EU Water Statistics Grant: Water abstraction and -use at River Basin Level

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Explanation of symbols

.	= data not available
*	= provisional figure
**	= revised provisional figure
x	= publication prohibited (confidential figure)
–	= nil or less than half of unit concerned
–	= (between two figures) inclusive
0 (0,0)	= less than half of unit concerned
blank	= not applicable
2010–2011	= 2010 to 2011 inclusive
2010/2011	= average of 2010 up to and including 2011
2010/'11	= crop year, financial year, school year etc. beginning in 2010 and ending in 2011
2008/'09–2010/'11	= crop year, financial year, etc. 2008/'09 to 2010/'11 inclusive

Due to rounding, some totals may not correspond with the sum of the separate figures.

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Content

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Summary

In this project methods have been developed to compile water abstraction and water use data at the level of River Basins in the Netherlands, for the years 2004-2008. In general, the methods build upon existing national data on water abstraction and drinking water use. The additional objective of the project was to improve observation and / or estimation of water use where necessary and possible.

In order to enable the regional distribution of national water data, in the first phase of the project a linkage between municipalities, River Basins as well as Public Water Supply (PWS) areas has been established. From the national PRTR database an overlay mapping of surface areas of municipalities and River Basins was obtained. The linkage between PWS areas and municipalities was obtained from the Association of Dutch Water Companies (VEWIN). The result of these two activities was a database with a distribution of municipality surface areas to River Basins and PWS areas. Via the link with basic statistics per municipality, statistical aggregates of the number of inhabitants and the number of employees per NACE class (Rev 1.1, 3 digit level) at the level of River Basins and of PWS areas could be calculated.

Specific for compilation of the regional distribution of drinking water use, customer files of the 10 PWS companies were collected. The customer files contain the names and addresses as well as the water use of all individual business- and private customers of the PWS companies. The data were primarily used for the regional breakdown of drinking water use to River Basins. A second aim of the collection and analysis of customer files was to improve the data on drinking water use per economic activity according to NACE. By linking 3 out of 10 customer files to the Central Business Register and processing the successful links, water use coefficients (m^3 drinking water per employee per year) for the Service Sector (NACE 45-93) could be calculated for the year 2008. In the follow-up of the project it is foreseen to process more customer files in order to improve these coefficients and also to calculate water use coefficients for other economic sectors, like for the manufacturing industry.

National data on water abstraction and drinking water use by the Agricultural Sector are calculated each year by the Agricultural Economic Research Institute, LEI. LEI makes use of the Farm Accountancy Data Network (FADN), this is a limited sample of the farms that are included in the so-called Farm Structure Survey (FSS). In this project we have developed a request for LEI to distribute the existing national data to a regional level by allocating the farms in the sample and their reported water use to the different River Basins. By making use of the so-called 'Statistical matching methodology', available figures are weighted and raised to totals per River Basin. In the results distinction is made between a number of sub sectors within agriculture such as arable farming, horticulture, animal husbandry, and other. Moreover, a distinction is made between use (of tap water) and abstraction from surface water or

groundwater and the purpose of the use, either for irrigation or for drinking of livestock.

For the most important sectors of the manufacturing industry data on water abstraction and tap water use are derived from the Annual Environment Reports (AER) and extrapolated to totals per NACE category. Allocation to River Basin of the individual registered companies is done via x-y coordinates. The additional extrapolated data are distributed to River Basins along the number of employees per River Basin per NACE category that remain after subtracting the employees of the individually registered companies.

For sectors of manufacturing industry not covered by the AER national totals for water abstraction and use of tap water are currently estimated on basis of historical data. These data are also distributed to River Basins along the number of employees per River Basin per NACE category.

Water abstraction by PWS companies is available at national level and for the areas supplied by the PWS companies. To establish the breakdown to River Basins, data available for each individual abstraction location is used. The GIS-coordinates of the geographical locations and spatial allocation to the River Basins were used to sum the quantities for each (sub-) River Basin, for both ground and surface water. The GIS action was carried out by the Association of Dutch Water Companies (VEWIN) for a single year (2008). For the other years 2004 – 2007, available data for the individual PWS companies with differentiation to the type of extraction and the 2008 PWS to River Basin distribution was used to translate the PWS data to the River Basins.

For regionalization of tap water use by households, two options exist. The top-down method makes use of national totals on water use by ‘households’ as obtained from VEWIN. With regionalized statistics on inhabitants, the used quantities can be distributed over the River Basins. In this project, it was chosen to test a bottom-up method too. With the customer files of all ten PWS companies principally part of the used tap water can be attributed to households as well as to the River Basins as their locations of residence are known.

Results of the disaggregations of use of drinking water and abstractions to River Basins are summarised in chapter 10. The detailed quantified results of the different project activities are shown in the Annexes. Abstraction of both fresh and marine water per economic activity per River Basin for 2004-2008 is shown as well as the use of water. Finally, water use coefficients per employee for the service sectors are shown.

1. Introduction

Currently, Statistics Netherlands publishes only national figures on water abstraction and water use by households and different industries of the economy[1]. No data is available on a regional scale. The growing number of publications and modeling being performed in context of the European Water Framework Directive (WFD) in recent years has created a growing demand for water data on a River Basin[2] scale. Eurostat and the European Environmental Agency (EEA) by means of required inventories for the Joint Questionnaire (JQ) or the State of the Environment reports, want to gather more data at the level of river basins. To ensure the development and elaboration of methods for such surveys, Eurostat in its Water Grants program 2008 listed the regionalization of water statistics as first priority.

The project assigned to Statistics Netherlands as part of the Water Grants program 2008 has been executed by the Environment Statistics department and by the Environmental Accounts group within the National Accounts department. The project started in March 2009 and has been finalized in December 2010.

The outline of the report is as follows:

In chapter 2 we start with a description of the objectives of the grant project. Chapter 3 continues with a brief description of the research activities undertaken, while in chapter 4 the method and compilation of the different regional aggregates has been dealt with. Chapter 5 looks after regionalization of the water abstraction data and drinking water use of the sectors Agriculture and Manufacturing Industry. The abstraction of water by PWS companies is addressed in chapter 6.

Chapter 7 gives possible methods for regionalization of the drinking water use of private Households and the Service sector (NACE 45-93). Chapter 8 briefly gives an outlook on future work on water abstractions by specific branches. Together with the regionalization of the data also the data on water use itself are improved. Chapter 9 lists these improvements.

The results of the project are presented in chapter 10 and the tables in the Annexes. Finally, chapter 11 gives the major conclusions and recommendations for future work.

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[1] CBS publication 'Dutch Environmental Accounts 2009'), 2010 and http://statline.cbs.nl/statweb/ (search for: 'watergebruik', table is only available in Dutch).

[2] The Netherlands is divided into 4 river basins: Ems, Meuse, Scheldt and Rhine. The Rhine basin is divided into 4 sub-basins: Rhine West, Rhine North, Rhine Centre and Rhine-East.

2. Objectives of the project

The main objective of the project is, starting from current (and future) data sets on water abstractions and water use by economic sector / industry in the Netherlands, to develop methods for regionalization to the 7 (sub-) River Basins in the Netherlands. The additional objective of the project is to improve observation and / or estimation of water use where necessary and possible.

The methods will be applied to the data for the years 2004 to 2008.

The project will cover the following products:

- An English report on the applied methodology;
- A regionalized dataset of water abstractions and water use for the years 2004 to 2008.

The regionalized dataset will then be used for at least the following reports:

- OECD / Eurostat Joint Questionnaire on 'Inland Waters';
- Statistics Netherlands Environmental Accounts: Regional water NAMWA physical data;
- Statistics Netherlands Environmental Accounts: Annual publication;
- EEA State of the Environment datasheet on the abstraction and use of water (in collaboration with The Directorate-General for Public Works and Water Management ('Rijkswaterstaat' / 'Water Service')[3];
- The Regional Environment Questionnaire of Eurostat.

[3] Is an executive department of the ministry of Transport, Public Works and Water management.

3. The project activities

In the project the following activities are distinguished:

1. Linking between:
    a. (sub-) River Basins;
    b. areas served by the Public Water Supply (PWS) companies;
    c. municipalities and connection to a number of basic statistics such as number of inhabitants and number of employees per NACE 3 digit level;
2. Regionalization of data on water use by households;
3. Regionalization of data on water abstraction and use in agriculture;
4. Regionalization of individual data and collectively estimated data on water abstraction and water use by manufacturing industry;
5. Regionalization of data on water abstraction by Public Water Supply (PWS) companies;
6. Regionalization of data on the (drinking) water use by other companies, per NACE category, based on customer files of PWS companies;
7. Improvement of the data, national and regional;
8. Estimation and regionalization of water abstraction by some specific sectors;

With respect to activities where resulting data are broken down along NACE categories, the aim is to present for all the years results according to NACE Rev 1.1. In the follow-up of the project, results will be calculated along NACE 2.0 categories.

4. Compilation of different regional aggregates and methodology

In the Netherlands – as in many countries - the geographical boundaries of River Basins do not match the boundaries of (groups of) administrative regions like municipalities. Also, most of the supply regions of Public Water Supply companies are situated in more than one River Basin. To facilitate a top-down distribution of existing national water data to data at (sub-)River Basin level, it is necessary to generate a number of basic statistics per (sub-)River Basin, like number of inhabitants, and employees per NACE and/or crop areas and number of cattle. In order to make these possible, coding tables that contain the links between the different spatial aggregates were build up.

For this project the number of employees refers to the number of jobs of employees. This excludes the number of self-employed people and is different from the number of 'employed persons' and 'full-time jobs'. The compilation of the NAMWA (van Rossum et al, 2010) breakdown of economic aggregates, like production and value added, to River Basin is based upon the number of full-time jobs excluding self-employed people.

Because of the ongoing process of fusions of municipalities in the country, it was necessary to build a separate table for each year (2004-2008). The activity comprises two sub-activities. In the following two paragraphs a short description of each sub-activity is given.

4.1 Spatial allocation of municipalities to River Basins

Basic data for this project activity is a database delivered to Statistics Netherlands by the Dutch PRTR database, hosted by the National Institute for Public Health and the Environment (RIVM) in Bilthoven[4]. This database contains per municipality (NUTS 3) the break down of total surface area (m^2) into River Basin district. Via GIS overlay of the maps of River Basins and municipalities, shape areas per municipality per River Basin were determined. Figure 4.1 shows the overlay of municipalities with the 7 River Basins in the Netherlands.

Using this shape area, fractions of municipalities per river basins were calculated. In case of low fractions, manual checks were performed in order to detect eventual inconsistencies in the GIS overlay mapping. Also, large areas of surface water were left out in the calculation of the fractions in those cases where the area with surface water of a municipality was allocated in a different River Basin than the land surface of the same municipality. This is typically the case with municipalities bordering the IJsselmeer. The reason for this adjustment is that the focus is on describing land-based human activities (employees per NACE, number of inhabitants) and their water use.

[4] PRTR: Pollutant Release & Transfer Register.

The result of this activity is a descriptive table with area fractions of municipalities per (sub-) River Basin per year. For 2008, out of a total of 443 municipalities, 50 municipalities are allocated to two (sub-)River Basins and 2 municipalities are allocated to 3 (sub-)River Basins. The remaining 391 are allocated to just one (sub-) River Basin (fraction = 1).

Figure 4.1: Overlay of Municipalities and River Basins (shaded)

4.2 Allocation of municipalities to supply areas of PWS companies

In the Netherlands, drinking water is produced and supplied by in total 10 PWS companies, covering the whole territory. From the Association of Dutch Water Companies (VEWIN) we received lists of the municipalities served per PWS company. Sometimes, a municipality is served by two different companies. Using population statistics per village or neighborhood, an exact count of the population per PWS area could be made. Subsequently, using the results of activity 1) (see paragraph 4.1) a table linking PWS companies via municipalities with (sub-)River Basins could be generated.

Figure 4.2 shows the overlay of PWS areas with River Basins. This map illustrates that 5 of in total 10 PWS companies are situated in more then one River Basin. The largest company (Vitens) is even situated in 5 River Basins.

Figure 4.2 Overlay of PWS areas (shaded) with the 7 River basins

4.3 Relevant basic statistics per River Basin

Table 4.1 shows the number of inhabitants per Water company, distributed to River Basins. The 'Total' row at the bottom of table 4.1 gives also the distribution of the total of inhabitants over the River Basins. As one might expect the large area of Rhine-West houses approximately 45% of all inhabitants.

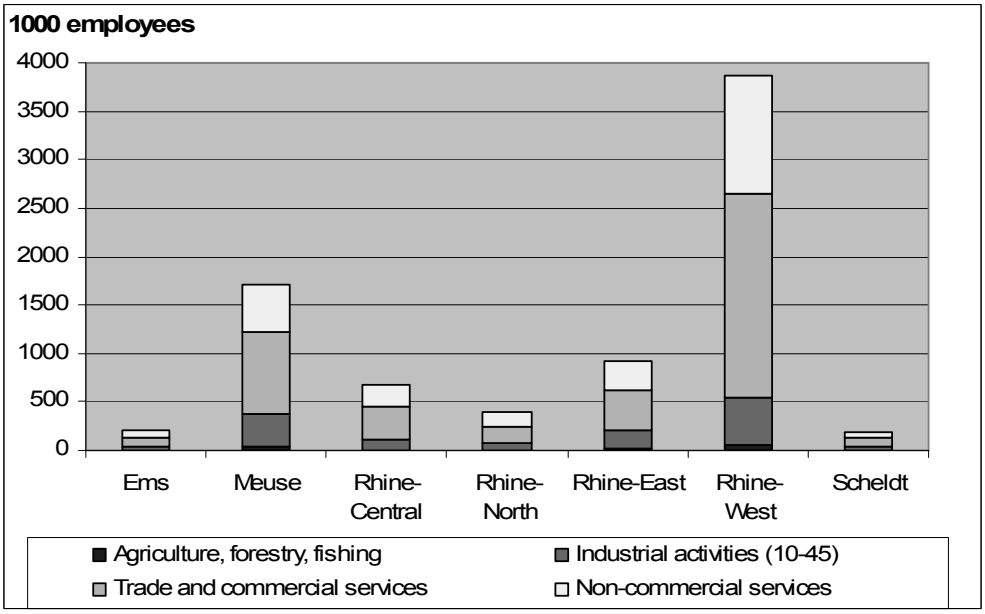
Statistics on the number of employees per municipality per Nace (3 digit level) were used to construct aggregated numbers of employees per River Basin. This is done for all reporting years (2004-2008). Figure 4.3 gives a summary result of this activity for 2008.

