

# Dr. Nihat Zal - EEA



**Water and  
Environment Support**  
in the ENI Southern Neighbourhood region



- Dr. Nihat Zal, having background in Physical Geography and Landscape Architecture, has been working as Project Manager at the **European Environment Agency since 2011.**
- He mainly deals with **water resources, water scarcity and resource efficiency** related issues in the area of water.
- He has been involved in various projects and activities not only in European region but also in West Balkans, Caucasus and Central Asia.
- He is author of numerous papers and reports. Since 2014, he has been working on the development of the European water accounts.
- Recently, the European Environment Agency has published the **first geo-referenced water accounts for physical asset accounts and flow accounts at the river basin level.**



# Water and Environment Support in the ENI Southern Neighbourhood Region

*Dr. Nihat Zal – Project manager, Water resources, water scarcity and droughts*

*European Environment Agency*

## Overview of European water accounts

# Overview of European water accounts



- Why - policy hooks
- What - key outputs/accounting modules
- How - Lessons learned
- Next steps – 2021-2023

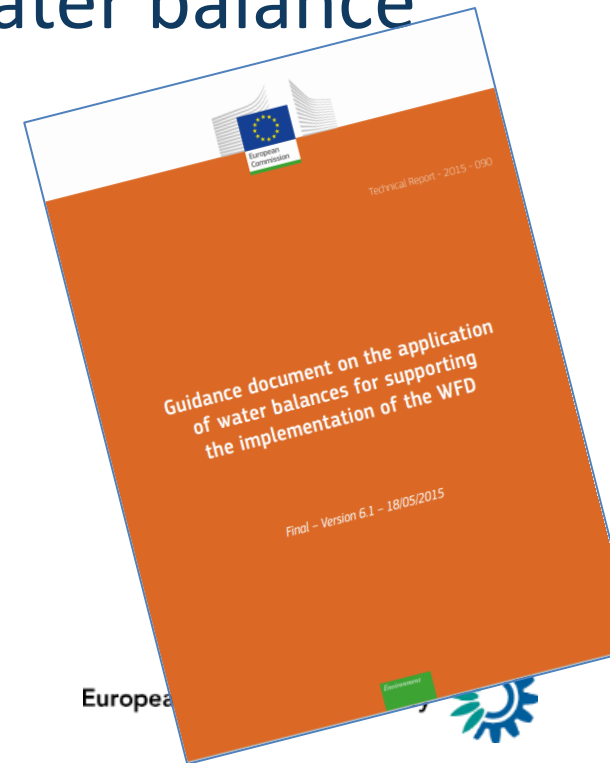
# European policy hooks for water accounts

- The EU Water Framework Directive (2000/60/EC) sets the purpose of the Directive –inter alia- as follows (Article 1);
  - (a) prevents further deterioration and protects and enhances the status of aquatic ecosystems and, with regard to their ***water needs***, terrestrial ecosystems and wetlands directly depending on the aquatic ecosystems;
  - (b) promotes ***sustainable water use*** based on a long-term ***protection of available water resources***;
- EU Green deal - protect, conserve and enhance the ***EU's natural capital***, and protect the health and well-being of citizens from environment-related risks and impacts
- EU New Circular Economy Action Plan (2020) address explicitly to the ***water stress*** and holds provisions for ***improving resource efficiency*** in the context of water resources management
- The EU Biodiversity Strategy 2030 acknowledges the importance of ***natural capital to industry and agriculture***
- The EU Farm-to-Fork Strategy is addressing to ***protecting the water***
- **Resource Efficient Europe** (COM(2011) 571) transformation Europe's economy into a sustainable one by 2050 – ***Water abstraction should stay below 20% of available renewable water resources.***
- The EU Water Scarcity and Droughts Policy - ***to ensure access to good quality water in sufficient quantity for all Europeans, and to ensure the good status of all water bodies across Europe.***
- **UN SGDs 6.4** – Water use efficiency and prevention from water scarcity by 2030

# A brief history...



- EEA has been working on developing the environmental-economic accounts including the water accounts since 2000s
- The EU Commission published Guidance document on developing the Water balance



