

Water Accounts in the Netherlands

Compilation and use

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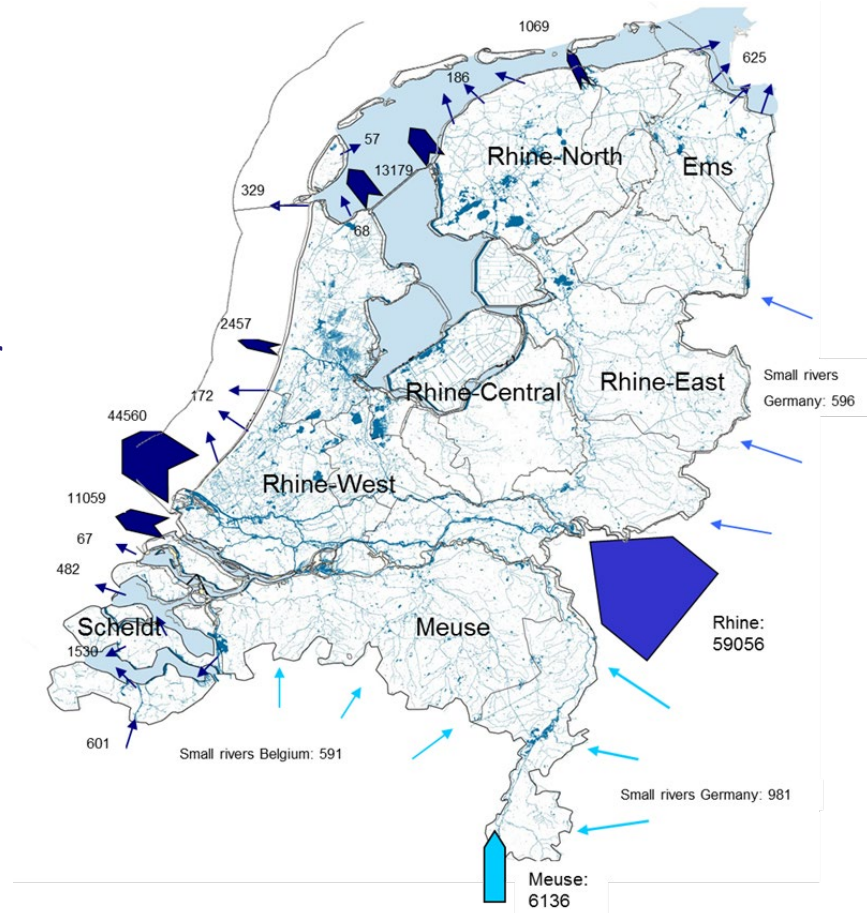


Water in the Netherlands



River basins in the Netherlands

- Downstream (delta) of 3 major rivers: Rhine, Meuse and Schelde
- Part of four international river basins
- All outflow is to the North sea catchment area



Water issues in the Netherlands



Safety, protection against flooding



**Water management:
excess of water**



Water distribution: water resources and water use



Water pollution



Water quality

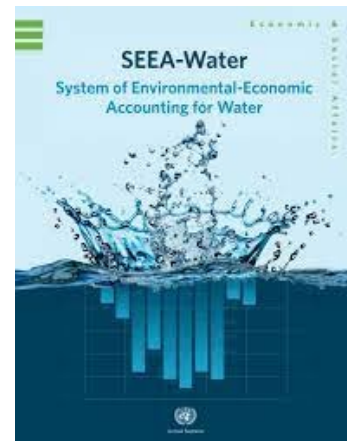


Water statistics and water accounts

Statistics Netherlands has been working on water statistics and water accounts for several years.

2021-2022: Eurostat grant project, Compilation of Physical Supply and Use tables, Asset Accounts and Policy Indicators for Water 2018-2020

- Test proposed format of the Eurostat tables on the Water Accounts
- Setting up a statistical production process
- Exploring data needs policy makers