Most industrial activities are concentrated in the Rhine-West area. Nevertheless, in the small areas of the Scheldt and the Ems also major chemical industry complexes are located.

Table 4.1: Number of inhabitants served by PWS company, per River Basin, 2008

	Total	Ems	Rhine-North	Rhine-East	Rhine-Center	Rhine-West	Meuse	Scheldt
	1,000 inhabitants							
Waterbedrijf Groningen	584	350	234					
Waterleidingmaatschappij Drenthe	435	154	51	230				
Vitens	5396		643	1772	1460	1503	17	
Waternet	893					893		
PWN Waterleidingbedrijf Noord-Holland	1662					1662		
Dunea	1209					1209	0	
Oasen	767					767		
Evides	1934					1456	69	409
Brabant Water	2401					47	2299	55
Waterleidingmaatschappij Limburg	1124						1124	
Total	16405	504	928	2002	1460	7537	3510	464

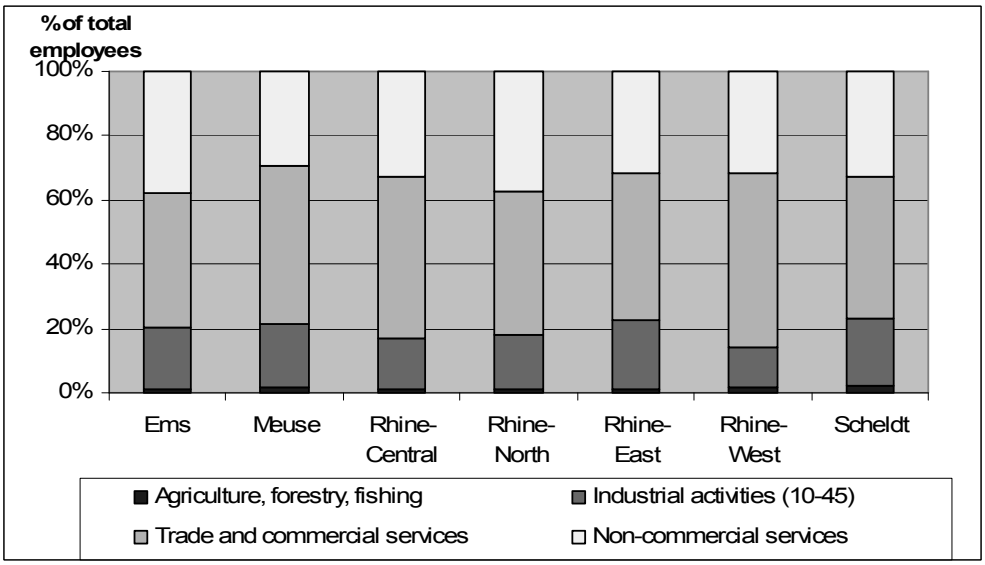
Figure 4.3 Number of employees per main economic category per River Basin, 2008



The shares of employment among the different sectors (Figure 4.4), does not show major differences between the River Basins. In the Scheldt region, industrial activities are relatively slightly larger than in other River Basins. In Rhine-West and Rhine-Central, Trade and Commercial Services are relatively larger then in other River Basins.

Similar data are calculated for each PWS company, also with a distribution to River Basins. These data are constructed within a database with numbers of employees per NACE 3-digit level, per municipality, per PWS company, per River Basin, for the years 2004-2008.

Figure 4.4 Distribution of employees per main economic category, per River basin, 2008



4.4 Method tested on individual customer data from PWS Companies

In the previous paragraphs the top-down compilation of aggregates at River Basin level either from national or PWS totals, is described by making use of a regional distribution of the numbers of inhabitants and/or employees for each industry. In this project it was chosen to test an alternative approach as well, a bottom-up approach. This approach makes use of the data from customer files of the PWS companies. The aim is to attribute all tap water use to river basins and to industries (NACE categories) and households. After close consultation with the Association of Dutch Water Companies, VEWIN, it was decided to collect individual customer data from all PWS companies. After several internal meetings, the ten PWS companies gave their final approval to this proposal in February 2010. The aims of obtaining the files were:

1. Localization of users via postal codes: in this way in principle all regional aggregates are possible.
2. Identification of economic activities (NACE) of the users through automated matching of records with the Central Business Register of Statistics Netherlands.
3. Via the number of employees per record or municipality: calculate average tap water use per employees per NACE (3-digit level).

From February 2010 onwards, PWS companies started to deliver the customer files. The files were collected by the VEWIN office and were delivered to Statistics Netherlands subsequently.

With respect to content, quality and completeness of the customer files, the following conclusions can be drawn:

1. Response: All 10 PWS companies responded; 6 companies provided separate files for business users and non-business users; 1 company provided only business users; 3 larger companies provided mixed files containing all customers (business and non-business users).
2. Data coverage (years): 9 out of 10 companies provided separate files for 2008; 6 companies provided also 2007; 3 companies provided files for 2009 instead of 2007. One company provided a file in which data of tap water use during a longer period (2007-2009) was given.
3. Quantities (m3 of use): Data on the tap water use were provided in various ways. Some companies provided the so called 'billed use', which doesn't necessary reflect the use during a single calendar year. Other companies provided data on billed use as well as the calculated yearly use (recalculated to 365 days). In other cases, the billed use was given, as well as the beginning date and end date of the water meter readings, making it possible to calculate the use for a single calendar year.
4. Usefulness: For 3 companies the distinction between business and private users was not clear. One company provided only company names of a selection of water users.
5. The customer files also do reflect administrative changes to charged uses. Correction of errors on charged volumes are included in the customer files, with as a result numerous records with negative use amounts. On the other hand, also upward corrections are included, but these cannot be distinguished from other records.
6. Spatial coverage: While processing the files it turned out that 1 company did not provide the complete file: half of the users in its PWS area were missing; this turned out to be a whole province. This incompleteness occurred in the final phase of the project, where no additional information was obtained from the PWS company.
7. In 6 customer files, information on NACE codes were included by the PWS companies. PWS companies can get this information from the Chambers of Commerce. The NACE code as registered by the Chambers of Commerce sometimes deviate from the NACE code in the Central Business Register of Statistics Netherlands.
8. 2 PWS companies did not provide information on the use address (location of the water meter or supply point) but only on the billing address. This address however can be located outside the supply area.

The formats of these individual customer files among the different PWS companies didn't appear to be similar. However, the individual records at least include names, addresses and tap water use of approximately 700,000 businesses in the whole economy.

4.4.1 Regional distribution derived from the customer files.

By making use of the addresses of the individual records, regionalization of data to other regional divisions, to River Basins in particular could be achieved for all PWS companies.

Confronting the total deliveries of tap water per PWS company according to the official VEWIN Statistics, with the summed amounts of the customer files resulted in the observation that none of these totals were the same. But, based on the data from the PWS customer files, still a distinction could be made between use by households and businesses. This differs from the distinction between households and business communicated by the Association of Dutch Water Companies (VEWIN). Nevertheless, the detailed customer data could be used to calculate relative distribution ratio's over the River Basins for both use categories. This is done for 2008 only. For the years 2004 -2007 the same ratios were applied, given the fact that there were no huge changes in the spatial distribution of population and economic activities. The ratios per River Basin were applied to the total official deliveries of tap water from VEWIN Statistics for 2004-2008. The results of the calculation are given in chapter 10.

4.4.2 Matching with the Central Business Register

In order to assign the records to a NACE category and to add the number of employees, in total 6 customer files (business users) could be matched to the Business Register of Statistics Netherlands. In 4 of them NACE codes of most of the records were already registered by the PWS themselves.

Given the time frame of the project it was not possible to match the other 4 customer files, moreover because the capacity needed to further process the matching results was larger then expected. While processing the matching results it was chosen to concentrate on the non-industrial and non-agricultural companies.

The matching results and 'success' of this linkage has been evaluated. In case of 3 PWS companies, representing 13% of the total use of drinking water by businesses, the connection was reasonably successful. Between 55 and 70% of the records could be matched. Within these 3 files in most of the records the NACE code of the Chambers of Commerce was already included and could account for the remaining 30-45 % of the NACE codes. After processing the matching results, all records had a NACE code. For the 3 PWS companies this way total water use per NACE (3-digit level) was calculated and coupled to data on the number of employees in the PWS areas. The resulting data files facilitate the calculation of average tap water use per employee per NACE category, for at least the non-industrial and non-agricultural companies. The results of this activity are given in Chapter 10.

Depending on the result of the linking to the Business Register, there is a possibility to confront the existing, partly estimated, tap water data of Agriculture and Industry, with the data from the customer files. This may eventually lead to an adjustment of the data on tap water use in these sectors. This activity is foreseen in the near future.

5. Methods for regionalization of water data for Agriculture and Industry

In this chapter, for the sectors Agriculture and Industry the methodologies applied for compiling aggregates at the scale of River Basins is described. This concerns both the abstraction of water from different sources as well as the use of drinking water.

5.1 Regionalization of data on water abstraction and use by the agricultural sector

5.1.1 Description of existing national data

The total amount of water abstraction and tap water use in agriculture, for the years 2001 to 2008 is estimated for each sub sector, such as animal husbandry and arable farming, by the Agricultural Economic Research Institute, LEI. LEI makes use of the Farm Accountancy Data Network (FADN), this is a limited sample of the farms that are included in the so-called Farm Structure Survey (FSS). Some processing of the LEI data was required in order to get the preferred aggregates for both surface water and groundwater separately.

5.1.2 Method for regionalization

In this project we have developed a request for LEI to distribute the existing national data to a regional level by allocating the farms in the sample and their reported water use to the different River Basins. This can be done relatively easy because their locations are well-known. The LEI also applies a well developed methodology to raise the figures of the water used by the individual farms that exist within the sample, to the total levels for each River Basin and to the national totals (Veen, 2010).

For several reasons it is not possible to derive a figure on the water use of the entire population of farms in the different basins. Not for all the farms in the sample water use is recorded. For some River Basins the number of farms in the sample is too low to derive reliable figures overall.

By making use of the so-called ‘Statistical matching methodology’, available figures are weighted and raised. Matching takes place between farms in the sample with farms in the whole population of farms with certain comparable features. Each single farm in the whole population is matched with a number of farms from the sample, weighing each sample farm counting up to 1. The best matching farm gets the highest weight (Veen, 2010).

In the LEI figures distinction is made between a number of sub sectors within agriculture such as arable farming, horticulture, animal husbandry, and other. Moreover, a distinction is made between use (of tap water) and abstraction from

surface water or groundwater and the purpose of the use either for irrigation or drinking of livestock.

The required budget for this task was made available by Statistics Netherlands for this year. This activity will ensure the future data flow on agricultural water use per River Basin as long as required budget will remain to be assured as well.

5.1.3 Developments relevant for alternative or eventually future method

As an alternative method, when LEI data at River Basin level will not be available or prove to be insufficient, the regionalization of the water abstraction for irrigation of grassland, arable farming and horticulture can be based on the shares of the respective River Basins in the total national area (hectares), which result from activity 1 (chapter 4). For animal husbandry and water particularly used for (cattle) drinking purposes, the distribution over the River Basins can be based on the distribution of the number of cattle over the different River Basins. For the national totals for use in agriculture we still do have to rely on figures obtained by LEI.

It is worth mentioning that currently there is a European regulation for agricultural statistics in place which requires Member States to make an inventory or a model to determine the quantities of water used for irrigation by each individual agricultural holding (except for horticulture). Aggregation towards the river basin level should be relatively easy. Statistics Netherlands currently is developing and testing the methodology to fulfill the requirements with regard to the data. Preliminary results have been derived already. However, more detailed and definitive results of this project cannot be expected before 2011 or even 2012. Until then the method being developed within the Water Grant project will be used, especially for 2004 to 2008.

5.2 Regionalization of water abstraction and use by manufacturing industry

5.2.1 Description of existing national data

Via the electronic Environmental Annual Reports (e-AERs), data of emissions to air and water and the disposal of waste, is collected for approximately 500 companies in the manufacturing industry, energy and environmental services sector. The Environmental Report also contains a water module. Via this module, data on the abstraction of surface water and groundwater as well as the use of tap water become available for the main companies in the industrial sectors. Statistics Netherlands, extrapolates the individual water data to totals per NACE category. In the project, both the data of individual companies and the extrapolated figures for each NACE category are regionalized.

Not all industrial NACE categories are covered by the AER data. In those cases where insufficient data were available, estimates based on historical data are used. In the project these National estimates are also regionalized to River Basins (see par. 5.2.4).

