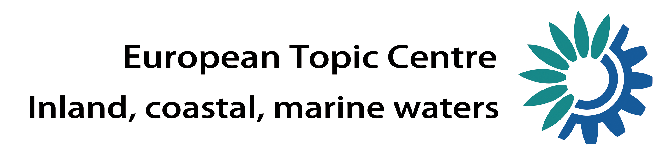
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| **EEA/NSV/13/002 – ETC/ICM** |  |



Content review on existing WISE SoE Water Quantity   
data flow

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**ACRONYMS**

CTY Country (spatial scale)

ECRINS European Catchments and Rivers Network System

EEA European Environmental Agency

EU European Union

EG WSD Expert Group on Water Scarcity & Droughts

FEC Functional Elementary Catchment

GIS Geographic Information System

ISIC International Standard Industrial Classification of All Economic Activities

IWRM Integrated Water Resources Management

JRC Joint Research Centre

LTAA Long Term Annual Average

MS Member State of the European Union

NACE Statistical Classification of Economic Activities in the European Community (in French: Nomenclature statistique des activités économiques dans la Communauté européenne),

OECD Organization for Economic Co-operation and Development

Eurostat European Union’s statistical agency

JQ IW OECD/Eurostat Joint Questionnaire on inland waters

RBD River Basin District

SB Sub-basin

SU Sub-Unit

SEEA-W System of Environmental – Economic Accounting for Water

SOE WQ DF State of Environment Water Quantity Data Flow

UN United Nations

WA Water Accounts

WEI+ Water Exploitation Index plus

WFD Water Framework Directive

WISE Water Information System for Europe

WRA Water Resources Accounting

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# What is the information we need for the EEA water assessments from 2016-2018?

## General framework

Recent developments in the field of water accounting across Europe, such as the implementation by EEA of a Water Accounts module, based on United Nations SEEA-W system of accounting, has created the need for appropriate water quantity data fuelling of this application. Existing structure of the SoE water quantity data parameterization wasn’t designed as such to support exactly the data requirements of this new challenge. Furthermore a development of the water exploitation index (WEI), the water exploitation index plus (WEI+), has been set up, creating additional needs for water quantity data in order to support its implementation. In addition to that, WFD reporting guidance for 2015 has requested water quantity parameters by each MS in order to better assess the pressures on European water resources and support the program of measures (PoM). WISE SoE water quantity data flow (SOE WQ DF) is expected to support the Directive, so these particular parameters must be included and aligned in definitions in SoE data flow following the principle: *Report once, use many times*. Finally, OECD/Eurostat JQ requests water quantity data to be reported biannually in a mandatory basis. SoE WQ DF can play a significant role in cooperation with OECD/Eurostat in water quantity data collection.

## Support of WEI+ Indicator (CSI 018/WAT 001- Use of freshwater resources)

The Water Exploitation Index (WEI) is an indicator of **the level of pressure that human activity exerts on the natural water resources** of a particular territory, which is helping to identify those prone suffering from water stress. Traditionally the WEI has been defined as “The *annual total water abstraction as a percentage of available long-term freshwater resources”*. It has been calculated so far mainly on a national basis.

A review and upgrade of the index (WEI+) has been developed by the Expert Group on Water Scarcity & Droughts (EG WS&D) with the purpose of better capturing the balance between renewable water resources and water consumption, in order to assess the **prevailing water stress conditions** in a river basin (EEA, 2012) . The proposed WEI+ aims mainly at redefining the actual water exploitation, since it incorporates returns from water uses and effective management, tackling as well issues of temporal and spatial scaling.

The EG WS&D has agreed that WEI+ would be formulated in these terms:

WEI+ = (Abstractions – Returns) / Renewable Water Resources

Abstractions minus returns can be expressed alternatively in “water consumptive use” terms, so water uses can also be applied in the calculation of WEI+.

Renewable Water Resources (RWR) can be estimated with the help of 2 options:

Option 1. RWR = ExIn + P – Eta – ΔSnat

Option 2. RWR = Outflow + (Abstraction – Return) – ΔSart

Regarding option 1 which uses the physical water balance of the reference area, the parameters ExIn (external inflow), P (precipitation) and Eta (Actual Evapotranspiration) are asked under this dataflow. The parameter “wb\_changes\_in\_groundwater\_storage” is also asked, for the estimation of Δsnat. The estimation of the change in groundwater storage is quite difficult and certainly requires the use of Hydrological modelling. Alternatively this parameter can be aproximated with the use of data reported in the SoE Groundwater data flow in combination with the reported parameter under this data flow: “Groundwater level”. More analyticaly if the difference in mean level of a phreatic aquifer ΔH, is known, as well as the area of the aquifer A and the mean storativity coefficient S, then the change in groundwater storage is estimated by the relationship:



Some problems have to be reffered:

* *In confined aquifers test pumping can estimate the changes in groundwater storage and the above relationship is not valid.*
* *The change in natural water storage also includes the change in soil moisture. This parameter must be derived with the use of hydrological models or satellite maps (SMAP satellite). Under the current SoE WQ DF revision the parameter “wb\_changes\_in\_soilwater\_storage”is proposed not to be inserted but to be considered part of “wb\_changes\_in\_groundwater\_storage”.*
* *Another problem relative to the accurate monthly calculation of WEI+ is the time lag that the precipitated water needs in order to reach an aquifer. This time lag is in the range of days to even months or years depending on the geological and geometrical features of the aquifer. Under option 1 this time lag must be taken into consideration in order to estimate accurately WEI+ values.*

Option 2 estimates the renewable water resources taking into account the manmade alterations inside the reference area. ΔSart is depicting the changes in artificial reservoirs’ volumes. The respective parameter under this dataflow is “wb\_changes\_in\_reservoir\_storage”. Given the importance of the calculation of WEI+ this parameter is very critical to be reported by the MSs. (The same is valid for the parameter: “wb\_changes\_in\_groundwater\_storage” if option 1 is to be adopted).

As a conclusion all needed parameters for the calculation of WEI+, using both options, are already included in the SoE WQ DF.

Under the current content review, a provision has been made, to even support WEI+(groundwater) and WEI+(surface water) if the index is divided in the future, respectively. This is feasible through the separation of water use parameters according to the surface or groundwater origin of the used water.

## Support of WREI 04

Water Use Intensity (WUI) of irrigated crops (m3/€ PPS) is an index which combines water volumes used for irrigation for a specific crop and Economic Outputcrop is the production value at producer price in € PPS (values at current prices) of a specific irrigated crop in a specified area (NUTS 2) under the formula:

WUI=Water Use Irrigationcrop (m3) / Economic Outputcrop (€ PPS)

Water quantity data flow can be used for the support of this indicator only partially, due to the lack of adequate parameterization of water abstraction for irrigation per specific crop in each reference spatial unit. If water used for irrigation “breaks up” according to the specific crop that it is intended to irrigate, then it will result in substantial increase in the number of requested parameters and respective increase in MSs reporting burden. An alternative would be to use modelled data or data reported in national agencies, in order to disaggregate the total reported water volumes for irrigation according to the area covered by each main crop.

## Planned assessments

Except of the formulation of CSI 018 and WREI 04, water quantity data are needed for a wide range of EEA’s assessments. First of all water abstraction and use have been characterized as top priority environmental pressures in Europe, and have a dominant place in EEA’s SOE Reports. Extra attention has been dedicated also on the monitoring of Water Scarcity and Droughts’ phenomena, especially after their exacerbation due to climate change. Climate change is moreover responsible for the increasing frequency of floods and many EEA’s assessments deal with this subject too.

Another group of assessments is relevant to efficiency on water use practices. The water footprint, public water supply network losses, efficiency in irrigation practices or in industrial use, are only some of the assessments that can be derived with the use of water quantity data. Finally many assessments have a specialized subject such as the use of desalinated, reused cooling water, or water for hydropower production. In Table 1.1 the possible products and assessments of water quantity data flow are presented.

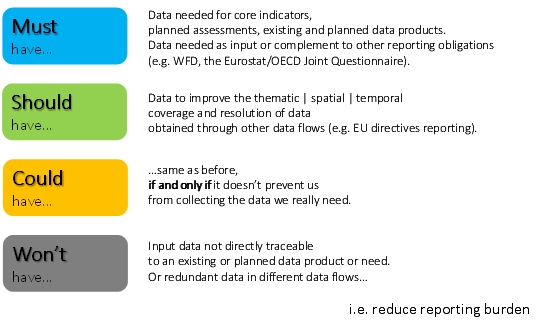
Table 1.1 Overview on products / assessments

| **Topic** | **Policy relevance (list relevant EU Directives or policy areas)** | **Name of product/ information displayed** | **SoE data flow** | **Scale of information (Europe, RBDs, regional, broad types)** | **European overviews (X = yes; '-- = no)** | **Country comparisons (X = yes; '-- = no)** | **Trend analyses (X = yes; '- - = no)** | **Pressures-status-measures analyses (X = suggested; '-- = not suggested)** | **SoE determinants** (or groups of determinants) **needed for assessment** | **Used for (give CSI or no. of table/ figure/ map and publication) or describe if new** | **Identify link with other data flows (e.g. EU Directives, Biodiversity Strategy, Eurostat, OECD)** | **Suggested change in data dictionary (give brief description)** | **Comments** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Over abstraction of water and its impacts | WFD | Water exploitation index plus (WEI+)/ Indication of the pressure on the water resources at national level as a consequence of water withdrawals | Water Quantity | SB, RBD, country level | X | X | X | X | Abstractions per economic sector, returns, Renewable water resources | CSI 018 | Groundwater DF, Lakes DF | Introduction of more detailed and aligned definitions in “return” parameters, in respect to OECD/Eurostat, WFD and Water accounts | Monthly versus annual values |
| Irrigated crops' efficiency | WFD | Water Use Intensity (WUI) of irrigated crops (m3/€ PPS) | Water Quantity | SB, RBD, country level | X | X | X | X | Water use irrigation | WREI 004 |  |  |  |
| Water accounts | WFD | Water accounts/Volumes of water abstracted and used from the environment to the economy | Water Quantity | SB, RBD | X | X | X | X | Water volumes per physical asset and economic sector, plus exchanges between physical assets | Support of EEA assessments | SEEA-W, Nopolu WA module, rivers DF | Increase in parameters due to physical assets and more economic sectors breakdown. | Enhanced detail in River Basin Management Plans (RBMPs) |
| water scarcity & droughts | WFD | water scarcity & droughts | Water Quantity | SB, RBD, country level | X | X | X | X | Precipitation, river discharge | Support of EEA assessments | SOER |  |  |
| Floods | WFD, Flood Risk Management Directive | Floods | Water Quantity | SB, RBD, country level | X | X | X | X | Precipitation, river discharge | Support of EEA assessments | SOER |  |  |
| Water efficiency | WFD | Water leakage and losses/ Detecting water supply system efficiency | Water Quantity | SB, RBD, country level | X | X | X | X | Returns and losses parameters | Support of WFD assessments | WFD 2016 9.3.2.1 Products from reporting | Change in returns breakdown and definitions in current SoE | Calculate “Sustainable Economic Level of Leakage-SELL) |
| Over abstraction of water and its impacts | WFD | Water Abstraction by source/ Share of abstraction between surface, soil and groundwater resources | Water Quantity | SB, RBD, country level | X | X | X | X | Abstractions by water asset | Support of WFD assessments | WFD 2016 9.3.2.1 Products from reporting |  |  |
| Water efficiency | WFD | Trends in water use by sector/ Identification of the main water users across Europe | Water Quantity | SB, RBD, country level | X | X | X | X | Abstractions by economic sector | Support of WFD assessments | WFD 2016 9.3.2.1 Products from reporting |  | SB and monthly scale |
| Water efficiency | WFD | Water transfers, returns and reuse | Water Quantity | SB, RBD, country level | X | X | X | X | Returns parameters, exchange table and reuse parameters | Support of WFD assessments | WFD 2016 9.3.2.1 Products from reporting | Reduction in parameters | SB and monthly scale |
| Water efficiency | WFD | Trends in hydropower production | Water Quantity | SB, RBD, country level | X | X | X | X | Abstraction for hydropower | EEA assessments | SOER |  | SB and monthly scale |
| Water efficiency | WFD | Trends in agricultural management-aquaculture | Water Quantity | SB, RBD, country level | X | X | X | X | Abstractions-returns in agriculture-irrigation-aquaculture | EEA assessments | SOER |  | SB and monthly scale |
| Water efficiency | WFD | Desalination Trends | Water Quantity | SB, RBD, country level | X | X | X | X | Abstractions -Desalination | EEA assessments | SOER | Reduction in parameters | SB and monthly scale |
| Thermal pressures and their impacts | WFD | Trends in cooling water | Water Quantity | SB, RBD, country level | X | X | X | X | Abstractions-returns cooling water (industry or electricity) | EEA assessments | SOER |  | SB and monthly scale |
| Water efficiency | WFD | Trends in Non-freshwater abstraction | Water Quantity | SB, RBD, country level | X | X | X | X | Non-Freshwater abstractions | EEA assessments | SOER | Reduction in parameters | SB and monthly scale |

## How to decide

The following concept has been generally followed in order to decide about the existing parameters in SoE water quantity data flow.

Figure 1.1 Decision Principles



The decision principles of Figure 1 have been implemented in a form of algorithm and are presented in Table 1.2, which is applied throughout the current data revision.

