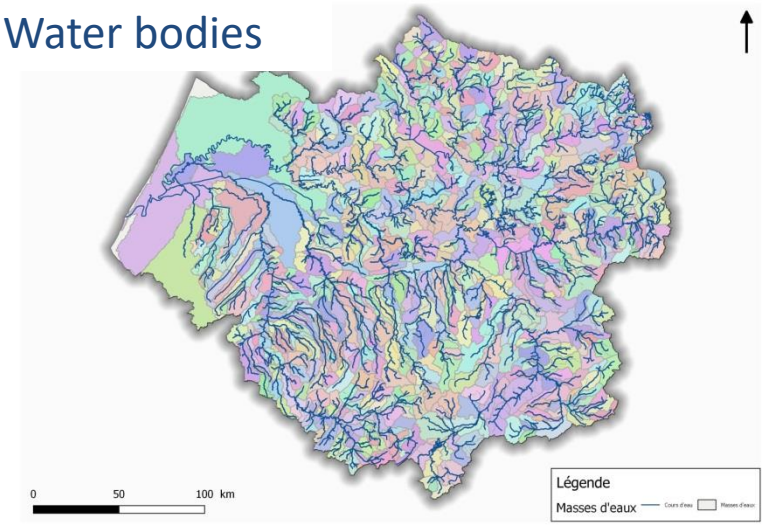


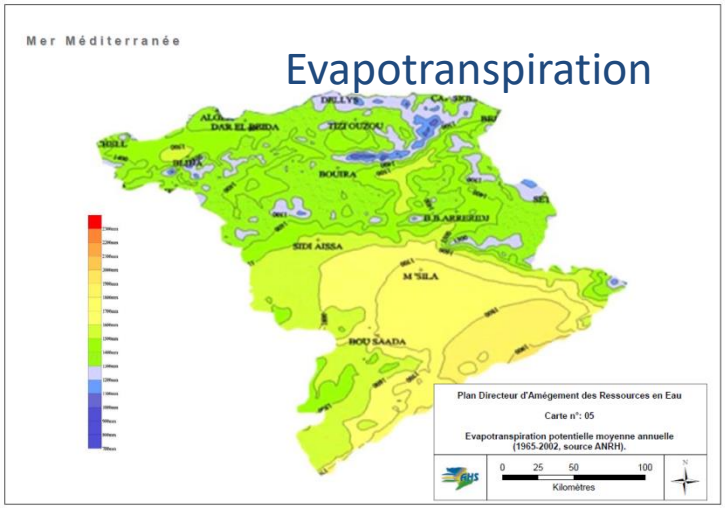



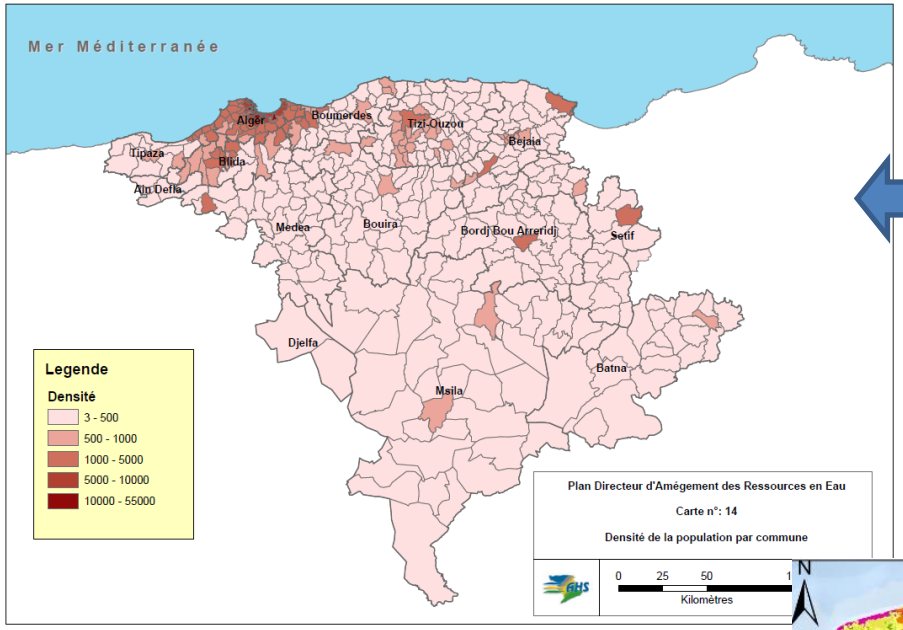