5.2.2 Regionalization of water data from individual companies

From the Emission Register or officially the 'Pollutant Release and Transfer Register (PRTR)', data can be obtained with the location coordinates of the companies that participate in the electronic Environmental Annual Reports (e-AERs)

These locations were linked to Geographic Information System maps (GIS maps) of the different River Basins. As a result, the individual establishments can easily be attributed to the River Basins. Abstractions from surface water can also be distinguished for fresh and salt surface water separately. Abstraction of salt water is done predominantly for cooling purposes. The companies that withdraw salt water are situated at major industrial complexes at the shore or sea harbours. Since all the companies at these locations are included in the e-AER registration, it is herewith assumed that all abstractions of salt water are covered.

For withdrawals from fresh surface water and groundwater as well as the use of tap water, not all companies in NACE (Rev. 1.1) 15-37 are present in the e-AERs registration. The ones that are missing are collectively estimated (see also 5.2.3 and 5.2.4).

A major drawback of the inventory of the tap water use via the e-AER is that in the format of the e-AER no distinction is made between the use of drinking water (deliveries by PWS companies) and 'other water'. Other water can be defined as water with a quality that differs from drinking water (PWS). This could be a semi finished product or even more pure water (e.g. demineralised water). The deliveries of 'other water' are done either by specialised water companies, operating separate water factories on-site or off-site an industrial plant, or by PWS companies.

For certain industry branches the use of drinking water therefore could be over-estimated. The aim is to identify and quantify the use of 'other water' in future. During the processing of the data in the context of this study, already some quantities of 'other water' were identified. Official VEWIN statistics (VEWIN, 2010) show that 'other water' supplied by PWS companies compares to 6-7 percent of their total drinking water supply. In case of deliveries of 'other water' by PWS companies, it is the aim to address this item in future contacts with VEWIN in order to obtain data on quantities and to identify the users.

5.2.3 Regionalization of the extrapolated data of industries covered by the AER

For those industrial NACE categories represented by sufficient individual companies, the data on water abstraction and tap water use are extrapolated to national totals. This manipulation is done using physical production data from PRODCOM statistics. The summed water data of individual companies with an e-AER are raised according to the ratio of the production of the individually registered companies and the total production of the concerning manufacturing industry. Further details can be found in the method description (Baas, 2006).

In the project a quite straight forward method is developed to regionalize the extrapolated water data to the River Basins. Estimated national totals are divided

top-down to the River Basins along a regional distribution of number of employees per NACE 3 digit level (result of activity 1) see chapter 4). This distribution is corrected for the employees of the establishments individually recorded via the AER. This number of employees is determined by matching the individual records with the Central Business Register of Statistics Netherlands.

5.2.4 Regionalization of water data of industries not covered by the e-AER

A number of sectors at the NACE (Rev. 1.1) 3-digit level in the manufacturing industry are not or inadequately represented in the AERs. For these companies water abstraction and water use is estimated based on data taken from the 'National Water Survey 2001' (CBS, 2004), which contains historic water data from: a. Mining and quarrying (NACE 11), b. manufacturing industry (NACE 15 till 37), c. 'Public Utilities' with electricity, gas, steam and hot water supply (NACE 40). For a full description of the method used, see (Graveland, 2006).

These data are distributed top-down to River Basins via a regional distribution of the number of employees per NACE 3 digit level, per (sub-) River Basin, obtained from activity 1) (see chapter 4).

6. Regionalization of data on water abstraction by Public Water Supply companies

Data for each River Basin are generated by making use of the data for each individual abstraction location. Through connection to GIS-coordinates of the geographical locations and spatial allocation to the River Basins, the quantities for each (sub-) River Basin and to type of water, either ground or surface water, were calculated.

The GIS action for one year (2008) was carried out by the Association of Dutch Water Companies (VEWIN). This processing could be established free of charge because Statistics Netherlands offered to deliver in return the results of the analyses of the use of drinking water per River Basin for households and companies (activities 2 and 6, see next paragraphs). For the other years of interest, 2004 – 2007, available data for the individual PWS companies with differentiation to the type of extraction either abstraction of ground water, natural dune water, river ground water, or surface water was used to translate to the River Basin level. For that purpose use was made of the spatial distribution of abstracted amounts per PWS and the translation to the River Basin level as was observed in the 2008 figures provided by VEWIN.

7. Regionalization of data on drinking water use by the service sectors and by Households

7.1 Introduction

For the regionalization of the tap water use by households as well as by remaining sectors of the economy such as Building, Trade and commercial and non-commercial services two options exist. The top-down method makes use of national totals on water use by the economic sectors and the households as obtained from VEWIN. Using regionalized statistics on inhabitants and number of employees, the used amounts can be distributed over river basins.

In contrast in this project, it was chosen to test a bottom-up method by which – in theory – all tap water uses can be attributed to different NACE categories and households as well as to different regional levels, such as river basins. The method makes use of the customer files of all ten PWS companies (see chapter 4.4). These files contain names, addresses and yearly tap water use of all customers. In theory, this information can be very valuable but in practice it turned out that in the use of these files we face a number of severe limitations (see also chapter 4.4). The final method used in this project therefore is a mixture of both methods: national totals are distributed top down over the River Basins using distribution ratios derived from the customer files. With respect to the customer files as possible source for data on water use per NACE, as a first step only information for the Service sectors is used.

In the next sections, first a description is given of national existing data. After that the 'mixed' method is described in chapter 7.3. Finally, chapter 7.4 gives a short description of the top-down method for households.

7.2 Description of existing national data

The total supply of drinking water is reported by the VEWIN on an annual basis in their 'Water Supply Statistics' or Drinking Water Statistics (VEWIN, 2008 & 2010). In there a distinction is made between 'households', 'small businesses' and 'wholesale market'. According to the official VEWIN Water supply Statistics, the use by households is defined as all uses below 300 m^3 of drinking water per year. The 'small businesses' concerns companies with a water use less than 10,000 m^3 a year. Companies with a water use of more than 10,000 m^3 per year are included in the 'wholesale market'.

The tap water use by Mining and Manufacturing industry (NACE 10-37) in principle is already regionalized and described by activity 4 (paragraph 5.2). Also, tap water used in agriculture is determined, while the applied regionalization procedure is described in activity 3 (paragraph 5.2).

Current data on drinking water use of companies in the remaining Service sectors (in this study: the sectors Building (NACE 45), Trade (NACE 50-52) and commercial

and non-commercial services (NACE 55-93)) are determined by combining the official VEWIN Statistics with the data on agriculture and manufacturing industry. In fact this was a balancing item in the composite tables of drinking water use per sector. The drinking water use is distributed over the NACE categories in proportion to the number of employed people as derived from the National Accounts.

Since water use in the Service sectors is mainly related to the use by employees, the estimated distribution over the NACE categories seems to be the best method available. For certain service related sectors as education, Health and social work activities, or recreational, cultural and sporting activities, in future the method for the water distribution can be adjusted somewhat. As the number of employees solely may not be the perfect tool for distributing the water used, addition can be made. To the number of employees, most probably the number of people cared for, number of full-time students, or either number of people making use of sporting facilities can be added. However not a major change, this would imply a preferable adjustment, as water use is largely related to the number of people making use of toilet and bathing facilities. Nevertheless, if the customer files from the PWS companies do provide sufficient quality of data for a range of years, it is preferred to use that data.

7.3 Method for regionalization of data on drinking water use by the service sector.

Parallel to regionalization of the data, the customer files were used for improvement of the data for the service sectors per NACE category. In this study, a first attempt has been made by calculating water use coefficients per employee per NACE 3-digit level on basis of 3 out of 10 customer files. By multiplying the resulting coefficients with the total number of employees per NACE 3-digit, the national total tap water use of the Service sector was calculated as well as the regional distribution over the River Basins, using the information on employees per River Basin as constructed in activity 1 (see chapter 4).

Results of the calculation of the water use coefficients are given in chapter 10. The calculated amounts of drinking water used by the Service sector are included in the composite tables on drinking water use per River Basin (see also chapter 10).

7.4 Method for regionalization of data on drinking water use by households

Based on information of the customer files, the uses of drinking water by households are localized via the postal code of the metering address. By linking this postal code as connected to municipalities with PWS areas and with River Basins (see chapter 4), relative distribution ratios for the use of drinking water to River Basin were calculated. This is done for 2008 only. For the years 2004 -2007 the same ratios were applied, given the fact that there were no huge changes in the spatial distribution of population. The official VEWIN statistics and publications contain data on the water use by households for each individual PWS company (VEWIN, (2008), VEWIN (2010)). These official statistics on deliveries of tap water from VEWIN Statistics for 2004-2008 were multiplied by the distribution ratios per River

Basin, resulting in the data on the drinking water use by households per River Basin for each single year.

As an alternative method for the use of the customer files, the distribution of the water used by households over the River Basins can be done via 2 steps: 1. Size of the population per River Basin and 2. Calculation of the amount of water used by multiplication with an average use per capita.

Determination of the population size per River Basin and per PWS area is possible via establishment of the geographic link between municipalities, PWS areas and River Basins (result of activity 1; see also chapter 4, table 4.1).

By combining the total figures on use by households, either PWS totals or National totals, with data on the population per PWS company and the link with (sub-)River Basins, regionalized values for the average water use per capita could be calculated. Finally, the total tap water use per River Basin can be calculated by multiplying these coefficients with the population size per River Basin. This method is regarded as the second best option and therefore has not been elaborated in this project. This is foreseen in the future. Ultimately, the results can be confronted with the distribution of the tap water use of households as derived from the customer files.

8. Estimation and regionalization of water abstraction in specific sectors

In some areas of commercial and non commercial services, abstraction of ground and or surface water is common practice. Examples include sports facilities especially golf courses, leisure and hotels / restaurants. These sectors should be further identified. By means of a desk study a method to estimate water abstraction by each of these sectors could be developed. Thereafter the national figures can be regionalized by making use of statistical indicators connected to these sectors. Unfortunately this activity could not be established within the time schedule of the project, because all of the remaining capacity was used for the processing of the customer files (activity 6 (see 4.4).

9. Improvement of the data

Throughout the project in conjunction with the data collection activities, the data processing and the break down activities to River basin and to economic activity, data have been improved as well. This is true for both data of water abstraction and data on water use.

Here we will briefly describe the data improvements that result from the activities executed in the project. Some elements of improvement were discussed already in detail in previous chapters.

1. Data for agriculture, the method for raising figures from water use by sample farms has been improved slightly, via better statistical matching with particular farms in the population.

2. Data for the Industry has (slightly) been improved. Reassessment of the use of drinking water by some companies with AERs in chemical manufacturing has led to a shift of drinking water to 'other water'; The use of 'other water' was not a subject in this Grant Project, but needs attention in future work.

3. So far, the use of drinking water in the service sectors (NACE rev 1.1 45-93) was in fact a balancing item in the national balance of water supplied and water used. In there the remainder of the water, after calculating the use by the other users (like agriculture, industry, and households) was assigned to the service sectors. However, by processing the customer files, the use of drinking water in principle can be obtained for each single NACE category (3-digit), including the service industries (NACE rev.1). This allows for a valuable bottom-up estimation of the use. Right now this has only been done on basis of the data of three out of ten PWS companies. These data are used to extrapolate to national totals and totals per River Basin. In the future it is foreseen to analyze the customer files from the other PWS companies as well, leading to improved coverage.

4. As a result balancing between national totals, sector totals and totals on households and with confronting the different and extended sources, one may well expect that quality of the figures will improve in the future.

5. The use of drinking water by Households may well result in more reliable figures if it can (partly) be based on the detailed customer files from the PWS companies. This allows for intensified confrontation with other sources, which can be good for the quality of the final result.

6. The customer files itself are a potential rich source of information which, under the condition of reasonable coverage and good connection to other statistical data, allow for improved quality on the figures on drinking water at national scale and River Basin scale.

7. While exploring the customer files, companies in the specific sector NACE 70 showed, as one might expect, large volumes of drinking water use. In this sector,

real estate properties, renting of houses and associations of real estate owners are included. In fact, the major part of the water use here is due to households living in the real estate properties. It has to be decided in future whether these drinking water volumes have to be attributed to the sector Households.

8. The official VEWIN totals (VEWIN, 2010) for non-business users is reflecting for a major part the use by households. From the customer files it appeared that also small companies, like stores, are sometimes included in these totals. On the other hand, households that use more then 300 m^3 drinking water per year are sometimes included in the official total of the business users. The customer files can help to identify such cases and improve the allocation of water uses to either households or businesses.

10. Results of the disaggregation to River Basins

10.1 Data on abstraction of water

In Annex I composite tables of the abstraction of fresh water by different sectors is given per River Basin, for the years 2004 to 2008. The format of the tables is derived from the Joint Questionnaire 'Inland Waters'. Table 10.1 summarizes the results for fresh surface water 2008, table 10.2 gives the results for fresh ground water and table 10.3 provides the totals for abstraction of fresh water. For a description of the origin of the data and specific methods of regionalisation, see chapter 5.

The highest abstracted amounts of fresh water occur in the Rhine-West and the Meuse area. In this area, most of the power plants and large industries are located.

Annex II contains a table with the abstractions of marine water, per River Basin for the years 2004-2008. Marine water is only abstracted by electricity power plants, chemical industry and for manufacturing of basic metals.