Table 1.2 Decision algorithm

| Case# | In WISE SoE? | In another Data Source? | Needed? | Decision | Criteria |
| --- | --- | --- | --- | --- | --- |
| a | 1 | 0 | 1 | Must | **Because it is needed.** |
| b | 1 | 0 | 0 | Won't | *Because it is not needed. Also applies for variables that can be derived.* |
| c1 | 1 | 1 | 1 | Must | If there is an agreement between the EEA and the other institution. |
| c2 | 1 | 1 | 1 | Should | If the spatial and/or temporal resolution of the other data source is not adequate. |
| c3 | 1 | 1 | 1 | Won't | If the other data source can be used. |
| d1 | 1 | 1 | 0 | Should | If, and only if, there is an agreement between the EEA and the other institution (e.g. Eurostat, DG ENV). |
| d2 | 1 | 1 | 0 | Won't | *Because it's not needed.* |
| e1 | 0 | 1 | 1 | Must | If, and only if, there is an agreement between the EEA and the other institution. |
| e2 | 0 | 1 | 1 | Could | If the spatial and/or temporal resolution of the other data source is not adequate. |
| e3 | 0 | 1 | 1 | Won't | If the other data source can be used. |
| f1 | 0 | 1 | 0 | Should | If, and only if, there is an agreement between the EEA and the other institution (e.g. Eurostat, DG ENV). |
| f2 | 0 | 1 | 0 | Won´t | If the other data source can be used. |
| g | 0 | 0 | 1 | Must | **Because it is needed.** |
| h | 0 | 0 | 0 | Won´t | *(for completeness sake…) Because it is not needed.* |

Where 1=YES and 0=NO…

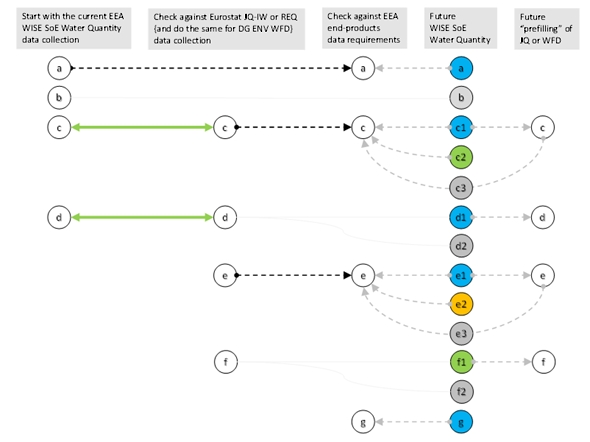
In Annex 1, there is a list of existing and proposed water quantity parameters labelled accordingly to the colours of Figure 1.1. Also there are accompanying comments following cases’ format described in Table 1.2.

Notes:

* Cases "c1" and "e1" are exceptional: if, regardless of the technical adequacy of the alternative data source, there is a commitment by the EEA in collecting the data, then the variable MUST be kept.   
  Another exceptional circumstance that might justify keeping an otherwise redundant variable is; if the calendar of dissemination for the alternative data source is not compatible with the needs of the EEA   
  (for example, annual data but collected only once every 2 years).
* Case "d1" is again exceptional: in this case the variable is not directly relevant to the EEA. It SHOULD be kept if, and only if, there is a commitment by the EEA in collecting the data.  
  Another exceptional circumstance that might justify keeping an otherwise irrelevant variable, is if it would increase the reporting burden of Member Countries *not* collecting it: i.e. if Countries would then be required to report to two different obligations and Data Collectors instead of just one.
* Case "f1" is a variant of "d1" that would require an additional variable to be included in the data collection.

More explanations about Table 1.2 and the followed revision process are seen in Figure 1.2:

Figure 1.2 Followed data revision process



Textual description of the diagram of Figure 1.2:

 Start with the list of variables currently in the WISE SoE data collection model.

* Check against the requirements of the EEA's end products (indicators, assessments, water accounts, etc.)
* Examples:
  + Variable "a" is necessary, so it MUST be kept in the *revised* WISE SoE Water Quantity data collection model.
  + Variable "b" is not used, so it WON'T be kept in the revised WISE SoE Water Quantity data collection model.

(The EEA can overrule this and decide to keep it as a SHOULD or COULD duly justified).

* Variable "c" is necessary but is also present in the JQ (or REQ or WFD, as applicable).  
  So, by default, it WON'T be kept, if there is another data source available (this also applies to data sources other than Eurostat's). This is "c3" option in the diagram. The EEA simply (re)uses the other data source.

However, it SHOULD be kept if the temporal and/or spatial resolution of the other data source is inadequate (and in the worst case scenario, the other data source could still be used). This is the "c2" option in the diagram.

Parameters are classified under case “c1”, and MUST be kept, if there is an established agreement between EEA and another organization (OECD/Eurostat, WFD), for the collection of this particular parameter. If the required temporal or spatial scale by the other data flow is different than the finer preferred scales in SoE, then at least the required mandatory scales, of the other data flow, must be reported in SoE. Proper alignment in definitions between the data flows, must be applied if any such issues exist.

* Variable "d" is being collected, but it is not required. By default, it WON´T be kept.  
  But it MUST be kept if there is an established agreement between the EEA and the other organisation, whereby the EEA has assumed the responsibility for the data collection. This is the "d1" option in the diagram.

* Variable "e" is not being collected, but it is required. By default, the EEA reuses the existing data source.

However, it COULD be included if the temporal and/or spatial resolution of the other data source is inadequate (and in the worst case scenario, the other data source could still be used…).   
The EEA will decide based on resource constraints (and the feedback from Countries). This is the "e2" option in the diagram.

The only situation where it MUST be included is again if the EEA has assumed the responsibility for the data collection (e.g. "prefilling" the JQ).

* Variable "f" is not collected and not required. It will of course not be included.

The only case that can justify that it SHOULD be included, is if it facilitates the reporting   
(e.g. the EEA collects an additional variable so that all the reporting towards another obligation can be indirectly fulfilled).  
This situation is not expected to be frequent.

* Variable "g" is strictly needed for an end product, but currently is not collected, nor can it be derived from an existing data source.

So it MUST be included in the revised WISE SoE Water Quantity data collection model.  
These situations are expected to be infrequent, and must be duly justified for internal discussion (and also with Members Countries).

* In the future, part of the WFD (and JQ or REQ, as applicable) can be "prefilled" with the information provided via the WISE SoE Water Quantity data flow.

# How can the SoE data flow best be streamlined with WFD and other assessments?

A major conceptual change is proposed to be adopted in this revision of the SoE WQ DF, in comparison with the current one based on assessments and productions planned for 2016 - 2018. The current data flow is going to be aligned in definitions with other data flows across Europe, new parameters will be introduced and some parameters will be aborted in order to rearrange the reporting scheme in a more contemporary and efficient way.

Furthermore, as some parameters of the current data flow, were derived by other parameters, logical errors occurred occasionally. For example, “total abstractions from ground water” and “total abstractions from surface water” didn’t match the sum of these two categories when reported as a parameter of “total abstractions”, in some occasions. It is proposed to abort any additional parameter that can be derived by a combination of any other existing parameter.

Another issue of the current reporting scheme was that it didn’t fully cover the information about the complex relationships (water exchanges) between each parameter, and didn’t give a clear idea about the water accounts occurring inside the reference area. This is crucial information for the construction of the water accounts scheme.

The previously described issues are being addressed in the current data revision: Six categories of water assets, are introduced, as it is proposed by the SEEA-W accounting scheme. These categories namely are: “Artificial reservoirs”, “Lakes”, “Rivers”, “Glaciers, snow and ice”, representing surface water and also “soil water” and “groundwater”. The result of this proposal is the streamlining of SoE WQ DF with fulfilling the purpose of fuelling water accounts calculations in pan-European scale. The overall scheme will be more clear and comprehensible and many inconsistencies among various data flows’ definitions will be streamlined. The classification of the water assets and their definitions are discussed, in detail, in a next paragraph.

## The new data set

The parameters under the new data flow are generally divided in the next three groups:

**Water Availability**

Areal Precipitation

Inflows from upstream territories

Exchange Table (water transfers inside the territory)

Returns by water asset and economic sector

Actual Evapotranspiration

Outflows to downstream territories

Outflows to the sea

Water imports-exports

Bottled imports-exports

**Water Abstraction**

Abstraction by physical water asset

Abstraction of Non Fresh Water

Abstraction for Public water Supply

Abstraction for Self Supply

Reused water

Desalinated water

**Water use**

Consumption Surface Water

Consumption Groundwater

Consumption Public WWS by economic sector

Consumption self-supply by economic sector

Each parameter under these three groups is a standalone parameter or represents a set of parameters that is further divided in economic sectors, according to the origin of abstraction (surface of groundwater) or the system of distribution: (public or self-supply). This list rearranges in an extent a complex system of needed parameters. The boundaries between these three groups are not clear since abstractions take part in water accounts (flows between the environment and the economy) and consumptive use equals abstractions minus returns.

## The economic sectors

Various categories of economic sectors are requested under existing dataflow or water accounting schemes. An effort has been undertaken for the new SoE WQ DF to be aligned with the following data flows:

1. SEEA-W following the ISIC v.4 economic categorization
2. WFD requirements
3. OECD/Eurostat economic sectors categorization (NACE classes)

Some problems in this process must be underlined. The UN SEEA-W scheme uses ISIC categorization of the economic activities’ break down. ISIC categorization is an international standard which doesn’t entirely match with Europe’s officially adopted economic sectors categorization (NACE classes) either in code numbers or in certain parameters that are grouped together under sectors or subdivisions. Therefore, the alignment with SEEA-W economic sectors categorization was needed to be consistent with also OECD/Eurostat implementations. Finally WFD requests water quantity data in a more abstract economic activity categorization, but focuses particularly in surface and groundwater separation. The goal of the revision is to include all needed economic sectors under the same dataflow and under NACE categorization so as to be compatible with the OECD/Eurostat statistical accounting framework. In Table 2.1 the SEEA-W economic sectors are presented.

Table 2.1 SEEA-W economic sectors

|  |  |  |  |
| --- | --- | --- | --- |
| s/n | ISIC Division | NACE breakdown | Sector |
| 1 | 1 to 3 | Section A | Agriculture, forestry and fishing |
| 2 | 5 to 33 and 41 to 43 | Sections B, C, F | Mining and quarrying, manufacturing and construction |
| 3 | 35 | Section D | Electricity, gas, stream and air conditioning supply |
| 4 | 36 | E / 36 | Water collection treatment and supply |
| 5 | 37 | E / 37 | Sewerage |
| 6 | 38,39 and 45 to 99 | E / 38,39 & Sections G,H,I,J,K,L,M,N,O,P,Q,R,S,T,U | Service industries |
| 7 |  |  | Households |

As this is a scheme particularly focusing on water accounting, extra attention has been given to sector E division 36 and 37 which are the two most relevant industries regarding water process: water collection treatment and supply (36) and wastewater treatment (37). In the same manner existing WISE SoE and OECD/Eurostat categorization is presented in Table 2.2.

Table 2.2 List of economic sectors categorization, by OECD/Eurostat, WISE SoE and WFD.

|  |  |  |
| --- | --- | --- |
| s/n | NACE breakdown | Sector |
| 1 | Section A | Agricultural, forestry, fishing (NACE A) use |
| 2 | Class 01.61 | Agricultural, forestry, fishing (NACE A) use - Irrigation |
| 3 | Section B | Mining & Quarrying (NACE B) use |
| 4 | Section C | Industrial (NACE C) use |
| 5 | Division 24 | Basic Metals Industry (NACE C) use |
| 6 |  | Industrial (NACE C) use - Cooling |
| 7 | Division 10 | Food Industry (NACE C) use |
| 8 | Division 13 | Textiles Industry (NACE C) use |
| 9 | Divisions 29 & 30 | Transport Industry (NACE C) use |
| 10 | Class 35.11 | Production of electricity (NACE D) use |
| 11 | 35.11-35.13 | Production of electricity (NACE D) use - Cooling |
| 12 | Class 35.11 | Production of electricity (NACE D) use - Hydropower |
| 13 | Section I | Services (e.g. tourism) (NACE I) use |
| 14 | All remaining | Other use |
| 15 |  | Domestic Use |

Finally Table 2.3 has been produced that merges the economic classification requirements of both OECD/Eurostat, EEA Water Accounts’ application ( using SEEA-W) and WFD, seen in Tables 2.1 and 2.2.

Table 2.3 Proposed economic sectors categorization

|  |  |
| --- | --- |
| S/n | NACE sectors |
| 1 | NACE A |
| 2 | NACE A (Class 01.61 - irrigation) |
| 3 | NACE A (Class 03.22 - freshwater aquaculture) |
| 4 | NACE B |
| 5 | NACE C |
| 6 | NACE C ( Division 10) |
| 7 | NACE C ( Division 13) |
| 8 | NACE C ( Division 29 + 30) |
| 9 | NACE C (industrial cooling water) |
| 10 | NACE D |
| 11 | NACE D (Classes 35.11-35.13) |
| 12 | NACE D (Hydropower under Class 35.11) |
| 13 | NACE D (cooling water on electricity sector) |
| 14 | NACE E (Division 36) |
| 15 | NACE E (Division 37) |
| 16 | NACE E (Divisions 38 & 39) |
| 17 | NACE F |
| 18 | NACE I |
| 19 | NACEs ( G, H, J-U ) |
| 20 | Domestic use (households) |

## The water resources

During this report the following categorization of water resources is adopted that is harmonized with the SEEA-W accounting system (SEEA-W, 2012), adopted by the United Nations in 2007 and updated in its current form in 2012. Water resources are divided in 6 water assets and measured in million cubic meters (106 m3).