Data sources and compilation

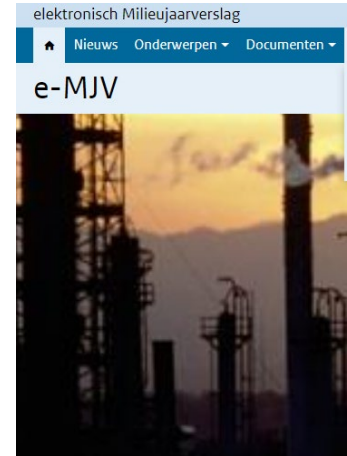
Data needs and sources

<u>Organisation/Institute</u>	<u>Data source</u>	<u>Source/sector</u> GW=Groundwater SW=Surface Water	<u>National totals</u>
Association of Public Water Supply companies (VEWIN)	VEWIN Statistics of Public Water Supply	Public Water supply ISIC 36 Abstraction of SW and GW	Yes
National Institute for Public Health and the Environment (RIVM)	Annual Environmental Reports (AER)	ISIC 10-35 37-39 (industry) Abstraction of SW and GW	Additional estimates by Statistics Netherlands
Institute for Agricultural Economics (WEcR)	Sample survey plus extrapolation per type of farm	ISIC 01-03 (Agriculture) Abstraction of SW and GW	Yes
Provinces, Water Boards	National Groundwater Register	ISIC all activities Abstraction of GW	<i>Almost</i>



Data Source: Annual Environmental Reports (AER)

- Participation: approximately **800 companies**; manufacturing industry, power plants and waste processing (legal obligation to report)
- Various modules included: air emissions, waste, **water abstraction and use**, water emissions, etc.
 - Reporting on volumes of **groundwater and surface water** abstracted, including marine water
 - Reporting on use of **tap water**: drinking water and other (industry water, raw water, demineralized water)



Data Source: WEcR farm water data



Wageningen Economic Research (WEcR):

- Stratified sample survey per sector, in total 1500 farms, yearly

On request of Statistics Netherlands the water use data are enriched:

- Extrapolation to totals
- Results are calculated for (dimensions):
 - **Type water:** Abstraction of groundwater & surface water, use of drinking water
 - **Agricultural sector:** Arable farming, Livestock farming, Horticulture, Fruit growing and Other farms.
 - **Type of use:** Use for irrigation, Use for livestock drinking, Other use
 - **Region:** National total, all 7 sub-River Basin areas and 12 Provinces

Compilation

- Collect data source
- Harmonize the source data to SEEA concepts
- Breakdown to economic sectors
- Confront different data sources and analyse results
- Link and integrate the data to create a total overview
- Balancing

Fill data gaps

- Use of drinking water in the services sector (NACE G-U)
 - Method: trend of employment in those sectors * water use in T-1 → data source is labour accounts.
- Use of water for some detailed sectors (NACE 2 digits)
 - Method: trend of added value * water use in T-1 based on previous studies → data source is national accounts



Compilation: output

- Put in the correct format to create output (aggregation)
- Publish results (tables, figures, indicators, report, news article, etc.)
- Whole process is automated in R
- Yearly figures T+2

Results



Supply table in 2020 in the Netherlands

	Million m3	Agriculture, forestry and fishing	Mining and quarrying	Manufacturing industry	Energy sector	Water collection, treatment and supply	Private waste-water treatment	Waste management services	Construction	Public waste-water treatment	Services	Households	Import	Environment	Total supply	
		A	B	C	D	E36	E37	E38-39	F	O84.1	G-U*					
(I) Water flows from environment to economy															15.279,9	15.279,9
Inland water resources															8.778,3	8.778,3
Groundwater															1.643,3	1.643,3
Soil water															-	-
Surface water															7.135,0	7.135,0
Other water sources															6.501,6	6.501,6
Precipitation															582,4	582,4
Sea water															5.919,2	5.919,2
(II) Abstracted water		372,2	29,4	3.089,8	8.742,5	1.341,3	1,0	721,9	45,0	897,6	47,0	0,0	7,8			15.295,5
Distribution		0,0	0,0	5,1	0,0	1.232,7	0,0	0,0	0,0	0,0	0,0	0,0	7,8			1.245,6
Drinkingwater						1.160,8				0,0			7,8			1.168,6
Industry water		0,0	0,0	5,1	0,0	71,9	0,0	0,0	0,0	0,0	0,0	0,0	0,0			77,0
Own use		372,2	29,4	3.084,7	8.742,5	108,7	1,0	721,9	45,0	897,6	47,0	0,0	0,0			14.050,0
(III) Wastewater flows within the economy		37,7	2,1	137,5	2,3	7,2	1,8	4,0	2,5	8,7	96,4	769,8	0,0			1.070,0
Reuse							0,0	0,0		3,7						3,7
Wastewater		37,7	2,1	137,5	2,3	7,2	1,8	4,0	2,5	5,0	96,4	769,8	0,0			1.066,3
Own treatment		0,0	0,0	8,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0				8,0
Wastewater (to) treatment		37,7	2,1	129,5	2,3	7,2	1,8	4,0	2,5	5,0	96,4	769,8	0,0			1.058,3
(IV) Return flows of water		268,5	29,6	2.631,7	8.742,1	101,6	3,4	674,2	45,3	1.949,5	12,8	0,0				14.458,7
Cooling water		0,0	25,0	2.463,2	8.742,1	0,0	0,0	668,1	0,0	0,0	9,5	0,0				11.907,9
Irrigation		268,5	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0				268,5
Losses through leakages						42,4	0,0	0,0		0,0						42,4
Unaccounted (fire water)						59,2	0,0	0,0		0,0						59,2
Water returned without use		0,0	0,0	0,0	0,0	0,0	0,0	0,0	38,8	0,0	0,0	0,0				38,8
Water safely treated		0,0	4,6	168,5	0,0	0,0	3,4	6,2	6,5	1.949,5	3,3	0,0				2.142,0
(V) Evapotranspiration and water in products		107,9	0,0	534,4	8,6	0,0	1,2	49,5	0,0	0,0	40,0	85,5	9,0			836,1
Total of Supply table		786,3	61,1	6.393,4	17.495,5	1.450,1	7,4	1.449,6	92,8	2.855,8	196,2	855,3	16,8		15.279,9	

