Water Accounts

- flows of water in physical units
  - abstraction for distribution or for self supply
  - use of water
  - return of wastewater

- economic transactions related to water

- emissions of pollutants

Figure 8.3 Schematic water flows

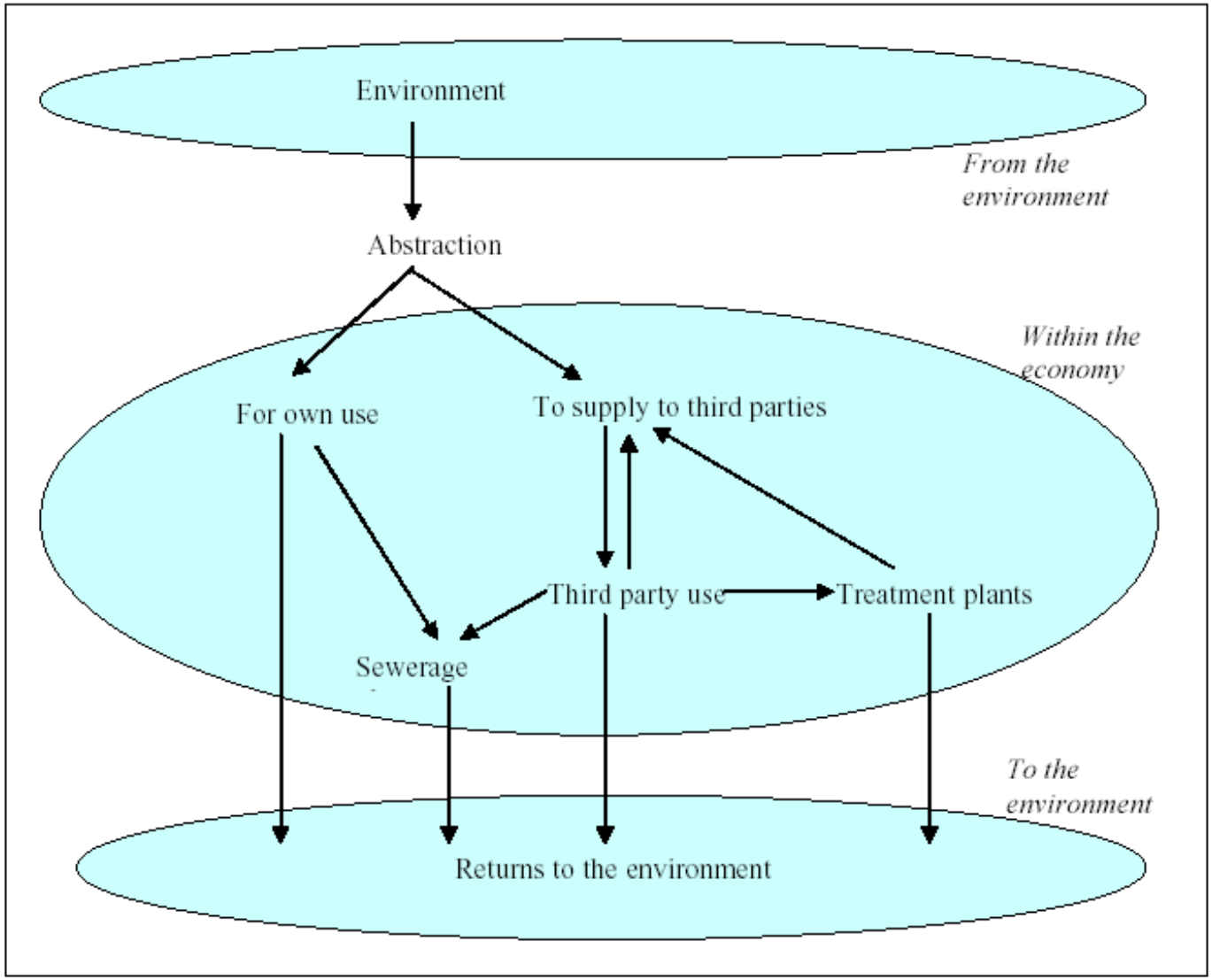
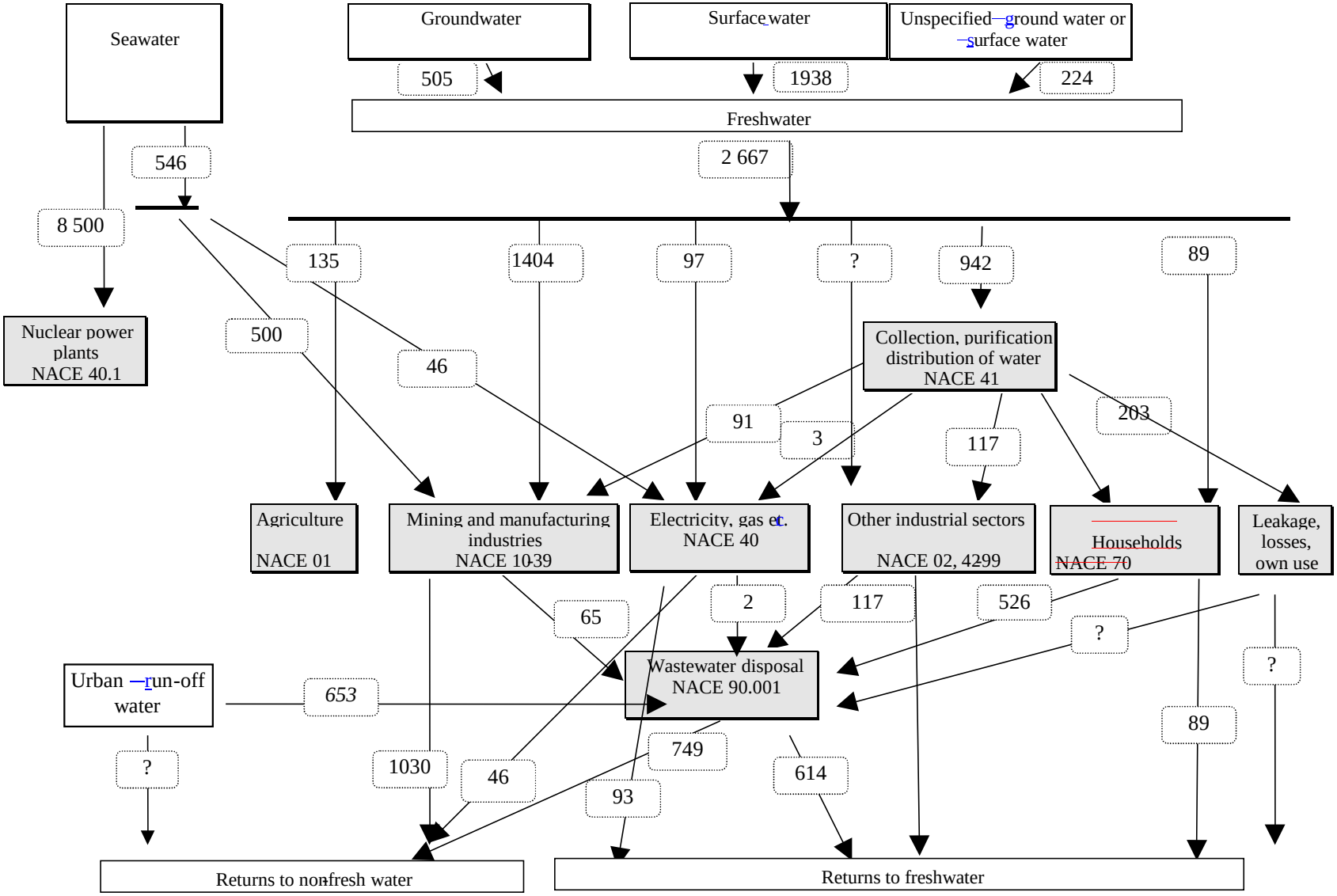