Table 2.4 Water assets categorization

|  |  |
| --- | --- |
| EA. 131 Surface water | EA.1311: Artificial reservoirs |
| EA.1312: Lakes |
| EA.1313: Rivers and streams |
| EA.1314: Glaciers, snow and ice |
| EA.132: Groundwater | |
| EA.133: Soil water | |

The definitions of the above categories are described below:

**Surface water** comprises of all water that flows over or is stored on the surface of the earth. Surface water includes artificial reservoirs, which are constructed reservoirs used for the storage, regulation and control of water resources; lakes, which are generally large bodies of standing water occupying depressions in the Earth’s surface; rivers and streams, which are bodies of water flowing continuously or periodically in channels; snow and ice, which include seasonal layers of these forms of frozen water on the ground surface; and glaciers, which are defined as an accumulation of ice of atmospheric origin, generally moving slowly on land over a long period. Snow, ice and glaciers are measured in water equivalents. The interconnections between these categories of water resources and the environment, in a reference area, are seen in Figures 2.1 and 2.2. In these figures “Other resources” stand for all other natural resources in the reference area, while “other changes” refer to unpredictable changes of water volumes (i.e. loss of water volume due to a seismic event).

Figure 2.1 “Artificial Reservoirs” or Lakes water transfers

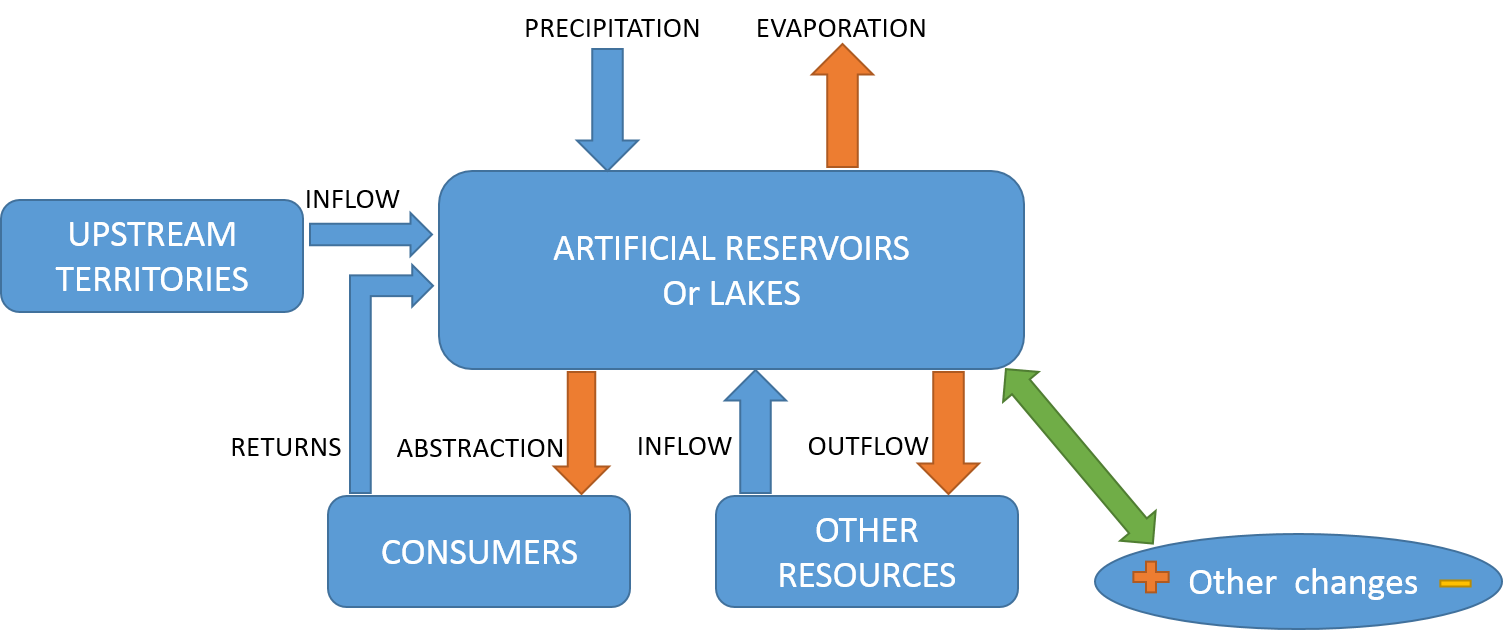
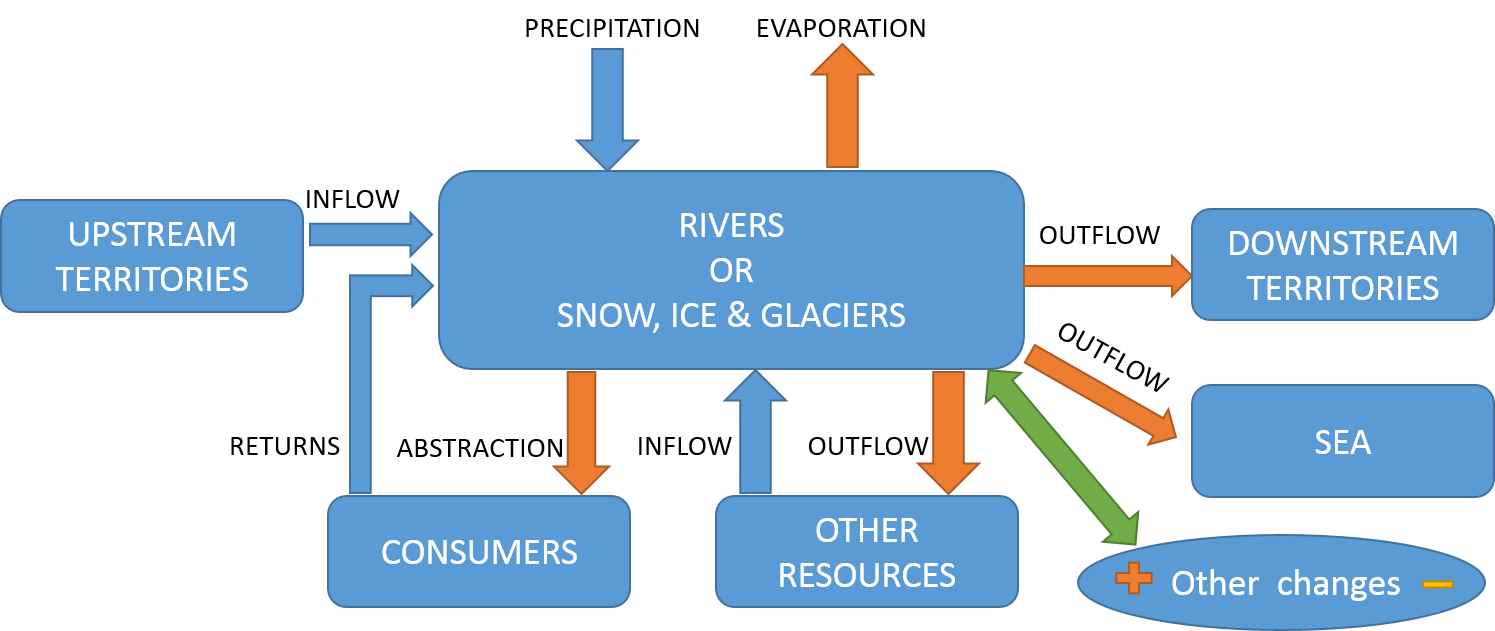
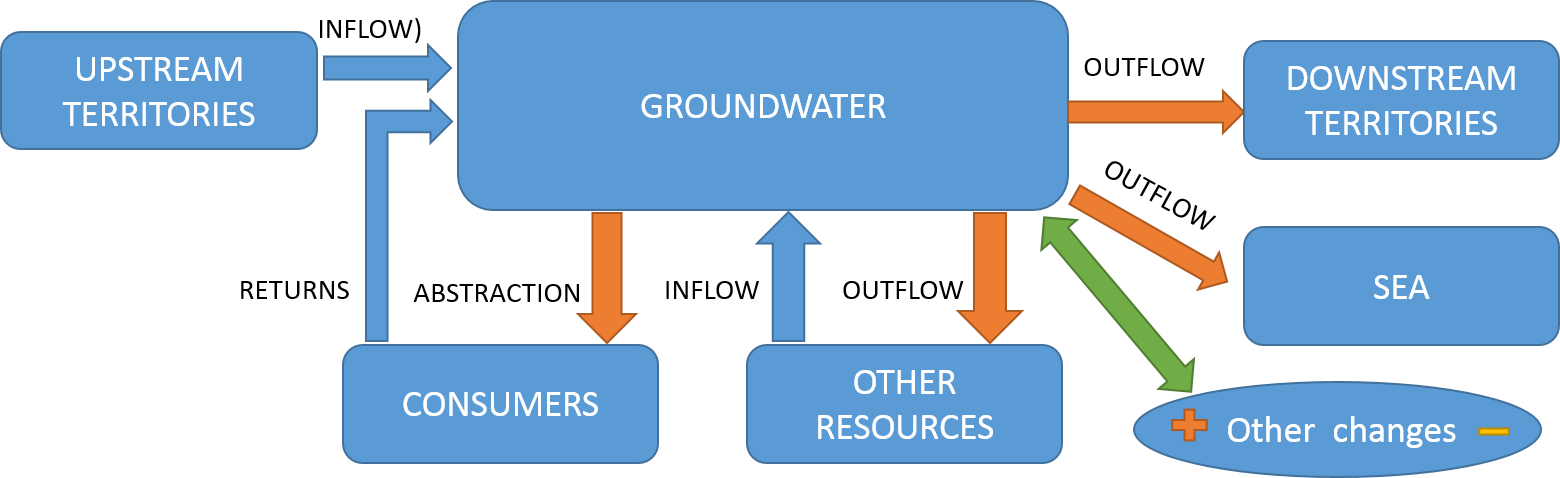


Figure 2.2 Rivers or “Snow Ice and Glaciers” water transfers

****

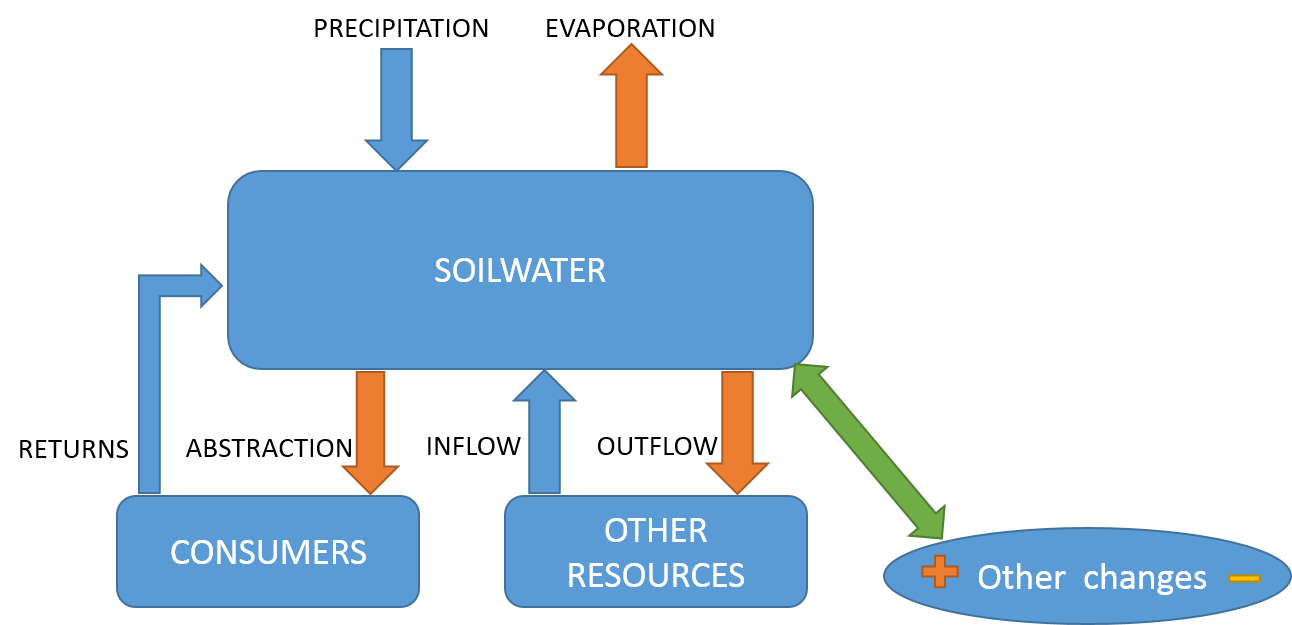
**Groundwater** (Figure 2.3) comprises of water which collects in porous layers of underground formations known as aquifers. An aquifer is a geologic formation, group of formations, or part of a formation that contains sufficient saturated permeable material to supply significant quantities of water to wells and springs. An aquifer may be unconfined, that is, have a water table and an unsaturated zone, or it may be confined between two layers of impervious or almost impervious formations. Depending on the recharge rate of the aquifer, groundwater can be fossil (or non-renewable) in the sense that water is not replenished by nature during the human lifespan. It should be noted that the concerns about non-renewable water apply not only to groundwater, but also to other bodies of water: for example, lakes may be considered non-renewable when their replenishment rate is very slow compared with their total volume of water.

Figure 2.3 Groundwater water transfers



**Soil water** (Figure 4) consists of water suspended in the uppermost belt of soil, or in the zone of aeration near the ground surface, that can be discharged into the atmosphere by evapotranspiration.

Figure 2.4 Soil water transfers



## WA reporting scheme

In Table 2.5 the modified Physical Assets Water accounting Table, according to SEEA-W (SEEA-W, 2012) is presented. The adoption of this scheme for the WISE SoE WQ DF has been decided in order to support EEA’s water accounting application for the construction of WA in pan-European scale, based on SEEA-W principles. Each row of this table constitutes a single parameter or a group of parameters that have to be reported. Some modifications have been applied in order to reduce reporting burden, due to the fact that the EEA’s WA application can disaggregate some reported parameters automatically in the respective physical assets. For example can disaggregate the areal precipitation in the various surface or soil water assets using a proper routine.

