Water statistics

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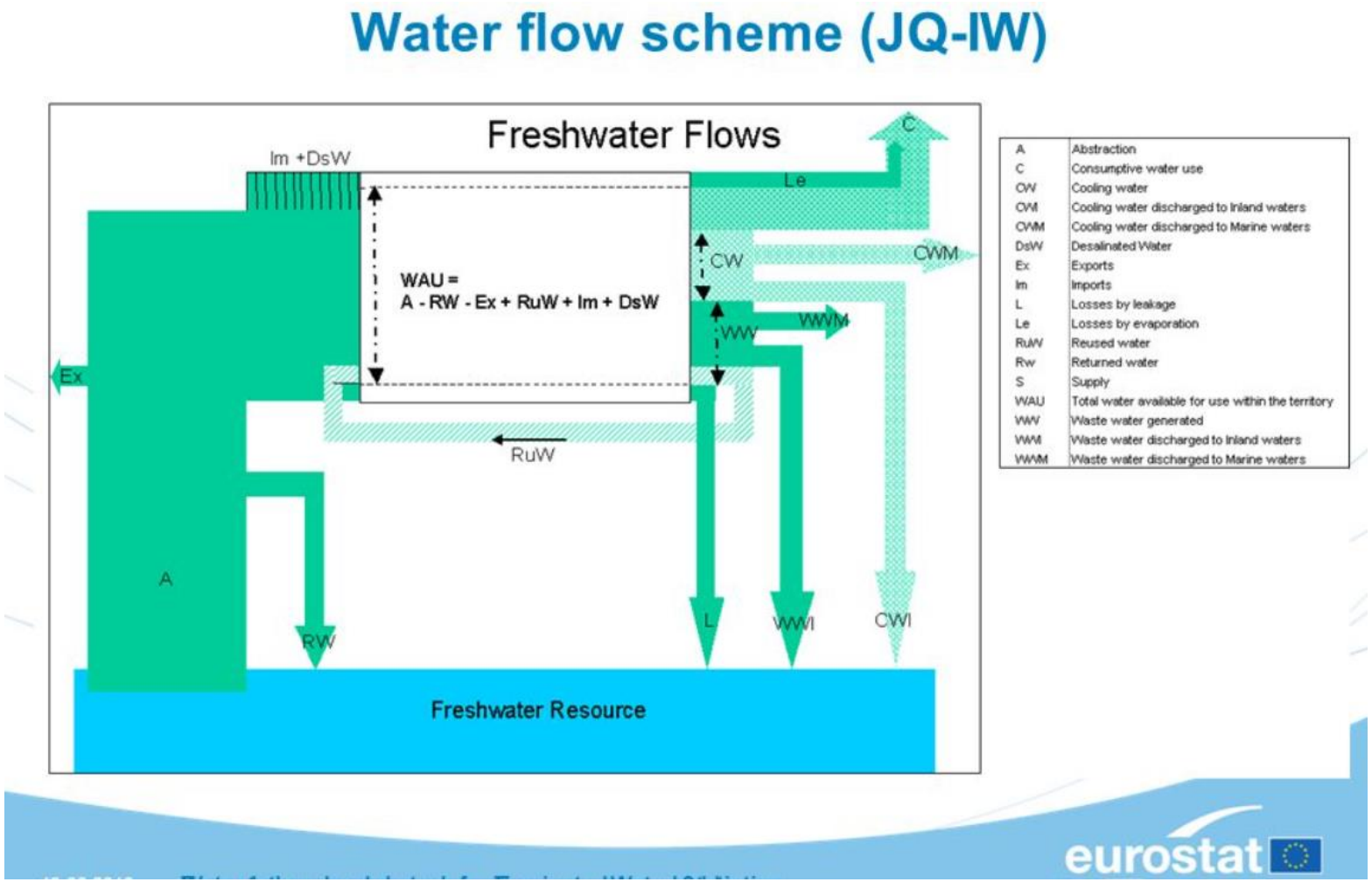
Water statistics framework in Estonia in the context of Eurostat/OECD JQ_IW

- Scope:
  - abstraction, use,
  - discharge,
  - Status of ground and surface water
- Bordeline: environment
- Geographical coverage: country (catchment areas)
- Breakdowns:
  - by river basins
  - by administrative districts
  - by industries, categories and households



Role of Statistics Estonia in the water related data flows and reporting, state of the art

Statistics Estonia:

- publishes water statistics data on a website
- has conducted several studies on water statistics and accounts
- compiles data on sustainable development indicators on water use and water quality
- is responsible for international reporting to OECD and Eurostat
- does not collect statistical data on water use and discaherge from enterprises but uses administrative data (Estonian Environment Agency)

Water statistics data are used as input to other statistical domains

Basic data on water abstraction and discharge

- Water related data are stored in an administative database (VEKA) managed for control purpose:
  - Database of enterprises having water permits (reporting to authorities): control over water use and wastewater management is based on the system of environmental permits.
  - “Water permits” are necessary starting from a certain threshold of water use.
  - In case of legal persons a permit is necessary if wastewater is discharged to environment.
  - According to the permit the water user must keep an account over the volume and parameters of the used water and generated wastewater.

Water statistics published on Statistics Estonia website

Water use

Water extraction by county (15), economic activity (NACE 64) and type of water, 1998 – 2017

- Ground water
- Mining water
- Surface water
- Sea water
- Mineral water

Water use by county (15) and water use sector, 1998 – 2017

- Domestic sector
- Industry
- Energy supply
- Cooling water
- Agriculture
- Irrigation water
- Aquaculture
- Other water use

Water statistics published on Statistics Estonia website

Water pollution

Datatable: wastewater treatment by county (15), 1994 – 2017

- Water discharge
- Wastewater needing purification
- Non-purified wastewater
- Purified wastewater
- Wastewater after primary treatment
- Wastewater after secondary treatment
- Wastewater after tertiary treatment
- Wastewater after not indicated treatment
- Insufficiently purified wastewater

Datatable: pollution load to surface water bodies with discharged wastewater by county (15), 1992 - 2017

- Biological oxygen demand (BOD7)
- Chemical oxygen demand (COD-Cr)
- Suspended solids
- Total nitrogen
- Total phosphorus
- Oil products

Achievments in the past:

Investigation of the methods for the production of better data for Estonian Eurostat/OECD Joint Questionnaire on Inland Waters

Special attention:

- **Table 7: "Generation and discharge of waste water"**

  The Eurostat/OECD Joint Questionnaire on the State of Environment, part Water asks data for wastewater generation and loads of pollutants (BOD, suspended solids, N-tot, P-tot) in discharged wastewater by economic categories.

  Data on wastewater generation and loads of pollutants by economic activities were estimated

- **Table 6: "Sewage sludge production and disposal"**

  Data on sludge generation and treatment had lot of gaps and were of low quanlity

- **Table 5: "Treatment capacity of waste water treatment plants**

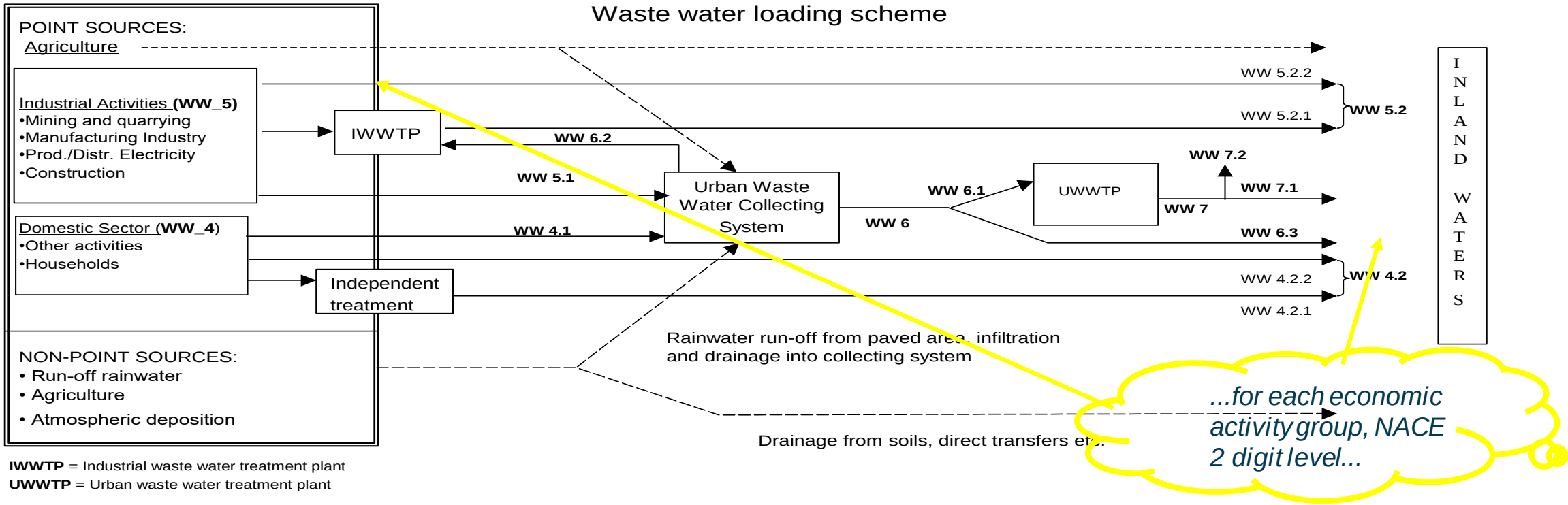
  Existing databases of wastewater treatment plants have been incomplete and contained lot of data gaps