*excluding O84.1

Use table in 2020 in the Netherlands

	Million m3	Agriculture, forestry and fishing	Mining and quarrying	Manufacturing industry	Energy sector	Water collection, treatment and supply	Private waste-water treatment	Waste management services	Construction	Public waste-water treatment	Services	Households	Accumulation	Export	Environment	Total use
		A	B	C	D	E36	E37	E38-39	F	O84.1	G-U*					
(I) Water flows from environment to economy		372,2	29,4	3.089,8	8.742,5	1.333,5	1,0	721,9	45,0	897,6	47,0	0,0				15.279,9
Inland water resources		307,2	2,7	2.420,8	3.520,6	1.333,5	1,0	720,3	45,0	380,2	47,0	0,0				8.778,3
Groundwater		214,2	0,3	113,2	0,3	839,8	0,2	3,1	45,0	380,2	47,0	0,0				1.643,3
Soil water		-														-
Surface water		93,0	2,4	2.307,6	3.520,3	493,7	0,8	717,2	0,0	0,0	0,0	0,0				7.135,0
Other water sources		65,0	26,7	669,0	5.221,9	0,0	0,0	1,6	0,0	517,4	0,0	0,0				6.501,6
Precipitation		65,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	517,4	0,0	0,0				582,4
Sea water		0,0	26,7	669,0	5.221,9	0,0	0,0	1,6	0,0	0,0	0,0					5.919,2
(II) Abstracted water		414,1	31,7	3.293,7	8.753,0	116,7	3,0	726,7	47,8	903,2	148,5	855,3		2,0		15.295,7
Distribution		41,9	2,3	209,0	10,5	8,0	2,0	4,8	2,8	5,6	101,5	855,3		2,0		1.245,7
Drinkingwater		41,9	2,3	140,1	2,6	8,0	2,0	4,5	2,8	5,6	101,5	855,3		2,0		1.168,6
Industry water		0,0	0,0	68,9	7,9	0,0	0,0	0,3	0,0	0,0	0,0	0,0		0,0		77,1
Own use		372,2	29,4	3.084,7	8.742,5	108,7	1,0	721,9	45,0	897,6	47,0	0,0		0,0		14.050,0
Aquaculture		0,0														0,0
Cooling (fresh water)			2,2	2.126,8	3.168,3			646,9	0,0							5.944,2
Cooling (seawater)		0,0	26,7	669,0	5.221,9	0,0		1,6	0,0		0,0					5.919,2
Hydroelectric power generation					0,0											0,0
Irrigation		333,5									0,0	0,0				333,5
Mine water			0,0													0,0
Other uses		38,7	0,5	288,9	352,3	108,7	1,0	73,4	45,0	897,6	47,0	0,0				1.853,1
(III) Wastewater flows within the economy		0,0	0,0	9,9	0,0	0,0	3,4	1,1	0,0	1.055,0	0,7	0,0		0,0		1.070,1
Reuse		0,0	0,0	2,3	0,0	0,0	0,0	1,0	0,0	0,0	0,4	0,0				3,7
Wastewater		0,0	0,0	7,5	0,0	0,0	3,4	0,1	0,0	1.055,0	0,3	0,0		0,0		1.066,3
Own treatment		0,0	0,0	7,5	0,0	0,0	0,0	0,1	0,0	0,0	0,3	0,0				7,9
Wastewater (to) treatment						0,0	3,4			1.055,0				0,0		1.058,4
(IV) Return flows of water															14.458,7	14.458,7
To inland water resources															6.466,6	6.466,6
Groundwater (+soil water)															333,5	333,5
Surface water															6.133,1	6.133,1
To other sources**															7.992,1	7.992,1
(V) Evapotranspiration and water in products													-	12,0	-	836,1
Total of Use table		786,3	61,1	6.393,4	17.495,5	1.450,2	7,4	1.449,7	92,8	2.855,8	196,2	855,3	-	14,0		

