Sustainability facts and figures 2002

VATTENFALL

Contents

Introduction

Last year Vattenfall published its first international Sustainability Report after made company acquisitions. This year the concept of sustainability and responsibility reporting has been further developed. The Group has decided to use three main channels to support the annual report's key messages, namely:

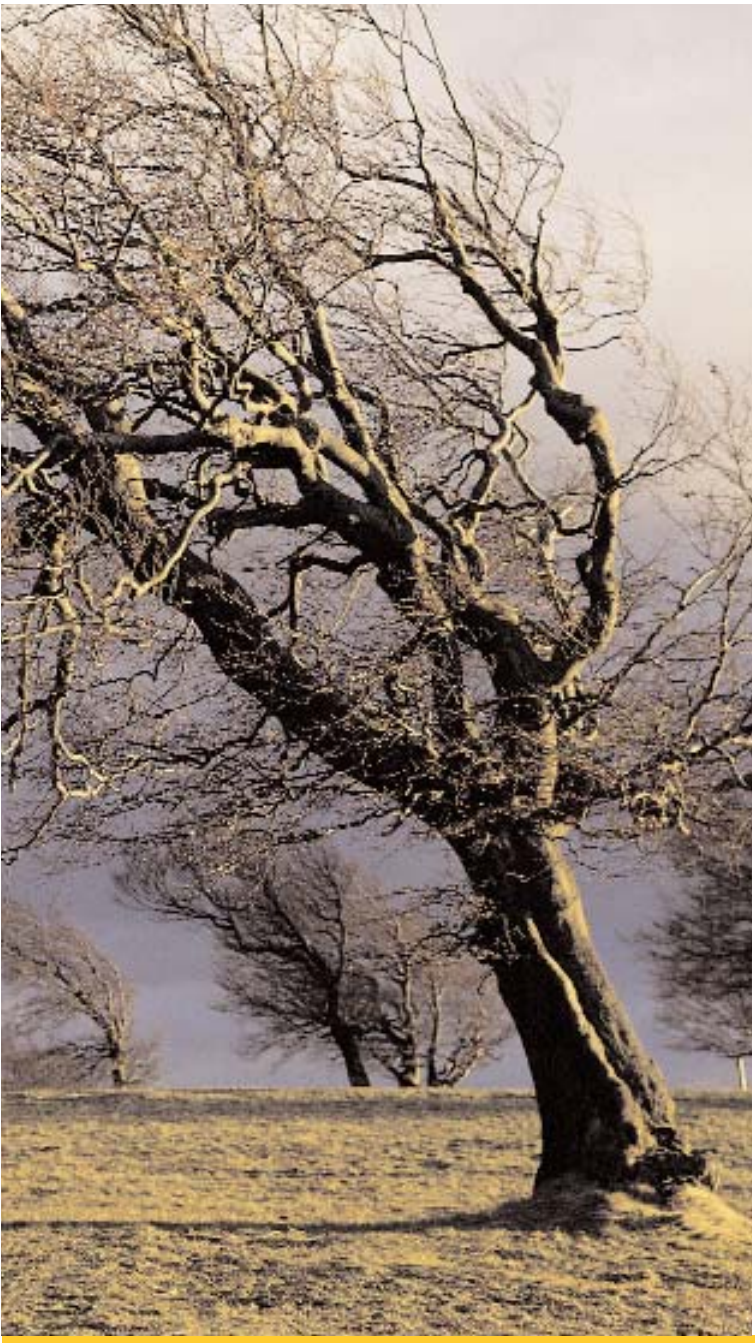
- The report "On our responsibility" – includes statements and key messages on responsibility matters.
- www.vattenfall.com – includes common information about the Group and also examples of how Vattenfall handles its corporate responsibilities. Current issues are commented on the site.
- Sustainability facts and figures – this report – presents annual facts and figures about the Vattenfall Group from a sustainability and environmental perspective.

Please notify that reported figures are not fully comparable with figures in the Vattenfall annual report 2002 due to accounting differences. However, all differences are marginal.

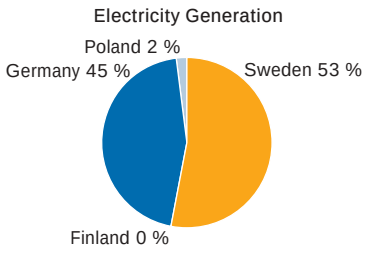
Vattenfall hopes that you as reader will find the information you look for in this report, on the international site *www.vattenfall.com*, in the report "On Our Responsibility" or in the Annual Report.