Table 10.1 Abstraction of fresh surface water per River Basin, 2008

Abstraction mio m3	Nace	Total NL	Ems	Rhine-North	Rhine-East	Rhine-Center	Rhine West	Meuse	Scheldt
Fresh surface water, total (1)		9639,8	43,6	430,6	276,3	64,5	4437,5	3888,1	499,1
of which:									
Agriculture, forestry, fishing	01-05	24,4	1,6	5,4	3,2	5,2	6,4	2,3	0,3
of which									
arable farming (irrigation)	0111	3,5	0,8	0,4	0,0	1,2	0,5	0,6	0,0
horticulture	0112	1,2	0,0	0,1	0,0	0,1	0,2	0,8	0,0
livestock drinking	012	16,0	0,7	4,7	2,8	2,8	4,8	0,0	0,2
other or combined		3,6	0,0	0,2	0,3	1,0	0,9	1,0	0,1
Mining and quarrying	10-14	1,1	0,1	0,1	0,1	0,1	0,3	0,3	0,0
Manufacturing industry, total	15-37	2998,6	34,5	28,8	80,2	57,3	1506,6	793,4	497,8
of which used by									
food processing	15	153,3	17,1	20,0	7,3	3,1	69,6	32,6	3,8
textiles, clothing and leather	17-19	4,5	0,0	0,0	0,9	0,2	0,6	2,6	0,1
paper and paper products	21	106,5	4,1	2,4	5,2	4,5	67,4	20,7	2,2
chemicals, refined petroleum	23-24	2683,0	12,9	5,3	55,9	46,6	1345,7	725,2	491,4
basic metals	27	29,7	0,2	0,3	2,0	1,7	18,9	6,5	0,1
other manufacturing industry		21,7	0,3	0,8	8,9	1,2	4,3	5,9	0,3
Production of electricity	40	5695,1	0,0	395,2	189,6	0,6	2231,8	2877,9	0,0
Public Water supply	41	489,8	6,9	0,0	0,0	0,0	278,1	204,8	0,0
Waste processing	9002	430,8	0,5	1,2	3,2	1,4	414,3	9,3	0,9
Other activities (excl. 9002)	45-93								
Private Households		0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0

Table 10.2 Abstraction of fresh ground water per River Basin, 2008

Abstraction mio m3	Nace	Total NL	Ems	Rhine-North	Rhine-East	Rhine-Center	Rhine West	Meuse	Scheldt
Fresh ground water, total (2)		966,5	42,9	70,4	181,0	115,8	230,2	303,4	22,8
of which:									
Agriculture, forestry, fishing	01-05	46,7	0,8	3,0	16,4	5,6	1,1	19,3	0,5
of which									
arable farming (irrigation)	011	7,7	0,0	1,1	1,1	3,2	0,0	2,3	0,0
horticulture	013	9,2	0,0	0,0	0,9	1,3	0,5	6,5	0,1
livestock drinking	012	26,6	0,7	1,8	13,4	1,0	0,7	8,6	0,3
other or combined	01	3,2	0,0	0,0	1,0	0,0	0,0	2,0	0,1
Mining and quarrying	10-14	0,1	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Manufacturing industry, total	15-37	154,5	4,3	6,8	28,8	15,1	57,5	39,1	2,9
of which:									
food processing industry	15	50,9	2,5	4,1	11,7	6,3	10,1	14,3	1,9
textile, clothing and leather	17-19	2,7	0,0	0,0	1,1	0,2	0,4	0,9	0,0
paper and paper products	21	18,6	0,5	0,4	2,0	5,7	8,3	1,5	0,2
chemicals, refined petroleum	23-24	25,5	0,3	0,1	2,5	0,6	15,4	6,6	0,1
basic metals	27	17,4	0,0	0,0	0,8	0,4	14,4	1,6	0,0
other manufacturing industry		39,4	0,9	2,2	10,7	1,9	8,9	14,2	0,6
Production of electricity	40	1,7	0,0	0,0	0,1	0,0	1,4	0,2	0,0
Public Water supply	41	762,4	37,8	60,6	135,2	94,9	169,9	244,7	19,4
Waste processing	9002	1,2	0,0	0,1	0,5	0,1	0,4	0,1	0,0
Other activities	45-93								
Private Households		0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0

Table 10.3 Total abstraction of fresh water, per River Basin, 2008

Abstraction mio m3	Nace	Total NL	Ems	Rhine-North	Rhine-East	Rhine-Center	Rhine West	Meuse	Scheldt
Fresh water, total		10606,3	86,5	501,0	457,3	180,3	4667,7	4191,5	521,9
of which:									
Agriculture, forestry, fishing	01-05	71,1	2,4	8,3	19,6	10,8	7,5	21,6	0,8
of which									
arable farming (irrigation)	011	11,2	0,8	1,5	1,1	4,5	0,5	2,8	0,0
horticulture	013	10,4	0,0	0,1	0,9	1,4	0,7	7,2	0,1
livestock drinking	012	42,6	1,4	6,5	16,2	3,9	5,5	8,6	0,5
other or combined	01	6,8	0,1	0,2	1,4	1,0	0,9	3,0	0,3
Mining and quarrying	10-14	1,2	0,1	0,1	0,1	0,1	0,4	0,4	0,0
Manufacturing industry, total	15-37	3153,1	38,8	35,6	109,0	72,4	1564,1	832,5	500,7
of which:									
food processing industry	15	204,2	19,5	24,0	18,9	9,4	79,8	46,9	5,6
textile, clothing and leather	17-19	7,2	0,0	0,1	2,0	0,5	1,0	3,5	0,1
paper and paper products	21	125,1	4,6	2,8	7,2	10,2	75,7	22,2	2,4
chemicals, refined petroleum	23-24	2708,5	13,2	5,4	58,4	47,1	1361,2	731,8	491,4
basic metals	27	47,1	0,2	0,4	2,8	2,1	33,3	8,1	0,2
other manufacturing industry		61,1	1,2	3,0	19,7	3,1	13,2	20,1	0,9
Production of electricity	40	5696,8	0,0	395,2	189,8	0,6	2233,1	2878,1	0,0
Public Water supply	41	1252,1	44,7	60,6	135,2	94,9	447,9	449,5	19,4
Waste processing	9002	432,0	0,5	1,2	3,7	1,5	414,7	9,4	1,0
Other activities	45-93								
Private Households		0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0

10.2 Data on the use of drinking water

10.2.1 Total use of drinking water per River Basin

In Appendix III composite tables on the use of drinking water by the different sectors is given per River Basin, for the years 2004 to 2008. The format of the tables is derived from the Joint Questionnaire 'Inland Waters', 'Table 3.1: Water use by supply category and user'. Table 10.4 summarizes the results of water use in 2008, for the whole national territory, reflecting the summed use of the river basins.

Table 10.4 Total use of drinking water by activity, 2004-2008

Territory: NL Netherlands, River Basins, RBs totaled		(10^6 m^3)				
	ISIC/NACE	2008	2007	2006	2005	2004
Public water supply (16).						
TOTAL		1093.1	1088.1	1098.8	1087.2	1099.4
of which used by:						
* Private households		788.35	789.36	800.57	784.89	790.80
* Agriculture, forestry, fishing	(01-05)	47.37	50.10	48.53	49.39	51.81
* Industrial activities	(10-40)	183.84	191.48	195.14	199.50	204.42
of which for:						
- Mining and quarrying	(10-14)	4.19	4.01	4.20	4.30	4.39
- Total manufacturing industries	(15-37)	176.37	184.78	188.72	193.11	197.87
of which for cooling purposes (18)		.	.	.	.	.
of which for:						
- 15 Food processing		49.18	49.07	51.23	49.32	49.43
- 17-19 Textiles, clothing and leather		1.10	1.13	0.96	0.95	1.16
- 21 Paper and paper products		3.58	2.90	3.09	3.51	2.36
- 23-24 Chemicals, refined petroleum		64.31	73.46	76.27	82.34	86.42
- 27 Basic metals		36.18	36.02	35.88	36.40	37.52
- Other manufacturing industry		22.02	22.20	21.29	20.59	20.98
- Production and distribution of electricity	(40.1)	3.28	2.69	2.22	2.10	2.16
of which for cooling purposes (18)		.	.	.	.	.
* Services	(41-93)	115.25	111.74	108.58	97.11	96.51
of which for:						
- Waste processing	(90)	3.66	2.73	3.43	2.63	3.31
- Other services		111.60	109.02	105.15	94.48	93.20
Balancing item	remainder	-41.69	-54.55	-54.06	-43.70	-44.15

The origin of the data on the different sectors is as follows.

- Total use of drinking water: official totals of drinking water deliveries by PWS companies, as reported by VEWIN (2008, 2010), regionalized to River Basin among distribution of water uses derived from the customer files (see chapter 4.4.1);
- Private households: official totals for non-business users as reported by VEWIN (2008, 2010), regionalized to River Basin among distribution of household water use derived from the customer files (see chapter 4.4);
- Agriculture: data from LEI (van der Veen et al, (2010)) with some processing, as described in chapter 5.1;
- Industry, power plants and waste processing: data from e-AER and additional estimates, see chapter 5.2;
- Service sectors (NACE 45-93): Calculated on basis of water use coefficients per employee (see 10.2.2); the extrapolation to total use and the distribution over River Basins is done along numbers of employees per NACE 3-digit level per River Basin (see chapter 7.3).

In the tables in Annex III as well as in table 10.4, the sum of the different sectors is not equal to the official VEWIN totals (included in the row 'TOTAL'). The balancing remainder is given at the bottom of each table. In 2008 the discrepancy between official total and calculated total is almost 4%. The height and sign of the discrepancy varies along the River Basins and over the reported years. A negative balance means that the official total use is lower then the sum of the separate sectors. In that case the drinking water use of one or more sectors could be over-estimated.

The total drinking water use in the Scheldt region seems by far the most balanced. Within Meuse and Ems, the discrepancy is positive, meaning that one or more

sectors are likely to be under-estimated. In the four Rhine regions, the balance is negative, caused by possible over-estimation of one or more economic sectors.

Given the different sources of information used to compile the tables, it is not surprising that the observed imbalances occur. In chapter 9, already some activities are proposed to improve the data per sector. The two most important activities are a better definition and quantification of the drinking water use by households versus businesses. Also the quantification and identification of the use of 'other water' by industrial companies could reduce the discrepancy.

Table 10.4 shows that the largest amounts of drinking water used are observed in the Rhine-West and the Meuse area. In this area, most households and large industry are situated.

For reporting of water data in the various publications and questionnaires, like for the Joint Questionnaire, the observed imbalances per River Basin forces to make choices which data are to be provided. For the future, actions are indeed defined to lower the imbalance but it is not expected it can be reduced to zero. For this year's reporting exercises 3 options remain. The first option is to calculate new bottom-up totals which will differ from official totals on PWS as reported by VEWIN. Second option is to distribute the balancing volume proportionally over the different sectors enabling to stick to the official VEWIN totals. The third option is to look after a customized approach in which the balancing amount is assigned to those sectors where the validity of the source data is considered to be less.

The proposal for the current Eurostat/OECD questionnaires is to provide the data according to option one (with calculated bottom-up totals) to safeguard maximum transparency. This choice urges to address the actions for improvement as formulated and to stimulate to reduce the imbalances with the official VEWIN statistics.

In table 10.5 for 2008 a comparison is made between the initial abstracted amounts of freshwater by PWS and their final supply of drinking water per River Basin. The national totals in this table are officially reported by VEWIN (2010). For the total abstraction per River Basin also VEWIN data of individual abstraction locations, are used. The distribution of the final supply per River Basin is based upon the customer files. The figures in table 10.5 show that the national total abstraction by PWS companies is higher then total supply. The observed difference stem from production losses, change in stocks, artificial infiltration, quantities of water supplied but not accounted for and supply of 'other water' to end users.

Table 10.5 Abstraction by PWS companies versus final supply of drinking water, 2008

mio m3	Total NL	Ems	Rhine-North	Rhine-East	Rhine-Center	Rhine West	Meuse	Scheldt
Abstraction by PWS companies	1252,1	44,7	60,6	135,2	94,9	447,9	449,5	19,4
Total drinking water supplied	1093,1	35,9	66,3	143,0	68,2	486,8	245,1	47,8

Despite the difference between either total abstraction for PWS and final use, the figures in table 10.5 illustrate the existing practices of transport of water for PWS

supply between the River Basins. For example, abstraction in the Meuse region is much higher then the use in this region. The existing practice is that large quantities of Meuse water are transported by pipe-line to the dunes in the Rhine-West region where it is artificially infiltrated for purification reasons. Subsequently, the PWS companies in the Rhine-West region abstract the water from the dunes for the production of drinking water[5]. Moreover, PWS companies responsible for the supply in the Scheldt region use large quantities of water abstracted in the Meuse region.

For other River Basins similar relations exist but on a smaller scale. In the Ems river basin, a part of the water abstracted is destined for PWS in the Rhine-North region. The same holds for abstraction in the Rhine-Center region in conjunction with PWS in the Rhine-East region.

10.2.2 Water use coefficients for the Service sector

Annex IV gives an overview of the water use coefficients calculated for the Service sectors on basis of 3 out of 10 customer files (see also chapter 4.4 and 7.3). Table 10.6 gives the 'top ten' of highest use coefficients per employee.