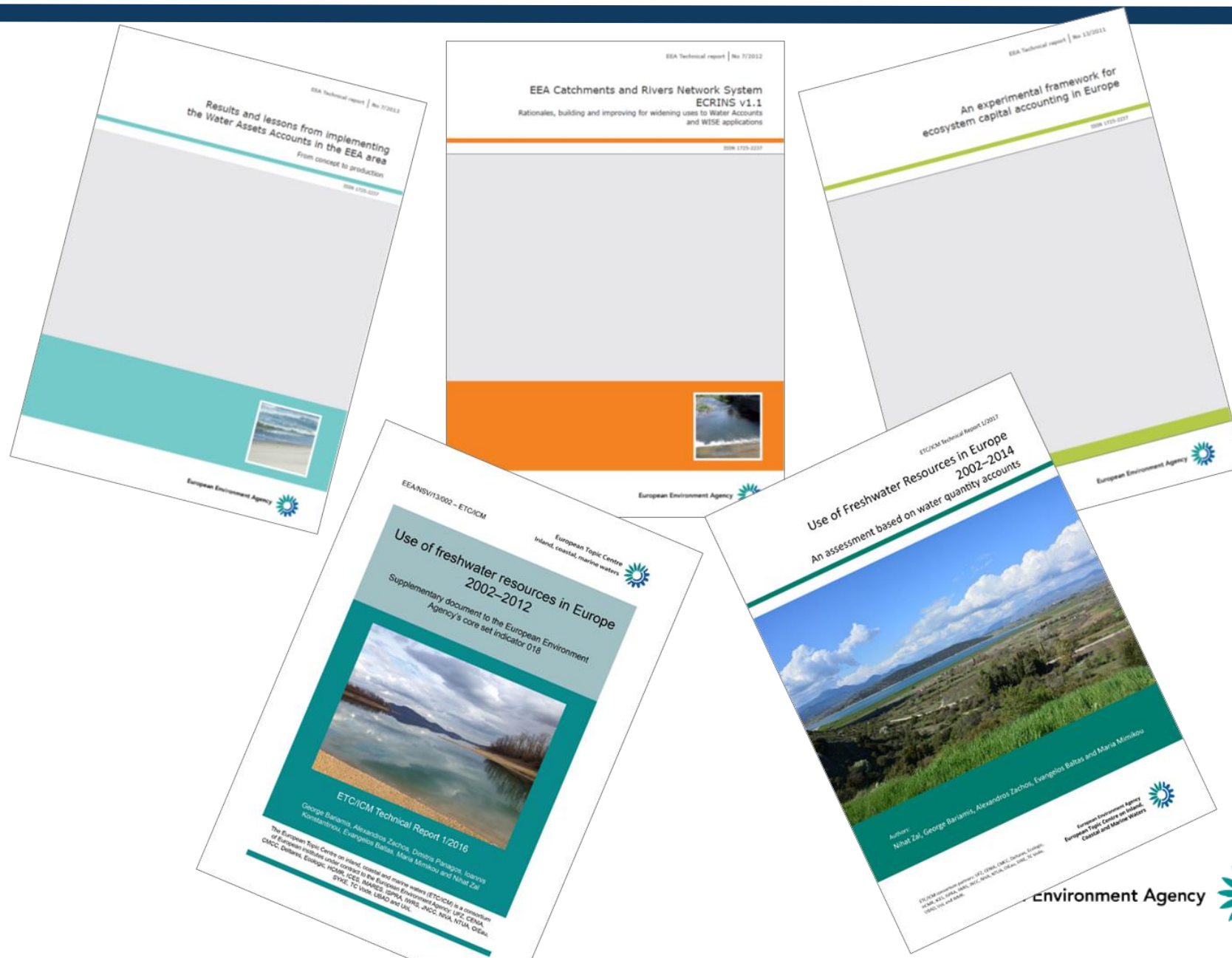


# A brief history...

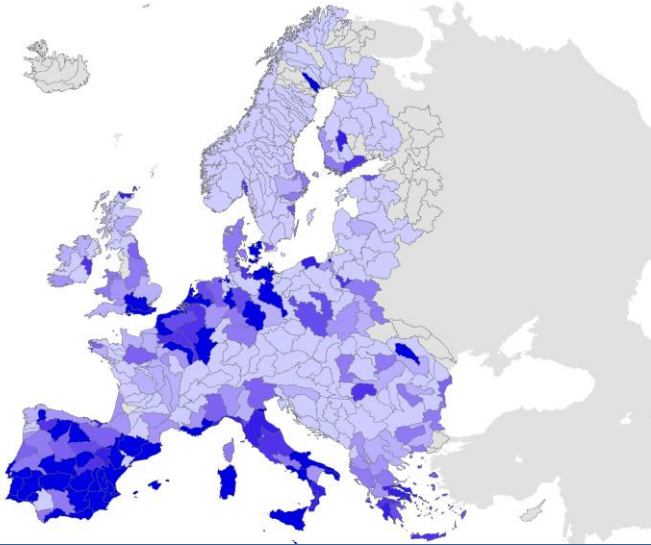


- EEA has been working on developing the environmental-economic accounts including the water accounts since 2000s
- The EU Commission published Guidance document on developing the Water balance
- EEA has also published a number of reports and assessments

# A brief history...



# Water accounts modules



- **Physical asset accounts and Flow accounts** (Physical supply and use)– Geo-referenced, monthly at subbasin scale (1990-2015) and country level (1990-2017)
- **Water emission accounts** (experimental)- at the river basin level
- **Freshwater ecosystem condition accounts** (experimental) at the river basin level



