SEEA-Water

System of Environmental and Economic Accounting for Water

SM GEODIM
MODELOS DE INFORMACIÓN DE LA TIERRA

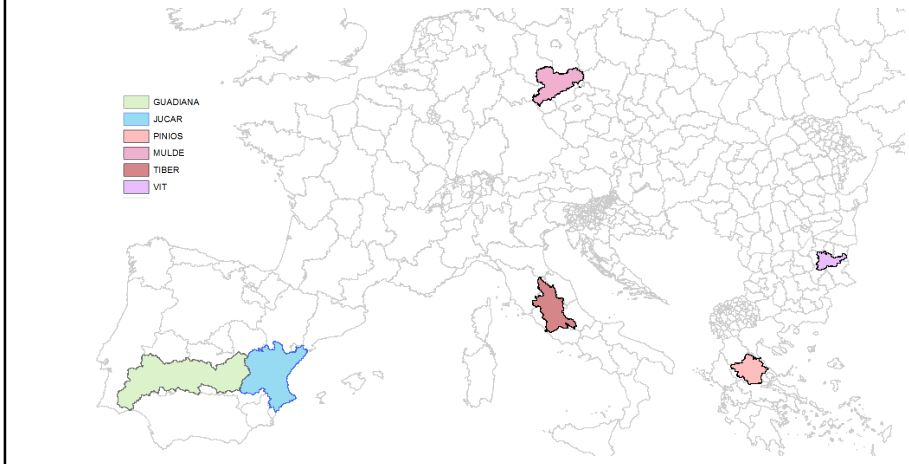
amaltea

imida

Desertification First Call (2011)

Prior to starting the elaboration of the proposals, the call for the above mentioned service contract (ENV.D.1/SER/2011/0036, http://ec.europa.eu/environment/funding/calls_en.htm) has to be carefully studied. Within the framework of this service contract European water resource balances (quantity, quality[2]) will be produced within the System of Economic and Environmental Accounts for Water (SEEAW)[3] framework at the monthly resolution under the "European catchments and River network system" (ECRINS) reference system[4]. These water balances will contribute to the comparative analyses of key aspects of river basin management in river basins across the EU covering also the ones affected by water scarcity, droughts or desertification. They will contribute to the building of water and ecosystem accounts at EU level.

Desertification First Call (2011)



SEEAW

Remarks / Main conclusions

SEEAW provides a conceptual framework for organizing the hydrological and economic information in a coherent and consistent manner.

Financial Balance of water uses.

SEEAW provides a guidelines of indicators to monitor the interaction between environment and economy.

SEEAW tables' structure supply the creation of new indicators.

To work under an "Integrated basin management" concept.

Coordination between countries in International basins.

To develop a complete modeling of river basin.

To develop a glossary of terms clarifying the used concepts in SEEA-Water tables.

Improve accuracy of data with high level of uncertainty: lakes depth, groundwater stocks…

Different spatial & temporal resolution of Economical and Hydrological data: disaggregation of economical data at municipality level.

User Requirements of water authorities: definition of spatial & temporal units of work.

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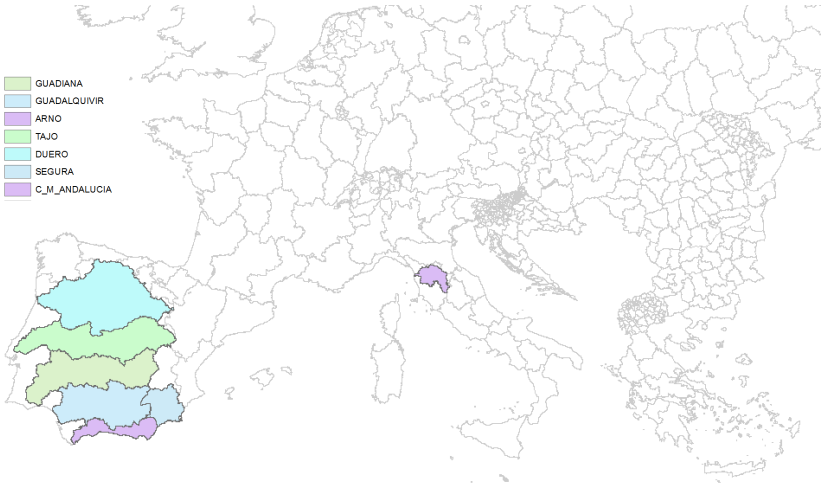
Desertification Second Call (2012-13)