Better data for Estonian Eurostat/OECD Joint Questionnaire

The estimation of pollution (P, N, BOD, suspended solids) in industrial wastewater in two locations of the wastewater flow:

Generation

Discharge to environment



Several development studies have been conducted by Statistics Estonia in the past

- Improvement of national wastewater information system (information on sector industry) in Estonia, 2003
- Estimation of the wastewater generation in the sector industry, 2004
- Estimation of the wastewater generation by source categories, 2006
- Statistical Inventory of Wastewater Treatment Plants, 2007
- Sewage Sludge Statistics, 2009

Wastewater factors for industry

Wastewater factors were calculated based on data of wastewater generation and economical data of net sale according to formula for each economic activity on NACE 2 digit level:

$$Fww = Wt/S$$

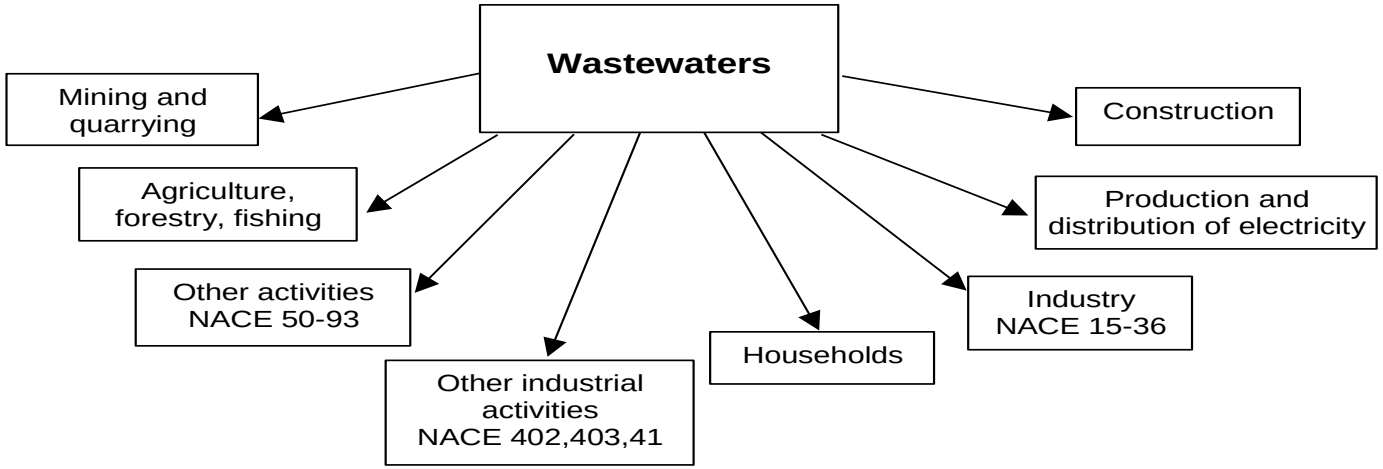
Where:
Fww — wastewater factor
Wt — total quantity of wastewater generated
S — total net sale

This methodology enables to estimate:

- total wastewater generated and division of wastewater by categories: industrial, sanitary and cooling water
- wastewater volume by selected industries by NACE codes
- pollution load (BOD, suspended solids, N-tot, P-tot) in generated wastewater by NACE codes
- quantity of pollutant (BOD, suspended solids, N-tot, P-tot) in wastewater released into environment originated from industries by NACE codes