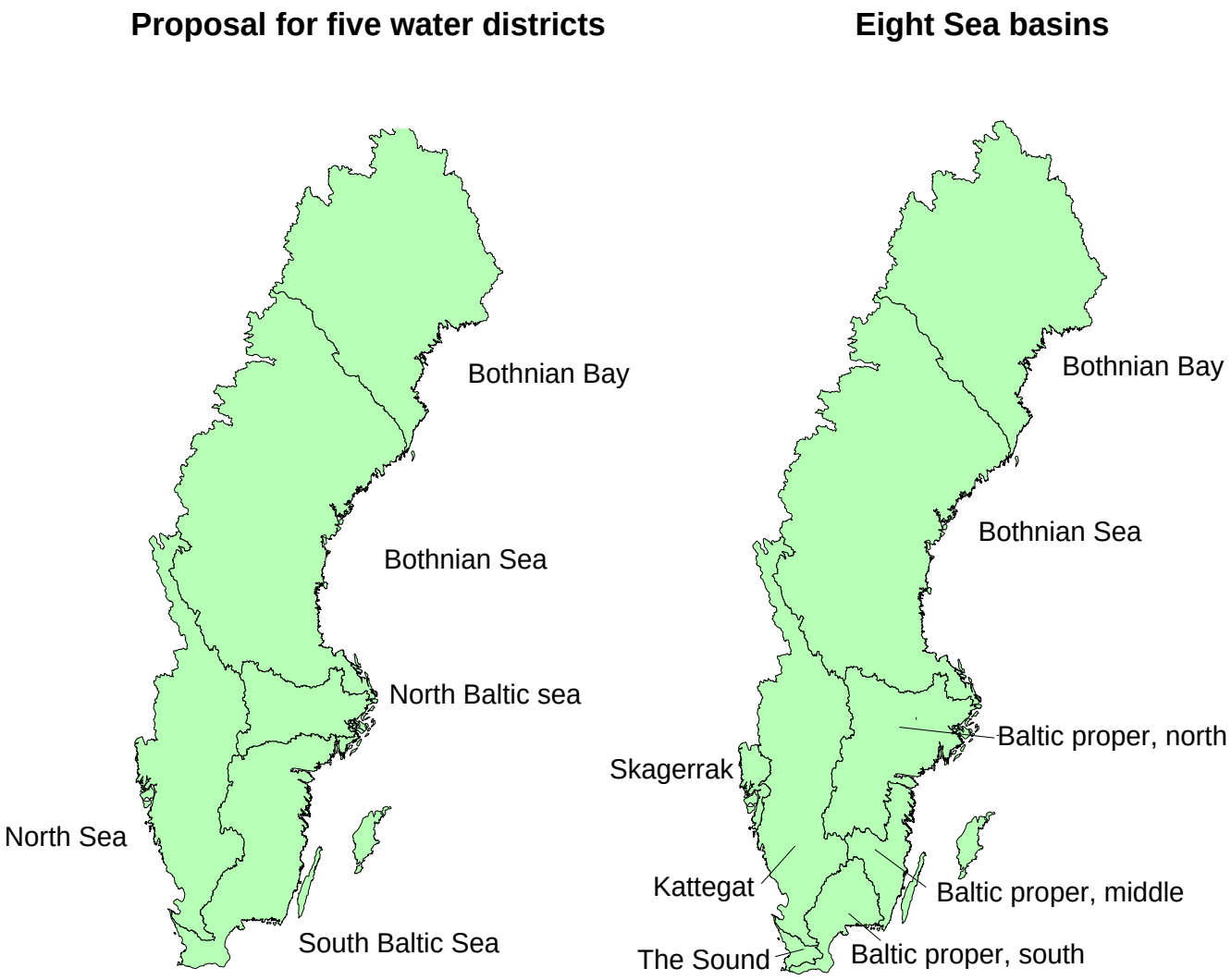
Figure 1 Flow of water in the Swedish technosphere