The **general objective** of the Call for proposals is to obtain detailed information on the water resources available in the selected pilot basins and to demonstrate the potential of management, technological and economic measures for improving water management with a view to halting desertification in Europe and decreasing vulnerability to water scarcity and droughts. The pilot initiatives should supplement the on-going projects on tackling water scarcity, droughts and desertification by focusing on complementing EU water resource balances elaborated in the framework of the System of Economic and Environmental Accounts for Water (SEEAW) with local data, as well as identifying management, technological and economic measures allowing the setting up of optimal water management in the pilot river basins.

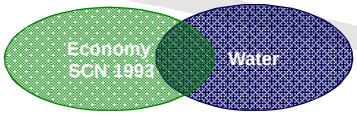
Desertification Second Call (2013)

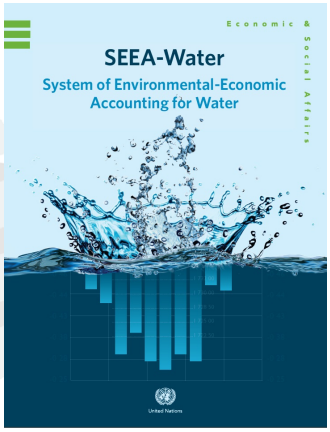


What's SEEA-Water?

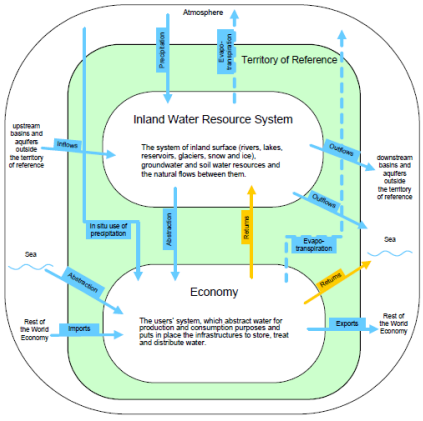
The *System of Environmental-Economic Accounting for Water (SEEA-Water)* provides a conceptual framework for organizing the hydrological and economic information in a coherent and consistent manner, following international standards (SCN 1993 and SCAE-2003).

The set of tables, standard and supplementary, were designed with the objective of facilitating the compilation of the accounts in countries and to obtain information which is comparable across countries and over time.





Categories of accounts



Flows between the economy and the environment

Five categories of accounts:

Category 1: Physical supply and use tables and emission accounts.

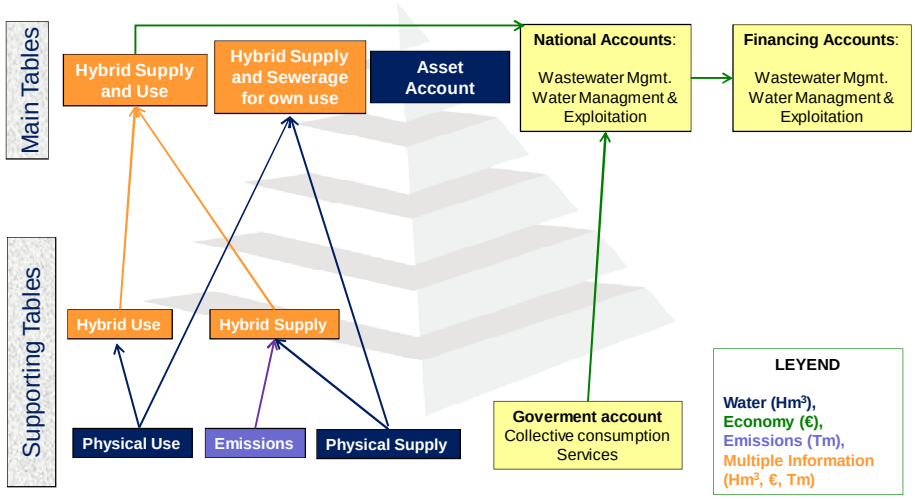
Category 2: Hybrid and economic accounts.