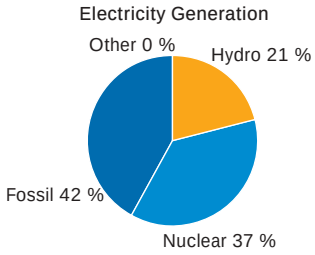
Further information about Vattenfall and its responsibilities can be read in the Vattenfall Responsibility Report and on the Vattenfall Group International Site www.vattenfall.com.

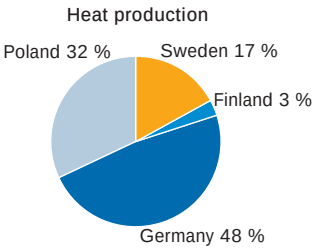
Vattenfall on its energy markets

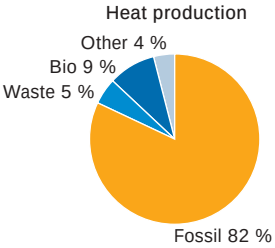


Vattenfall produces, distributes and sells electricity, heat and other kinds of energy services and solutions mainly on the Swedish, German, Finnish and Polish markets.









Market position

	Sweden	Finland	Germany	Poland
Electricity generation and sales	1	2	3	Among the 3 largest
Electricity trading	Among the 3 largest		Among the 5 largest	N/a
Electricity distribution	1	2	4	2
District heating	2	Limited	1	1

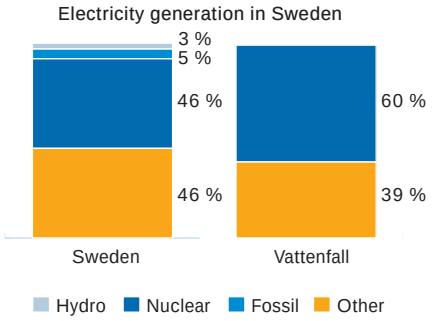
Vattenfall in Sweden 2002

	Vattenfall	Sweden in total
Electricity Generation	86.8 TWh	143 TWh
Network customers	900,000	5,200,000
Electricity sales	78.9 TWh	149 TWh
Heat Production	6.3 TWh	43.7 TWh*
Heat sales	5.9 TWh	41.5 TWh*

** Figures from 2000 regarding heat production and consumption.*

Vattenfall is the largest generation, sales and distribution company on the Swedish electricity market. Vattenfall has both regional and local electricity networks in Sweden. The company is the second largest player on the Swedish district-heating market.

The company's total electricity generation in Sweden amounted to 86.8 TWh in 2002. Among the Swedish electricity generation facilities, there are three nuclear power plants, 53 large and medium-sized hydro power plants and about 40 small hydro and wind power plants respectively.



Vattenfall has about 900,000 electricity network customers in Sweden and sells almost 80 TWh electricity to local distributers and end-customers.

Vattenfall's heat activities in Sweden include both district-heating and other customer-adapted heat solutions. The company's largest Swedish district-heating system is in Uppsala. More than 50 per cent of Vattenfall's heat generation in Sweden is based on biofuels. Refuse-derived fuel (RDF) is an important supplementary fuel. Sales of heat in Sweden was close to 6 TWh in 2002.

Vattenfall in Finland 2002

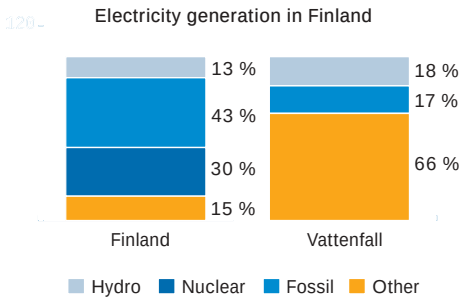
	Vattenfall	Finland in total
Electricity Generation	0.49 TWh	72 TWh
Network customers	350,000	2,200,000
Electricity sales	5.5 TWh	84 TWh
Heat Production	1.2 TWh	34.8 TWh*
Heat sales	1.8 TWh	32.3 TWh*

** Figures from 2000 regarding heat production and consumption.*

Vattenfall is the second largest electricity sales and distribution company on the Finnish market. The company has both regional and local electricity networks in Finland. Vattenfall is active on the Finnish heating market.