Table 2.5 Main Physical Assets Accounts Table

| Water Asset accounts (in million cubic meters) | | EA.131. Surface Water | | | | EA. 132 Groundwater | EA. 133 Soil water | Total |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| EA.1311 Artificial reservoirs | EA. 1312 Lakes | EA. 1313 Rivers | EA. 1314 Snow, ice and glaciers |
| **1. Opening stocks** | |  |  |  |  |  |  |  |
| **Increases in stocks** | |  |  |  |  |  |  |  |
| **2. Returns** | | I | | | I | I | I |  |
| **3. Precipitation** | | II | | | snow |  | II |  |
| **4. Inflows** | |  | | | | | | |
| **4.a. From upstream territories** | | III | | |  | III |  |  |
| **4.b. From other resources in the territory** | |  | III |  |
| **Decreases in stocks** | |  |  |  |  |  |  |  |
| **5. Abstraction** | | IV | | |  | IV | V |  |
| **6.Evaporation/actual evapotranspiration** | | VI | | |  |  | VI |  |
| **7. Outflow** | |  | | | | | | |
| **7.a. To downstream territories** | |  |  | III |  | III |  |  |
| **7.b. To the sea** | |  |  |  |  |  |
| **7.c. To other resources in the territory** | | III | |  | III |  |
| **8. Other changes in volume** | |  |  |  |  |  |  |  |
| **9. Closing stocks** | |  |  |  |  |  |  |  |
|  | |  |  |  |  |  |  |  |
| **MEMO** | | | | | | | | |
|  | New discovered water during accounting period or natural disasters, bulk water imports-exports, bottled water imports-exports | | | | | | | |
|  | null by definition | | | | | | | |
|  | derived or calculated water quantity | | | | | | | |
| I | Sum of Returns for the 7 sectors | | | | | | | |
| II | Disaggregated through ECRINS – WA application | | | | | | | |
| III | Assigned through ECRINS - WA application | | | | | | | |
| IV | Sum of Abstractions for the 7 sectors | | | | | | | |

Grey cells in table 2.5 are null by definition. For example precipitation can’t directly be reported in the groundwater asset, because it reaches the soil water and then is partly infiltrated in the ground. The analytical relations of every water asset with the environment are presented in Figures 2.1-2.4, as already discussed in paragraph 2.3. Water exchanges between the various water assets inside the reference area are synoptically presented in lines 4.b and 7.c but analytically are presented in a separate table (Table 2.6). Opening stocks (line 1 in Table 2.5) contain the volumes recorded in the starting of the accounting period for every water asset category. It must match with the closing stocks (line 9 in Table 2.5) of the previous accounting period. MSs are not asked to report lines 1 and 9. Opening and closing stocks are values that are derived by the Water Accounts application by EEA.

Table 2.6 Exchanges Table

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Flows between water resources (millions of cubic meters) | EA.131. Surface Water | | | | EA. 132 Groundwater | EA. 133 Soil water | Outflows to other resources in the territory |
| EA.1311 Artificial reservoirs | EA. 1312 Lakes | EA. 1313 Rivers | EA. 1314 Snow, ice and glaciers |
| EA.1311 Artificial reservoirs |  |  |  |  |  |  |  |
| EA. 1312 Lakes |  |  |  |  |  |  |  |
| EA. 1313 Rivers |  |  |  |  |  |  |  |
| EA. 1314 Snow, ice and glaciers |  |  |  |  |  |  |  |
| EA. 132 Groundwater |  |  |  |  |  |  |  |
| EA. 133 Soil water |  |  |  |  |  |  |  |
| Inflows from other resources in the territory |  |  |  |  |  |  |  |

Grey cells: null by definition; Yellow cells: derived sums

# Analysis of the parameters of Water Accounts (WA)

## General

This chapter analyses the main components of the water accounting scheme implemented by EEA. This scheme is mainly divided in the physical assets and the economy units that abstract water. Interactions between the economy and the environment form the complex water accounting interrelations that must be reported in the data flow. In each paragraph a summary of the definitions, the parameterization and the temporal and spatial scale of every group of parameters is presented.

### Spatial scale requirements

The ideal spatial scale for reporting is a trade-off, on the one hand, of the appropriate scale for capturing localized phenomena such as water scarcity conditions and on the other hand the MSs reporting burden. Coarser spatial scale, i.e. country scale can’t reveal localised phenomena like significant pressures on the water resources due to anthropogenic activities, or uneven precipitation distribution due to geographical diversity. So there is a need for EEA’s assessments to have a detailed spatial scale reference in order to provide an in depth analysis of Europe’s environmental issues.

In general there are three applicable spatial scales for reporting in SoE WQ DF. Starting from the finer one, there is Sub Basin (SB), River Basin District (RBD) and country (CTY) scale.

The ideal trade-off of needed spatial resolution without imposing enormous reporting burden to the MSs is SB spatial scale. This scale is adequate enough for the production of detailed environmental assessments. On the other hand RBD spatial scale is coarser and the detail in EEA’s assessments is subsequently lower. Europe has in some cases very large RBDs like the example of Danube’s RBD that covers the area of many countries. MSs are encouraged to report in this scale only in small to medium sided RBDs.

Finally if there are no data in SB or RBD spatial scales then CTY level is acceptable even though it has little practical value for instance in Water Accounting and will only contribute in EEA’s assessments that are relevant with country comparisons regarding water.

In general, MSs are encouraged to report as many parameters possible in the same spatial and temporal scale in order for the data to be compatible and comparable.

### Temporal scale requirements

Similarly to the spatial scale requirements there are four applicable temporal scales for reporting in SoE WQ DF; namely daily, monthly, seasonal and annual. Furthermore if MSs provide more than 20 consecutive years of a reported parameter then EEA can aggregate these annual values in order to estimate Long Term Annual Average (LTAA) values.

Daily temporal scale is the finer scale and desirable especially for stream flow measurements where daily timeseries are needed by EEA’s water accounting tool. MSs are encouraged to report stream flow timeseries from gauges in the sections between SBs’ borders and crossing rivers, or the exits to the sea.

The ideal temporal scale for reporting in this data flow is monthly temporal scale. Many EEA’s assessments need this scale in order to identify the annual variation of the reported parameters.

If monthly resolution is not available then seasonal temporal resolution is the minimum one for identifying annual variation.

Annual values are acceptable but can only depict inter-annual trends of the reported parameters. So MSs are encouraged to report in this scale only if there are no data available in finer temporal scales.

Finally LTAA values are needed for the estimation of available water resources in an area or hydrological assessments.

## Physical Water Accounts

The physical water accounts examine the course of water from the moment of precipitation until the exit of the reference area in the liquid form or as a vapour (evapotranspiration). Volumes of water enter the reference area from other areas or outflow to other areas and/or the sea. Moreover water is transferred inside the reference area between various water assets and to various users as abstractions. Throughout this report a comparison is been undertaken between the existing parameters in the current dataflow in respect to the proposed one, for each thematic group.

### Areal Precipitation and snowpack

**Areal precipitation** is a parameter that already exists in SoE WQ DF. It includes also snow precipitation. This volume can be measured by the monthly difference of snow layers using coefficients of equivalent water, or with snow measuring devices (i.e. snow cushions).

In order to track hyper-annual changes is snow volume, for climatic assessments, the parameter “wb\_snowpack” is used which is defined as: “*Volume of snow accumulated and stored over a period which can result (fully or partially) in snow melted water. It does not include the glaciers, and it is measured at a reference time*”.

Areal precipitation has not undergone any change under SoE WQ content review. Thoughts only exist not to request any more the coordinates of the rain gauges due to the fact that MSs are asked to report areal data and to perform areal interpolation prior to reporting.

Areal precipitation’ synoptic Table is the next:

Table 3.1 Areal Precipitation and snowpack

|  |  |
| --- | --- |
| PARAMETERS under current dataflow | **Areal Precipitation (P)**  **wb\_snowpack** |
| DEFINITION | Total volume of atmospheric wet precipitation (rain, snow, hail etc.). Precipitation is usually measured by meteorological or hydrological institutes. |
| SPATIAL SCALE | **SB,** RBD, COUNTRY |
| TEMPORAL SCALE | **MONTHLY,** SEASONAL, YEAR, LTAA\* |
| UNITS | mio m3 (million cubic meters) |

\*: LTAA = Long Term Annual Average. Based on annual values, averaged over a period of at least 20 consecutive years. The time period used to calculate the LTAA should also be provided

**SCALES IN BOLD:** BestscaleforWater Accounts calculation

### Potential-Actual evapotranspiration

Potential Evapotranspiration is a necessary input in climatic models developed by EEA and therefore has not undergone any revision under current content review.

Mean Actual Evapotranspiration (Eta) for the entire reference area needs to be reported. EEA’S water accounting tool can disaggregate the mean value respectively to the existing water assets of the reference spatial area. So Eta is possible to be disaggregated in actual evaporation from “artificial reservoirs”, “rivers” and “lakes” and actual evapotranspiration from “soil water” and “snow, ice and glaciers”. This revision in Eta is EEA’s internal revision and it is not adding any extra reporting burden to the MSs.

Table 3.2 Potential – Actual evapotranspiration

|  |  |
| --- | --- |
| PARAMETER under current dataflow | **POTENTIAL EVAPOTRANSPIRATION (PET**) |
| DEFINITION | The maximum quantity of water capable of being evaporated in a given climate from a continuous stretch of vegetation covering the whole ground and well supplied with water. |
| PARAMETER under current dataflow | **ACTUAL EVAPOTRANSPIRATION (ETa)** |
| DEFINITION | Total volume of evaporation from the ground, wetlands and natural water bodies and transpiration of plants. According the definition of this concept in hydrology, the evapotranspiration generated by all human interventions is excluded, except rain-fed agriculture and forestry.  The “actual evapotranspiration” is measured or calculated using different types of mathematical models, ranging from very simple algorithms (Turc, Penmann, Budyko, Turn Pyke, etc.) and corrections related to vegetal cover and season to schemes that capture the hydrological cycle in detail. |
| SPATIAL SCALE | **SB**,RBD,COUNTRY |
| TEMPORAL SCALE | **MONTHLY**,SEASONAL,YEAR,LTAA\* |
| UNITS | million m3 |

\*: LTAA = Long Term Annual Average. Based on annual values, averaged over a period of at least 20 consecutive years. The time period used to calculate the LTAA should also be provided

**SCALES IN BOLD:** BestscaleforWater Accounts calculation

### Inflows from upstream-outflows to downstream territories and the sea

These parameters in current SoE data flow are referring **to both** surface and groundwater inflows and outflows. If MSs report only surface flows to the reference area, then these parameters are not needed and can be replaced by the reporting of the point parameter “stream flow” properly located in the river sections with the reference area (inflows and outflows). EEA’s WA application can use these stream flows timeseries in order to calculate the respective surface inflows and outflows. But if MSs report also the groundwater flows then these three parameters are essential to be reported.

Table 3.3 Inflows and outflows

|  |  |
| --- | --- |
| PARAMETER under current dataflow | **Total Actual External Inflow Qi** |
| DEFINITION | Total volume of actual flow of rivers and groundwater, coming from neighbouring territories (e.g. RBDs) within or outside the country’s borders. (External in terms that this water quantity is produced, moved or even exchanged outside of the hydrological or administrative boundaries of the reference area that these data are reported) |
| PARAMETER under current dataflow | **Total Actual Outflow to neighbouring territories (Qo,n)** |
| DEFINITION | Total actual outflow – of which to neighbouring territories: The total volume of actual outflow of rivers and groundwater into neighbouring territories (RBDs or Countries if Country level is reported). |
| PARAMETER under current dataflow | **Total Actual Outflow to the sea (Qo,s)** |
| DEFINITION | Total actual outflow – of which into the sea: The total volume of actual outflow of rivers and groundwater into the sea. |
| SPATIAL SCALE | **SB,**RBD,COUNTRY |
| TEMPORAL SCALE | **MONTHLY,**SEASONAL,YEAR,LTAA\* |
| UNITS | mio m3 (million cubic meters) |

\*: LTAA = Long Term Annual Average. Based on annual values, averaged over a period of at least 20 consecutive years. The time period used to calculate the LTAA should also be provided

**SCALES IN BOLD:** BestscaleforWater Accounts calculation

### Other changes in volume

Other changes in volume include all the increases in the stocks of water that are not classified elsewhere. This item may include, for example, the amount of water in aquifers discovered or lost during the accounting period, and the appearance or disappearance of water due to natural causes, like seismic events. For the SoE water quantity reporting the imports or exports of bottled and bulk water are also considered. Other changes in volume can be calculated directly or as a residual and it is newly proposed parameter.

Table 3.4 Other changes in volume

|  |  |
| --- | --- |
| Proposed New Parameter | **Other changes in volume** |
| DEFINITION | The amount of water in aquifers discovered or lost during the accounting period, and the appearance or disappearance of water due to natural causes, like seismic events |
| PARAMETERS under current dataflow | **Water imports-exports** |
| DEFINITION | Traded bulk water from another or to another territory outside the specific reporting unit |
| PARAMETERS under current dataflow | **Bottled water imports- Bottled water exports** |
| DEFINITION | Traded bottled water that is imported to and/or exported from the specific reporting unit. |
| SPATIAL SCALE | **SB**,RBD,COUNTRY |
| TEMPORAL SCALE | **MONTHLY**,SEASONAL,YEAR,LTAA\* |
| UNITS | mio m3 (million cubic meters) |

\*: LTAA = Long Term Annual Average. Based on annual values, averaged over a period of at least 20 consecutive years. The time period used to calculate the LTAA should also be provided

**SCALES IN BOLD:** BestscaleforWater Accounts calculation

### Inflows from and outflows to other resources in the territory

Inflows from other resources include transfers, both natural and artificial, among the resources within the territory. They include, for example, flows of infiltration and seepage, as well as channels built for water diversion.

