Environmental accounts at the EEA- Water accounts



Agnieszka Romanowicz



UN-SEEA 2003

- Physical flow accounts. The flows expressed in physical terms (e.g. m3/year) are between and within environment and economy. They can belong to four categories: products, natural resources, ecosystem inputs and residuals.
- **SNA flow accounts**: this category is purely economic and takes those elements of the existing SNA which are relevant to the good management of the environment and shows how the environment-related transactions can be made more explicit.

UN-SEEA 2003

- Environmental assets: They are measured in physical and monetary terms. Timber stock accounts showing opening and closing timber balances and the related changes over the course of an accounting period are an example.
- Valuation and environmental adjustments: This final category of SEEA accounts considers how the existing SNA might be adjusted to account for the impact of the economy on the environment. Three sorts of adjustments are considered; those relating to depletion, those concerning so-called defensive expenditures and those relating to degradation.

Physical Water Balances

- Within the UN framework the water accounts is understood as a balance calculation of water resources within specific area (e.g. catchment, administrative river basin).
- The flexibility of the system (spatially disaggregated) and daily flow information allows specific calculation in terms of time line and unit Therefore, it can be used in a number of applications.

Environmental accounts and Physical Water Balances at the EEA

- Early 2000's pilot studies on water quality accounts
- 2004/2005 work on environmental accounts started
 - → first land accounts were calculated
- Till now data sets and spatial data sets have been updated and improved:
 - Land accounts 1990-2000-2006 (2012 in preparation)
 - Water physical accounts calculated for 8 years
 - Natural capital accounts
 - Carbon accounts (in preparation)



Environmental accounts and Physical Water Balances at the EEA

- The 2013- 2018 (2020) period:
 - Continuation and further developments of the water accounts (including quality accounts)
 - Building blocks for the environmental accounts in other sectors (or improvements of)
 - Water accounts are part of larger system therefore any changes to the reference layers or data sets needs to be carefully done

Physical Water Balances/ Water accounts- 2013 work

- The first calculation of the water balances has shown need for better data flows:
 - Revision of current data flows (EIONET and collected by the EEA directly)
 - Water quality accounts → this is important for the e-flow calculation and should be developed
 - ECRINS→ there is a need to further improve the reference layer.
 - Calculation of indicators based on the Water accounts
 - Extension of calculation period (from 8-10 years to

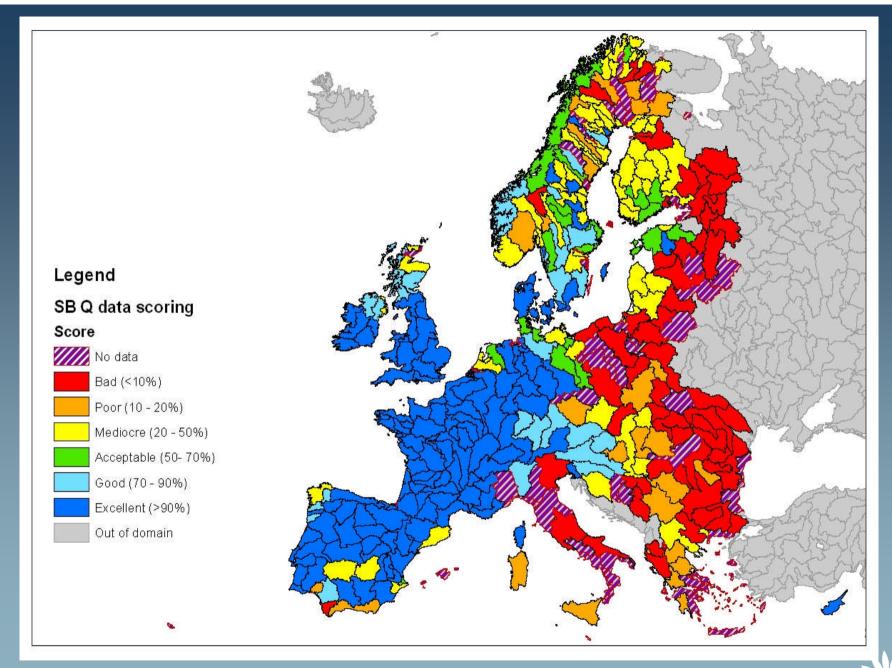
What was done so far

Data collection and calculation

- Use was made from already reported water data and additional specific data collection of daily river discharge data
- All other data already reported if possible were reused for the analysis. When no data were available within the EU institutions other organizations were approached.
- Calculation was based on an average 8 years input data