Vattenfall's total electricity generation in Finland amounted to 0.5 TWh in 2002. In Finland, the company has one large hydro power plant and several small hydro and wind power plants as well as a combined heat and power plant.

Vattenfall has about 350,000 electricity network customers in Finland and sells 5.5 TWh electricity to local distributers and end-customers.



Vattenfall's heat activities in Finland include customer-adapted heat solutions. Almost all of Vattenfall's produced heat in Finland is based on biofuels. Sales of heat in Finland amounted to 1.8 TWh in 2002.

Vattenfall in Germany 2002

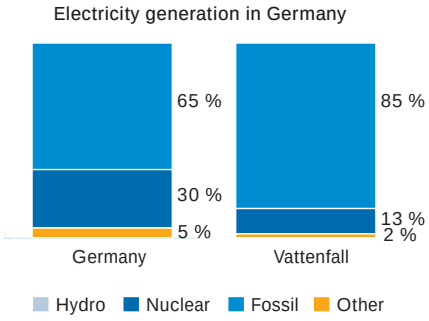
	Vattenfall	Germany in total
Electricity Generation	75.2 TWh	520 TWh
Network customers	3,400,000	42,000,000
Electricity sales	99.0 TWh	523 TWh
Heat Production	17.7 TWh	87.8 TWh*
Heat sales	14.0 TWh	79.4 TWh*

** Figures from 2000 regarding heat production and consumption.*

Vattenfall is the third largest company on generation and sales, and the fourth largest company on distribution on the German electricity market. Vattenfall is one of the largest lignite miners in Germany with four open cast mines. The company operates the grid in the eastern part of Germany. Vattenfall is the largest company on the German heat market.

Vattenfall's total electricity generation in 2002, amounted to 75.2 TWh. Electricity is generated in five large lignite-fired power plants, two nuclear power plants, a number of combined heat and power plants in Berlin and Hamburg and additional facilities, including hydro power, pumped-storage power and wind power plants. Vattenfall has a stake in a further two German nuclear power plants and additional fossil-fired power plants.

Vattenfall has about 2,2 million network customers in Berlin and almost 1 million network customers in Hamburg. In 2002 the company sold 99 TWh electricity to 3.4 million endcustomers and resellers and local distribution companies.



In 2002, about 59.3 million tonnes of lignite were extracted from Vattenfall's four open-cast mines in Lausitz in southeastern Germany. Tha vast majority of the extracted lignite was used in Vattenfall's nearby located power plants.

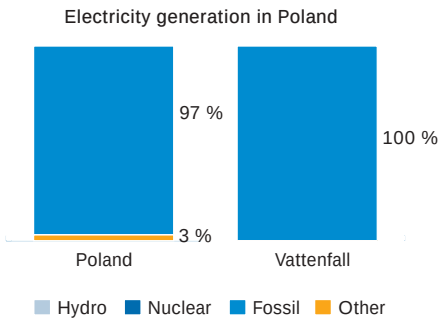
Vattenfall supplied almost 14 TWh of district-heating in 2002 to 700,000 households in Berlin, to 380,000 households in Hamburg as well as to customers in other German cities and communities. Vattenfall's district-heating production is based on coal, gas, and in Hamburg, RDF incineration. Berlin's district-heating system is Europe's largest and supplies one-third of the city's inhabitants with heat.

Vattenfall in Poland 2002

	Vattenfall	Poland in total
Electricity Generation	3.9 TWh	130 TWh
Electricity sales	3.3 TWh	123 TWh
Heat Production	11.9 TWh	94.6 TWh*
Heat sales	11.8 TWh	80.1 TWh*

** Figures from 2000 regarding heat production and consumption.*

Vattenfall runs heat and electricity generation in Warsaw (EW) and electricity distribution in Silesia (GZE). Vattenfall is one among the three largest electricity generation and sales companies in Poland and the second largest on electricity distribution. The company is Poland's largest district-heating company.



The company's total electricity generation in Poland amounted to almost 4 TWh in 2002. All Vattenfall's electricity in Poland is generated in three combined heat and power plants. All Vattenfall's generated electricity in Warsaw is sold to the city's local electricity distributor.

Vattenfall sold 3.3 TWh electricity to local distributers and end-customers.

The three fossil-fired combined heat and power plants and the two heating plants in Warsaw have an annual output of roughly 12 TWh of district-heating which is sold in Warsaw's district-heating network.