# Practical use of water accounts outputs

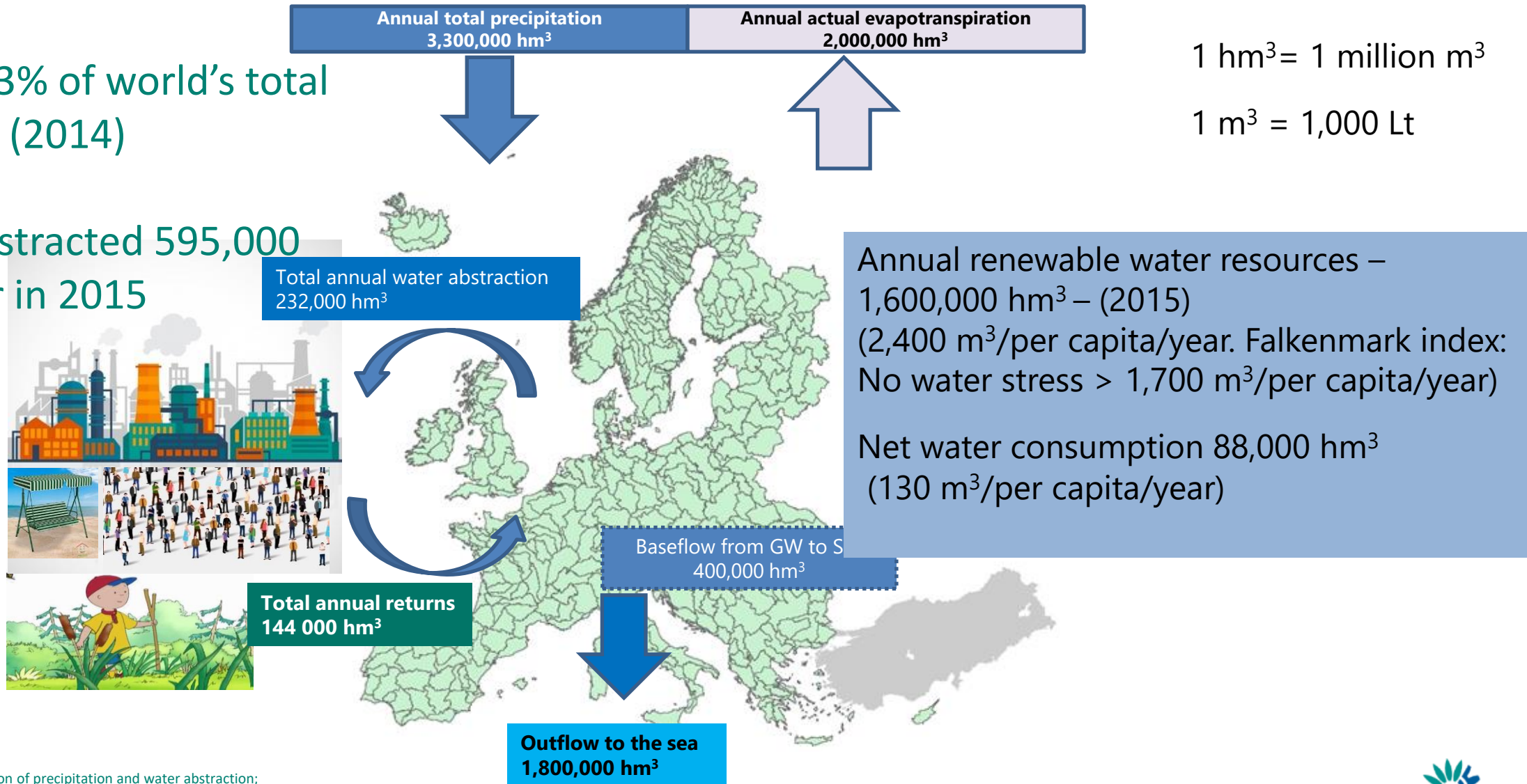
Overall purpose is to build a **comprehensive European database to support information needs** for important environmental issues, as well as holistic assessments of ecosystems' integrity and sustainability

- Developing the **relational database** – EEA has released the first version of the [European water accounts in 2019](#) covering 1990-2015

# European water balance - 2015

On average, 3% of world's total precipitation (2014)