*excluding O84.1

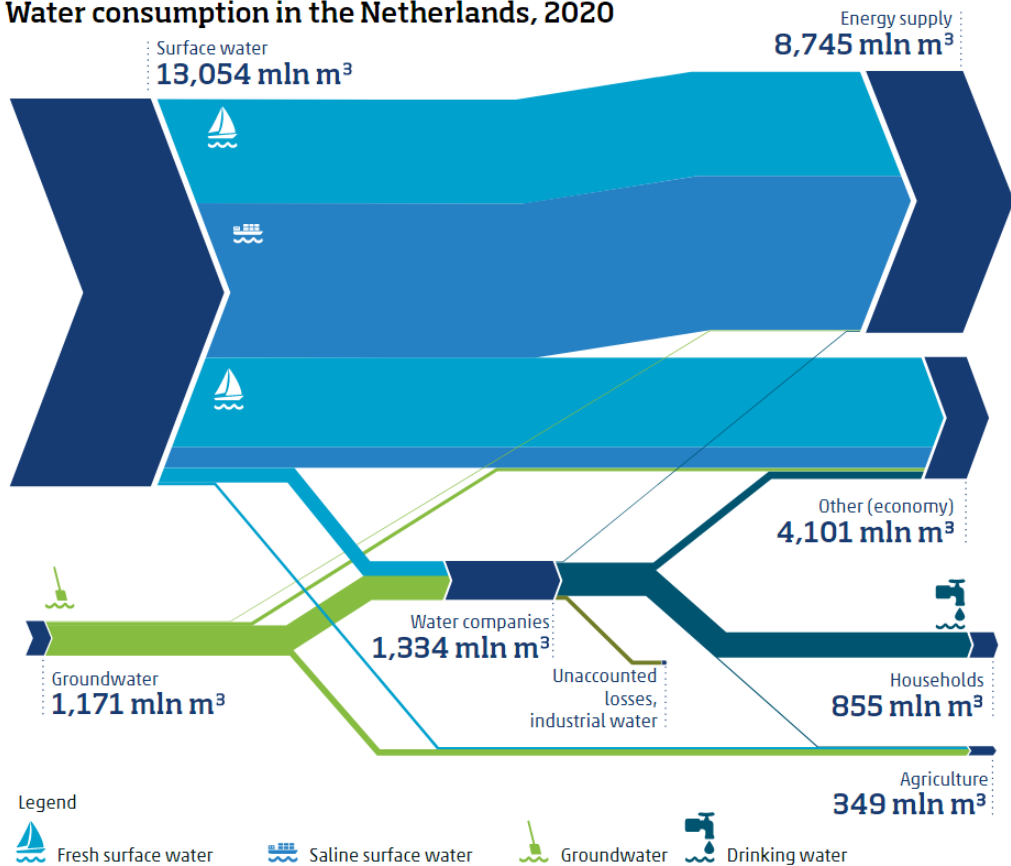
**including returns with unknown destination