Category 3: Asset accounts.

Category 4: Quality accounts.

Category 5: Valuation of water resources.

SEEA-Water Tables



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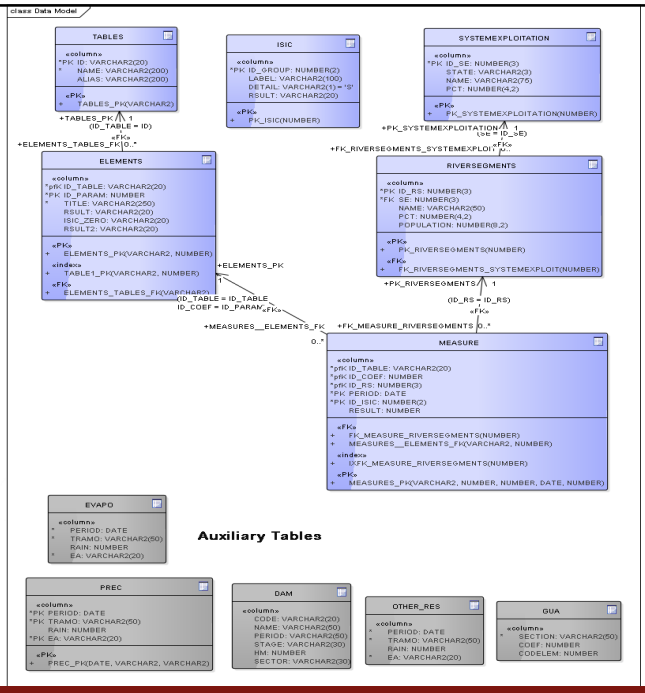
SEEA-Water Data Model



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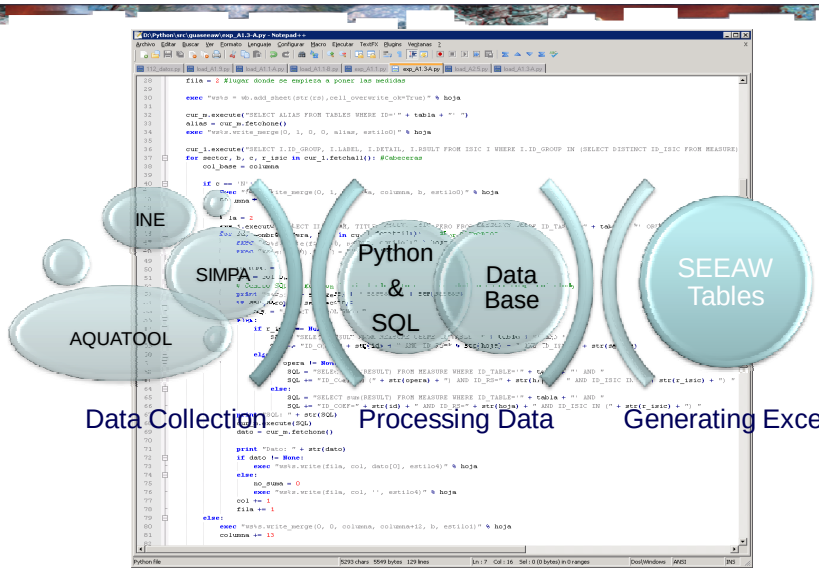
SEAA-Water Data Load