Outflows to other water resources represent water exchanges inside the territory. In particular, they include the water flowing out of a water body and reaching other water agents within the territory.

For inflows and outflows within the territory, SoE data flow will provide an Exchanges Table to be filled in a monthly basis and RBD or SB scale, according to Table 2.6. **This Table creates (6X6-6)=(36-6)=30 possible volume exchanges between different physical water assets inside the reference area**, but of course in each case only some would be applicable, depending on the existence or not of artificial reservoirs, lakes or ice, snow and glaciers assets in each reference area. The reason why these parameters are not asked separately but are proposed to fill a Table is that this form gives a more integrated vision of the water exchanges inside the reference area, minimizes errors in the reporting procedure and provides the opportunity to sum the exchanges horizontally and vertically (where must match), giving an extra consistency check.

In the existing SoE data flow the parameters of Table 3.5 are relevant with the water exchanges inside the reference area. In the revised SoE the parameters of Table 3.5 are proposed to remain due to their significance in the calculation of WEI+, (although can be derived if the exchange Table 2.6 is filled).

Table 3.5 Parameters of existing SoE data flow relative to exchanges inside the reference area

|  |  |
| --- | --- |
| PARAMETER under current dataflow | **wb\_aquifer\_recharge** |
| DEFINITION | Total volume of water added from outside to the zone of saturation of an aquifer through natural recharge only (either from percolation of precipitation or from a losing surface water body-river, lake). Artificial recharge is excluded here. |
| PARAMETERS under current dataflow | **wb\_changes\_in\_reservoir\_storage** |
| DEFINITION | Volumetric change of the water stored in a reservoir (natural and manmade) at a given time |
| PARAMETERS under current dataflow | **wb\_changes\_in\_groundwater\_storage** |
| DEFINITION | Volumetric change of the groundwater stored in an aquifer at a given time |
| SPATIAL SCALE | **SB**,RBD,COUNTRY |
| TEMPORAL SCALE | **MONTHLY**,SEASONAL,YEAR,LTAA\* |
| UNITS | mio m3 (million cubic meters) |

\*: LTAA = Long Term Annual Average. Based on annual values, averaged over a period of at least 20 consecutive years. The time period used to calculate the LTAA should also be provided

**SCALES IN BOLD:** BestscaleforWater Accounts calculation

## Abstractions

Abstractions represent the amount of water removed from any resource, either permanently or temporarily during the accounting period, for final consumption and production activities. Water used for hydroelectric power generation is considered part of total water abstraction. Nevertheless, it is reported separately due to the large abstraction volumes, which are over scaling the rest of the abstractions’ categories. Abstraction also includes the use of precipitation for rain-fed agriculture as this is considered removal of water from the soil as a result of a human activity. Water used in rain-fed agriculture is thus recorded as abstraction from soil water. Water abstractions minus water returns are equal to the respective water consumption per economic sector. In the revised SoE water quantity data flow there are 7 groups of abstractions.

### Abstractions Per water asset

Abstractions per water asset is a critical element of the accounting table linking the physical and the economic accounts. In the existing SoE there was a lack of proper parameterization, so five new parameters are proposed to be inserted in the dataflow and one existing parameter to remain as seen in Table 3.6.

Table 3.6 Abstractions per water asset

|  |  |
| --- | --- |
| Abstractions by water asset | 1. wa\_abstraction\_ art\_reservoirs 2. wa\_abstraction\_ lakes 3. wa\_abstraction\_rivers 4. wa\_abstraction\_snow\_ice &\_glaciers 5. wa\_total\_abstraction\_133\_rainfed\_agriculture 6. wa\_total\_abstraction\_gw |
| Definition | **Abstraction** represents the amount of water removed from any resource, either permanently or temporarily during the accounting period, for final consumption and production activities. |
| SPATIAL SCALE | **SB,** RBD, COUNTRY |
| TEMPORAL SCALE | **MONTHLY,**SEASONAL,YEAR,LTAA\* |
| UNITS | mio m3 (million cubic meters) |

\*: LTAA = Long Term Annual Average. Based on annual values, averaged over a period of at least 20 consecutive years. The time period used to calculate the LTAA should also be provided

**SCALES IN BOLD:** BestscaleforWater Accounts calculation

In comparison with the existing data flow as seen in Table 3.7, 4 parameters in the current SoE Database were relevant with the water abstractions by water asset.

Table 3.7 Abstractions per water asset

|  |  |
| --- | --- |
| Existing SoE code | Existing SoE name |
| 101001 | wa\_total\_abstraction |
| 101002 | wa\_total\_abstraction\_sw |
| 101003 | wa\_total\_abstraction\_gw |
| 101004 | wa\_total\_abstraction\_from\_rainwater |

The first parameter of Table 3.7 is proposed to be excluded since it is derived by other parameters, the second is divided in abstraction by lakes, rivers and snow-ice-glaciers, the third remains, while the forth is replaced by “wa\_total\_abstraction\_rainfed\_agriculture”

.

### Abstractions for public water supply/economic sector/surface-groundwater

Abstractions must be also reported per economic sector. Following the SEEA-W scheme, and aligning the ISIC classification into NACE, seven categories are proposed: NACE A, NACE B\_C\_F, NACE D, NACE\_E\_36, NACE\_E\_37, NACE E\_38\_39\_G-U and domestic. Also the separation of abstractions according to surface and groundwater resource is recommended. Abstraction for hydropower generation is requested separately due to its importance. Moreover abstractions relative to domestic use of rainwater are requested: this is a promising trend and must be monitored separately.

Table 3.8 Abstractions per economic sector, surface and groundwater

|  |  |
| --- | --- |
| Abstractions public water supply | 1. **Abstraction for hydropower** 2. **For public water supply system -Surface water** 3. **For public water supply system- Groundwater** 4. **For public water supply system-rainwater** |
| Definition | **Abstraction** represents the amount of water removed from any resource, either permanently or temporarily during the accounting period, for final consumption and production activities. |
| SPATIAL SCALE | **SB,**RBD,COUNTRY |
| TEMPORAL SCALE | **MONTHLY,**SEASONAL,YEAR,LTAA\* |
| UNITS | mio m3 (million cubic meters) |

\*: LTAA = Long Term Annual Average. Based on annual values, averaged over a period of at least 20 consecutive years. The time period used to calculate the LTAA should also be provided

**SCALES IN BOLD:** BestscaleforWater Accounts calculation

### For Self Supply- per economic sector, surface and groundwater

16 parameters are proposed to apart the new dataset for surface water while 14 parameters are proposed for the groundwater dataset. Two parameters are referring to rain water in the surface water group. These datasets are aligned with data requirements for OECD/Eurostat prefilling and water accounting scheme. In the surface water dataset, 2 extra parameters are proposed in addition to OECD/Eurostat and water accounting requirements that can cover future efficiency EEA’s assessments. These 2 parameters are “wa\_abstraction\_for\_self\_suply\_total\_sw-nace\_d\_cooling” and   
“wa\_abstraction\_for\_self\_suply\_total\_sw-nace\_d\_hydropower”.

Table 3.9 Abstractions for self-supply-Surface Water & Groundwater

|  |  |
| --- | --- |
| Abstractions Self Supply-surface Water | **Abstractions for self-supply-surface water per economic sector**  **Abstractions for self-supply-groundwater per economic sector** |
| Definition | **Abstraction** represents the amount of water removed from any resource, either permanently or temporarily during the accounting period, for final consumption and production activities.  **Self-Supply**: Without entering the public supply system |
| SPATIAL SCALE | **SB**,RBD,COUNTRY |
| TEMPORAL SCALE | **MONTHLY**,SEASONAL,YEAR,LTAA\* |
| UNITS | mio m3 (million cubic meters) |

\*: LTAA = Long Term Annual Average. Based on annual values, averaged over a period of at least 20 consecutive years. The time period used to calculate the LTAA should also be provided

**SCALES IN BOLD:** BestscaleforWater Accounts calculation

Regarding the surface water abstractions for self supply, 16 parameters existed in the current SoE; 11 are proposed to remain, 5 are proposed to be deleted and 5 new to enter in the group, resulting again in a sum of 16 parameters. The deleted parameters are comprised by, one total parameter that can be derived and 4 parameters relevant with sub-divisions of NACE C not needed for any EEA’s assessment.

Similarly for groundwater 16 parameters existed; 9 are proposed to remain, 7 are proposed to be deleted and 5 new to enter the group, resulting in a sum of 14 parameters. The deleted parameters are 1 total parameter that can be derived, 4 sub-divisions of NACE C not needed by EEA, and 2 more parameters “wa\_abstraction\_for\_self\_suply\_total\_gw-nace\_d\_hydropower”, “wa\_abstraction\_for\_self\_suply\_total\_gw-other” which are of minor importance.

### Non Fresh Water

Non fresh water is brackish water found in inland territories or near the sea.

Table 3.10 Abstractions Non-Freshwater

|  |  |
| --- | --- |
| Abstractions Non-Freshwater | **10 economic sectors-2 of them new (aquaculture and NACE F)** |
| Definition | **Abstraction** represents the amount of water removed from any resource, either permanently or temporarily during the accounting period, for final consumption and production activities.  **Non freshwater sources:** (Marine and brackish water)  Includes sea water and transitional water, such as brackish swamps, lagoons and estuarine areas. Such water resources may be of great importance locally, although in a national context, they are usually of lesser importance as compared to surface and groundwater resources. |
| SPATIAL SCALE | **SB**,RBD,COUNTRY |
| TEMPORAL SCALE | **MONTHLY**,SEASONAL,YEAR,LTAA\* |
| UNITS | mio m3 (million cubic meters) |

\*: LTAA = Long Term Annual Average. Based on annual values, averaged over a period of at least 20 consecutive years. The time period used to calculate the LTAA should also be provided

**SCALES IN BOLD:** BestscaleforWater Accounts calculation

In the existing SoE dataflow 15 parameters comprised this group. 7 of them were deleted and 2 new entered (Abstraction non freshwater for aquaculture and NACE F), resulting in total 10 proposed parameters.

### Reused Water

6 parameters are proposed to apart the new group. 4 are common with OECD/Eurostat and 2 are extra due to their importance (Industry-Cooling and Energy-Cooling)

Table 3.11 Abstractions from Reused Water

|  |  |
| --- | --- |
| Abstractions from reused Water | **Reused Water per economic sector** |
| Definition | **Abstraction** represents the amount of water removed from any resource, either permanently or temporarily during the accounting period, for final consumption and production activities.  **Reused Water** has undergone wastewater treatment and is delivered to a user as reclaimed wastewater. This means the direct supply of treated effluent to the user. Excluded is waste water discharged into a watercourse and used again downstream |
| SPATIAL SCALE | **SB**,RBD,COUNTRY |
| TEMPORAL SCALE | **MONTHLY**,SEASONAL,YEAR,LTAA\* |
| UNITS | mio m3 (million cubic meters) |

\*: LTAA = Long Term Annual Average. Based on annual values, averaged over a period of at least 20 consecutive years. The time period used to calculate the LTAA should also be provided

**SCALES IN BOLD:** BestscaleforWater Accounts calculation

Table 3.12 Differences of recycled and reused water

|  |
| --- |
| **Recycled water** is the “Water that is used multiple times by the same user. (either treated or non-treated)” while,  **Reused water** is the “Water that has undergone wastewater treatment and is delivered to a user as reclaimed wastewater. This means the direct supply of treated effluent to the user. Excluded is waste water discharged into a watercourse and used again downstream. Recycling is excluded.” |

11 parameters existed in current SoE in reused water category plus 11 in recycled water category. 5 are proposed to be deleted in reused water and 10 from recycled category are proposed to be deleted too. The latter category created confusion regarding its definitions with the reused water category as seen in Table 3.12. Only the total recycled water is proposed to remain.

### Desalinated Water

8 abstractions according to economic sectors are proposed to apart the new group.

Table 3.13 Abstractions from Desalinated Water

|  |  |
| --- | --- |
| Abstractions from Desalinated Water | **Desalinated water by economic sectors** |
| Definition | **Abstraction** represents the amount of water removed from any resource, either permanently or temporarily during the accounting period, for final consumption and production activities.  **Desalinated water:** Total volume of water obtained from desalination processes. |
| SPATIAL SCALE | **SB**,RBD,COUNTRY |
| TEMPORAL SCALE | **MONTHLY**,SEASONAL,YEAR,LTAA\* |
| UNITS | mio m3 (million cubic meters) |

\*: LTAA = Long Term Annual Average. Based on annual values, averaged over a period of at least 20 consecutive years. The time period used to calculate the LTAA should also be provided

**SCALES IN BOLD:** BestscaleforWater Accounts calculation

11 parameters of desalinated water existed in the current dataflow. 8 are proposed to be deleted, 5 new to enter and 3 to remain, resulting in the sum of 8 proposed parameters.

## Returns

**Returns** represent the total volume of water that is returned from the economy into surface, groundwater or soil water during the accounting period. Returns can be divided by type of water returned, for example, irrigation water, treated or untreated wastewater. Usually returns can be estimated by the abstraction minus the respective consumption volumes using the equation:

Returns=Abstractions-Consumption

In some cases of in situ uses like hydropower, abstractions are almost equal with returns because water consumption is very small or negligible. In the case of cooling water which is also an in situ use, water is consumed mostly through evaporation.

The reporting of returns by MSs per water asset or economic category is not an easy task. Most public water supply and treatment companies can only measure the water abstracted by source (lakes, art. reservoirs, rivers or groundwater), treated in a water or wastewater treatment plant and finally the water consumed by the end-users. Only end-users volumes can be distinguished under different economic classes. The returns of the system either as evaporation or as leakage can only be estimated by the difference in abstraction and consumption volumes.

Proposed changes in “Returns” parameters.