Water bodies



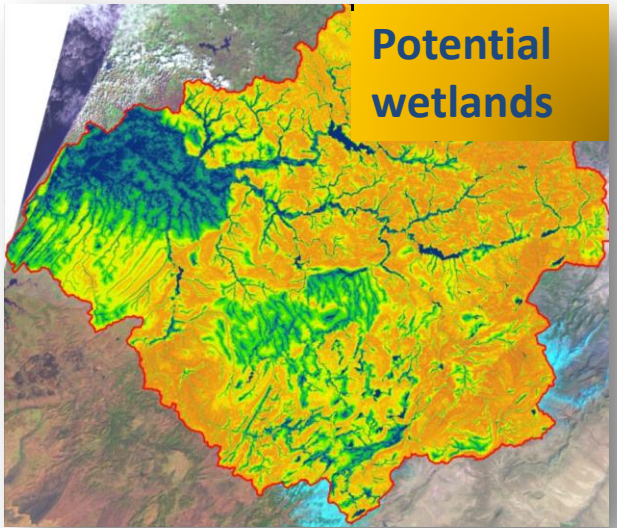
# Characterisation

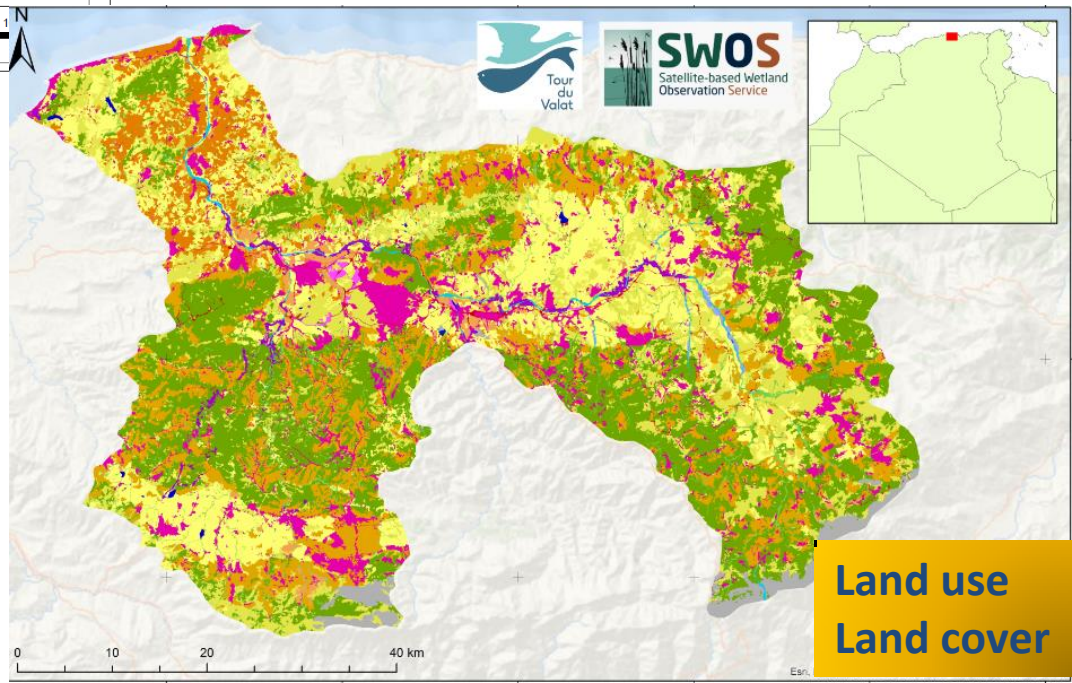
# Example (2/2)