Table 10.6 Top ten of water use coefficients per employee, 2008

NACE REV 1.1.	Name	Tapwater use per employee m3/year	Tapwater use per employee liter/day
552	Camping sites and other provision of short-stay accommodation	484,53	1327,49
926	Sporting activities	237,48	650,62
551	Hotels	94,94	260,11
701	Real estate activities with own property	86,00	235,63
505	Retail sale of automotive fuel	84,90	232,59
631	Cargo handling and storage	73,29	200,80
927	Other recreational activities	73,18	200,49
913	Activities of other membership organizations	73,06	200,17
702	Letting of own property	66,55	182,32
930	Other service activities	62,19	170,39

Most of the economic activities listed in table 10.6 are related to providing accommodation or leisure to people. In general the number of people making use of these facilities is very high in contrast to the number of employees. The high water use of NACE 505 is probably related to the wide-spread presence of car wash facilities at fuel stations. For the category Cargo handling, probably tanker cleaning facilities are responsible for the high use rate per employee.

The plausibility of these coefficients might improve when more customer files can be processed in future.

[5] In the data on total abstraction by PWS companies, only initial abstractions are included. Likewise, abstractions of surface water destined for artificial infiltration is included in the data, while abstractions of artificially infiltrated water from dunes are not included.

11. Conclusions / recommendations

We can draw some conclusions with regard to method and compilation activities.

1. In agriculture raising figures with statistical matching between sample farms (recording water use and abstraction) and other farms in the population (national or River basin) allows for solid outcomes at River basin level;
2. In the manufacturing industry, the data from the AERs allows for sound figures raised to national totals for both extraction as well as drinking water use. The allocation to River basin is relatively easy by allocating the (GIS) location of the establishments to the River basins;
3. Data obtained from the PWS company customer files in combination with other statistical data allows for improvement of the national figures on tap water use. It too allows for compiling figures at a River basin scale including breakdown to industry (3 digit level);
4. Distribution of the use of drinking water by household is quite well facilitated by the PWS customer files, under the condition that coverage is sufficient and preferably complete;
5. For water abstraction both from surface water and groundwater sound figures for the national totals as well as for the (sub-)River basins were compiled by making use of the available data sources;
6. For drinking water for the main users (per industry and households) reasonable figures can be compiled at the national scale, with some balancing needed. At the River basin scale the results require further confrontation and adjustment to get fully comprehensive figures that sum up to River basin totals;
7. The results of the first attempt to calculate water use coefficients per employee per NACE for the Service sectors seem plausible. Especially the activities where accommodation and leisure is offered to people show large uses of drinking water per employee. Also the NACE categories where car-washing and tanker cleaning are included in the activities have large use coefficients.

In order to streamline future work on the water use data the following recommendations can be made:

1. The water data of the industrial sectors can be improved by identifying and quantifying the uses of ‘other water’. It is advised to adjust the format of the Environmental reporting modules so that a distinction can be made between uses of drinking water (PWS) and ‘other water’;
2. Further processing of customer files is recommended to improve the water use coefficients. In addition to the coefficients for the Service sector, also coefficients for industrial activities could be calculated in order to check the current available data on industrial water use;

3. It is advised to discuss with VEWIN and PWS companies the wish for a more clear distinction between the drinking water use by private households and businesses. This will probably lead to a shift in the official VEWIN statistics. Special attention is needed for the reported uses of NACE 70 activities, renting of houses and real estate property. It has to be discussed whether the water use found within this activity should be attributed to the sector private Households;
4. For reasons of comparability between the reported years, all economic activities in this study are classified according to NACE rev. 1.1. Future work on water quantities therefore must provide a breakdown along NACE 2.0;

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Annex I: Abstraction of fresh water per economic sector per River Basin, 2004-2008

The Netherlands	River Basin:	Ems		Sub-basin: -		
Abstraction mio m3	Nace	2008	2007	2006	2005	2004
Fresh surface water, total (1)		43,601	45,402	82,151	59,391	75,136
of which:						
Agriculture, forestry, fishing	01-05	1,599	0,908	3,829	0,568	2,079
of which						
arable farming (irrigation)	0111	0,833	0,581	2,926	0,547	1,418
horticulture	0112	0,045	0,084	0,043	0,021	0,036
livestock drinking	012	0,674	0,011	0,659	0,000	0,625
other or combined		0,047	0,232	0,200	0,000	0,001
Mining and quarrying	10-14	0,124	0,119	0,134	0,138	0,153
Manufacturing industry, total	15-37	34,516	36,945	57,440	38,310	51,278
of which used by						
food processing	15	17,056	15,776	16,716	20,707	15,140
textiles, clothing and leather	17-19	0,021	0,021	0,016	0,043	0,030
paper and paper products	21	4,055	3,463	3,668	4,126	4,854
chemicals, refined petroleum	23-24	12,881	16,505	36,389	12,695	30,560
basic metals	27	0,197	0,870	0,350	0,489	0,262
other manufacturing industry		0,306	0,311	0,301	0,251	0,432
Production of electricity	40	0,000	0,000	0,000	0,000	0,000
Public Water supply	41	6,900	7,000	20,000	20,000	21,000
Waste processing	9002	0,462	0,430	0,748	0,375	0,626
Other activities (excl. 9002)	45-93					
Private Households		0,000	0,000	0,000	0,000	0,000
Fresh ground water, total (2)		42,908	43,111	43,779	45,682	47,413
of which:						
Agriculture, forestry, fishing	01-05	0,782	1,080	0,944	1,329	1,228
of which						
arable farming (irrigation)	011	0,000	0,000	0,000	0,205	0,310
horticulture	013	0,002	0,005	0,000	0,000	0,024
livestock drinking	012	0,732	1,075	0,944	1,124	0,625
other or combined	01	0,047	0,000	0,000	0,000	0,269
Mining and quarrying	10-14	0,011	0,010	0,011	0,011	0,012
Manufacturing industry, total	15-37	4,300	4,341	4,617	6,687	7,962
of which:						
food processing industry	15	2,473	2,507	2,587	3,088	3,446
textile, clothing and leather	17-19	0,016	0,018	0,015	0,035	0,038
paper and paper products	21	0,533	0,470	0,473	2,317	2,753
chemicals, refined petroleum	23-24	0,319	0,270	0,474	0,271	0,615
basic metals	27	0,049	0,062	0,036	0,043	0,036
other manufacturing industry		0,911	1,013	1,032	0,933	1,073
Production of electricity	40	0,000	0,000	0,000	0,000	0,000
Public Water supply	41	37,800	37,630	38,160	37,630	38,160
Waste processing	9002	0,015	0,050	0,047	0,025	0,051
Other activities	45-93					
Private Households		0,000	0,000	0,000	0,000	0,000
Fresh water, total (1)+(2)		86,509	88,513	125,930	105,073	122,550
of which:						
Agriculture, forestry, fishing	01-05	2,381	1,988	4,773	1,897	3,308
of which						
arable farming (irrigation)	011	0,833	0,581	2,926	0,751	1,728
horticulture	013	0,047	0,089	0,043	0,021	0,060
livestock drinking	012	1,406	1,086	1,604	1,124	1,250
other or combined	01	0,094	0,232	0,200	0,000	0,270
Mining and quarrying	10-14	0,135	0,129	0,145	0,149	0,165
Manufacturing industry, total	15-37	38,816	41,286	62,057	44,997	59,240
of which:						
food processing industry	15	19,529	18,283	19,303	23,795	18,586
textile, clothing and leather	17-19	0,037	0,039	0,031	0,078	0,068
paper and paper products	21	4,588	3,933	4,141	6,443	7,607
chemicals, refined petroleum	23-24	13,200	16,775	36,863	12,966	31,175
basic metals	27	0,246	0,932	0,386	0,532	0,298
other manufacturing industry		1,217	1,324	1,333	1,184	1,505
Production of electricity	40	0,000	0,000	0,000	0,000	0,000
Public Water supply	41	44,700	44,630	58,160	57,630	59,160
Waste processing	9002	0,477	0,480	0,795	0,400	0,677
Other activities	45-93					
Private Households		0,000	0,000	0,000	0,000	0,000

The Netherlands	River Basin:	Rhine		Sub-basin:	Rhine North	
Abstraction mio m3	Nace	2008	2007	2006	2005	2004
Fresh surface water, total (1)		430,608	428,049	304,785	504,380	522,879
of which:						
Agriculture, forestry, fishing	01-05	5,376	3,601	8,433	3,115	6,772
of which						
arable farming (irrigation)	0111	0,361	0,255	2,127	0,079	0,083
horticulture	0112	0,102	0,152	0,133	0,091	0,298
cattle watering	012	4,685	2,901	5,866	2,907	6,145
other or combined		0,228	0,292	0,307	0,038	0,246
Mining and quarrying	10-14	0,062	0,060	0,065	0,062	0,056
Manufacturing industry, total	15-37	28,774	33,743	56,694	44,901	59,328
of which used by						
food processing	15	19,952	18,376	18,584	16,574	20,331
textiles, clothing and leather	17-19	0,021	0,023	0,020	0,041	0,033
paper and paper products	21	2,360	1,817	1,928	2,176	1,807
chemicals, refined petroleum	23-24	5,341	12,598	35,237	25,133	35,396
basic metals	27	0,326	0,163	0,064	0,306	0,183
other manufacturing industry		0,775	0,766	0,862	0,671	1,579
Production of electricity	40	395,200	389,100	236,870	454,947	454,450
Public Water supply	41	0	0	0	0	0
Waste processing	9002	1,196	1,545	2,723	1,355	2,273
Other activities	45-93	n.m.	n.m.	n.m.	n.m.	n.m.
Private Households		0,000	0,000	0,000	0,000	0,000
Fresh ground water, total (2)		70,387	72,140	70,234	71,278	71,220
of which:						
Agriculture, forestry, fishing	01-05	2,973	3,091	0,000	2,907	0,328
of which						
arable farming (irrigation)	011	1,102	0,153	0,000	0,000	0,149
horticulture	013	0,032	0,037	0,000	0,000	0,179
cattle watering	012	1,839	2,901	0,000	2,907	0,000
other or combined	01	0,000	0,000	0,000	0,000	0,000
Mining and quarrying	10-14	0,004	0,004	0,004	0,005	0,005
Manufacturing industry, total	15-37	6,808	7,022	6,948	6,035	7,722
of which:						
food processing industry	15	4,097	3,618	3,096	3,100	4,157
textile, clothing and leather	17-19	0,048	0,056	0,044	0,081	0,071
paper and paper products	21	0,398	0,342	0,410	0,366	0,428
chemicals, refined petroleum	23-24	0,051	0,137	0,333	0,285	0,534
basic metals	27	0,032	0,012	0,007	0,024	0,020
other manufacturing industry		2,181	2,857	3,058	2,178	2,511
Production of electricity	40	0,000	0,000	0,000	0,000	0,000
Public Water supply	41	60,55	61,85	63,11	62,24	62,98
Waste processing	9002	0,052	0,173	0,172	0,091	0,185
Other activities	45-93					
Private Households		0,000	0,000	0,000	0,000	0,000
Fresh water, total (1)+(2)		500,995	500,188	375,019	575,657	594,099
of which:						
Agriculture, forestry, fishing	01-05	8,349	6,691	8,433	6,021	7,100
of which						
arable farming (irrigation)	011	1,462	0,408	2,127	0,079	0,232
horticulture	013	0,134	0,189	0,133	0,091	0,477
cattle watering	012	6,524	5,802	5,866	5,813	6,145
other or combined	01	0,228	0,292	0,307	0,038	0,246
Mining and quarrying	10-14	0,066	0,064	0,069	0,067	0,061
Manufacturing industry, total	15-37	35,582	40,765	63,642	50,936	67,050
of which:						
food processing industry	15	24,049	21,994	21,680	19,674	24,488
textile, clothing and leather	17-19	0,069	0,079	0,064	0,122	0,104
paper and paper products	21	2,758	2,159	2,338	2,542	2,235
chemicals, refined petroleum	23-24	5,392	12,735	35,570	25,418	35,930
basic metals	27	0,358	0,175	0,071	0,330	0,203
other manufacturing industry		2,956	3,623	3,920	2,849	4,090
Production of electricity	40	395,200	389,100	236,870	454,947	454,450
Public Water supply	41	60,550	61,850	63,110	62,240	62,980
Waste processing	9002	1,248	1,718	2,895	1,446	2,458
Other activities	45-93					
Private Households		0,000	0,000	0,000	0,000	0,000