Existing SoE WQ DF separated returns before use and returns after use, it also requests returns (public water supply system losses) between use and reuse to be reported. Strict definitions were needed for the clarification of these returns reporting. Returns in the proposed scheme are conceptually aligned with SEEA-W and OECD/Eurostat and when referring to “Leakage and Losses” of the public water supply system (which equals by definition to returns of the public water supply system) the next assumptions are valid:

(a) Losses due to leakage are reported as losses.

(b) Losses due to evaporation that occurs when, for example, water is distributed through open channels are recorded as water consumption because the losses do not return directly to water resources.

(c) Losses due to illegal tapping and meter malfunctioning are included under water consumption of the supplier of water.

7 new parameters are proposed to be inserted, from which “wb\_effluent sea” and “wb\_effluent cooling water sea” are not returns in the strict definition because they end up in the sea, but as they are asked by the OECD/Eurostat JQ are proposed also to enter the data flow. Returns from agriculture are proposed to be reported due to their significant volumes. In total 11 returns’ parameters are proposed to apart the revised “returns” data group.

Table 3.14 Water returns by economic sector and water asset

|  |  |
| --- | --- |
| Water returns | 1. **wb\_non\_treated\_effluent\_cooling** 2. **wb\_non\_treated\_effluent\_hydropower** 3. **wb\_return energy cooling** 4. **wb\_losses of public\_supply\_system** 5. **wb\_treated\_effluent** 6. **wb\_non\_treated\_effluent** 7. **wb\_return\_agriculture** 8. **wb\_return \_ISIC\_other** 9. **wb\_effluent\_inland waters** 10. **wb\_effluent\_sea\*** 11. **wb\_effluent\_cooling\_water\_sea\*** |
| Definition | **Returns** represent the total volume of water that is returned from the economy into surface, groundwater or soil water during the accounting period. |
| SPATIAL SCALE | **SB,**RBD,COUNTRY |
| TEMPORAL SCALE | **MONTHLY,**SEASONAL,ANNUAL,LTAA\*\* |
| UNITS | mio m3 (million cubic meters) |

\*: typically are not considered returns.

\*\*: LTAA = Long Term Annual Average. Based on annual values, averaged over a period of at least 20 consecutive years. The time period used to calculate the LTAA should also be provided

**UNITS IN BOLD:** BestscaleforWater Accounts calculation

## Consumptive water use

The water consumption is defined as “water abstracted which is no longer available for use because it has evaporated, transpired, been incorporated into products and crops, or consumed by man or livestock”. Water losses due to leakages during the transport of water between the point or points of abstraction and the point or points of use are excluded.

Consumptive use of water can be disaggregated according to use of surface, groundwater or soil water or according to public water supply system and self-supply system and economic categories. Consumption is reminded that stands for abstraction minus returns.

WFD 2016 imposes the water quantity data requirements presented in column 4 of Table 3.15.

Table 3.15 WFD water quantity list of pressures

|  |  |  |  |
| --- | --- | --- | --- |
| 1 | 2 | 3 | 4 |
| ***WFD list of pressures*** | *driver* | *specification of pressure* | *NACE classes or equivalent in the statistical and SoE reporting* |
| **3.1 Abstraction – Agriculture** | Agriculture | Includes irrigation and livestock breeding. | * Water use, NACE A Agriculture * Water use, for Irrigation ((ref. NACE/ISIC division 01) |
| **3.2 Abstraction – Public Water Supply** | Urban development | Affection to TW and/or CW possible only in case of desalination plants. | * Water use, NACE I (Services, tourism included) * Water use, any other economic activity * Water use, from public supply * Water use, from self-supply * Water use, from self-supplied for domestic purposes * Reused water * Water use, produced from Desalination process * Water imports * Water exports * Water transfers (intra-RBD) |
| **3.3 Abstraction – Industry** | Industry | Abstraction for industrial processes (cooling water is covered under the category ‘Abstraction – cooling water’) | * Water use, NACE B (Mining and Quarrying) * Water use, NACE C (Manufacturing Industry) * Water use, for Hydropower generation |
| **3.4 Abstraction – Cooling water** | Industry; Energy non-hydro |  | * Water use, NACE D (Production of Electricity) |
| **3.5 Abstraction - Fish farms** | Aquaculture |  | * No NACE class |
| **3.6 Abstraction – other** | Recreation | Abstraction for any other purpose not listed above. | * Water use, any other economic activity |

The parameters of Table 3.15 were not fully covered (regarding their surface or groundwater discretization) from the existing SoE data flow. In the proposed content review this issue has been fully addressed and as a result SoE proposed dataflow is aligned with WFD water quantity data requirements.

### Water use-public water supply per economic sector and water assets

Public water supply system refers to “water supplied by economic units engaged in collection, purification and distribution of water (excluding system operation for agricultural purposes and treatment of waste water solely in order to prevent pollution). Public water supply services provide water for domestic use, service sector etc.”

According to WFD reporting guidance definition water use from public water supply is: “Total volume of freshwater used by end-users for a specific purpose within a territory, and which is provided to them by public water supply systems”.

Thus, since this depends on the system it may not be always possible to separate which amount is intended for each user. 19 parameters are proposed according to economic classes and physical water assets categorization (surface or groundwater) for public water supply use. This group of parameters can be derived by water abstractions minus returns. Nevertheless usually water agencies report this parameter instead of returns because is more practical to gauge consumption with water meters just before the final use. So SoE can give the option for every possible combination of reporting. (Abstractions and returns or abstractions and water use).

Table 3.16 Water use public water supply

|  |  |
| --- | --- |
| Water use surface water | Water use public water supply per economic sector and water asset |
| Definition | Total volume of freshwater used by end-users for a specific purpose within a territory, and which is provided to them by public supply systems |
| SPATIAL SCALE | **SB**,RBD,COUNTRY |
| TEMPORAL SCALE | **MONTHLY**,SEASONAL,YEAR,LTAA\* |
| UNITS | mio m3 (million cubic meters) |

\*: LTAA = Long Term Annual Average. Based on annual values, averaged over a period of at least 20 consecutive years. The time period used to calculate the LTAA should also be provided

**UNITS IN BOLD:** BestscaleforWater Accounts calculation

In this category 19 parameters existed in the current dataflow, from which 4 are proposed to be deleted and 13 new to be inserted due mainly to WFD requirements (surface water and groundwater disaggregation). In total 28 parameters are proposed to be requested.

### Water use-self supply per economic sector and water assets

19 parameters are proposed according to economic classes and physical water assets categorization (surface or groundwater)

Table 3.17 Water use from self-supply

|  |  |
| --- | --- |
| Water consumptive use parameters by self- supply | Water use from self-supply per economic sector and physical water asset |
| Definition | Total volume of freshwater used by end-users for a specific purpose within a territory, and which is provided to them by self-supply systems |
| SPATIAL SCALE | SB,RBD,COUNTRY |
| TEMPORAL SCALE | MONTHLY,SEASONAL,YEAR,LTAA\* |
| UNITS | mio m3 (million cubic meters) |

\*: LTAA = Long Term Annual Average. Based on annual values, averaged over a period of at least 20 consecutive years. The time period used to calculate the LTAA should also be provided

**UNITS IN BOLD:** BestscaleforWater Accounts calculation

Comparison with existing SoE.

In this category 19 parameters existed. 4 are proposed to be deleted and 13 new to be inserted due mainly to WFD requirements. In total 28 parameters are proposed to be requested.

# Summary of Changes

The proposed revised data set has the next number of parameters according to their characterization:

Table 4.1 Proposed changes

|  |  |
| --- | --- |
| Must | 123 |
| Should | 44 |
| Could | 0 |
| Sum | 167 |
|  | (Of which 97 existing and 70 new) |
| Won’t | 91 |

It has to be mentioned that except the proposed parameters, the exchanges Table 2.6 has to be filled. This Table creates (6X6-6)=(36-6)=**30 possible volume exchanges** between different physical water assets inside the reference area, but of course in each case only some would be applicable, depending on the existence of artificial reservoirs or not, lakes or ice, snow and glaciers assets in each reference area. This is the reason why they are not presented as parameters but are asked as a separate table. It is proposed also the table of the physical water accounts to be requested in the form of Table 2.5, in order to be filled by the MSs.

In Annex 1 below all parameters are presented. In the first column if a SoE code is mentioned the parameter is an existing parameter, or else if the characterization NEW is inserted then this parameter is proposed to be inserted in the revised data flow. If there is code NEW-WA then this parameter is needed for Water accounts, while NEW-WFD is needed for the Water Framework Directive.