Population by administrative units **Needs to be converted by river basin**

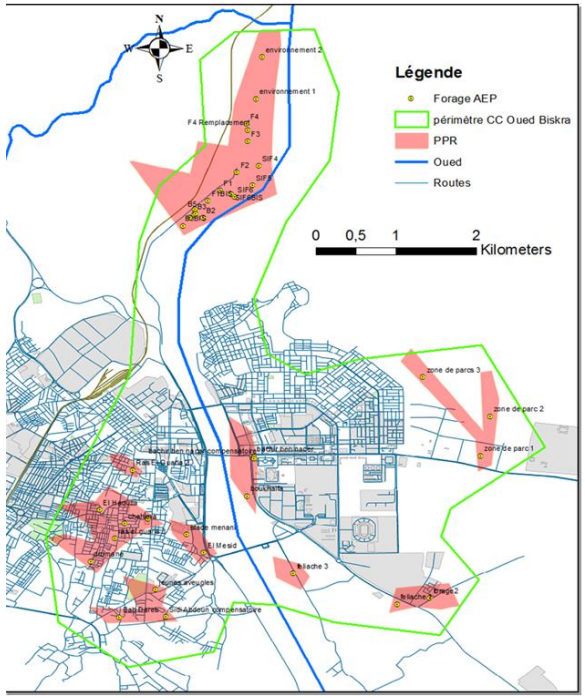
Earth observation can provide valuable data



# Data for IWRM planning: Protected areas

- **Drinking water abstraction protection zones**
- **Bathing/recreational areas**
- **Wetlands** (e.g. RAMSAR convention)
- **Natural parks** (habitat, species protection)
- **Vulnerable / sensitive areas**



# Focus on data for IWRM planning: **Pressures**

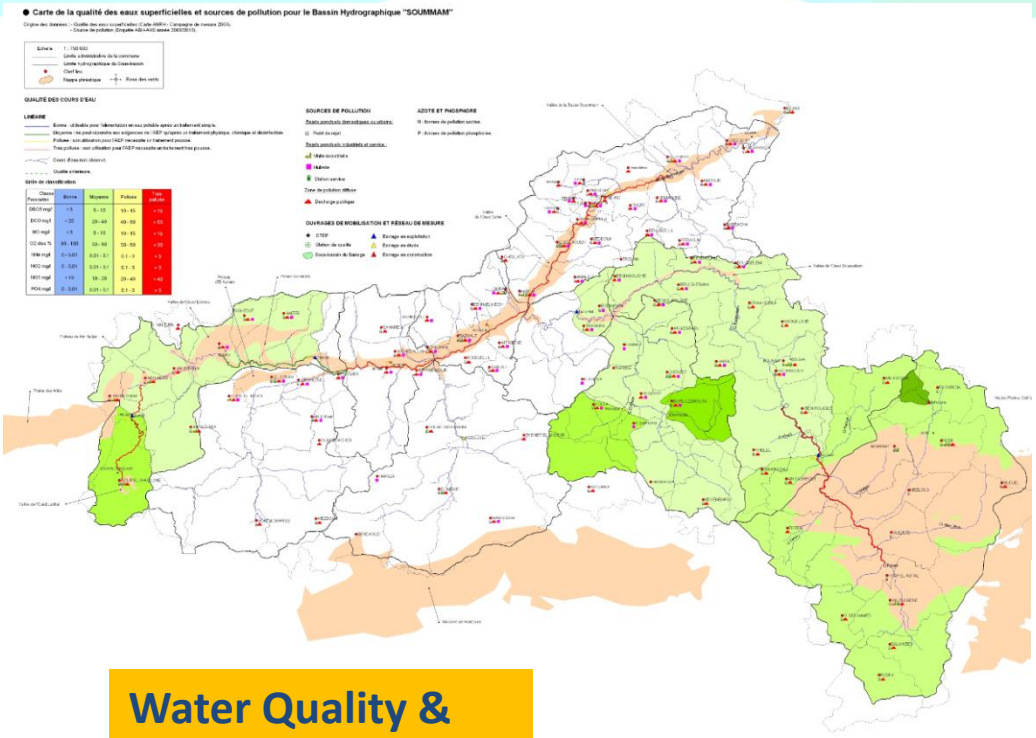
- **Waste water discharge**
- **Diffuse pollution**
- **Landfills**
- **Polluted soils**
- **Sectoral water abstraction**
  - potable,
  - irrigation,
  - industry
- **Hydromorphology alterations** (e.g. dams, dikes, weirs, gravel extraction, channelling)