The Netherlands	River Basin:	Rhine		Sub-basin:	Rhine East	
Abstraction mio m3	Nace	2008	2007	2006	2005	2004
Fresh surface water, total (1)		276,270	278,703	325,542	219,241	199,470
of which:						
Agriculture, forestry, fishing	01-05	3,184	2,600	2,751	0,020	2,773
of which						
arable farming (irrigation)	0111	0,000	0,000	0,020	0,000	0,000
horticulture	0112	0,024	0,887	0,078	0,015	0,783
cattle watering	012	2,811	1,367	2,653	0,000	1,920
other or combined		0,348	0,347	0,000	0,005	0,070
Mining and quarrying	10-14	0,083	0,041	0,103	0,159	0,188
Manufacturing industry, total	15-37	80,204	101,891	151,928	85,348	79,476
of which used by						
food processing	15	7,260	8,022	7,651	5,212	6,923
textiles, clothing and leather	17-19	0,936	0,637	0,433	0,907	0,850
paper and paper products	21	5,235	4,266	4,507	4,320	2,974
chemicals, refined petroleum	23-24	55,871	79,016	129,630	68,430	59,821
basic metals	27	1,953	1,250	1,008	1,267	1,451
other manufacturing industry		8,948	8,700	8,699	5,212	7,457
Production of electricity	40	189,649	171,129	166,603	131,673	113,050
Public Water supply	41	0	0	0	0	0
Waste processing	9002	3,150	3,042	4,157	2,041	3,983
Other activities	45-93					
Private Households		0,000	0,000	0,000	0,000	0,000
Fresh ground water, total (2)		181,004	172,965	194,579	175,725	180,313
of which:						
Agriculture, forestry, fishing	01-05	16,444	14,997	32,792	15,329	15,038
of which						
arable farming (irrigation)	011	1,116	0,059	1,458	0,125	0,153
horticulture	013	0,861	0,774	4,756	1,386	1,877
cattle watering	012	13,438	13,602	20,201	11,729	11,301
other or combined	01	1,028	0,562	6,377	2,089	1,707
Mining and quarrying	10-14	0,006	0,004	0,007	0,010	0,012
Manufacturing industry, total	15-37	28,756	30,447	31,776	32,126	35,637
of which:						
food processing industry	15	11,664	11,396	11,587	11,240	11,103
textile, clothing and leather	17-19	1,068	1,226	1,214	1,628	1,654
paper and paper products	21	1,995	1,970	2,038	1,823	3,391
chemicals, refined petroleum	23-24	2,480	4,225	5,158	5,198	5,552
basic metals	27	0,836	0,837	0,858	0,901	1,365
other manufacturing industry		10,713	10,794	10,921	11,337	12,572
Production of electricity	40	0,108	0,090	0,119	0,132	0,101
Public Water supply	41	135,18	126,72	129,19	127,65	128,88
Waste processing	9002	0,510	0,707	0,695	0,478	0,645
Other activities	45-93					
Private Households		0,000	0,000	0,000	0,000	0,000
Fresh water, total (1)+(2)		457,273	451,668	520,121	394,966	379,783
of which:						
Agriculture, forestry, fishing	01-05	19,627	17,597	35,543	15,349	17,811
of which						
arable farming (irrigation)	011	1,116	0,059	1,478	0,125	0,153
horticulture	013	0,885	1,661	4,835	1,401	2,660
cattle watering	012	16,250	14,968	22,853	11,729	13,221
other or combined	01	1,377	0,909	6,377	2,095	1,777
Mining and quarrying	10-14	0,089	0,045	0,110	0,169	0,200
Manufacturing industry, total	15-37	108,960	132,338	183,704	117,474	115,113
of which:						
food processing industry	15	18,924	19,418	19,238	16,452	18,026
textile, clothing and leather	17-19	2,004	1,863	1,647	2,535	2,504
paper and paper products	21	7,230	6,236	6,545	6,143	6,365
chemicals, refined petroleum	23-24	58,351	83,241	134,788	73,628	65,373
basic metals	27	2,789	2,087	1,866	2,168	2,816
other manufacturing industry		19,661	19,494	19,620	16,549	20,029
Production of electricity	40	189,757	171,219	166,722	131,805	113,151
Public Water supply	41	135,180	126,720	129,190	127,650	128,880
Waste processing	9002	3,660	3,749	4,852	2,519	4,628
Other activities	45-93					
Private Households		0,000	0,000	0,000	0,000	0,000

The Netherlands	River Basin:	Rhine		Sub-basin:	Rhine Central	
Abstraction mio m3	Nace	2008	2007	2006	2005	2004
Fresh surface water, total (1)		64,545	102,326	129,467	74,992	97,995
of which:						
Agriculture, forestry, fishing	01-05	5,198	3,093	9,388	2,657	3,630
of which						
arable farming (irrigation)	0111	1,246	2,002	5,374	0,425	0,438
horticulture	0112	0,102	0,751	0,422	0,041	0,924
cattle watering	012	2,824	0,340	2,994	1,979	2,007
other or combined		1,026	0,000	0,599	0,213	0,261
Mining and quarrying	10-14	0,091	0,102	0,032	0,043	0,041
Manufacturing industry, total	15-37	57,285	97,173	117,055	70,616	91,778
of which used by						
food processing	15	3,091	3,752	2,531	1,576	3,245
textiles, clothing and leather	17-19	0,247	0,383	0,096	0,153	0,109
paper and paper products	21	4,498	4,648	5,091	5,758	5,174
chemicals, refined petroleum	23-24	46,573	84,070	107,264	61,522	80,313
basic metals	27	1,678	3,080	0,817	0,790	1,278
other manufacturing industry		1,198	1,240	1,257	0,817	1,661
Production of electricity	40	0,588	0,515	0,546	0,526	0,535
Public Water supply	41	0	0	0	0	0
Waste processing	9002	1,383	1,443	2,446	1,150	2,011
Other activities	45-93	n.m.	n.m.	n.m.	n.m.	n.m.
Private Households		0,000	0,000	0,000	0,000	0,000
Fresh ground water, total (2)		115,767	123,639	130,237	122,214	127,476
of which:						
Agriculture, forestry, fishing	01-05	5,572	8,091	11,822	6,110	7,108
of which						
arable farming (irrigation)	011	3,237	2,911	3,871	1,143	0,775
horticulture	013	1,300	1,262	4,216	1,765	2,474
cattle watering	012	1,036	3,241	2,367	1,979	2,007
other or combined	01	0,000	0,677	1,368	1,223	1,851
Mining and quarrying	10-14	0,005	0,005	0,002	0,002	0,002
Manufacturing industry, total	15-37	15,145	17,372	18,055	17,201	20,281
of which:						
food processing industry	15	6,342	6,566	5,979	5,471	5,667
textile, clothing and leather	17-19	0,235	0,337	0,270	0,369	0,388
paper and paper products	21	5,717	7,007	7,793	7,938	9,473
chemicals, refined petroleum	23-24	0,553	1,284	1,429	1,265	1,717
basic metals	27	0,429	0,205	0,509	0,406	0,494
other manufacturing industry		1,869	1,974	2,074	1,752	2,542
Production of electricity	40	0,000	0,000	0,000	0,000	0,000
Public Water supply	41	94,93	97,95	100,16	98,78	99,88
Waste processing	9002	0,115	0,221	0,198	0,121	0,205
Other activities	45-93					
Private Households		0,000	0,000	0,000	0,000	0,000
Fresh water, total (1)+(2)		180,312	225,965	259,704	197,206	225,471
of which:						
Agriculture, forestry, fishing	01-05	10,770	11,184	21,210	8,767	10,738
of which						
arable farming (irrigation)	011	4,483	4,913	9,245	1,568	1,213
horticulture	013	1,402	2,013	4,637	1,806	3,398
cattle watering	012	3,860	3,581	5,361	3,958	4,015
other or combined	01	1,026	0,677	1,967	1,436	2,112
Mining and quarrying	10-14	0,096	0,107	0,034	0,045	0,043
Manufacturing industry, total	15-37	72,430	114,545	135,110	87,817	112,059
of which:						
food processing industry	15	9,433	10,318	8,510	7,047	8,912
textile, clothing and leather	17-19	0,482	0,720	0,366	0,522	0,497
paper and paper products	21	10,215	11,655	12,884	13,696	14,647
chemicals, refined petroleum	23-24	47,126	85,354	108,693	62,787	82,030
basic metals	27	2,107	3,285	1,326	1,196	1,772
other manufacturing industry		3,067	3,214	3,331	2,569	4,203
Production of electricity	40	0,588	0,515	0,546	0,526	0,535
Public Water supply	41	94,930	97,950	100,160	98,780	99,880
Waste processing	9002	1,498	1,664	2,644	1,271	2,216
Other activities	45-93					
Private Households		0,000	0,000	0,000	0,000	0,000

The Netherlands	River Basin:	Rhine		Sub-basin:	Rhine West	
Abstraction mio m3	Nace	2008	2007	2006	2005	2004
Fresh surface water, total (1)		4437,478	4522,515	4923,805	4951,173	4948,940
of which:						
Agriculture, forestry, fishing	01-05	6,366	6,558	9,539	11,250	17,626
of which						
arable farming (irrigation)	0111	0,499	0,265	0,297	0,239	0,265
horticulture	0112	0,202	0,588	2,781	4,377	7,604
cattle watering	012	4,801	4,807	5,325	6,236	6,253
other or combined		0,865	0,898	1,136	0,399	3,504
Mining and quarrying	10-14	0,340	0,343	0,361	0,312	0,296
Manufacturing industry, total	15-37	1506,610	1187,962	1138,010	1001,412	1278,573
of which used by						
food processing	15	69,627	70,861	66,989	66,360	76,310
textiles, clothing and leather	17-19	0,608	0,546	0,318	0,594	0,400
paper and paper products	21	67,411	77,158	71,291	77,561	76,564
chemicals, refined petroleum	23-24	1345,749	1014,236	973,452	831,946	1080,797
basic metals	27	18,927	20,920	21,617	21,208	35,656
other manufacturing industry		4,288	4,241	4,343	3,743	8,846
Production of electricity	40	2231,776	2587,180	3003,437	3197,009	2861,379
Public Water supply	41	278,07	273	280	275	278
Waste processing	9002	414,316	467,472	492,458	466,190	513,066
Other activities	45-93					
Private Households		0,000	0,000	0,000	0,000	0,000
Fresh ground water, total (2)		230,237	237,848	236,681	236,448	248,889
of which:						
Agriculture, forestry, fishing	01-05	1,135	0,871	0,626	0,000	0,138
of which						
arable farming (irrigation)	011	0,006	0,001	0,000	0,000	0,000
horticulture	013	0,468	0,870	0,000	0,000	0,010
cattle watering	012	0,661	0,000	0,626	0,000	0,000
other or combined	01	0,000	0,000	0,000	0,000	0,128
Mining and quarrying	10-14	0,029	0,029	0,030	0,027	0,027
Manufacturing industry, total	15-37	57,498	58,845	59,382	60,936	70,700
of which:						
food processing industry	15	10,126	9,507	12,061	11,425	12,614
textile, clothing and leather	17-19	0,381	0,466	0,364	0,576	0,541
paper and paper products	21	8,256	8,348	8,142	8,029	10,904
chemicals, refined petroleum	23-24	15,436	16,617	15,573	16,732	19,943
basic metals	27	14,396	15,521	14,631	15,327	15,943
other manufacturing industry		8,903	8,387	8,612	8,846	10,754
Production of electricity	40	1,357	1,343	0,384	0,368	0,295
Public Water supply	41	169,85	175,68	175,16	174,57	176,82
Waste processing	9002	0,368	1,080	1,099	0,547	0,909
Other activities	45-93					
Private Households		0,000	0,000	0,000	0,000	0,000
Fresh water, total (1)+(2)		4667,715	4760,363	5160,486	5187,621	5197,829
of which:						
Agriculture, forestry, fishing	01-05	7,501	7,429	10,165	11,250	17,764
of which						
arable farming (irrigation)	011	0,504	0,266	0,297	0,239	0,265
horticulture	013	0,669	1,458	2,781	4,377	7,614
cattle watering	012	5,463	4,807	5,951	6,236	6,253
other or combined	01	0,865	0,898	1,136	0,399	3,632
Mining and quarrying	10-14	0,369	0,372	0,391	0,339	0,323
Manufacturing industry, total	15-37	1564,108	1246,807	1197,392	1062,348	1349,273
of which:						
food processing industry	15	79,753	80,368	79,050	77,785	88,924
textile, clothing and leather	17-19	0,989	1,012	0,682	1,170	0,941
paper and paper products	21	75,667	85,506	79,433	85,590	87,468
chemicals, refined petroleum	23-24	1361,185	1030,853	989,025	848,678	1100,740
basic metals	27	33,323	36,441	36,248	36,535	51,599
other manufacturing industry		13,191	12,628	12,955	12,589	19,600
Production of electricity	40	2233,133	2588,523	3003,821	3197,377	2861,674
Public Water supply	41	447,920	448,680	455,160	449,570	454,820
Waste processing	9002	414,684	468,552	493,557	466,737	513,975
Other activities	45-93					
Private Households		0,000	0,000	0,000	0,000	0,000