| Annex 1 | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| SoE Code | Existing SoE + changes | Must | Should | Could | Won't | Comments |
| 100001 | Groundwater level | 1 | 0 | 0 | 0 | case a- needed for Water accounts |
| 100002 | Reservoir inflow | 1 | 0 | 0 | 0 | case c1- WFD |
| 100003 | Reservoir outflow | 1 | 0 | 0 | 0 | case c1-WFD & OECD/EUROSTAT |
| 100004 | Stream flow | 1 | 0 | 0 | 0 | case a- needed for Water accounts |
| 101001 | wa\_total\_abstraction | 0 | 0 | 0 | 1 | case d2 (not needed because it can be derived) |
| 101002 | wa\_total\_abstraction\_sw | 0 | 0 | 0 | 1 | case d2 (not needed because it can be derived) |
| NEW - WA | wa\_abstraction\_art\_reservoirs | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| NEW - WA | wa\_abstraction\_lakes | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| NEW - WA | wa\_abstraction\_rivers | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| NEW - WA | wa\_abstraction\_snow\_ice\_glaciers | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| 101003 | wa\_total\_abstraction\_gw | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| 101004 | wa\_total\_abstraction\_from\_rainwater | 0 | 0 | 0 | 1 | case d2 (not needed because it can be derived) |
| NEW - WA | wa\_total\_abstraction\_rainfed\_agriculture | 1 | 0 | 0 | 0 | case g needed for water accounts |
| 101005 | wa\_total\_abstraction\_for\_hydropower | 1 | 0 | 0 | 0 | case c1 -OECD/Eurostat plus needed for water accounts |
| 101006 | wa\_available\_groundwater | 0 | 1 | 0 | 0 | case d1 - needed for OECD/Eurostat |
| 101007 | wa\_evaporation\_losses | 1 | 0 | 0 | 0 | case c1-WFD & OECD/EUROSTAT |
| 101008 | wa\_for\_public\_wss | 0 | 0 | 0 | 1 | case d2 -not needed because it can be derived |
| 101009 | wa\_for\_public\_wss\_sw | 0 | 0 | 0 | 1 | case d2 -not needed because it can be derived |
| NEW - WA | wa\_for\_public\_wss\_sw\_nace\_a | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| NEW - WA | wa\_for\_public\_wss\_sw\_nace\_b\_c\_f | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| NEW - WA | wa\_for\_public\_wss\_sw\_nace\_d | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| NEW - WA | wa\_for\_public\_wss\_sw\_nace\_e\_36 | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| NEW - WA | wa\_for\_public\_wss\_sw\_nace\_e\_37 | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| NEW - WA | wa\_for\_public\_wss\_sw\_nace\_e\_38\_39\_G-U | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| NEW - WA | wa\_for\_public\_wss\_sw\_domestic | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| 101010 | wa\_for\_public\_wss\_gw | 0 | 0 | 0 | 1 | case d2-not needed because it can be derived |
| NEW - WA | wa\_for\_public\_wss\_gw\_nace\_a | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| NEW - WA | wa\_for\_public\_wss\_gw\_nace\_b\_c\_f | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| NEW - WA | wa\_for\_public\_wss\_gw\_nace\_d | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| NEW - WA | wa\_for\_public\_wss\_gw\_nace\_e\_36 | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| NEW - WA | wa\_for\_public\_wss\_gw\_nace\_e\_37 | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| NEW - WA | wa\_for\_public\_wss\_gw\_nace\_e\_38\_39\_G-U | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| NEW - WA | wa\_for\_public\_wss\_gw\_domestic | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| 101011 | wa\_for\_public\_wss\_from\_rainwater | 1 | 0 | 0 | 0 | case a - needed for water accounts |
| 101012 | wa\_abstraction\_for\_self\_suply\_total | 0 | 0 | 0 | 1 | case d2 -not needed because it can be derived |
| 101013 | wa\_for\_self\_suply\_from\_rainwater | 0 | 0 | 0 | 1 | case d2 –not needed because it can be derived |
| NEW - WA | wa\_for\_self\_suply\_from\_rainwater\_domestic | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| NEW - WA | wa\_for\_self\_suply\_from\_rainwater\_other | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| 101101 | wa\_non\_freshwater-total | 0 | 0 | 0 | 1 | case d2 -not needed because it can be derived |
| 101102 | wa\_non\_freshwater-domestic | 1 | 0 | 0 | 0 | case a - needed for water accounts |
| 101103 | wa\_non\_freshwater-nace\_a | 1 | 0 | 0 | 0 | case c1- needed for OECD/Eurostat and water accounts |
| 101104 | wa\_non\_freshwater-nace\_a\_irrgation | 1 | 0 | 0 | 0 | case c1- needed for OECD/Eurostat |
| NEW | wa\_non\_freshwater-nace\_a\_aquaculture | 0 | 1 | 0 | 0 | case f1- needed for OECD/Eurostat |
| 101105 | wa\_non\_freshwater-nace\_b | 1 | 0 | 0 | 0 | case a - needed for water accounts |
| 101106 | wa\_non\_freshwater-nace\_c | 1 | 0 | 0 | 0 | case c1- needed for OECD/Eurostat and water accounts |
| NEW - WA | wa\_non\_freshwater-nace\_f | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| 101107 | wa\_non\_freshwater-nace\_c\_food\_ind | 0 | 0 | 0 | 1 | case b- not needed |
| 101108 | wa\_non\_freshwater-nace\_c\_basic\_metals | 0 | 0 | 0 | 1 | case b- not needed |
| 101109 | wa\_non\_freshwater-nace\_c\_transport | 0 | 0 | 0 | 1 | case b- not needed |
| 101110 | wa\_non\_freshwater-nace\_c\_textiles | 0 | 0 | 0 | 1 | case b- not needed |
| 101111 | wa\_non\_freshwater-nace\_c\_cooling | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 101112 | wa\_non\_freshwater-nace\_d | 0 | 0 | 0 | 1 | case b- not needed |
| 101113 | wa\_non\_freshwater-nace\_d\_cooling | 1 | 0 | 0 | 0 | case c1- needed for OECD/Eurostat and water accounts |
| 101115 | wa\_non\_freshwater-nace\_i | 1 | 0 | 0 | 0 | case c1- needed for OECD/Eurostat |
| 101116 | wa\_non\_freshwater-other | 0 | 0 | 0 | 1 | case b- not needed |
| 101201 | wa\_abstraction\_for\_self\_suply\_total\_sw-total | 0 | 0 | 0 | 1 | case b-not needed because it can be derived |
| 101202 | wa\_abstraction\_for\_self\_suply\_total\_sw-domestic | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 101203 | wa\_abstraction\_for\_self\_suply\_total\_sw-nace\_a | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 101204 | wa\_abstraction\_for\_self\_suply\_total\_sw-nace\_a\_irrgation | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| NEW | wa\_abstraction\_for\_self\_suply\_total\_sw-nace\_a\_aquaculture | 0 | 1 | 0 | 0 | case f1- needed for OECD/Eurostat |
| 101205 | wa\_abstraction\_for\_self\_suply\_total\_sw-nace\_b | 1 | 0 | 0 | 0 | case c1- needed for OECD/Eurostat and water accounts |
| 101206 | wa\_abstraction\_for\_self\_suply\_total\_sw-nace\_c | 1 | 0 | 0 | 0 | case c1- needed for OECD/Eurostat and water accounts |
| NEW - WA | wa\_abstraction\_for\_self\_suply\_total\_sw-nace\_f | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| 101207 | wa\_abstraction\_for\_self\_suply\_total\_sw-nace\_c\_food\_ind | 0 | 0 | 0 | 1 | case b- not needed |
| 101208 | wa\_abstraction\_for\_self\_suply\_total\_sw-nace\_c\_basic\_metals | 0 | 0 | 0 | 1 | case b- not needed |
| 101209 | wa\_abstraction\_for\_self\_suply\_total\_sw-nace\_c\_transport | 0 | 0 | 0 | 1 | case b- not needed |
| 101210 | wa\_abstraction\_for\_self\_suply\_total\_sw-nace\_c\_textiles | 0 | 0 | 0 | 1 | case b- not needed |
| 101211 | wa\_abstraction\_for\_self\_suply\_total\_sw-nace\_c\_cooling | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 101212 | wa\_abstraction\_for\_self\_suply\_total\_sw-nace\_d | 1 | 0 | 0 | 0 | case a - needed for water accounts |
| NEW - WA | wa\_abstraction\_for\_self\_suply\_total\_sw-nace\_e\_36 | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| NEW - WA | wa\_abstraction\_for\_self\_suply\_total\_sw-nace\_e\_37 | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| NEW - WA | wa\_abstraction\_for\_self\_suply\_total\_sw-nace\_e\_38\_39\_G-U | 1 | 0 | 0 | 0 | case g - needed for water accounts |
| 101213 | wa\_abstraction\_for\_self\_suply\_total\_sw-nace\_d\_cooling | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 101214 | wa\_abstraction\_for\_self\_suply\_total\_sw-nace\_d\_hydropower | 1 | 0 | 0 | 0 | case a - needed for water accounts |
| 101215 | wa\_abstraction\_for\_self\_suply\_total\_sw-nace\_i | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 101216 | wa\_abstraction\_for\_self\_suply\_total\_sw-other | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 101301 | wa\_abstraction\_for\_self\_suply\_total\_gw-total | 0 | 0 | 0 | 1 | case b-not needed because it can be derived |
| 101302 | wa\_abstraction\_for\_self\_suply\_total\_gw-domestic | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 101303 | wa\_abstraction\_for\_self\_suply\_total\_gw-nace\_a | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 101304 | wa\_abstraction\_for\_self\_suply\_total\_gw-nace\_a\_irrgation | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| NEW | wa\_abstraction\_for\_self\_suply\_total\_gw-nace\_a\_aquaculture | 1 | 0 | 0 | 0 | case e1- needed for OECD/Eurostat |
| 101305 | wa\_abstraction\_for\_self\_suply\_total\_gw-nace\_b | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 101306 | wa\_abstraction\_for\_self\_suply\_total\_gw-nace\_c | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| NEW - WA | wa\_abstraction\_for\_self\_suply\_total\_gw-nace\_f | 1 | 0 | 0 | 0 | case g- needed for water accounts |
| 101307 | wa\_abstraction\_for\_self\_suply\_total\_gw-nace\_c\_food\_ind | 0 | 0 | 0 | 1 | case b- not needed |
| 101308 | wa\_abstraction\_for\_self\_suply\_total\_gw-nace\_c\_basic\_metals | 0 | 0 | 0 | 1 | case b- not needed |
| 101309 | wa\_abstraction\_for\_self\_suply\_total\_gw-nace\_c\_transport | 0 | 0 | 0 | 1 | case b- not needed |
| 101310 | wa\_abstraction\_for\_self\_suply\_total\_gw-nace\_c\_textiles | 0 | 0 | 0 | 1 | case b- not needed |
| 101311 | wa\_abstraction\_for\_self\_suply\_total\_gw-nace\_c\_cooling | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 101312 | wa\_abstraction\_for\_self\_suply\_total\_gw-nace\_d | 1 | 0 | 0 | 0 | case a - needed for water accounts |
| NEW - WA | wa\_abstraction\_for\_self\_suply\_total\_gw-nace\_e\_36 | 1 | 0 | 0 | 0 | case g- needed for water accounts |
| NEW - WA | wa\_abstraction\_for\_self\_suply\_total\_gw-nace\_e\_37 | 1 | 0 | 0 | 0 | case g- needed for water accounts |
| NEW - WA | wa\_abstraction\_for\_self\_suply\_total\_gw-nace\_e\_38\_39\_G-H & J-U | 1 | 0 | 0 | 0 | case g- needed for water accounts |
| 101313 | wa\_abstraction\_for\_self\_suply\_total\_gw-nace\_d\_cooling | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 101314 | wa\_abstraction\_for\_self\_suply\_total\_gw-nace\_d\_hydropower | 0 | 0 | 0 | 1 | case b- not needed |
| 101315 | wa\_abstraction\_for\_self\_suply\_total\_gw-nace\_i | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 101316 | wa\_abstraction\_for\_self\_suply\_total\_gw-other | 0 | 0 | 0 | 1 | case d2 (not needed because it can be derived) |
| 102001 | wb\_areal\_precipitation | 1 | 0 | 0 | 0 | case c1- needed for OECD/Eurostat , Water accounts and WFD |
| 102002 | wb\_pot\_evapotranspiration | 1 | 0 | 0 | 0 | case a- needed for EEA assessments |
| 102003 | wb\_act\_evapotranspiration | 1 | 0 | 0 | 0 | case c1- needed for OECD/Eurostat , Water accounts and WFD |
| 102004 | wb\_internal\_flow | 0 | 0 | 0 | 1 | case d2 (not needed because it can be derived) |
| 102005 | wb\_total\_act\_ext\_inflow | 1 | 0 | 0 | 0 | case c1- needed for OECD/Eurostat , Water accounts and WFD |
| 102006 | wb\_total\_actual\_outflow | 1 | 0 | 0 | 0 | case c1- needed for OECD/Eurostat , Water accounts and WFD |
| 102007 | wb\_total\_actual\_outflow\_sea | 1 | 0 | 0 | 0 | case c1- needed for OECD/Eurostat , Water accounts |
| 102008 | wb\_total\_actual\_outflow\_neighbour | 1 | 0 | 0 | 0 | case c1- needed for OECD/Eurostat , Water accounts |
| 102009 | wb\_aquifer\_recharge | 1 | 0 | 0 | 0 | case c1- needed for OECD/Eurostat , Water accounts |
| 102010 | wb\_snowpack | 1 | 0 | 0 | 0 | case a- needed for Water accounts |
| 102011 | wb\_changes\_in\_reservoir\_storage | 1 | 0 | 0 | 0 | case a- needed for Water accounts and WFD |
| 102012 | wb\_changes\_in\_groundwater\_storage | 1 | 0 | 0 | 0 | case a- needed for Water accounts and WFD |
| 102013 | wb\_return\_flow | 0 | 0 | 0 | 1 | case b-not needed because it can be derived |
| 102020 | wb\_non\_treated\_effluent\_cooling | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 102021 | wb\_non\_treated\_effluent\_hydropower | 1 | 0 | 0 | 0 | case a- needed for EEA assessments |
| NEW | wb\_return energy cooling | 1 | 0 | 0 | 0 | case g- needed for EEA assessments |
| 102022 | wb\_losses\_betwn\_use\_and\_reuse | 0 | 0 | 0 | 1 | case b-not needed due to definition alignment issues |
| NEW | wb\_losses of public\_supply\_system | 1 | 0 | 0 | 0 | case e1- needed for OECD/Eurostat |
| 102016 | wb\_treated\_effluent | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 102019 | wb\_non\_treated\_effluent | 1 | 0 | 0 | 0 | case a- needed for EEA assessments |
| NEW | wb\_return\_agriculture | 1 | 0 | 0 | 0 | case g- needed for water accounts |
| NEW | wb\_return \_ISIC\_other | 1 | 0 | 0 | 0 | case g- needed for water accounts |
| NEW | wb\_effluent\_inland waters | 1 | 0 | 0 | 0 | case e1- needed for OECD/Eurostat |
| NEW | wb\_effluent\_sea | 1 | 0 | 0 | 0 | case e1- needed for OECD/Eurostat |
| NEW | wb\_effluent\_cooling\_water\_sea | 1 | 0 | 0 | 0 | case e1- needed for OECD/Eurostat |
| 102014 | wb\_returned\_before\_use | 0 | 0 | 0 | 1 | case b- not needed (definition alignment) |