# Focus on data for IWRM planning: **Monitoring**

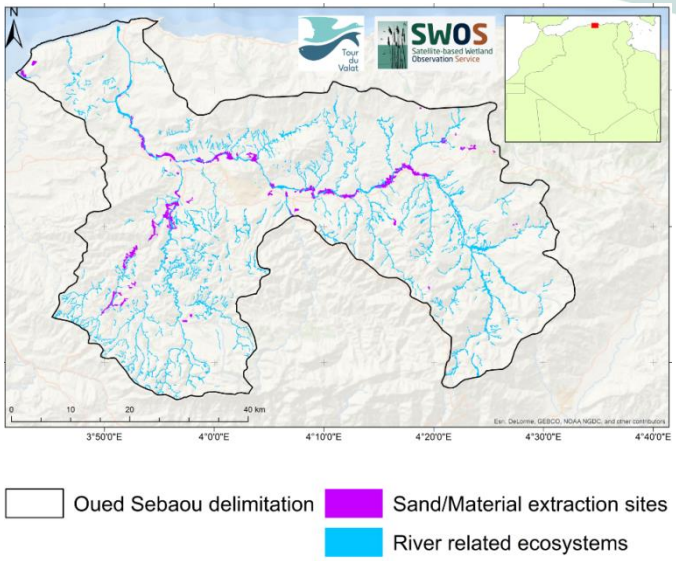
- **Monitoring network (stations location, characteristics)**
  - Surface water quality (rivers, lakes, reservoirs)
  - Hydrology
  - Reservoirs quantity
  - Groundwater quality (parameters)
  - Groundwater levels
- **Definition of status**
  - For each type of “water body”,
  - Combining different parameters
- **Monitoring results**
  - Time series for each parameter
  - Global status of “water bodies”