China has abstracted 595,000 hm<sup>3</sup> of water in 2015

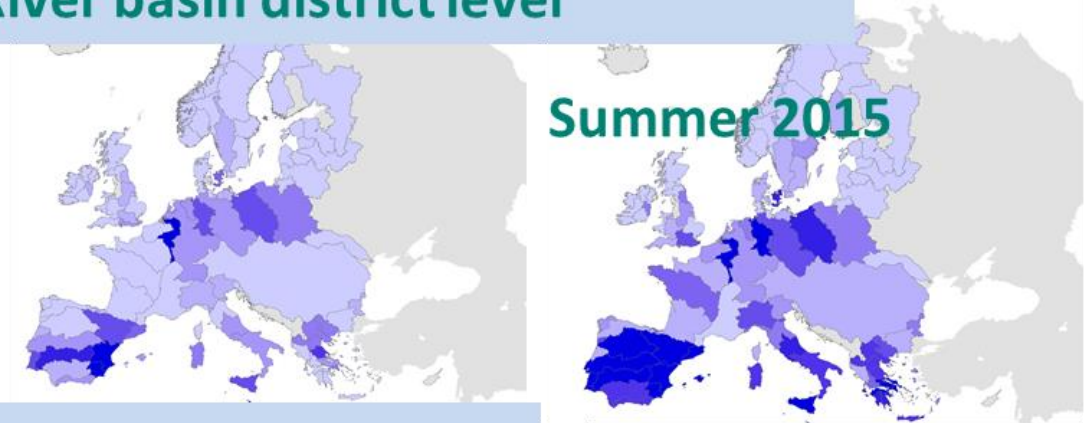


# Practical use of water accounts' outputs

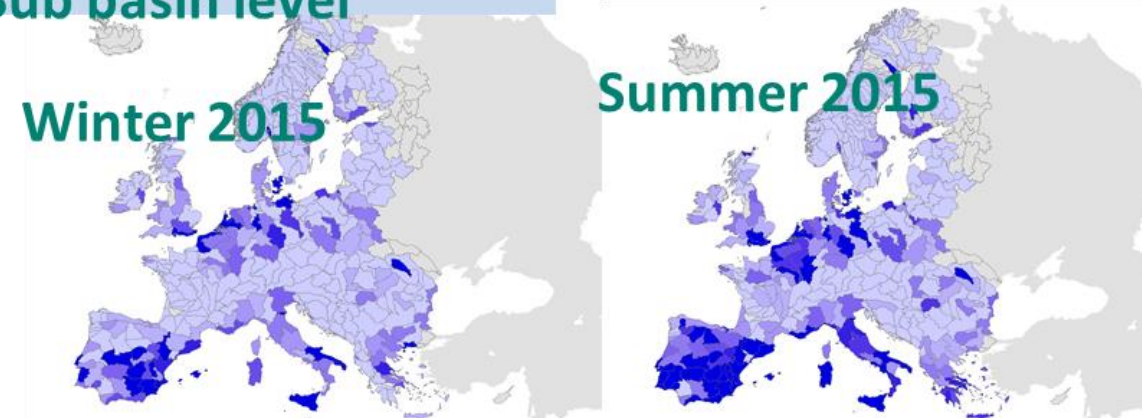
- Data support for indicator development
  - Use of freshwater resources (Water exploitation index plus-WEI+)



## River basin district level

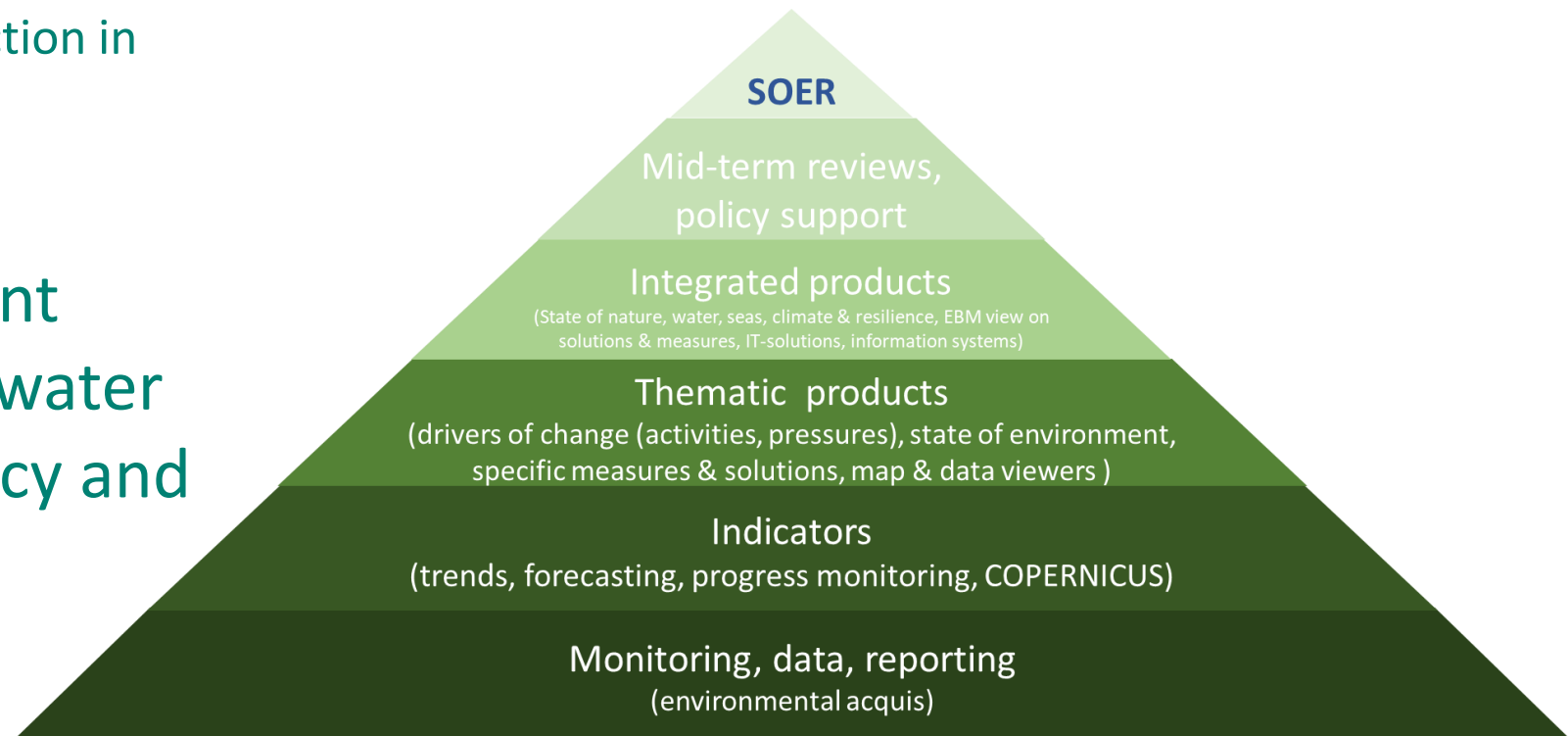


## Sub basin level



# Practical use of water accounts' outputs

- Data support for indicator development
  - Use of freshwater resources (Water exploitation index plus-WEI+)
  - Water intensity of crop production in Europe
- Developing the assessment around water resources, water scarcity, resource efficiency and freshwater ecosystem conditions