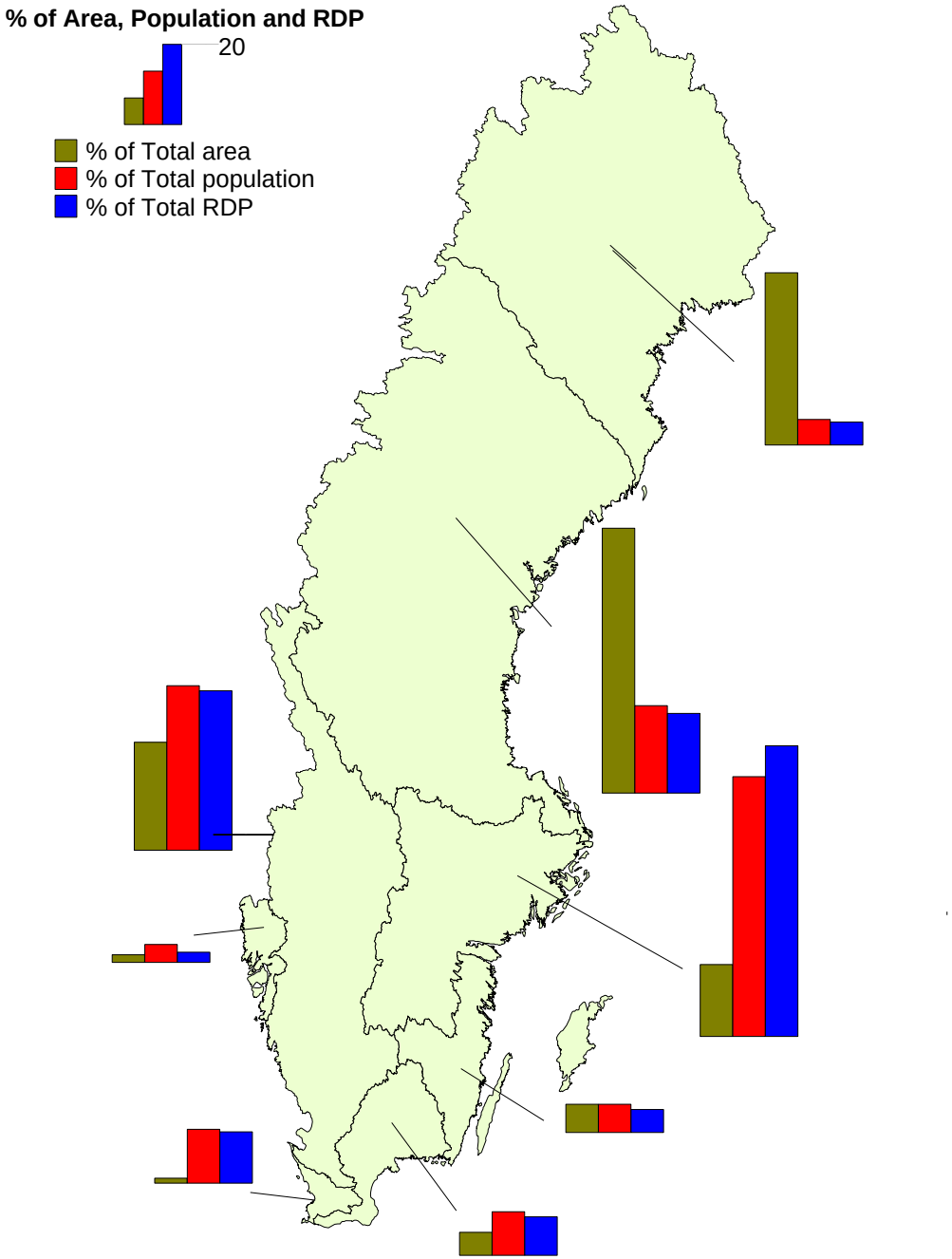


Source of information, physical data	**Data included**
Survey Svenskt Vatten AB 1997	• total population • population connected to public water system • population connected to public sewage system • abstraction from ground-water or surface water • purchase or sale of water to other municipalities
SCB survey Manufacturing industry, 1995, 2000	• use of water in industry, households, public use, own use in waterworks and losses Non-market produced/ self supply of water
Real estate assessment register, yearly	Self supply *Households*
SCB agriculture survey 1985	Water for irrigation
Estimation based on livestock, agricultural statistics survey 1999	Water for livestock
TRK – report	Nitrogen net loads
SCB database, year 2000. Discharges to water and sludge	Wastewater and wastewater treatment

Source of information, monetary data	**Data included**
The municipal accounts, a yearly survey	Revenues, investments and expenditure for production of water and wastewater treatment. A division between data for municipal waterworks and waste water is not possible.
Business statistics, yearly	Costs and revenues within NACE 41 (Collection, purification and distribution of water) and 90001 (Sewage disposal).
Survey from the trade association for Swedish water utilities, the Swedish Water and Wastewater Association, Svenskt Vatten AB, 1997	Municipal tariffs for water and wastewater for household in a one-family building, including information of the percentage cost for water and for wastewater treatment respectively. No collection on tariffs for industries.
Selected data from Environmental protection expenditure in industry 1999/2000	Expenditure for self-supply of water and of wastewater treatment

Map 1 Water districts and Sea basins




% of Area, Population and RDP
20
% of Total area
% of Total population
% of Total RDP

Allocation to sea basins

1. Environmental statistics are compiled for sea basins

‘Abstraction and use of water in the manufacturing industry’ and ‘Discharges to water and sludge production in 2000 by municipal wastewater treatment plants and some coastal industry’ are compiled for drainage basins.

2. Information on real estate and population with geographical location of the basic data

The real estate register contains information on x, y coordinates, which by using geographic information systems (GIS) can be allocated to a sea basin.

3. Allocation of municipality data to Sea basins

By using GIS, it is possible to combine digital maps for municipalities, localities and sea basins. 119 municipalities were entirely within one sea basin, 165 municipalities intersected with a minor part and 5 municipalities were split between two sea basins. For these 5, data were disaggregated according to the percentage of the population in urban areas. This method was used for data concerning the supply and use of distributed water, both physical and monetary data.