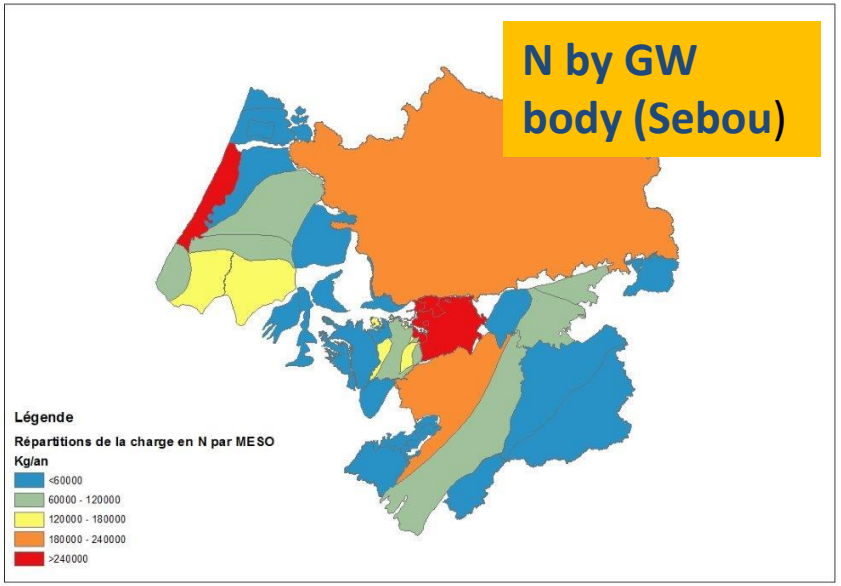
# Pressures & monitoring

# Examples (1/2)




**Water Quality & pollution sources (Soumman)**

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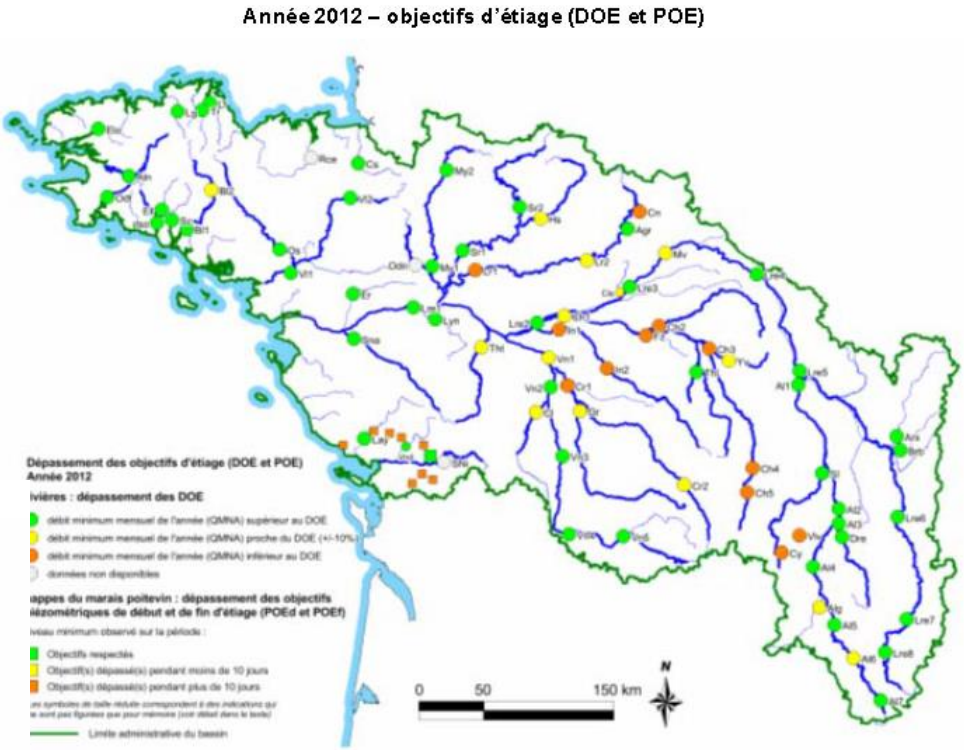
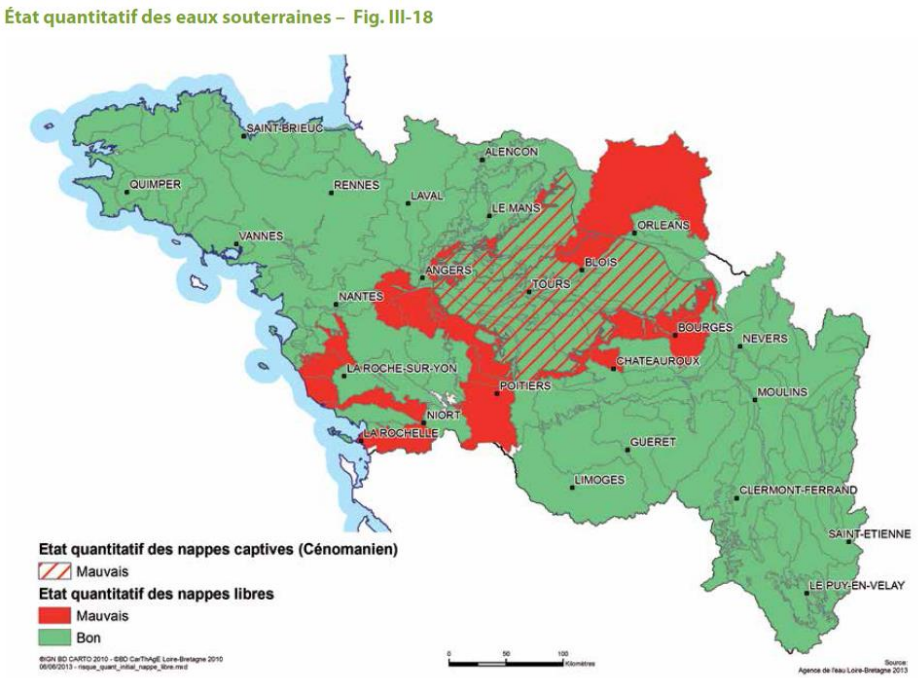
# Pressures & monitoring