	Data sources used	Main issues of data quality
Reference system	1km Grid of LEAC for all data ECRINS for river network	ECRINS represents the river network in a GIS system. The information used for this layer comprise data from various source that are free of any licencing issues. Further improvement of this layer is needed.
Climate data	E-OBS version 5 created within the FP^ ENSAMBLES project, hosted by Royal Netherlands Meteorological Institute MARS - STAT data base (JRC)	Unevenly distributed measured data in particular for the NMS; missing data were interpolated
Land cover and soil	Corine <i>Land cover</i> 2006 and HYDROSOL database of JRC	The data are not covering all MS for the 2006 year, gaps were filled with the 2000 database.
Evapotranspiration	should be computed from daily data taking into account the soil capacity and wilting point characteristics, to follow the SEEAW methodology; climate data and soil characteristic based on CORINE, FAO and JRC information	Due to missing data most of the values were modelled to calculate the final value
River discharge	Regular data flows to the EEA and ad-hoc collection of data (contacts with the administration, web mining)	Coverage of the data is not sufficient, modelled data when possible were used to fill the gaps; time series were not sufficient for long term analysis and consisted of a lot of errors that whenever possible were corrected
Levels of reservoirs	Dam database of the EEA, Art.13 reporting under the WFD, Wikipedia information; estimation based on available information	Large uncertainty of the input data connected with non-official sources of information
Groundwater recharge		
Water use and returns by sector	Eurostat databases; direct data from the MS, UWWTD reporting, guidelines documents and water accounts calculation (e.g. values in proportion to population) and modelling assumptions	The source information were not consistent therefore recalculation towards one dataset of population was made. Therefore for some sectors values differ between the officially supplied to the

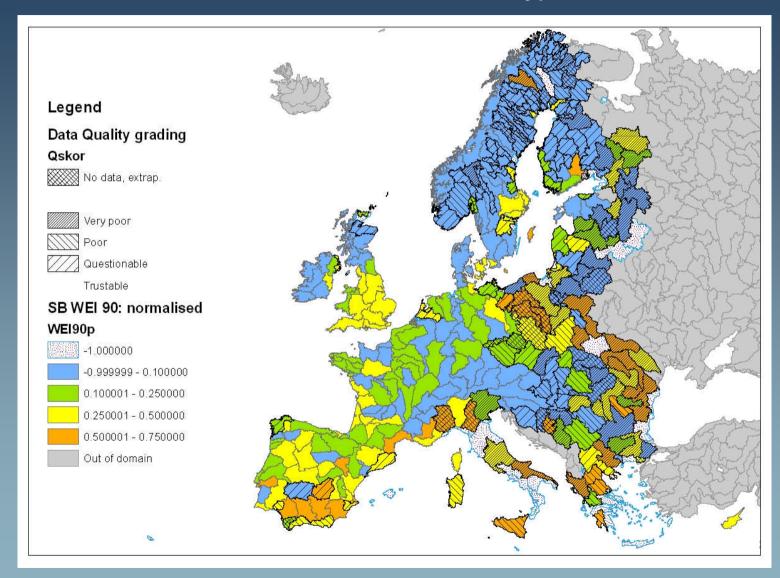




Water Exploitation Index (WEI)

- Index developed in 80's with a specific regional focus (Mediterranean)
- Discussion on updating WEI index took place >
 conceptual work on WEI+ lead to new recalculation –
 however the new index was not fully approved
- The WEI and WEI+ maps represent calculation based on WA and based on traditional data flows/information

WEI 90% based on Water Accounts calculation (including information on the database availability)



Conclusions

- The work done so far showed a number of gaps that should be filled:
 - Data flow > should accommodate new needs for data analysis and integrated knowledge analysis
 - Extension of time line for calculation is needed
 - Development of the quality part is needed
 - Data outside of the EEA remit remains a big problem
 - Further developments of the GIS layers is needed



Conclusions

- At the same time it was a good step towards building a system that could be used by the EU institutions and the MS for analysing the water balances between subbasins, different international rivers and providing harmonized picture at the EU level.
- The WA can become operational only when the right data at the EU and national level is available. For this a discussion is needed.
- Use of the water balances calculations (WA) and data sets for indicators (WS&D-WEI+) show high uncertainty and significant lack of good data coverage to provide seamless and robust information.

Conclusions

- The SEIS concept calls for building one shared system of data collection that will served various reporting obligations (regulatory and voluntary one) → which until now is still not operational.
- Can we apply the concept: 'report once use many' for water by using water accounts?

Thank you for your attention

 Contact details: agnieszka.romanowicz@eea.europa.eu