Sustainability Facts and Figures

Facilities owned or controlled by the Vattenfall Group are reported to 100 per cent no matter Vattenfall's majority stake. No figures are reported from minority stake facilites. Figures reported regarding production amounts are not fully comparable with the figures in the Vattenfall annual Report 2002 due to accounting differences.

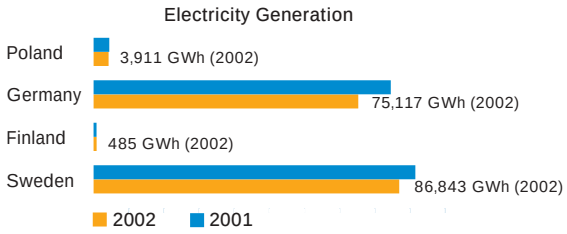
Comments on Year 2002 in Brief

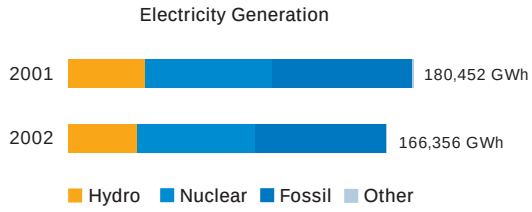
Electricity Generation and Heat Production
Both electricity generation and heat production amounted less in 2002 than in 2001.

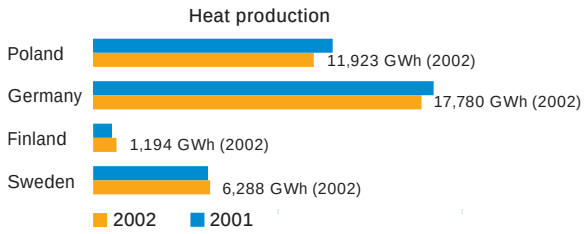
Less electricity was generated in Swedish and Finnish hydro power plants in 2002 than in 2001 due to a very dry sommer and fall. This is in part balanced by filled water reservoirs and heavy rain in the beginning of 2002.

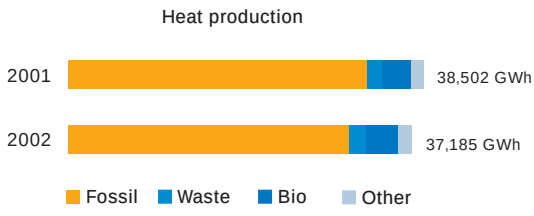
In 2002 Vattenfall genereated less electricity in its German nuclear power plants than in 2001. The Brunsbüttel nuclear power plant was down during almost the entire 2002.

Heat production in 2002 amounted less than in 2001 due to slightly milder winters (beginning and end of 2002).









Environmental Performance

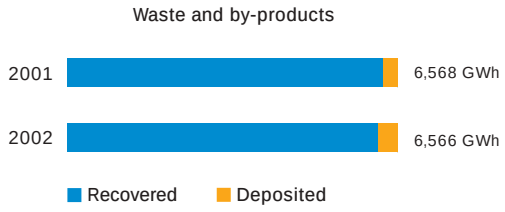
In 2002 Vattenfall's environmental performance was similar to 2001. All variations in emission levels, fuel consumption and production of by-products are results of changed electricity generation and heat production. Reported data from 2001 and 2002 indicate normal year-to-year variations.

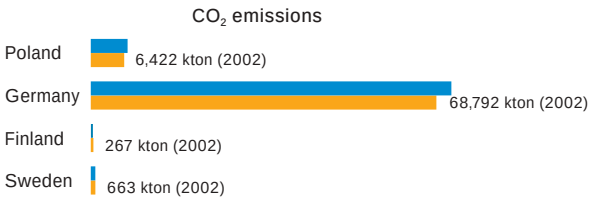
Vattenfall recovers most of its waste and by-products. Ashes and gypsum from combustion facilities dominate reported amounts. Deposited amounts of waste and by-products increased in Germany and Finland. In Poland they decreased. A high percentage of deposited waste origins from construction and deconstruction sites.

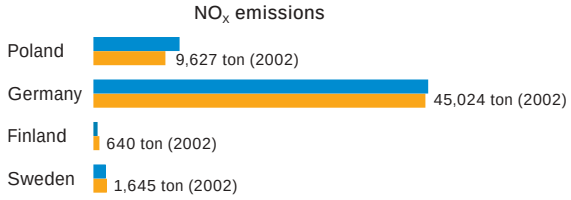
Less amounts of reported chemicals were purchased in 2002. Chemicals are stored at the facilities over the years. Purchased amounts do not necessarely indicate used amounts.