# Examples (2/2)

## Surface water flows:

(e.g. Sebou eflows: 1-6 m/s)




## Ground water levels

# Data for IWRM planning: Economic analysis

➔ *Cost recovery*

➔ *Cost-benefits analysis*

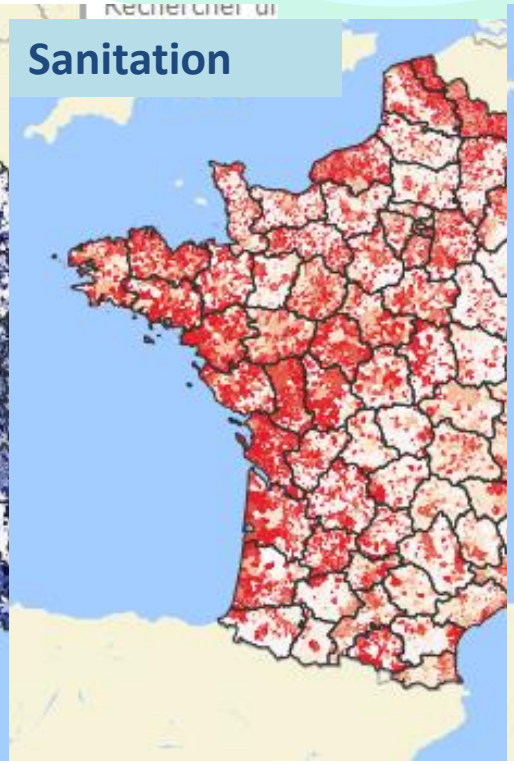
- **Water services tariffs**
- **Water abstraction fees**
- **Waste water discharge fees**
- **Infrastructures costs**
- ***Monitoring and data management costs***
- **Economic activities (incl. social impacts)**
- **Cost of Programme of Measures**

# Water tariffs

## Drinking water

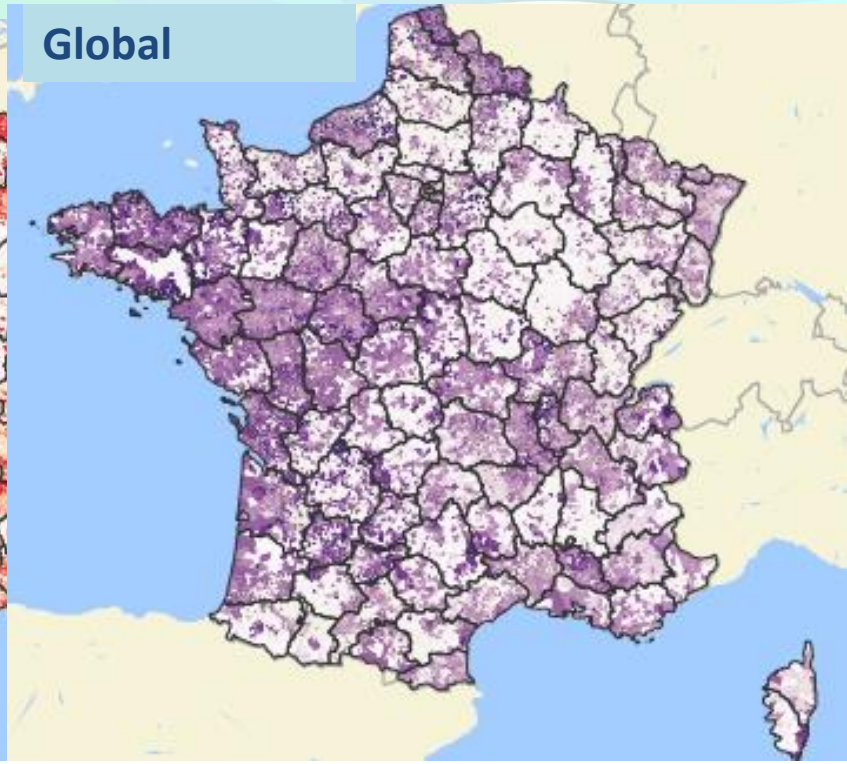
- Aucune donnée disponible
- Inférieur à 1,50 € / m³
- 1,50 à 1,80 € / m³
- 1,80 à 2 € / m³
- 2 à 2,30 € / m³
- Supérieur à 2,30 € / m³