Combining monetary and physical water flows

2020		Industries										Households	Rest of the World	Total
		Agriculture, forestry and fishing A	Mining and quarrying B	Manufacturing C	Energy sector D	Water collection, treatment and supply E36	Waste management, sewerage E37-39	Public administration O	Other industries F-U	Total industries				
Monetary flows	1. Intermediate consumption (mln euro)	19,612	3,715	229,053	7,156	609	6,547	35,003	509,155	810,850			810,850	
	of which water	58	22	293	12	6	5	30	356	782	1,100		1,882	
	2. Gross value added (mln euro)	12,737	2,797	86,236	4,536	1,045	3,491	53,036	545,750	709,628			709,628	
	of which sewerage and waste water taxes	23	0	89	19	0	13	69	438	651	2,378		3,029	
	3. Employment (x 1000 fte); population (x 1000)	179	8	738	26	5	29	476	6,313	7,774	17,407		7,774	
Physical flows	4. Supply of water (mln m3)													
	Distribution of abstracted water	0	0	5	0	1,233	0	0	0	1,238	0	8	1,246	
	Wastewater to treatment	38	2	138	2	7	6	5	99	297	770	0	1,066	
	Total return flows of water	269	5	169	0	102	10	1,950	49	2,551	0	0	2,551	
	5. Use of water (mln m3)													
	Total abstracted water	372	0	294	352	1,334	74	898	92	3,417	0	0	3,417	
	of which own use of abstracted water	372	0	289	352	1,09	74	898	92	2,187	0	0	2,187	
Use of distributed water	42	2	209	11	8	7	6	104	388	855	2	1,246		
	TOTAL USE OF WATER	414	3	498	363	109	81	903	196	2,567	855	2	3,424	
	6. Water consumption (mln m3)	108	0	534	9	0	51	0	40	742	86	0	827	
Ratio indicators	Water use intensity (m3 / 1000 euro)	33	1	6	80	104	23	17	0	4				
	Water use per employee / person (m3 / fte) (m3/ person)	2,313	350	675	13,954	21,760	2,800	1,897	31	330	49			
	Wastewater intensity (m3 / 1000 euro)	3	1	2	1	7	2	0	0	0				
	Wastewater per employee / person (m3 / fte) (m3/ person)	211	263	186	88	1,440	200	11	16	38	44			
	Wastewater tax / wastewater (euro / m3)	1		1	8		2	14	4	2	3			

Water in the Netherlands in 2020

Water consumption in the Netherlands, 2020

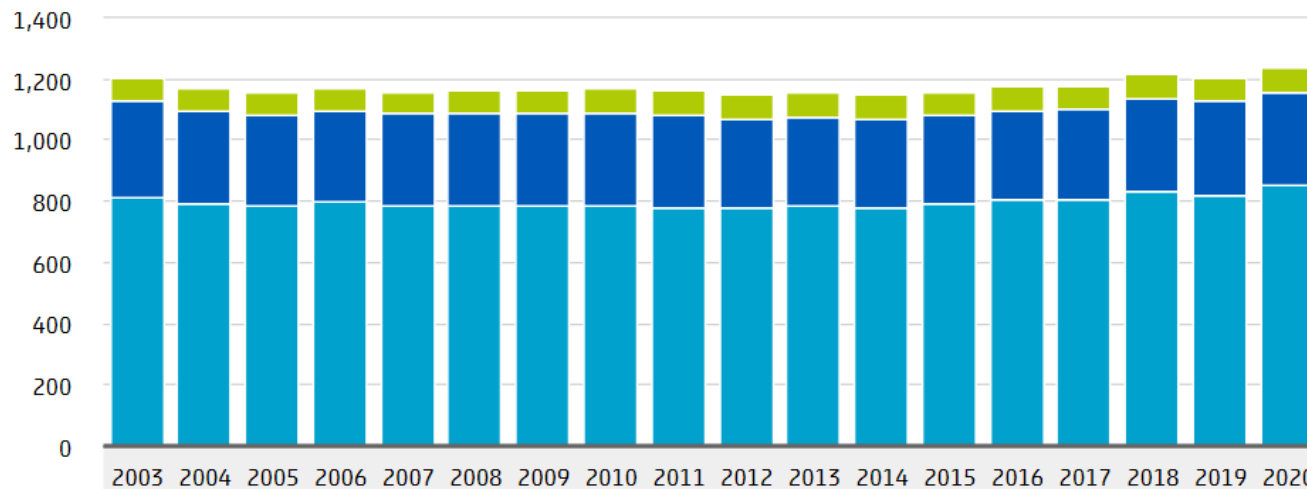


Water in the Netherlands in 2020

Mains water consumption¹



million m³



- Households (drinking water)
- Companies (drinking water)
- Companies (industrial water)