Improvement of the coverage of water statistics

Estimation of the generation of wastewater from all point sources



- Estimation of the generation of wastewater from all sources (area + point sources)
- Table 7 “Generation and diacharge of waste water” of Eurostat/OECD Joint Questionnaire for one year was fully compiled for one certain year

Statistical inventory of wastewater treatment plants

- Statistical inventory of wastewater treatment plants was performed and as a result an extended compact database of wastewater treatment plants was created.
- New information was gained regarding following topics:
  - wastewater collection methods
  - Insight of treatment details about wastewater collected from sumps
  - Overview of wastewater (generation) sources
  - Wastewater quantities and pollutant loads from biggest clients of WWTP-s
- Already existing data fields were updated and complemented regarding:
  - Wastewater treatment methods
  - Design capacity
  - Pollutant loads – measurement frequency and measured value
- The results of this project gave the bases for considerable improvement of our estimation methods and adjustment of our wastewater (and pollutants) factors.

The evaluation of the sludge generation and treatment

- Dry solid factors were calculated, which show the quantity of dry solids (in tons) resulting per one unit (1000 m3) of wastewater treated.
- Dry solid factors were further used for converting sludge disposed quantities also to dry solids.
- Major update of the Table 6 of Eurostat/OECD Join Questionnaire part Inland Waters was made.
- Factors were also used for estimation of solid matter of sludge in waste statistics

Water statistics as input to other statistcal fields(1)

Environmental trends and their analyses

- Use of natural resources
- Water pollution and water resources depletion

Ecomomy-Wide Material Flow Accounts

- Domestic processed output - emissions to water
- Domestic processed output - dissipative use of products

Water statistics as input to other statistical fields (2)

Environmental goods and services sector accounts

Wastewater factors (based on sales revenue of one m^3 wastewater) are used for the

- Estimation output of the services of wastewater management

Water supply factors (based on sales revenue from water supply of one m^3 of water) are used for:

- Estimation of the output of services for the management of water

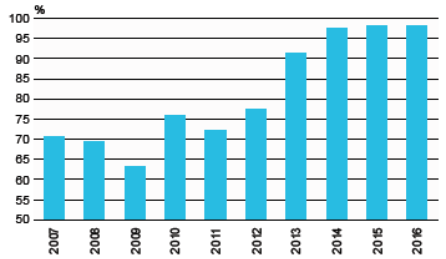
International reporting

- The Eurostat/OECD Joint Questionnaire on the State of Environment, part Inland Water (potentially big task and voluntary work currently)
- OECD reference data for environment (AQA)
- Quality of life in European Cities (Urban Audit, water abstraction and use on local administrative level)
- Eurostat Regional Environmental Data Collection
- OECD Agri Environment Indicators
- FAO AQuastat

Sustainable Development Goal Indicators

SDG 6. Clean water and Sanitation

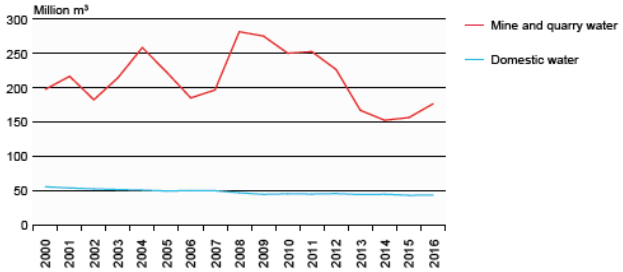
Share of consumers receiving quality drinking water from public water supply in Estonia, 2007–2016



Source: Health Board

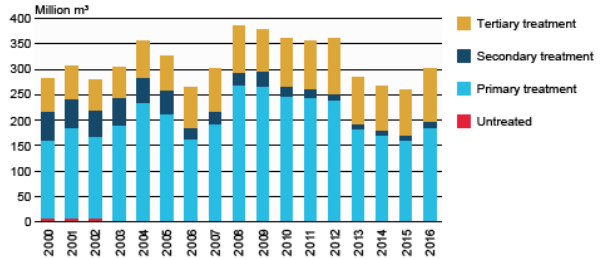
98.1% of consumers received quality drinking water from the public water supply in 2016.

Groundwater abstraction in Estonia, 2000–2016



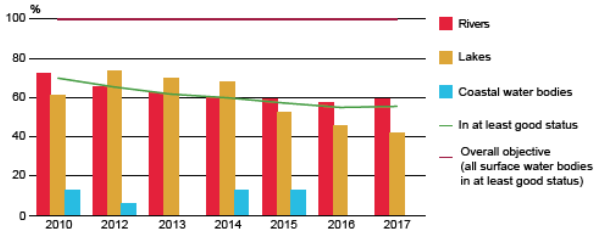
Compared to 2000, groundwater abstraction has decreased in Estonia.