## Sanitation



- Aucune donnée disponible
- Inférieur à 1,50 € / m³
- 1,50 à 1,80 € / m³
- 1,80 à 2 € / m³
- 2 à 2,30 € / m³
- Supérieur à 2,30 € / m³

## Global



- Aucune donnée disponible
- Inférieur à 3 € / m³
- 3 à 4 € / m³
- 4 à 5 € / m³
- 5 à 6 € / m³
- Supérieur à 6 € / m³

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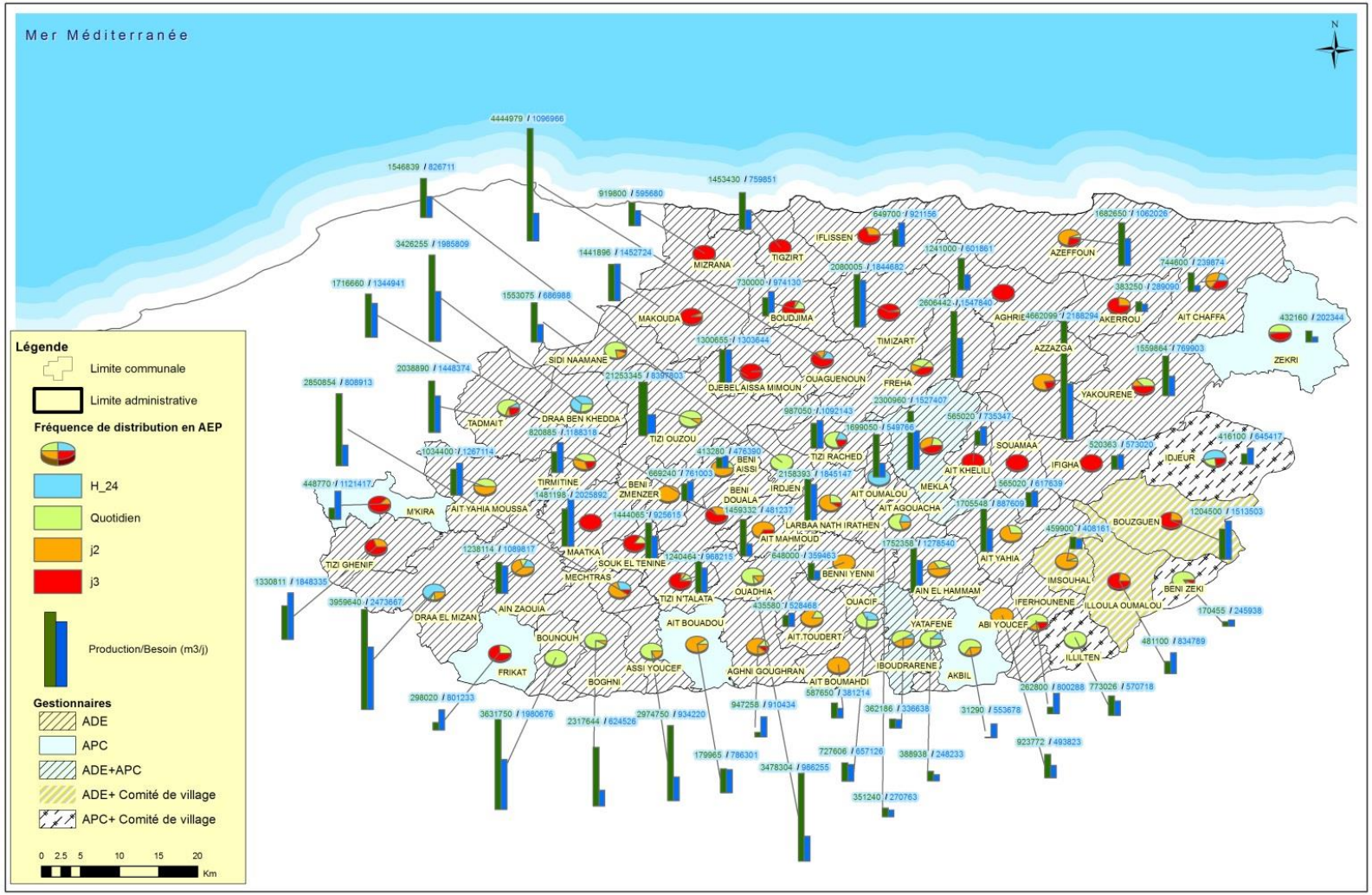
# Data for IWRM planning: Environmental objectives Programme of measures