The Netherlands	River Basin:	Meuse		Sub-basin: -		
Abstraction mio m3	Nace	2008	2007	2006	2005	2004
Fresh surface water, total (1)		3888,109	3993,349	3612,630	4049,626	4155,419
of which:						
Agriculture, forestry, fishing	01-05	2,325	4,100	3,953	1,529	1,455
of which						
arable farming (irrigation)	0111	0,559	0,545	1,463	0,037	0,002
horticulture	0112	0,767	2,707	2,440	1,421	0,586
cattle watering	012	0,000	0,030	0,039	0,000	0,006
other or combined		0,999	0,819	0,011	0,072	0,860
Mining and quarrying	10-14	0,348	0,345	0,365	0,371	0,372
Manufacturing industry, total	15-37	793,420	861,314	742,359	963,141	1053,565
of which used by						
food processing	15	32,563	24,390	6,170	7,611	17,234
textiles, clothing and leather	17-19	2,575	2,018	1,605	2,332	1,744
paper and paper products	21	20,736	18,184	19,281	19,993	17,527
chemicals, refined petroleum	23-24	725,187	805,018	704,344	922,400	1002,648
basic metals	27	6,477	5,662	4,603	5,184	5,201
other manufacturing industry		5,882	6,041	6,355	5,619	9,212
Production of electricity	40	2877,882	2918,844	2651,807	2882,905	2882,017
Public Water supply	41	204,8	202	202	193	210
Waste processing	9002	9,334	6,746	12,146	8,680	8,010
Other activities	45-93	n.m.	n.m.	n.m.	n.m.	n.m.
Private Households		0,000	0,000	0,000	0,000	0,000
Fresh ground water, total (2)		303,428	308,700	344,591	314,241	324,005
of which:						
Agriculture, forestry, fishing	01-05	19,313	20,883	52,368	27,651	27,442
of which						
arable farming (irrigation)	011	2,255	1,449	1,350	2,598	1,473
horticulture	013	6,465	5,018	3,424	5,592	7,098
cattle watering	012	8,630	12,718	33,253	14,757	15,164
other or combined	01	1,963	1,699	14,342	4,705	3,708
Mining and quarrying	10-14	0,019	0,019	0,020	0,020	0,020
Manufacturing industry, total	15-37	39,120	39,980	40,529	39,806	50,590
of which:						
food processing industry	15	14,304	14,542	14,894	14,351	15,002
textile, clothing and leather	17-19	0,916	0,936	0,896	1,278	1,257
paper and paper products	21	1,455	2,409	2,751	2,531	5,375
chemicals, refined petroleum	23-24	6,594	7,186	6,376	6,184	10,105
basic metals	27	1,625	1,262	1,395	1,418	1,816
other manufacturing industry		14,226	13,645	14,217	14,046	17,035
Production of electricity	40	0,221	0,174	0,252	0,278	0,219
Public Water supply	41	244,66	247,36	251,21	246,4	245,5
Waste processing	9002	0,095	0,284	0,212	0,086	0,234
Other activities	45-93					
Private Households		0,000	0,000	0,000	0,000	0,000
Fresh water, total (1)+(2)		4191,538	4302,049	3957,221	4363,868	4479,424
of which:						
Agriculture, forestry, fishing	01-05	21,639	24,983	56,321	29,181	28,897
of which						
arable farming (irrigation)	011	2,815	1,993	2,812	2,635	1,475
horticulture	013	7,232	7,724	5,864	7,013	7,684
cattle watering	012	8,630	12,748	33,292	14,757	15,170
other or combined	01	2,962	2,518	14,353	4,777	4,568
Mining and quarrying	10-14	0,367	0,364	0,385	0,391	0,392
Manufacturing industry, total	15-37	832,540	901,294	782,888	1002,947	1104,155
of which:						
food processing industry	15	46,867	38,932	21,064	21,962	32,236
textile, clothing and leather	17-19	3,491	2,954	2,501	3,610	3,001
paper and paper products	21	22,191	20,593	22,032	22,524	22,902
chemicals, refined petroleum	23-24	731,781	812,204	710,720	928,584	1012,753
basic metals	27	8,102	6,924	5,998	6,602	7,017
other manufacturing industry		20,108	19,686	20,572	19,665	26,247
Production of electricity	40	2878,103	2919,018	2652,059	2883,183	2882,236
Public Water supply	41	449,460	449,360	453,210	439,400	455,500
Waste processing	9002	9,429	7,030	12,358	8,766	8,244
Other activities	45-93					
Private Households		0,000	0,000	0,000	0,000	0,000

The Netherlands	River Basin:	Scheldt		Sub-basin: -		
Abstraction mio m3	Nace	2008	2007	2006	2005	2004
Fresh surface water, total (1)		499,144	529,981	555,782	606,572	577,619
of which:						
Agriculture, forestry, fishing	01-05	0,310	0,344	0,501	0,181	1,551
of which						
arable farming (irrigation)	0111	0,001	0,001	0,003	0,000	0,001
horticulture	0112	0,003	0,036	0,053	0,044	0,114
cattle watering	012	0,172	0,000	0,162	0,000	0,204
other or combined		0,134	0,307	0,282	0,137	1,231
Mining and quarrying	10-14	0,045	0,036	0,036	0,037	0,041
Manufacturing industry, total	15-37	497,840	528,650	553,547	605,511	574,607
of which used by						
food processing	15	3,778	2,655	3,205	2,585	2,834
textiles, clothing and leather	17-19	0,093	0,069	0,042	0,085	0,060
paper and paper products	21	2,170	1,204	1,877	1,810	0,934
chemicals, refined petroleum	23-24	491,351	524,385	548,074	600,714	570,172
basic metals	27	0,122	0,021	0,016	0,011	0,029
other manufacturing industry		0,326	0,315	0,332	0,307	0,578
Production of electricity	40	0,000	0,000	0,000	0,000	0,000
Public Water supply	41	0	0	0	0	0
Waste processing	9002	0,949	0,951	1,698	0,843	1,420
Other activities	45-93	n.m.	n.m.	n.m.	n.m.	n.m.
Private Households		0,000	0,000	0,000	0,000	0,000
Fresh ground water, total (2)		22,801	23,777	24,384	22,276	23,668
of which:						
Agriculture, forestry, fishing	01-05	0,505	0,491	1,018	0,446	0,463
of which						
arable farming (irrigation)	011	0,004	0,113	0,704	0,053	0,000
horticulture	013	0,067	0,044	0,075	0,046	0,053
cattle watering	012	0,300	0,333	0,239	0,347	0,204
other or combined	01	0,134	0,000	0,000	0,000	0,205
Mining and quarrying	10-14	0,002	0,002	0,002	0,002	0,002
Manufacturing industry, total	15-37	2,869	2,931	3,014	2,501	3,816
of which:						
food processing industry	15	1,864	1,840	1,808	1,479	1,376
textile, clothing and leather	17-19	0,037	0,037	0,032	0,067	0,064
paper and paper products	21	0,237	0,143	0,211	0,128	0,692
chemicals, refined petroleum	23-24	0,092	0,252	0,279	0,214	0,765
basic metals	27	0,031	0,006	0,005	0,004	0,007
other manufacturing industry		0,609	0,654	0,679	0,610	0,912
Production of electricity	40	0,003	0,003	0,003	0,001	0,001
Public Water supply	41	19,38	20,24	20,24	19,27	19,27
Waste processing	9002	0,042	0,110	0,107	0,056	0,116
Other activities	45-93					
Private Households		0,000	0,000	0,000	0,000	0,000
Fresh water, total (1)+(2)		521,945	553,758	580,165	628,848	601,286
of which:						
Agriculture, forestry, fishing	01-05	0,815	0,835	1,518	0,627	2,013
of which						
arable farming (irrigation)	011	0,005	0,114	0,707	0,053	0,002
horticulture	013	0,070	0,080	0,128	0,089	0,166
cattle watering	012	0,473	0,333	0,401	0,347	0,409
other or combined	01	0,267	0,307	0,282	0,137	1,436
Mining and quarrying	10-14	0,047	0,038	0,038	0,039	0,043
Manufacturing industry, total	15-37	500,709	531,581	556,561	608,012	578,423
of which:						
food processing industry	15	5,642	4,495	5,013	4,064	4,210
textile, clothing and leather	17-19	0,130	0,106	0,074	0,152	0,124
paper and paper products	21	2,407	1,347	2,088	1,938	1,626
chemicals, refined petroleum	23-24	491,443	524,637	548,353	600,928	570,937
basic metals	27	0,153	0,027	0,021	0,015	0,036
other manufacturing industry		0,935	0,969	1,011	0,917	1,490
Production of electricity	40	0,003	0,003	0,003	0,001	0,001
Public Water supply	41	19,380	20,240	20,240	19,270	19,270
Waste processing	9002	0,991	1,061	1,805	0,899	1,536
Other activities	45-93					
Private Households		0,000	0,000	0,000	0,000	0,000

Annex II: Abstraction of marine water per economic sector per River Basin, 2004-2008

The Netherlands					
Abstraction mio m3	Nace	Total NL	Ems	Rhine-West	Scheldt
2008					
Marine water, total		3657,444	1897,949	1308,323	451,171
of which:					
Manufacturing industry, total	15-37	307,929	101,040	178,115	28,774
of which:					
chemicals, refined petroleum	23-24	111,285	101,040	0,000	10,245
basic metals	27	196,644	0,000	178,115	18,529
Production of electricity	40	3349,515	1796,910	1130,208	422,397
Other activities		n.a.	n.a.	n.a.	n.a.
2007					
Marine water, total		3669,310	1877,213	1383,996	408,101
of which:					
Manufacturing industry, total	15-37	348,310	123,868	181,653	42,789
of which:					
chemicals, refined petroleum	23-24	148,064	123,868	0,000	24,196
basic metals	27	200,247	0,000	181,653	18,593
Production of electricity	40	3320,999	1753,345	1202,343	365,312
Other activities		n.a.	n.a.	n.a.	n.a.
2006					
Marine water, total		3589,953	1759,731	1457,216	373,006
of which:					
Manufacturing industry, total	15-37	376,869	146,972	164,830	65,067
of which:					
chemicals, refined petroleum	23-24	193,015	146,972	0,000	46,043
basic metals	27	183,854	0,000	164,830	19,025
Production of electricity	40	3213,084	1612,759	1292,386	307,939
Other activities		n.a.	n.a.	n.a.	n.a.
2005					
Marine water, total		3469,626	1569,829	1517,832	381,965
of which:					
Manufacturing industry, total	15-37	345,657	114,380	178,564	52,714
of which:					
chemicals, refined petroleum	23-24	146,859	114,380	0,000	32,479
basic metals	27	198,798	0,000	178,564	20,234
Production of electricity	40	3123,969	1455,449	1339,268	329,251
Other activities		n.a.	n.a.	n.a.	n.a.
2004					
Marine water, total		4321,304	1831,029	1972,200	518,075
of which:					
Manufacturing industry, total	15-37	430,615	193,006	186,006	51,603
of which:					
chemicals, refined petroleum	23-24	226,492	193,006	0,000	33,486
basic metals	27	204,122	0,000	186,006	18,117
Production of electricity	40	3890,689	1638,022	1786,194	466,473
Other activities		n.a.	n.a.	n.a.	n.a.

Annex III: Use of water per economic sector per River Basin, 2004-2008

Territory: NL EMS	ISIC/NACE	(10⁶ m³) 2008	2007	2006	2005	2004
Public water supply (16).						
TOTAL		35.9	36.0	36.3	35.4	36.3
of which used by:						
* Private households		23.29	23.16	23.80	21.04	21.74
* Agriculture, forestry, fishing	(01-05)	1.55	1.59	1.97	1.56	1.70
* All industrial activities	(10-40)	5.66	7.15	7.62	7.50	7.91
of which for:						
- Mining and quarrying	(10-14)	0.47	0.46	0.51	0.53	0.58
- Total manufacturing industries	(15-37)	4.62	6.18	6.55	6.79	6.90
of which for cooling purposes (18)		.	.	.	.	.
of which for:						
- 15 Food processing		0.68	0.83	0.86	1.38	0.94
- 17-19 Textiles, clothing and leather		0.01	0.01	0.00	0.01	0.01
- 21 Paper and paper products		0.46	0.39	0.38	0.55	0.46
- 23-24 Chemicals, refined petroleum		2.68	4.14	4.54	4.16	4.80
- 27 Basic metals		0.27	0.25	0.23	0.22	0.19
- Other manufacturing industry		0.53	0.57	0.54	0.46	0.50
- Production and distribution of electricity	(40.1)	0.56	0.51	0.56	0.19	0.42
of which for cooling purposes (18)		.	.	.	.	.
* Services	(41-93)	2.84	2.61	2.54	2.42	2.34
of which for:						
- Waste processing	(90)	0.01	0.02	0.04	0.02	0.03
- Other services		2.82	2.58	2.50	2.39	2.31
Balancing item	remainder	2.58	1.46	0.38	2.85	2.58

Territory: NL Meuse	ISIC/NACE	(10⁶ m³) 2008	2007	2006	2005	2004
Public water supply (16).						
TOTAL		245.1	245.9	250.5	245.7	245.7
of which used by:						
* Private households		152.84	153.31	161.44	158.78	155.68
* Agriculture, forestry, fishing	(01-05)	13.76	13.88	14.16	13.58	14.65
* All industrial activities	(10-40)	33.95	32.91	31.90	36.80	40.02
of which for:						
- Mining and quarrying	(10-14)	1.33	1.32	1.39	1.42	1.42
- Total manufacturing industries	(15-37)	32.12	31.19	30.16	34.91	38.27
of which for cooling purposes (18)		.	.	.	.	.
of which for:						
- 15 Food processing		9.52	9.82	9.69	9.08	8.88
- 17-19 Textiles, clothing and leather		0.47	0.46	0.43	0.37	0.41
- 21 Paper and paper products		1.20	0.98	1.01	1.11	0.79
- 23-24 Chemicals, refined petroleum		12.21	11.97	11.41	16.83	20.41
- 27 Basic metals		0.91	0.47	0.43	0.44	0.45
- Other manufacturing industry		7.82	7.49	7.19	7.08	7.34
- Production and distribution of electricity	(40.1)	0.50	0.41	0.35	0.47	0.33
of which for cooling purposes (18)		.	.	.	.	.
* Services	(41-93)	24.24	23.67	23.08	20.36	20.42
of which for:						
- Waste processing	(90)	0.27	0.22	0.38	0.28	0.25
- Other services		23.96	23.45	22.70	20.08	20.17
Balancing item	remainder	20.32	22.14	19.88	16.21	14.93