Treatment of effluent in Estonia, 2000–2016



The majority of effluent is treated mechanically, but the amount of effluent undergoing tertiary treatment is nevertheless rising.

Surface water bodies in at least good overall status in Estonia, 2010–2017

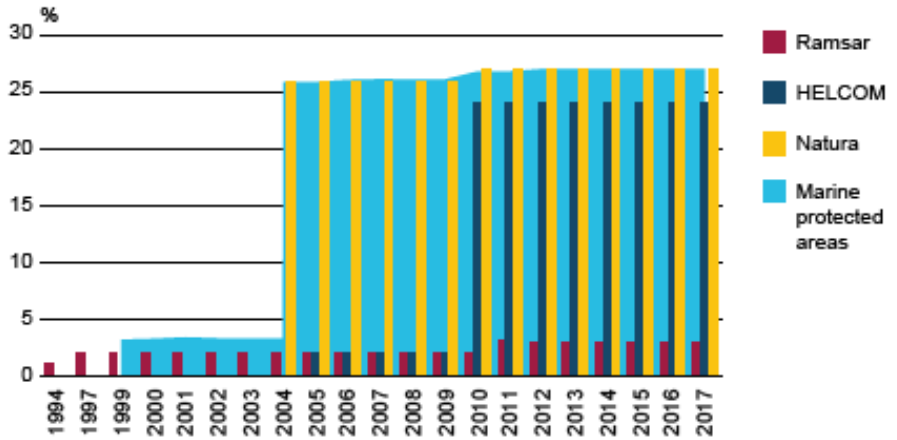


Source: Environment Agency

Approximately half of surface water bodies in Estonia are in at least good overall status; the status of coastal water bodies is worse than that of inland water bodies.

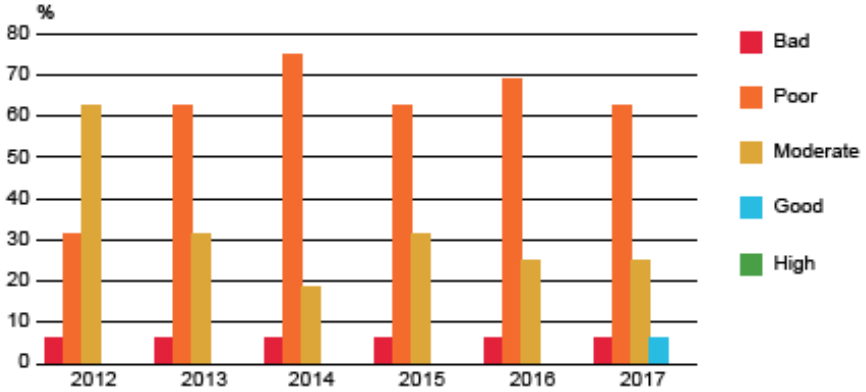
Sustainable Development Goal Indicators
SDG 14. Life below water

Share of marine protected areas in marine surface area in Estonia, 2017



Estonia has exceeded the target set for 2020 to protect 10% of its coastal and marine areas

Overall status of coastal water bodies in Estonia, 2012–2017



Source: Environment Agency

In 2012–2016, there were no coastal water bodies in Estonia in at least good status; in 2017, there was one.

Issues for future development

Unfortunately development works started with pilot studies are now discontinued for several reasons:

- Water abstraction and water pollution is not considered the most important environmental problem in Estonia

- After reaching a certain quality, Estonian environment authorities are not intrested in additional statistics besides rutine administrative data

- Water statistics is currently not getting remarkable finincing due to a low priority compare to other more demanding tasks (we devoted 10 man days on water statistics in 2018)

Thank you!

Contact us on Statistics Estonia website:
https://www.stat.ee/environment

Database:
http://pub.stat.ee/px-web.2001/I_Databas/Environment/databasetree.asp

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Water Use database (VEKA)

- The water department of Estonian Environment Agency manages the Water Use database (hereinafter referred to as VEKA), which contains: name, location of water user and registration number in state databases; location of intake structure; type and amount of extracted water; field of water use and amount of water; name and location of wastewater outlet; amount, type and level and efficiency of wastewater treatment; pollution load by main pollution parameters; sludge data; WWTP data.