| 102015 | wb\_returned\_after\_use | 0 | 0 | 0 | 1 | case b- not needed (definition alignment) |
| 102017 | wb\_treated\_effluent\_uwwtp | 0 | 0 | 0 | 1 | case b- not needed |
| 102018 | wb\_treated\_effluent\_other\_wwtp | 0 | 0 | 0 | 1 | case b- not needed |
| NEW | Other\_changes\_in\_volume | 0 | 0 | 0 | 1 | case c1- needed for Water accounts |
| 102023 | wb\_water\_imports | 1 | 0 | 0 | 0 | case c1- needed for OECD/Eurostat , Water accounts and WFD |
| 102024 | wb\_water\_exports | 1 | 0 | 0 | 0 | case c1- needed for OECD/Eurostat , Water accounts and WFD |
| NEW | Non\_renewable\_groundwater\_Total | 1 | 0 | 0 | 0 | case e1- needed for OECD/Eurostat |
| 102025 | wb\_artif\_gw\_recharge | 1 | 0 | 0 | 0 | case a- needed for EEA assessments |
| 102026 | wb\_bottled\_imports | 1 | 0 | 0 | 0 | case a - needed for water accounts |
| 102027 | wb\_bottled\_exports | 1 | 0 | 0 | 0 | case a - needed for water accounts |
| 102028 | wb\_water\_requirements | 0 | 0 | 0 | 1 | case b- not needed |
| 102101 | wb\_reused\_water-total | 0 | 0 | 0 | 1 | case d2-not needed because it can be derived |
| 102102 | wb\_reused\_water-domestic | 1 | 0 | 0 | 0 | case a- needed for EEA assessments |
| 102103 | wb\_reused\_water-nace\_a | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 102104 | wb\_reused\_water-nace\_a\_irrgation | 0 | 0 | 0 | 1 | case b- not needed |
| 102105 | wb\_reused\_water-nace\_b | 0 | 0 | 0 | 1 | case b- not needed |
| 102106 | wb\_reused\_water-nace\_c | 1 | 0 | 0 | 0 | case e1- needed for OECD/Eurostat |
| 102107 | wb\_reused\_water-nace\_c\_cooling | 1 | 0 | 0 | 0 | case a- needed for EEA assessments |
| 102108 | wb\_reused\_water-nace\_d | 0 | 0 | 0 | 1 | case b- not needed |
| 102109 | wb\_reused\_water-nace\_d\_cooling | 1 | 0 | 0 | 0 | case a- needed for EEA assessments |
| 102110 | wb\_reused\_water-nace\_i | 0 | 0 | 0 | 1 | case b- not needed |
| 102111 | wb\_reused\_water-other | 0 | 0 | 0 | 1 | case b- not needed |
| 102201 | wb\_desalinated\_water-total | 0 | 0 | 0 | 1 | case d2-not needed because it can be derived |
| NEW | wb\_desalinated\_water-public water supply | 1 | 0 | 0 | 0 | case e1- needed for OECD/Eurostat and water accounts |
| 102202 | wb\_desalinated\_water-domestic | 1 | 0 | 0 | 0 | case a - needed for water accounts |
| 102203 | wb\_desalinated\_water-nace\_a | 1 | 0 | 0 | 0 | case a - needed for water accounts |
| 102204 | wb\_desalinated\_water-nace\_a\_irrgation | 0 | 0 | 0 | 1 | case b- not needed |
| 102205 | wb\_desalinated\_water-nace\_b | 0 | 0 | 0 | 1 | case b- not needed |
| NEW - WA | wb\_desalinated\_water-nace\_b\_c\_f | 1 | 0 | 0 | 0 | case g- needed for water accounts |
| 102206 | wb\_desalinated\_water-nace\_c | 0 | 0 | 0 | 1 | case b- not needed |
| 102207 | wb\_desalinated\_water-nace\_c\_cooling | 0 | 0 | 0 | 1 | case b- not needed |
| 102208 | wb\_desalinated\_water-nace\_d | 1 | 0 | 0 | 0 | case a - needed for water accounts |
| NEW - WA | wb\_desalinated\_water-nace\_e\_36 | 1 | 0 | 0 | 0 | case g- needed for water accounts |
| NEW - WA | wb\_desalinated\_water-nace\_d\_37 | 1 | 0 | 0 | 0 | case g- needed for water accounts |
| NEW - WA | wb\_desalinated\_water-nace\_e\_38\_39\_G-U | 1 | 0 | 0 | 0 | case g- needed for water accounts |
| 102209 | wb\_desalinated\_water-nace\_d\_cooling | 0 | 0 | 0 | 1 | case b- not needed |
| 102210 | wb\_desalinated\_water-nace\_i | 0 | 0 | 0 | 1 | case b- not needed |
| 102211 | wb\_desalinated\_water-other | 0 | 0 | 0 | 1 | case b- not needed |
| 103001 | wu\_large\_items\_city | 0 | 0 | 0 | 1 | case b- not needed |
| 103002 | wu\_large\_items\_industry | 0 | 0 | 0 | 1 | case b- not needed |
| 103003 | wu\_large\_items\_agric\_unit | 0 | 0 | 0 | 1 | case b- not needed |
| 103101 | wu\_total\_freshwater\_used-total | 0 | 0 | 0 | 1 | case b- not needed-derived |
| 103102 | wu\_total\_freshwater\_used-domestic | 0 | 0 | 0 | 1 | case b- not needed-derived |
| 103103 | wu\_total\_freshwater\_used-nace\_a | 0 | 0 | 0 | 1 | case b- not needed-derived |
| 103104 | wu\_total\_freshwater\_used-nace\_a\_irrgation | 0 | 0 | 0 | 1 | case b- not needed-derived |
| 103105 | wu\_total\_freshwater\_used-nace\_b | 0 | 0 | 0 | 1 | case b- not needed-derived |
| 103106 | wu\_total\_freshwater\_used-nace\_c | 0 | 0 | 0 | 1 | case b- not needed-derived |
| 103107 | wu\_total\_freshwater\_used-nace\_c\_food\_ind | 0 | 0 | 0 | 1 | case b- not needed-derived |
| 103108 | wu\_total\_freshwater\_used-nace\_c\_basic\_metals | 0 | 0 | 0 | 1 | case b- not needed-derived |
| 103109 | wu\_total\_freshwater\_used-nace\_c\_transport | 0 | 0 | 0 | 1 | case b- not needed-derived |
| 103110 | wu\_total\_freshwater\_used-nace\_c\_textiles | 0 | 0 | 0 | 1 | case b- not needed-derived |
| 103111 | wu\_total\_freshwater\_used-nace\_c\_cooling | 0 | 0 | 0 | 1 | case b- not needed-derived |
| 103112 | wu\_total\_freshwater\_used-nace\_d | 0 | 0 | 0 | 1 | case b- not needed-derived |
| 103113 | wu\_total\_freshwater\_used-nace\_d\_cooling | 0 | 0 | 0 | 1 | case b- not needed-derived |
| 103114 | wu\_total\_freshwater\_used-nace\_d\_hydropower | 0 | 0 | 0 | 1 | case b- not needed-derived |
| 103115 | wu\_total\_freshwater\_used-nace\_i | 0 | 0 | 0 | 1 | case b- not needed-derived |
| 103116 | wu\_total\_freshwater\_used-other | 0 | 0 | 0 | 1 | case b- not needed-derived |
| 103117 | wu\_total\_freshwater\_used-nace\_c\_paper | 0 | 0 | 0 | 1 | case b- not needed-derived |
| 103118 | wu\_total\_freshwater\_used-nace\_c\_chemicals | 0 | 0 | 0 | 1 | case b- not needed-derived |
| 103119 | wu\_total\_freshwater\_used-nace\_c\_other\_manufact\_ind | 0 | 0 | 0 | 1 | case b- not needed-derived |
| 103201 | wu\_public\_water\_supply-total | 0 | 0 | 0 | 1 | case b- not needed-derived |
| NEW-WFD | wu\_public\_water\_supply-total\_SW | 1 | 0 | 0 | 0 | case g- needed for WFD |
| NEW-WFD | wu\_public\_water\_supply-total\_GW | 1 | 0 | 0 | 0 | case g- needed for WFD |
| 103202 | wu\_public\_water\_supply-domestic | 1 | 0 | 0 | 0 | case c1- needed for WFD and OECD/EUROSTAT |
| 103203 | wu\_public\_water\_supply-nace\_a | 0 | 0 | 0 | 1 | case d2- not needed it can be derived |
| NEW-WFD | wu\_public\_water\_supply-nace\_a\_SW | 1 | 0 | 0 | 0 | case g- needed for WFD and OECD/EUROSTAT |
| NEW-WFD | wu\_public\_water\_supply-nace\_a\_GW | 1 | 0 | 0 | 0 | case g- needed for WFD and OECD/EUROSTAT |
| 103204 | wu\_public\_water\_supply-nace\_a\_irrgation | 1 | 0 | 0 | 0 | case a- needed for EEA assessments |
| NEW-WFD | wu\_public\_water\_supply-nace\_a\_aquaculture | 1 | 0 | 0 | 0 | case g- needed for WFD |
| 103205 | wu\_public\_water\_supply-nace\_b | 0 | 0 | 0 | 1 | case d2- not needed it can be derived |
| NEW-WFD | wu\_public\_water\_supply-nace\_b\_SW | 1 | 0 | 0 | 0 | case g- needed for WFD and OECD/EUROSTAT |
| NEW-WFD | wu\_public\_water\_supply-nace\_b\_GW | 1 | 0 | 0 | 0 | case g- needed for WFD and OECD/EUROSTAT |
| 103206 | wu\_public\_water\_supply-nace\_c | 0 | 0 | 0 | 1 | case d2- not needed it can be derived |
| NEW-WFD | wu\_public\_water\_supply-nace\_c\_SW | 1 | 0 | 0 | 0 | case g- needed for WFD and OECD/EUROSTAT |
| NEW-WFD | wu\_public\_water\_supply-nace\_c\_GW | 1 | 0 | 0 | 0 | case g- needed for WFD and OECD/EUROSTAT |
| NEW - WA | wu\_public\_water\_supply-nace\_f | 1 | 0 | 0 | 0 | case e1- needed for OECD/EUROSTAT and water accounts |
| 103207 | wu\_public\_water\_supply-nace\_c\_food\_ind | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 103208 | wu\_public\_water\_supply-nace\_c\_basic\_metals | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 103209 | wu\_public\_water\_supply-nace\_c\_transport | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 103210 | wu\_public\_water\_supply-nace\_c\_textiles | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 103211 | wu\_public\_water\_supply-nace\_c\_cooling | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 103212 | wu\_public\_water\_supply-nace\_d | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 103213 | wu\_public\_water\_supply-nace\_d\_cooling | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| NEW - WA | wu\_public\_water\_supply-nace\_e\_36 | 1 | 0 | 0 | 0 | case g- needed for water accounts |
| NEW - WA | wu\_public\_water\_supply-nace\_e\_37 | 1 | 0 | 0 | 0 | case g- needed for water accounts |
| NEW - WA | wu\_public\_water\_supply-nace\_e\_38-39\_G-U | 1 | 0 | 0 | 0 | case g- needed for water accounts |
| 103214 | wu\_public\_water\_supply-nace\_d\_hydropower | 1 | 0 | 0 | 0 | case a- needed for WFD |
| 103215 | wu\_public\_water\_supply-nace\_i | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 103216 | wu\_public\_water\_supply-other | 0 | 0 | 0 | 1 | case b- not needed |
| 103217 | wu\_public\_water\_supply-nace\_c\_paper | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 103218 | wu\_public\_water\_supply-nace\_c\_chemicals | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 103219 | wu\_public\_water\_supply-nace\_c\_other\_manufact\_ind | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 103301 | wu\_self\_supply-total | 0 | 0 | 0 | 1 | case d2- not needed it can be derived |
| NEW-WFD | wu\_self\_supply-total\_SW | 1 | 0 | 0 | 0 | case g- needed for WFD |
| NEW-WFD | wu\_self\_supply-total\_GW | 1 | 0 | 0 | 0 | case g- needed for WFD |
| 103302 | wu\_self\_supply-domestic | 1 | 0 | 0 | 0 | case c1- needed for WFD and OECD/EUROSTAT |
| 103303 | wu\_self\_supply-nace\_a | 0 | 0 | 0 | 1 | case d2- not needed it can be derived |
| NEW-WFD | wu\_self\_supply-nace\_a\_SW | 1 | 0 | 0 | 0 | case g- needed for WFD and OECD/EUROSTAT |
| NEW-WFD | wu\_self\_supply-nace\_a\_GW | 1 | 0 | 0 | 0 | case g- needed for WFD and OECD/EUROSTAT |
| 103304 | wu\_self\_supply-nace\_a\_irrgation | 1 | 0 | 0 | 0 | case a- needed for EEA assessments |
| NEW-WFD | wu\_self\_supply-nace\_a\_aquaculture | 1 | 0 | 0 | 0 | case g- needed for WFD |
| 103305 | wu\_self\_supply-nace\_b | 0 | 0 | 0 | 1 | case d2- not needed it can be derived |
| NEW-WFD | wu\_self\_supply-nace\_b\_SW | 1 | 0 | 0 | 0 | case g- needed for WFD and OECD/EUROSTAT |
| NEW-WFD | wu\_self\_supply-nace\_b\_GW | 1 | 0 | 0 | 0 | case g- needed for WFD and OECD/EUROSTAT |
| 103306 | wu\_self\_supply-nace\_c | 0 | 0 | 0 | 1 | case d2- not needed it can be derived |
| NEW-WFD | wu\_self\_supply-nace\_c\_SW | 1 | 0 | 0 | 0 | case g- needed for WFD and OECD/EUROSTAT |
| NEW-WFD | wu\_self\_supply-nace\_c\_GW | 1 | 0 | 0 | 0 | case g- needed for WFD and OECD/EUROSTAT |
| NEW - WA | wu\_self\_supply-nace\_f | 1 | 0 | 0 | 0 | case e1- needed for OECD/EUROSTAT and water accounts |
| 103307 | wu\_self\_supply-nace\_c\_food\_ind | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 103308 | wu\_self\_supply-nace\_c\_basic\_metals | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 103309 | wu\_self\_supply-nace\_c\_transport | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 103310 | wu\_self\_supply-nace\_c\_textiles | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 103311 | wu\_self\_supply-nace\_c\_cooling | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 103312 | wu\_self\_supply-nace\_d | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| NEW - WA | wu\_self\_supply-nace\_e\_36 | 1 | 0 | 0 | 0 | case g- needed for water accounts |
| NEW - WA | wu\_self\_supply-nace\_e\_37 | 1 | 0 | 0 | 0 | case g- needed for water accounts |
| NEW - WA | wu\_self\_supply-nace\_e\_38\_39\_G-U | 1 | 0 | 0 | 0 | case g- needed for water accounts |
| 103313 | wu\_self\_supply-nace\_d\_cooling | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 103314 | wu\_self\_supply-nace\_d\_hydropower | 1 | 0 | 0 | 0 | case a- needed for WFD |
| 103315 | wu\_self\_supply-nace\_i | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 103316 | wu\_self\_supply-other | 0 | 0 | 0 | 1 | case b- not needed |
| 103317 | wu\_self\_supply-nace\_c\_paper | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 103318 | wu\_self\_supply-nace\_c\_chemicals | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 103319 | wu\_self\_supply-nace\_c\_other\_manufact\_ind | 0 | 1 | 0 | 0 | case d1- needed for OECD/Eurostat |
| 103401 | wu\_recycled\_water-total | 1 | 0 | 0 | 0 | case a- needed for WFD |
| 103402 | wu\_recycled\_water-domestic | 0 | 0 | 0 | 1 | case b not needed |
| 103403 | wu\_recycled\_water-nace\_a | 0 | 0 | 0 | 1 | case b not needed |
| 103404 | wu\_recycled\_water-nace\_a\_irrgation | 0 | 0 | 0 | 1 | case b not needed |
| 103405 | wu\_recycled\_water-nace\_b | 0 | 0 | 0 | 1 | case b not needed |
| 103406 | wu\_recycled\_water-nace\_c | 0 | 0 | 0 | 1 | case b not needed |
| 103407 | wu\_recycled\_water-nace\_c\_cooling | 0 | 0 | 0 | 1 | case b not needed |
| 103408 | wu\_recycled\_water-nace\_d | 0 | 0 | 0 | 1 | case b not needed |
| 103409 | wu\_recycled\_water-nace\_d\_cooling | 0 | 0 | 0 | 1 | case b not needed |
| 103410 | wu\_recycled\_water-nace\_i | 0 | 0 | 0 | 1 | case b not needed |
| 103411 | wu\_recycled\_water-other | 0 | 0 | 0 | 1 | case b not needed |

#### References

EEA, 2012, Update on Water Scarcity and Droughts indicator development

EEA, 2013, SoE Water Quantity data manual V3.1

SEEA-W, 2012, System of environmental and economic accounting for water, UN

WFD 2016, 2014, Water Framework Directive Reporting Guidance V4.7, EU

NACE codes, <http://ec.europa.eu/competition/mergers/cases/index/nace_all.html>

ISIC codes, UN, <http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=27>