Territory: NL Rhine Centre		(10^6 m³)				
	ISIC/NACE	2008	2007	2006	2005	2004
Public water supply (16).						
TOTAL		68.2	67.8	68.1	67.5	68.3
of which used by:						
* Private households		56.35	56.60	56.98	56.40	56.85
* Agriculture, forestry, fishing	(01-05)	3.48	4.07	2.58	3.20	4.47
* All industrial activities	(10-40)	8.02	9.36	9.20	8.08	8.74
of which for:						
- Mining and quarrying	(10-14)	0.35	0.39	0.12	0.16	0.16
- Total manufacturing industries	(15-37)	7.63	8.93	9.03	7.86	8.54
of which for cooling purposes (18)		.	.	.	.	.
of which for:						
- 15 Food processing		4.09	4.34	3.79	3.34	3.41
- 17-19 Textiles, clothing and leather		0.10	0.12	0.08	0.07	0.08
- 21 Paper and paper products		0.39	0.31	0.35	0.42	0.26
- 23-24 Chemicals, refined petroleum		1.43	2.52	3.29	2.69	3.27
- 27 Basic metals		0.09	0.09	0.04	0.04	0.16
- Other manufacturing industry		1.54	1.55	1.49	1.32	1.36
- Production and distribution of electricity	(40.1)	0.05	0.04	0.05	0.05	0.05
of which for cooling purposes (18)		.	.	.	.	.
* Services	(41-93)	10.53	9.93	9.62	8.50	8.37
of which for:						
- Waste processing	(90)	0.06	0.08	0.13	0.08	0.09
- Other services		10.47	9.85	9.49	8.42	8.28
Balancing item	remainder	-10.21	-12.16	-10.24	-8.67	-10.16

Territory: NL Rhine North		(10^6 m³)				
	ISIC/NACE	2008	2007	2006	2005	2004
Public water supply (16).						
TOTAL		66.3	66.1	66.5	65.5	66.6
of which used by:						
* Private households		51.19	51.31	51.91	50.30	51.07
* Agriculture, forestry, fishing	(01-05)	6.86	6.28	6.47	7.57	7.58
* All industrial activities	(10-40)	7.87	7.90	8.72	7.84	8.30
of which for:						
- Mining and quarrying	(10-14)	0.24	0.23	0.25	0.24	0.21
- Total manufacturing industries	(15-37)	7.54	7.59	8.39	7.51	7.99
of which for cooling purposes (18)		.	.	.	.	.
of which for:						
- 15 Food processing		5.93	5.45	5.51	4.95	5.14
- 17-19 Textiles, clothing and leather		0.06	0.06	0.06	0.06	0.06
- 21 Paper and paper products		0.18	0.13	0.13	0.15	0.11
- 23-24 Chemicals, refined petroleum		0.29	0.46	1.21	1.20	1.52
- 27 Basic metals		0.02	0.01	0.00	0.01	0.01
- Other manufacturing industry		1.07	1.49	1.47	1.14	1.16
- Production and distribution of electricity	(40.1)	0.09	0.07	0.08	0.09	0.10
of which for cooling purposes (18)		.	.	.	.	.
* Services	(41-93)	5.79	5.60	5.43	5.13	5.06
of which for:						
- Waste processing	(90)	0.05	0.08	0.15	0.09	0.10
- Other services		5.75	5.51	5.28	5.04	4.96
Balancing item	remainder	-5.38	-4.96	-6.00	-5.31	-5.45

Territory: NL Rhine-East		(10^6 m³)				
	ISIC/NACE	2008	2007	2006	2005	2004
Public water supply (16).						
TOTAL		143.0	142.2	143.4	142.0	143.9
of which used by:						
* Private households		119.82	120.15	121.28	117.22	118.10
* Agriculture, forestry, fishing	(01-05)	9.99	10.78	8.92	9.85	11.50
* All industrial activities	(10-40)	11.66	11.57	13.40	13.12	12.50
of which for:						
- Mining and quarrying	(10-14)	0.32	0.16	0.39	0.61	0.72
- Total manufacturing industries	(15-37)	11.34	11.41	13.00	12.51	11.78
of which for cooling purposes (18)		.	.	.	.	.
of which for:						
- 15 Food processing		5.32	5.12	5.68	5.53	5.54
- 17-19 Textiles, clothing and leather		0.28	0.30	0.25	0.29	0.43
- 21 Paper and paper products		0.52	0.42	0.42	0.43	0.26
- 23-24 Chemicals, refined petroleum		1.65	2.08	3.31	2.83	2.06
- 27 Basic metals		0.22	0.10	0.09	0.10	0.12
- Other manufacturing industry		3.36	3.39	3.25	3.33	3.36
- Production and distribution of electricity	(40.1)	0.00	0.00	0.01	0.00	0.00
of which for cooling purposes (18)		.	.	.	.	.
* Services	(41-93)	13.24	12.89	12.50	11.11	10.80
of which for:						
- Waste processing	(90)	0.18	0.22	0.40	0.30	0.17
- Other services		13.05	12.68	12.10	10.81	10.63
Balancing item	remainder	-11.71	-13.15	-12.73	-9.25	-9.05

Territory: NL Rhine West	ISIC/NACE	(10⁶ m³) 2008	2007	2006	2005	2004
Public water supply (16).						
TOTAL		486.8	483.7	488.0	484.7	491.6
of which used by:						
* Private households		360.06	361.02	361.90	357.94	363.31
* Agriculture, forestry, fishing	(01-05)	10.49	12.11	12.00	11.75	10.42
* All industrial activities	(10-40)	98.53	105.32	106.87	108.73	113.77
of which for:						
- Mining and quarrying	(10-14)	1.31	1.32	1.39	1.20	1.14
- Total manufacturing industries	(15-37)	95.44	102.63	104.55	106.49	111.66
of which for cooling purposes (18)		.	.	.	.	.
of which for:						
- 15 Food processing		17.55	17.46	19.66	19.42	20.11
- 17-19 Textiles, clothing and leather		0.18	0.18	0.13	0.13	0.15
- 21 Paper and paper products		0.64	0.56	0.65	0.69	0.40
- 23-24 Chemicals, refined petroleum		35.53	42.47	42.48	44.24	47.98
- 27 Basic metals		34.56	35.03	35.01	35.46	36.45
- Other manufacturing industry		6.99	6.93	6.62	6.56	6.57
- Production and distribution of electricity	(40.1)	1.78	1.37	0.93	1.04	0.97
of which for cooling purposes (18)		.	.	.	.	.
* Services	(41-93)	54.96	53.51	51.98	46.39	46.25
of which for:						
- Waste processing	(90)	3.05	2.04	2.25	1.81	2.62
- Other services		51.92	51.47	49.73	44.58	43.64
Balancing item	remainder	-37.29	-48.30	-44.72	-40.10	-42.19

Territory: NL Scheldt	ISIC/NACE	(10⁶ m³) 2008	2007	2006	2005	2004
Public water supply (16).						
TOTAL		47.8	46.4	45.9	46.3	47.2
of which used by:						
* Private households		24.80	23.80	23.26	23.21	24.04
* Agriculture, forestry, fishing	(01-05)	1.23	1.39	2.43	1.88	1.48
* All industrial activities	(10-40)	18.15	17.28	17.43	17.43	13.18
of which for:						
- Mining and quarrying	(10-14)	0.17	0.14	0.14	0.14	0.15
- Total manufacturing industries	(15-37)	17.68	16.85	17.06	17.04	12.74
of which for cooling purposes (18)		.	.	.	.	.
of which for:						
- 15 Food processing		6.10	6.05	6.05	5.64	5.43
- 17-19 Textiles, clothing and leather		0.02	0.01	0.01	0.02	0.02
- 21 Paper and paper products		0.20	0.11	0.16	0.16	0.08
- 23-24 Chemicals, refined petroleum		10.53	9.83	10.03	10.40	6.39
- 27 Basic metals		0.12	0.08	0.09	0.13	0.14
- Other manufacturing industry		0.72	0.76	0.72	0.70	0.69
- Production and distribution of electricity	(40.1)	0.30	0.29	0.24	0.25	0.29
of which for cooling purposes (18)		.	.	.	.	.
* Services	(41-93)	3.66	3.53	3.44	3.21	3.27
of which for:						
- Waste processing	(90)	0.04	0.05	0.09	0.06	0.06
- Other services		3.62	3.48	3.35	3.15	3.21
Balancing item	remainder	0.00	0.42	-0.63	0.56	5.20

Annex IV: Water use coefficients per employee, per NACE 3 digit level, Service sector, 2008.

NACE REV 1.1.	Name	Tapwater use per employee m3/year	liter/day	Basis of coefficient Number of companies
410	Collection, purification and distribution of water	36,98	101,31	18
451	Site preparation	15,84	43,39	36
452	Building of complete constructions or parts thereof; civil engineering	5,96	16,32	483
453	Building installation	2,36	6,46	188
454	Building completion	2,96	8,12	162
455	Renting of construction or demolition equipment with operator	4,71	12,92	12
501	Sale of motor vehicles	17,45	47,82	547
502	Maintenance and repair of motor vehicles	47,59	130,39	197
503	Sale of motor vehicle parts and accessories	8,56	23,45	54
504	Sale, maintenance and repair of motorcycles and related parts and accessories	13,11	35,91	29
505	Retail sale of automotive fuel	84,90	232,59	104
511	Wholesale on a fee or contract basis	16,02	43,90	58
512	Wholesale of agricultural raw materials and live animals	27,11	74,27	87
513	Wholesale of food, beverages and tobacco	28,56	78,24	128
514	Wholesale of household goods	7,55	20,69	217
515	Wholesale of non-agricultural intermediate products, waste and scrap	12,81	35,11	282
518	Wholesale in machinery, equipment en additional supplies	5,18	14,19	212
519	Wholesale of other specialised goods	4,64	12,71	36
521	Retail sale in non-specialized stores	5,58	15,27	400
522	Retail sale of food, beverages and tobacco in specialized stores	14,93	40,90	280
523	Retail sale of pharmaceutical and medical goods, cosmetic and toilet articles	2,91	7,97	220
524	Other retail sale of new goods in specialized stores	6,52	17,86	1731
525	Retail sale of second-hand goods in stores	16,94	46,42	44
526	Retail sale not in stores	4,48	12,27	52
527	Repair of personal and household goods	11,84	32,44	47
551	Hotels	94,94	260,11	145
552	Camping sites and other provision of short-stay accommodation	484,53	1327,49	229
553	Restaurants	40,61	111,26	787
554	Bars	59,80	163,85	514
555	Canteens and catering	17,12	46,90	83
601	Transport via railways	12,57	34,45	18
602	Other land transport	8,83	24,20	210
603	Transport via pipelines			
611	Sea and coastal water transport	0,06	0,18	3
612	Inland water transport	2,88	7,90	14
620	Air transport			
631	Cargo handling and storage	73,29	200,80	95
632	Other supporting transport activities	8,19	22,45	17
633	Activities of travel agencies and tour operators; tourist assistance activities n.e.c.	3,63	9,95	49
634	Activities of other transport agencies	5,69	15,60	31
641	Post and courier activities	1,33	3,64	44
642	Telecommunications	2,45	6,72	22
651	Monetary intermediation	4,19	11,49	157
652	Other financial intermediation	25,74	70,52	401
660	Insurance and pension funding, except compulsory social security	2,89	7,91	16
671	Activities auxiliary to financial intermediation, except insurance and pension funding	22,71	62,21	67
672	Activities auxiliary to insurance and pension funding	1,57	4,31	47

Continues on next page.

NACE REV 1.1.	Name	Tapwater use per employee m3/year	liter/day	Basis of coefficient Number of companies
701	Real estate activities with own property	86,00	235,63	83
702	Letting of own property	66,55	182,32	350
703	Real estate activities on a fee or contract basis	30,69	84,08	180
711	Renting of automobiles	6,26	17,15	13
712	Renting of other transport equipment	1,28	3,51	4
713	Renting of other machinery and equipment	9,37	25,67	31
714	Renting of personal and household goods n.e.c.	12,06	33,04	36
721	Hardware consultancy	10,15	27,82	16
722	Software consultancy and supply	1,39	3,82	41
723	Data processing	1,79	4,92	6
724	Database activities	1,30	3,56	1
725	Maintenance and repair of office, accounting and computing machinery	8,30	22,74	3
726	Other computer related activities	1,80	4,93	1
731	Research and experimental development on natural sciences and engineering	16,94	46,40	11
732	Research and experimental development on social sciences and humanities	8,50	23,29	2
741	Legal, accounting, book-keeping and auditing activities; tax consultancy; market research and public opinion polling; business and management consultancy; holdings	6,33	17,35	355
742	Architectural and engineering activities and related technical consultancy	2,83	7,76	122
743	Technical testing and analysis	6,37	17,46	18
744	Advertising	2,07	5,67	59
745	Labour recruitment and provision of personnel	0,44	1,21	85
746	Investigation and security activities	0,62	1,70	9
747	Industrial cleaning	1,11	3,05	60
748	Miscellaneous business activities n.e.c.	7,23	19,80	85
751	Administration of the State and the economic and social policy of the community	8,23	22,54	428
752	Provision of services to the community as a whole	17,34	47,49	101
753	Compulsory social security activities	4,70	12,88	2
801	Primary education	13,31	36,46	570
802	Secondary education	9,92	27,19	153
803	Higher education	2,42	6,63	15
804	Adult and other education	6,03	16,51	66
851	Human health activities	12,15	33,27	373
852	Veterinary activities	4,74	12,98	16
853	Social work activities	21,67	59,38	887
900	Sewage and refuse disposal, sanitation and similar activities	32,66	89,48	105
911	Activities of business, employers' and professional organizations	7,83	21,46	13
912	Activities of trade unions	0,71	1,95	2
913	Activities of other membership organizations	73,06	200,17	548
921	Motion picture and video activities	35,04	96,01	15
922	Radio and television activities	1,66	4,55	4
923	Other entertainment activities	40,73	111,60	105
924	News agency activities	2,10	5,76	2
925	Library, archives, museums and other cultural activities	27,85	76,30	125
926	Sporting activities	237,48	650,62	681
927	Other recreational activities	73,18	200,49	26
930	Other service activities	62,19	170,39	518