# Practical use of water accounts' outputs

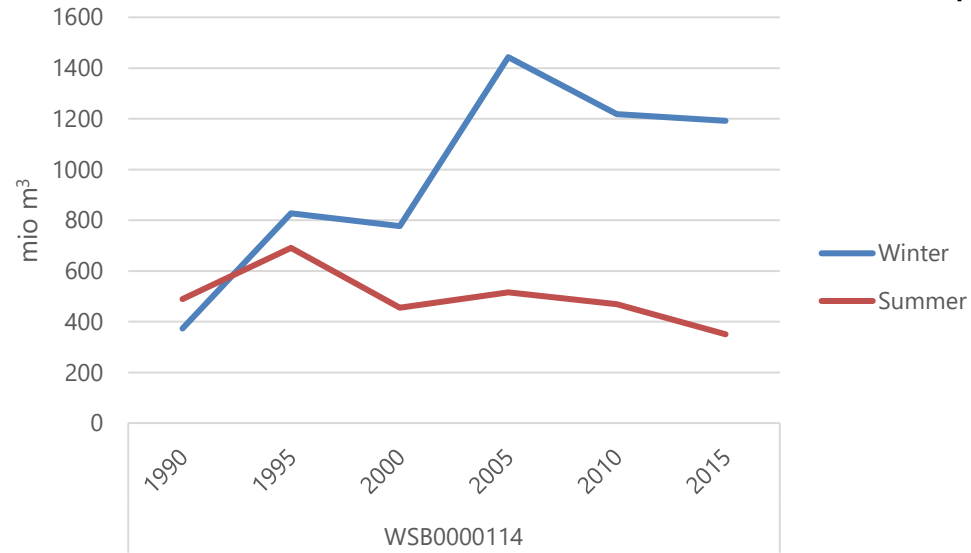
- Data support for indicator development
  - Use of freshwater resources (Water exploitation index plus-WEI+)
  - Water intensity of crop production in Europe
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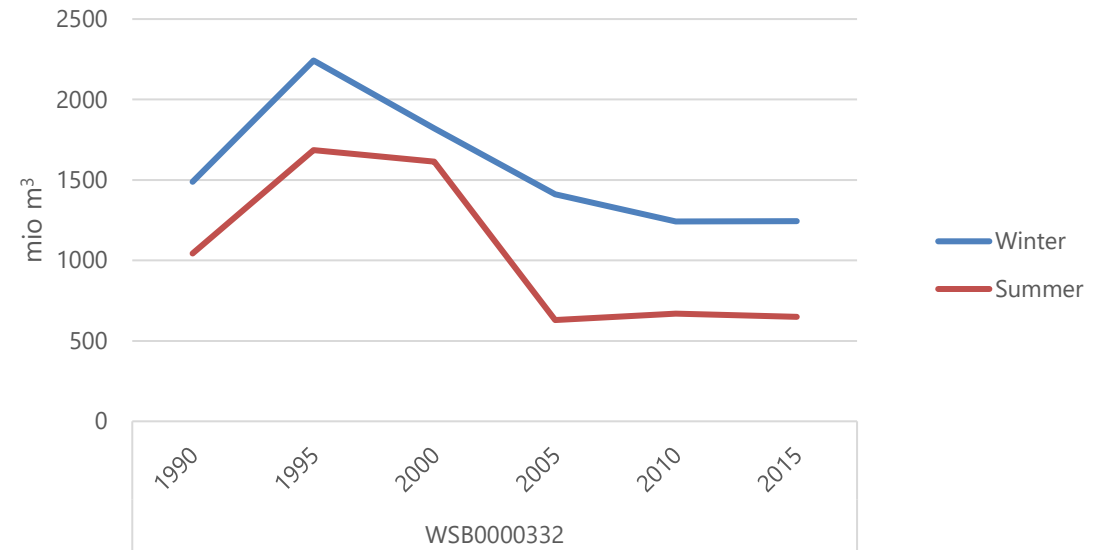


# Regional and seasonal dimensions of renewable freshwater resources

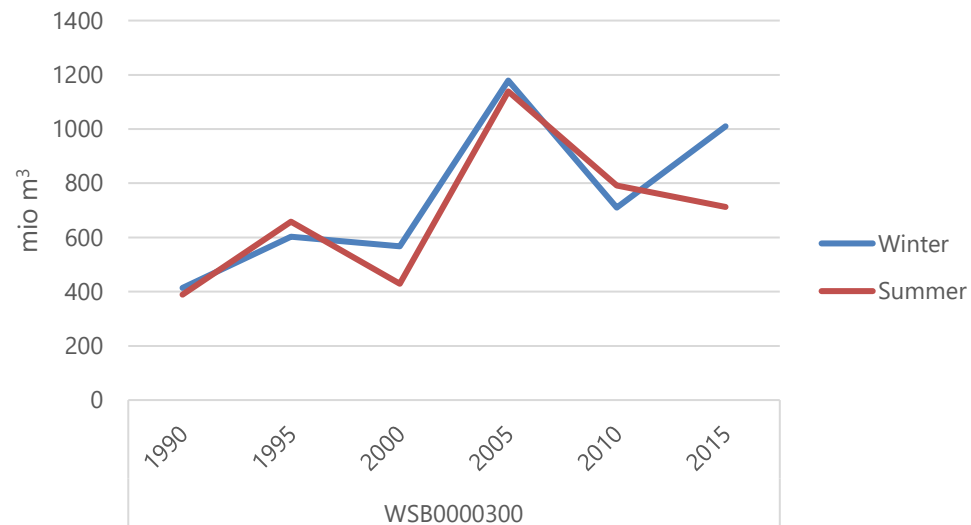
## Eastern Sterea Ellada – Greece (Southern Europe)