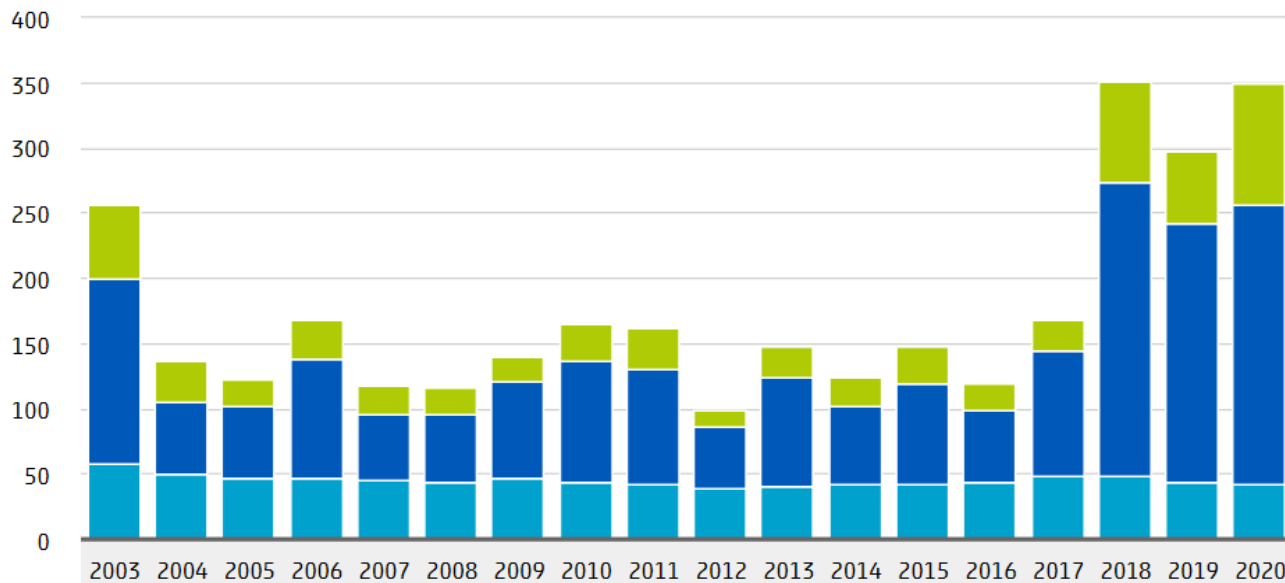
¹Mains water consists of drinking water and industrial water.



Water use in agriculture, 2020

Water consumption in agriculture

million m³



Drinking water

Groundwater

Fresh surface water



Water balance

- National yearly water asset account 2018-2020 in the Netherlands

billion m ³	2018	2019	2020
Additions to stock - total	101.9	109.1	107.5
Returns	6.3	6.5	6.5
Precipitation	25.2	32.4	32.2
Inflows from other territories	70.4	70.2	68.8
Reductions in stock - total	99.8	-	-
Abstraction	8.5	8.9	8,8
Evaporation and actual evaporation	16.9	-	-
Outflows to other territories	0	0	0
Outflows to the sea	74.4	75.6	74.7
of which estimated	3.3	3.3	3.3
Balance: additions - reductions	2.1	-	-

Users and policy applications



Users and Policy applications

International Organisations

- **Eurostat** and Organisation of Economic Cooperation and Development (**OECD**)
 - Joint Questionnaire on Inland Waters
- Food and Agriculture Organisation (**FAO**)
 - SDG 6.4.1 Water Use Efficiency & SDG 6.4.2 Water Stress
- European Environment Agency (**EEA**)
 - WISE Water quantity



Main national users:

- Policy makers: Ministry of Infrastructure and Water, water boards,
- Water companies, etc.
- Research (Universities, research agencies, etc.)

(Additional) demand for water data by users

- The PSUT tables: more detailed breakdown economic sectors
- Split drinking water use in a) use for low grade applications, like rinsing and cleaning, and b) use in high grade applications.
- Temporal and spatial breakdown water asset account to observe the effects of for instance droughts
- Data on groundwater abstractions divided into abstraction from shallow (phreatic) groundwater and deep-lying aquifers.
- Water account : include groundwater flows to and from outside territories.

Thank you for your attention





Facts that matter