*Improving the status of "water bodies"*

- **Defining quantitative or qualitative objectives for water bodies with targeted timeframe**
  - ☹ ➔ 😐 ➔ ☺
- **Defining a set of measures to reach each objective**
  - Implementation monitoring indicators
  - Impact indicators
  - Costs
  - stakeholders

# Quality of water supply services (Algeria)

***Carte de production et de fréquence de distribution en AEP de la wilaya de Tizi Ouzou***

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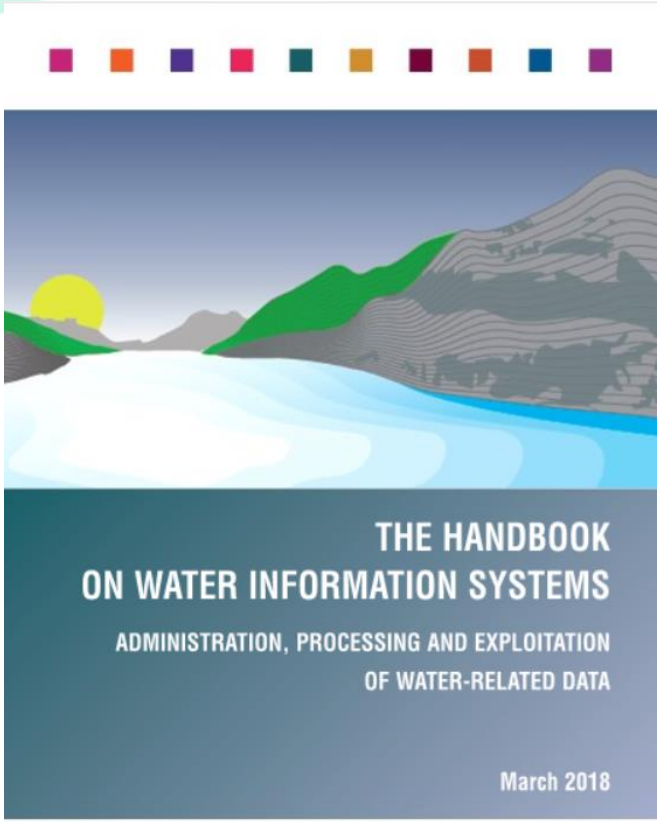
# What if no data available/usable?

***Include knowledge improvement in your water resources management plan***

- **Define and implement missing regulation** (e.g. protection areas for water abstraction)
- **Improve data interoperability**
- **Improve observation network**
  - New monitoring stations
  - Information systems
- **Carry-out studies and modelling:**
  - Sensitive areas
  - Flood risk areas
  - Eflows
  - Earth observation

# Further reading

https://www.riob.org/pub/HandBook-SIE-en/



# Breakout sessions

- ***Mapping data availability and source or proxy in each country according to the types of data needed for RBMP (from a local planner point of view)***

- **45 mins group discussions:**
  - Each country prepare its own inputs in 15mins with real name of data providers if it is easier (e.g. water utility X)
    - 3 examples by country: at least one good practice / one important but facing difficulties
  - Discussion preparation of one common table covering all countries with potential transfer of good practices. 25 mins
  - Final wrap-up – 5 mins (can be used as buffer for the previous step)

- **Feedback: 15 mins by rapporteurs in plenary**

# SWIM and Horizon 2020 Support Mechanism

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## Thank you for your attention.

Contact: **Eric MINO,** e.mino@semide.org

This Project is funded by the European Union