Hydrological Models

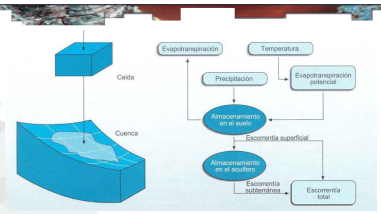
In Spain, Water Authorities made hydrological simulation of the basin and its management through numerical physically based models. Balances operates with monthly scale and with series of climatic variables (rain, temperature, runoff) with more than thirty-years of knowledge

Climatic data Physical aspect of the basin	Data about water use Regulation services and transport
Precipitation-Input Simulation Model **SIMPA**	Basin Management Model **AQUATOOL**
Characterization of water resources	Water resources allocation
http://hercules.cedex.es/hidrologia/pub/proyectos/simpa.htm	http://www.upv.es/aquatool/aquatooldma.html

Hydrological Models

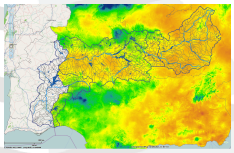
Rainfall-runoff model (SIMPA), calibrated at gauging stations with near-natural flow regime.

Characterization of water resources in natural flow regime.

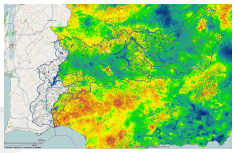


The results are provided by raster maps for each hydrological variable and each month of the simulated period (1940/41-2011/2012).

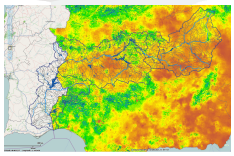
Rainfall (mm)



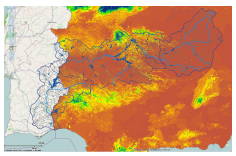
Actual evapotranspiration (mm)



Soil water (mm)



Total runoff (mm)



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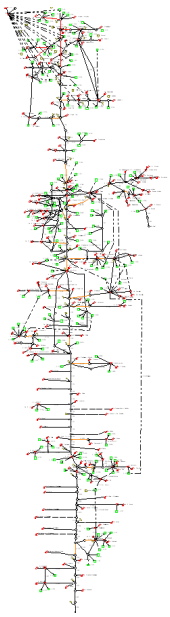
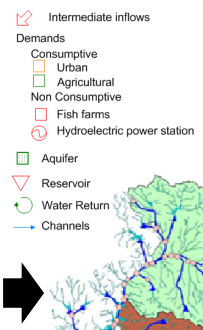
Guadiana basin hydraulic scheme





Basin water resources balance in altered flow regime

Geografic adjustment

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Economical Data

National Statistic Institute (INE) http://www.ine.es http://www.ine.pt

Implemented Data:

- Water related costs and benefits for economic sectors.
- Unitary cost of water for industries and households.
- Costs, benefits and capital formation for water collection and sewage disposal industries.
- Government: Financial costs of water. Taxes on water.
- Public investment for water supply, wastewater management and environmental protection.

Problems:

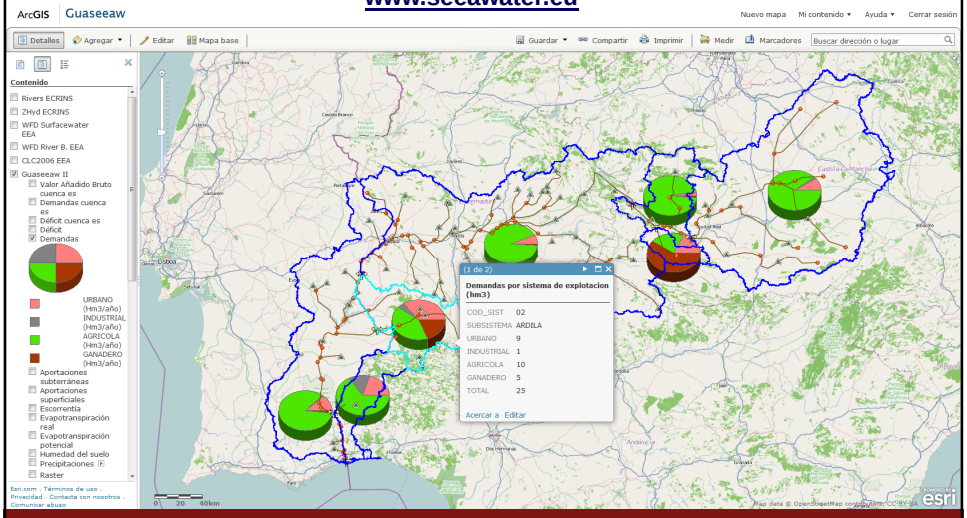
- Integration of hydrological and economic data.
- Different spatial and temporal framework: state/ river basin, reference year: Availability of actual economical data.
- Different spatial and temporal disaggregation of data: municipalities / exploitation units, year/month.
- Different economic sector disaggregation: generic/specific for water management.

Data gaps:

- Unitary cost of water for agriculture. Costs and benefits for energy industries.

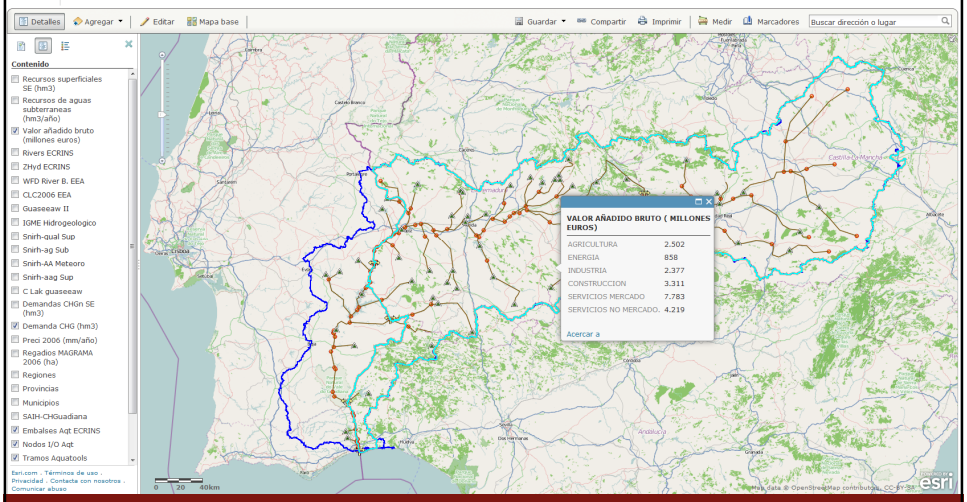
Demands by exploitation systems

www.seeawater.eu



Total Gross value added

www.seeawater.eu



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Indicators derived

Indicators of Water Resource (WR) Availability:

- Internal Renewable WR
- External Renewable WR
- Total Natural Renewable WR
- Total Actual Renewable WR
- Dependency ratio
- Exploitable WR
- Per capita Renewable Resource
- Density of internal Resource
- Exploitation Index
- Consumption Index

Indicators of Water Intensity & Water Productivity:

- Water use & Pollution intensity
- Water & Pollution intensity
- Water Productivity ratios
- Water "pollutivity" ratios

Indicators of Opportunities to Increase effective water supply:

- Return flows
- Water Reuse
- Losses

Indicators for Cost & Price of Water and wastewater Services:

- Cost & Price of water
- Cost & Price of wastewater treatment services

Tables:

- Asset accounts
- Matrix of flows
- Asset account at national level

Tables:

- Physical Use & Supply
- Hybrid supply table
- Hybrid use table

Tables:

- Matrix of flows
- Supplementary table of losses in distribution

Tables:

- Hybrid supply & use table
- Hybrid supply & sewerage table

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WWDR Indicators

Global Indicators (K):

Index of non-sustainable water use
Urban and rural population
Domestic & industrial water use
Water pollution index
Sediment trapping efficiency
Climate moisture index
Water resue index

Tables:

Physical Use & Supply
Asset accounts

Resources Indicators (K & D):

Precipitation annually
Total actual renewable resources (TARWR) volume
TARWR per capita
Surface water as a percentage of TARWR
Groundwater development
Overlap as a percentage of TARWR
Inflow as a percentage of TARWR
Outflow as a percentage of TARWR
Total use as a percentage of TARWR

Tables:

Asset accounts
Physical Use & Supply

Agriculture Indicators (K)

Percentage of undernourished people
Percentage of poor people living in rural areas
Relative importance of agriculture in the economy
Irrigated land as a percentage of cultivated land
Importance of agriculture withdrawals in water balance
Extent of land salinazed by irrigation
Importance of groundwater in irrigation

Tables:

Asset accounts
Physical Use & Supply
Hybrid supply & use table

WWDR: World Water Developement Report.
K: Key indicators; D: Developing indicators; C: Conceptual indicators

WWDR Indicators

Valuing Indicators (D):

Water sector share in total public spending
Rate of cost recovery
Water charges as percent of households income

Tables:

Hybrid supply & use table

Sharing Indicators (C):

Water independency indicator
Cooperation indicator
Vulnerability indicator
Fragility indicator
Development indicator

Tables:

Asset accounts

WWDR: World Water Developement Report.
K: Key indicators; D: Developing indicators; C: Conceptual indicators

FAQs

Why realised Water Balances?

Allow a coherent view of the water supply and demand of a basin.
Establish water management operation rules in the basin.
Aim to provide an objective framework for the water resources allocation according to the Basin Management Plan.

Why created a standar for the provision of Economical Data?

Because information flow goes from Statistical National Institutes to water managers.
Establish a normalization would facilitate the work of these institutes as well as EUROSTAT.
Because it will be possible to find a normalized data base to feed SEEAW data model.

Why used SEEA-Water as decision-making tool?

It's an information system that normalized relationships between hydrological and economical data.
It's an available tool to establish water accounts.
It's easy to define / develop objective indicators.
Blueprint: …*the Commission has developed **water accounts** at river basin and sub-catchment level. These accounts will need to be further refined with Member States and stakeholders in the context of the WFD CIS, but they provide the 'missing link' in many river basins for water management. They tell water managers how much water flows in and out of a river basin and how much water can realistically be expected to be available before allocation takes place...*

FAQs

Is ECRINS a valid model for SEEA-Water?

ECRINS model are not very useful for hydrological planning due its thoroughness. For example, Guadiana RB has 1031 ecrins segments divided into 7 exploitation units or Segura RB has 298 ecrins segments for one exploitation unit. Also these E. Units not only correspond to hydrological criteria but management too.

Is useful a guidance on water balance?

According the complexity of the matter (multiple definitions and scenarios, different applied tools & methods) a guidance will be very interesting if provides a homogeneity for the integration of data and coherence of results at EU level.

Why used a data model to fill in SEEA-Water?

Data model gives internal coherence to complex SEEAW tables.
When data are included into data model , it's possible to homogenize the information and establish mechanism to join the different data providers, allowing to compiled the data in a structured way with the minor redundancies.
Once it's elaborated, the implementation of tables is easy, quickly and automatically and it's possible to calculate indicators or to compare different periods of time.

Next...

It would be positive a specific topic in HORIZON 2020:

- To promote the elaboration of hydrological balances in Europe.
- To enhance SEEA-Water as management tool for water managers.
- To check the state of the art of hydrological data of the European basins with an operational app
- To deep on economical data: sources, layout mode and disaggregation level… tending towards a normalization.

SEEA-Water

System of Environmental and Economic Accounting for Water

Thanks for your attention!

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