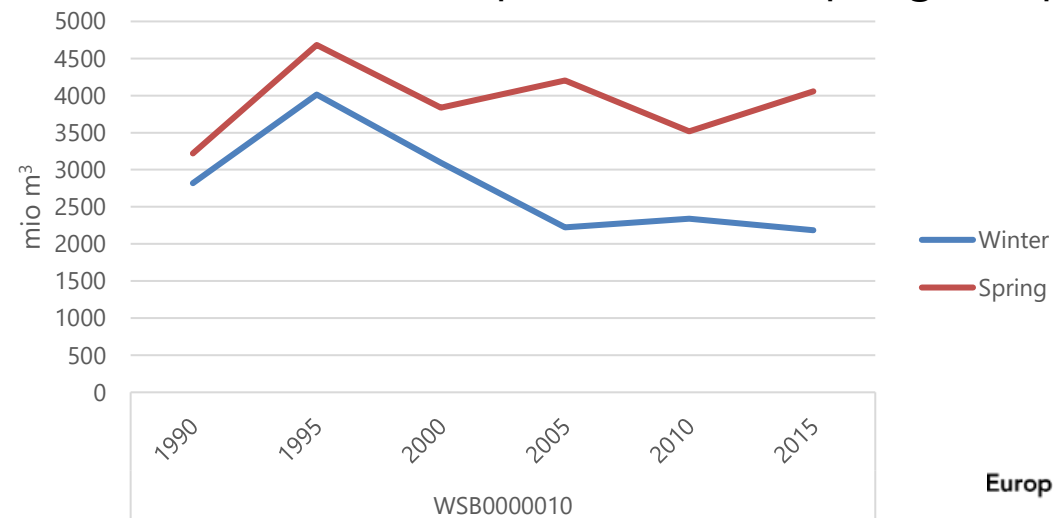
## Neckar – Germany (Western Europe)