4. Using environmental expenditure data together with distribution keys

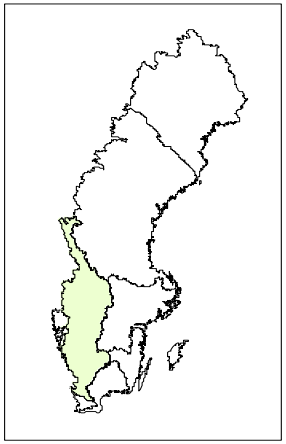
Environmental expenditure in the manufacturing industry contains data on investments and expenditure for wastewater.
The data referred to companies. One company can have several establishments in different sea basins.
The expenditure for each industry was allocated in relation to the quantities of discharged water from the survey on water use.

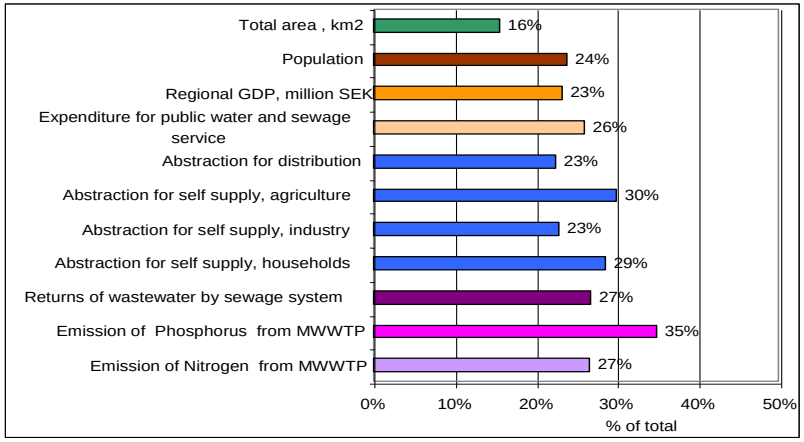
Water district

Municipality

Urban area/Locality

Kattegat

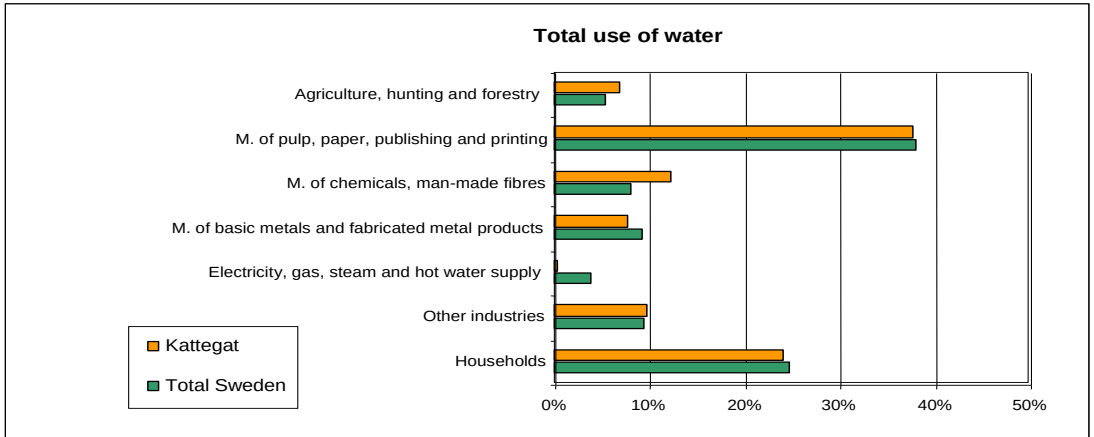




		Use of distributed water, 1000 m3	Self supply, 1000 m3	Total use, 1000 m3
A*	Agriculture, hunting and forestry		40 734	40 734
DE	M. of pulp, paper, publishing and printing	1 806	217 609	219 415
DG	M. of chemicals, man-made fibres	1 826	70 741	72 567
DJ	M. of basic metals and fabricated metal products	4 035	42 044	46 079
40	Electricity, gas, steam and hot water supply	474	2 671	3 145
	Other industries	44 357	12 920	57 277
	Total industries	52 498	386 719	439 217
	Households	114 917	25 619	140 536
	Total	**167 415**	**412 338**	**579 753**

Total expenditure for distributed water: 3422 Million SEK.

Waste water treatment service in the manufacturing industry:
Current exp.: 315 million SEK
Investments: 156 million SEK



Summary

1. Regionalize to water district
2. Simplify tables to provide overview
3. Collect water use data each 3-5 years
4. Supplement with diffuse sources such as leakage of nitrogen from agriculture land
5. Couple the data to driving forces for modelling