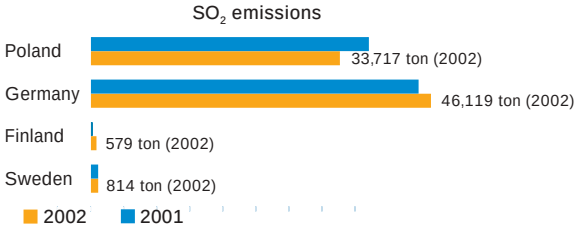
In 2002 more new ground was opened up for lignite mining than was re-cultivated in accordance with authorised plans. More ground water than in 2001 was removed due to increased land use.

Extraction of peat and biofuels in Sweden increased in 2002. Lignite extraction in Germany amounted same level as in 2001.









Energy Balances

The Vattenfall Group is active throughout the energy value chain. Operations currently focus on Sweden, Germany, Finland and Poland. Vattenfall generates, distributes and sells chiefly electricity and heat. Vattenfall also conducts lignite mining at four sites in Germany.

Figures on electricity and heat sales, production and fuel extraction are presented in the tables below. Electricity, heat and fuel balances are presented.

Table 1 - Total sales of electricity, heat and fuel (GWh)

	Sweden	Finland	Germany	Poland	Other units	Total 2002	Total 2001
Electricity	78,925	5,469	99,008	3,266	1,598	186,668	198,851
Heat	5,929	1,774	13,952	11,785		33,440	36,884
Gas	138		1,037			1,175	73
Lignite			7 156			7,156	7,413
Peat	28					28	3
Biofuels	9					9	2

Table 2 - Total generation of electricity, heat and cooling (GWh)

	Sweden	Finland	Germany	Poland	Total 2002	Total 2001
Electricity	86,843	485	75,117	3,911	166,356	180,452
Heat	6,288	1,194	17,691	11,923	37,096	38,502
Cooling	23		89		112	66

Table 2a - Total electricity generation (GWh to the grid)

	Sweden	Finland	Germany	Poland	Total 2002	Total 2001
Hydro power	34,128	315	1,224		35,666	40,049
Wind power	46	5	4		55	47
Nuclear power	52,074		9,800		61,874	66,286
Gas	25	39	2,778		2,842	3,664
Oil	38	0	117		155	160
Coal	318		6,382	3,911	10,611	15,841
Lignite			54,482		54,482	53,947
Peat	14	41			54	28
Biofuels	165	83	0*		248	97
Waste			123**		123	89
Other	36	3	207		245	244
Total 2002	**86,843**	**485**	**75,117**	**3,911**	**166,356**	
Total 2001	91,443	463	84,432	4,114	180,452	

* *Reported as "other".*
** *Waste include fractions of biofuels and fossil fuels.*

Table 2b – Total heat production (GWh to the distribution system)

	Sweden	Finland	Germany	Poland	Total 2002	Total 2001
Gas	378	319	4,768		5,465	3,879
Oil	470	115	141	773	1,499	7,269
Coal	63		5,345	11,150	16,558	16,044
Lignite			5,779		5,779	4,333
Peat	793	308			1,101	830
Biofuels	2,957	439	0*		3,396	3,045
Waste	755	2	1,062**		1,818	1,577
Electricity***	595				595	761
Other	277	12	685		974	697
Total 2002	**6,288**	**1,194**	**17,780**	**11,923**	**37,185**	
Total 2001	6,171	944	18,438	12,949	38,502	

Table 3 – Total fuel extraction (GWh)

	Sweden	Finland	Germany	Poland	Total 2002	Total 2001
Lignite			143,777		143,777	140,243
Peat	644				644	288
Biofuels	333				333	23
Total 2002	**977**		**143,777**		**144,754**	
Total 2001	311		140,243		140,554	

Table 4 – Total energy balances (TWh)

	Electricity		Heat		Cooling	
Sales		187		33		
Production	166		37		0.1	
Purchasing	57		4		0	
Deliveries to minority owners		18		0		0
Internal use, losses and balancing errors		19		8		0.1
Total 2002	**224**	**224**	**41**	**41**	**0.1**	**0.1**
Total 2001	232	232	41	41	0.1	0.1

* *Reported as "other".*
** *Waste includes fractions of biofuels and fossil fuels.*
*** *Electricity used as fuel in electric boilers and heat pumps.*

Table 5 - Total fuel balances (TWh)