## Maritsa- Bulgaria (Eastern Europe)

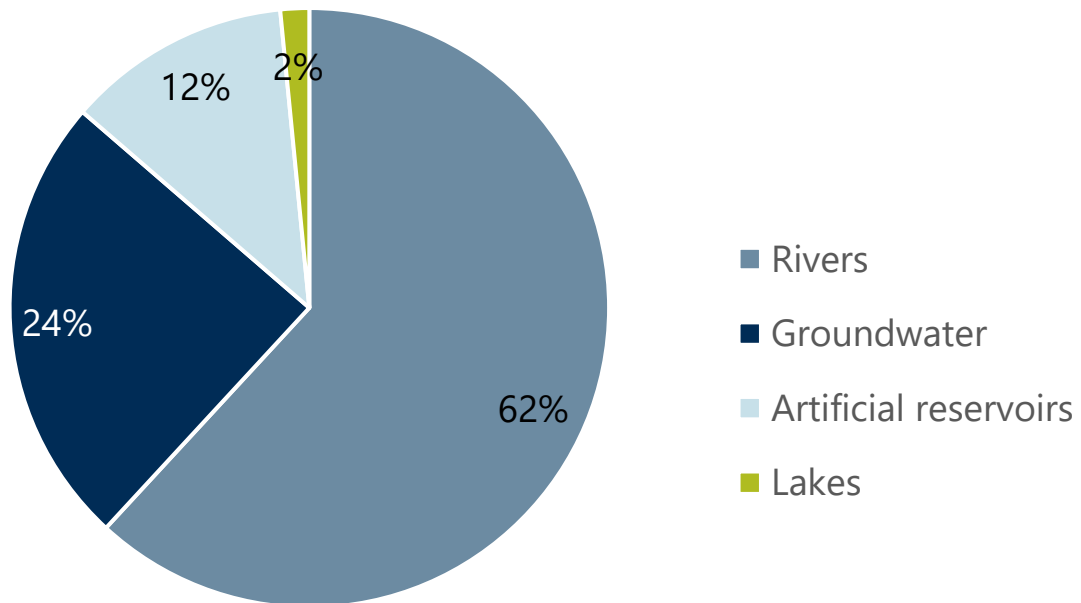


## Aare – Switzerland (Alps, winter and spring comparison)

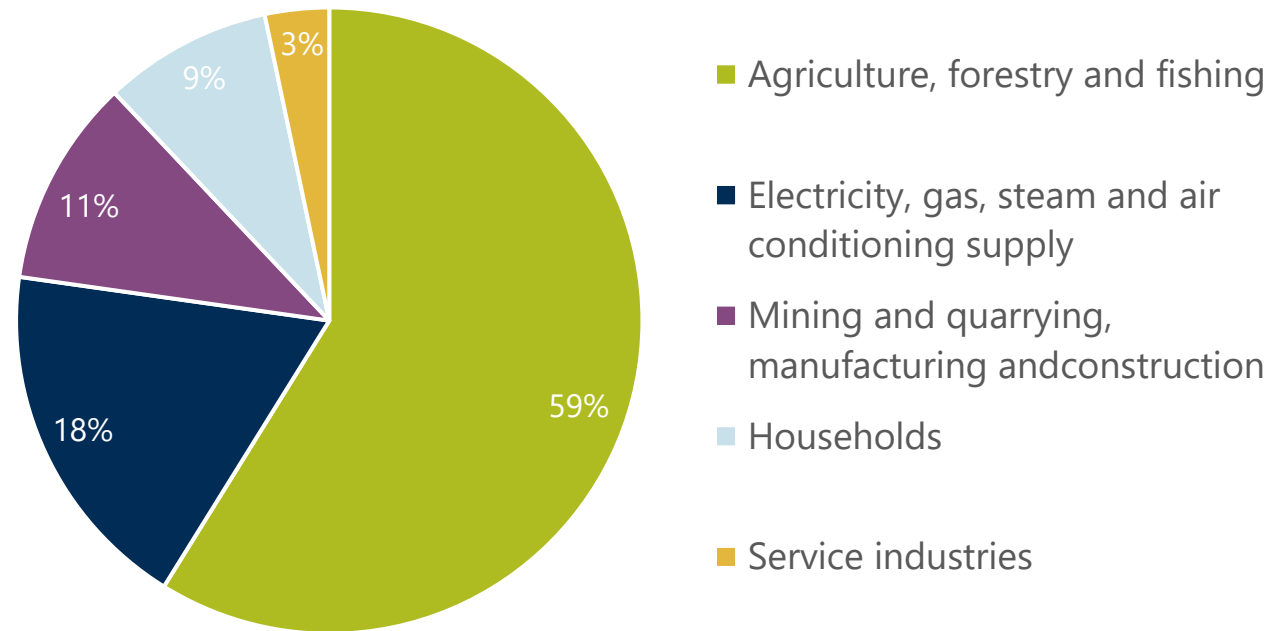


# Practical use of water accounts' outputs

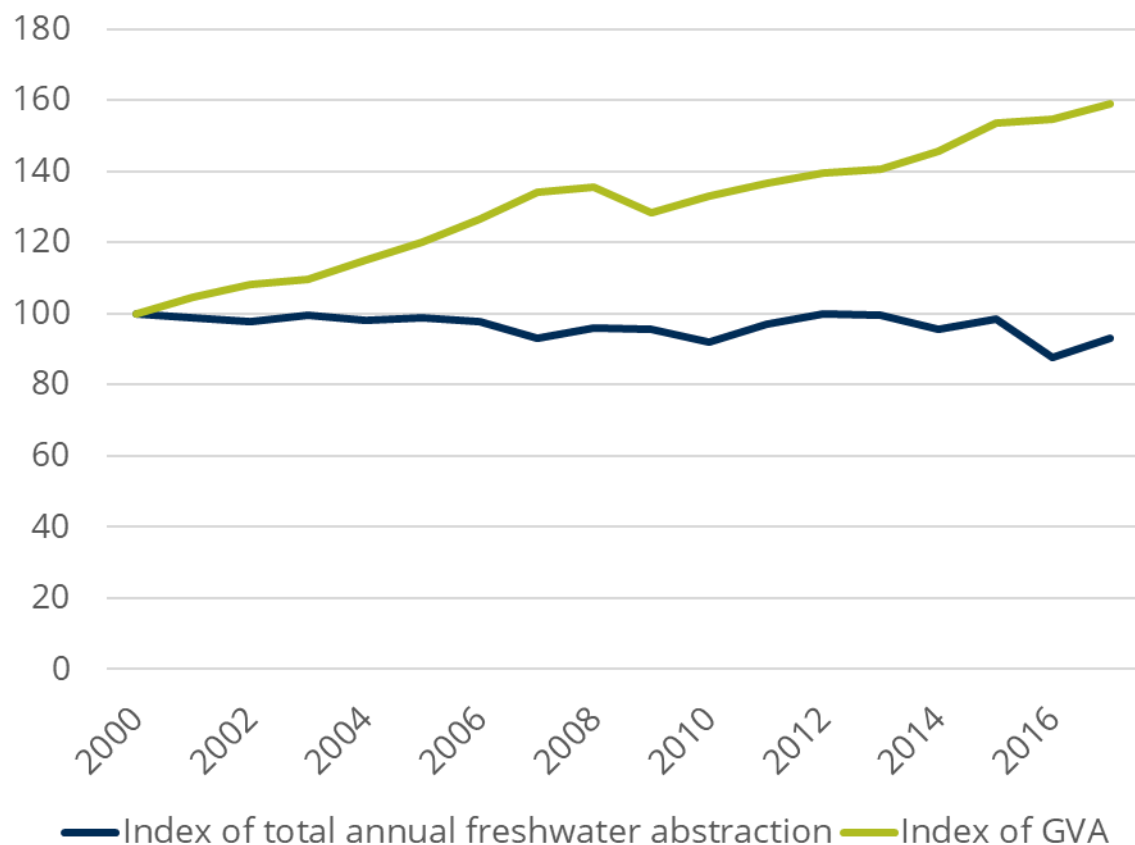
Water abstraction by source in Europe (2017)