	Gas		Oil		Coal	
Sales		1		0		0
Internal use		11		2.2		39
Extraction/Production	0		0		0	
Purchasing	12		2.1		40	
Losses and balancing errors		0	0.1			1
Total 2002	**12**	**12**	**2.2**	**2.2**	**40**	**40**
Total 2001	12	12	2.4	2.4	51	51

	Lignite		Peat		Biofuels	
Sales		7		0		0
Internal use		152		1.3		4.3
Extraction/Production	144		0.6		0.3	
Purchasing	14		0.5		4.0	
Losses and balancing errors	1			0		0
Total 2002	**159**	**159**	**1.3**	**1.3**	**4.3**	**4.3**
Total 2001	154	154	0.7	0.7	3	3

Use of Fuels, Materials and Chemicals

Vattenfall uses fuels, materials, chemicals and other resources to operate, maintain and develop plants, distribution networks etc. The most extensive and sustainability significant use of resources is presented in the tables below.

Materials are removed in order to enable lignite extraction from the mines. In 2002, a total of 409 million m^3 of material (385 million m^3 in 2001), mainly sand, was removed to extract 59 million ton (57 million ton in 2001) of lignite.

Fuel consumption is expressed in terms of heating value and mass or volume. Since the biofuel used consists of many different fuels with varying dry substance contents and since the oil used is an aggregate of oils with varying heating values and densities, the mass or volume has been expressed as a single fuel with fixed properties. Used conversion factors for fuels are presented.

Table 6 - Conversion factors for fuels

Gas	0.011 MWh/m^3
Oil	9.96 MWh/m^3
Coal	7.56 MWh/ton
Lignite	2.43 MWh/ton
Peat (50 per cent dry substance)	2.58 MWh/ton
Biofuels (chips, 40 per cent dry substance)	2.33 MWh/ton

Table 7 - Total use of fuels for production of electricity, heat and cooling (GWh)

	Sweden	Finland	Germany	Poland	Total 2002	Total 2001
Uranium*	(163 ton)		(41 ton)		(204 ton)	(299 ton)
Gas	420	396	10,211		11,028	12,271
Oil	547	124	519	968	2,158	2,304
Coal	454		20,262	18,197	38,913	51,456
Lignite			151,182		151,182	147,019
Peat	863	387			1,249	925
Bio fuels	3,414	585	**		4,294	3,419
Waste	716	2	1,926***		2,644	2,881
Electricity****	625		47		672	774
Other	308	17	1,361		1,686	1,273
Total 2002 (excl uranium)	**7,347**	**1,510**	**185,508**	**19,165**	**213,825**	
Total 2001 (excl uranium)	6,863	1,218	193,916	20,325	222,322	

Table 7a - Total use of fuels for electricity generation (GWh)

	Sweden	Finland	Germany	Poland	Total 2002	Total 2001
Uranium*	(163 ton)		(41 ton)		(204 ton)	(299 ton)
Gas	29	48	7,393		7,469	9,510
Oil	47	1	393		441	593
Coal	384		17,769	5 564	23,717	31,661
Lignite			148,214		148,214	144,676
Peat	15	49			64	34
Bio fuels	204	100	**		304	110
Waste			391***		391	454
Other	21	3	534		557	812
Total 2002 (excl uranium)	**700**	**201**	**174,694**	**5,564**	**181,158**	
Total 2001 (excl uranium)	591	87	181,491	5,682	187,851	

Table 7b - Total use of fuels for heat and cooling production (GWh)

	Sweden	Finland	Germany	Poland	Total 2002	Total 2001
Gas	391	349	2,818		3,558	2,761
Oil	501	123	126	968	1,718	1,710
Coal	69		2,493	12 633	15,195	19,796
Lignite			2,967		2,967	2,343
Peat	848	337			1,185	891
Bio fuels	3,209	485	**		3,695	3,309
Waste	716	2	1,535***		2,253	2,427
Electricity****	625		47		672	774
Other	287	13	828		1,128	460
Total 2002	**6,647**	**1,310**	**10,814**	**13,601**	**32,372**	
Total 2001	6,272	1,131	12,425	14,643	34,471	

* *Loaded uranium in nuclear power plants. 1 kg loaded uranium gives about 290 MWh electricity in Vattenfall's plants.*
** *Reported as "other".*
*** *Waste includes fractions of biofuels and fossil fuels.*
**** *Electricity used as fuel in electric boilers and heat pumps.*