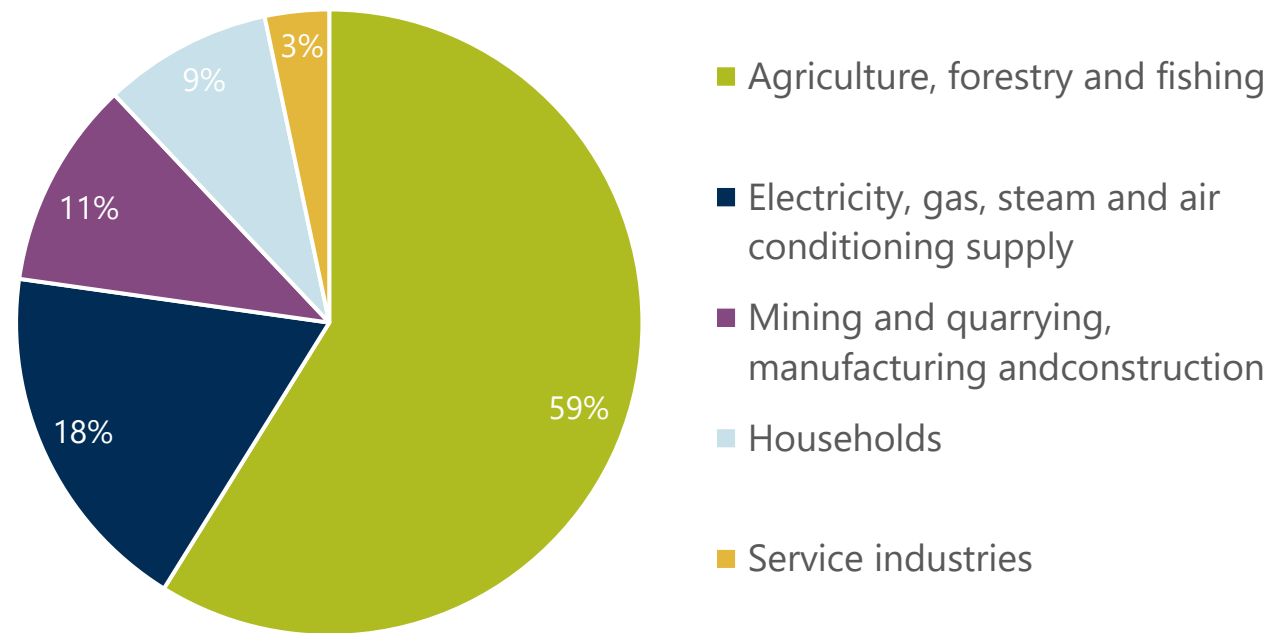
Water use by sectors in Europe (2017)



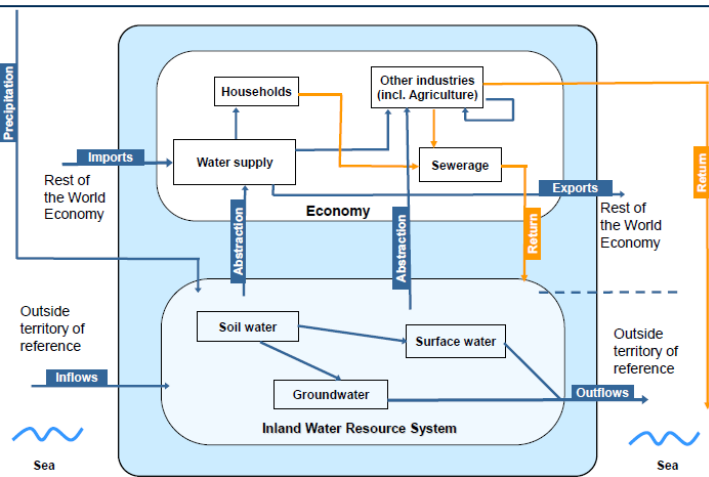
# Practical use of water accounts' outputs



Water use by sectors in Europe (2017)

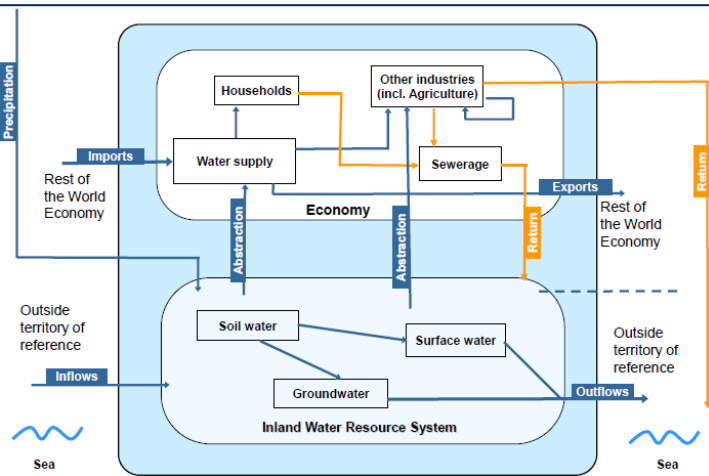


# Lessons learned



- Importance of completeness and accuracy of underlying data
  - High resource demanding
  - Need for consistent spatial reference data
  - Data integration and assimilation
  - In many cases modelling/proxies have to be developed requiring strong expertise on hydrology and IT programming
- Still conceptual issues with climatic parameters, reservoirs and returns components
- No common implementation framework on water quality and freshwater ecosystem conditions
- More practical examples needed for further improvements

# Lessons learned



- Revise and update the underlying data – 2020/2021
- Upgrade the IT tools of computing the water accounts – 2020/2021
- Develop emissions and ecosystem conditions accounts – 2022/2023
- Develop dashboard of European water accounts – 2021-2023
- Assessment on sectoral water use
  - Water and Agriculture – 2020/2021
  - Water and Energy – 2022/2023
  - Groundwater resources – 2020/2021
- Update and develop indicators
  - Water exploitation index plus – 2022
  - Water use intensity of crop production – 2022
  - Water reuse – 2022 (?)
  - Water pricing and cost recovery – 2021
  - Groundwater level - 2021



# ***THANK YOU !***

**For more information:**

**[www.eea.europa.eu](http://www.eea.europa.eu)**

