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DEFINITIONS

Installed capacity (net capacity):

The sum of the rated capacities of the individual power plant units (expressed in MW), excluding the power plant's own consumption of electricity.

Transmission capacity:

The power (in MW) that a high-voltage line can transmit under normal conditions, taking into account any limitations that may be imposed on the rated capacity.

Electricity generation (net generation):

The output of a power plant, excluding the plant's own consumption; usually expressed in GWh.

Generation of condensing power:

Generation at a conventional steam power plant where the energy of the steam is used solely for electricity generation and where the steam is condensed to water after the turbine.

Combined heat and power (CHP) generation:

Generation at a steam power plant where some of the energy of the steam is used for electricity generation and some for another purpose, e.g. for district heating or as process steam for industry. Previously known as back-pressure generation.

Imports/exports:

Since 1 January 1996, the sum (in GWh) of the physically registered MWh values for each connection between the individual countries, per hour of exchange. Until 31 December 1995, imports and exports referred to the quantities of energy recorded as purchases and sales between the respective countries when accounts were settled. Net imports is the difference between imports and exports. *The Norwegian share of Linnvassely is recorded as imports to Norway and the German share of Enstedværket as exports to Germany.*

Total consumption:

The sum of electricity generation and net imports, expressed in GWh.

Occasional power to electric boilers:

Expressed in GWh, this refers to the supply of electricity to electric boilers on special conditions for the generation of steam or hot water, which are alternatively generated using oil or some other fuel. *As of 1 January 1996, Sweden can no longer determine monthly values for occasional power to electric boilers. Thus the values for gross consumption in Sweden for 1996 also include occasional power to electric boilers.*

Gross consumption (electricity available):

The sum of domestic generation and imports minus exports and occasional power to electric boilers; usually expressed in GWh.

Losses:

The difference between gross consumption and net consumption, including pumped storage power; usually expressed in GWh.

Pumped storage power:

The electricity used for pumping water up to a reservoir, for the generation of electricity on a later occasion; expressed in GWh.

Net consumption:

The sum of the energy used by consumers of electricity; usually expressed in GWh.

UNITS AND SYMBOLS

kW	kilowatt
MW	megawatt = 1,000 kW
GW	gigawatt = 1,000 MW
J	joule
kJ	kilojoule
PJ	petajoule = 10^{15} J
kWh	kilowatt-hour = 3,600 kJ
MWh	megawatt-hour = 1,000 kWh
GWh	gigawatt-hour = 1,000 MWh
TWh	terawatt-hour = 1,000 GWh
~	alternating current (AC)
=	direct current (DC)
.	Data are nonexistent
..	Data are too uncertain
0	Less than 0.5 of the unit given
-	No value

CALCULATION OF ELECTRICITY CONSUMPTION

Electricity generation

+ Imports

– Exports

= **Total consumption**

– Occasional power to electric boilers

= **Gross consumption**

– Losses, pumped storage power, etc.

= **Net consumption**

Responsible for statistical data on the individual countries:

Lisbeth Petersson - Association of Danish Electric Utilities, Denmark
 Terho Savolainen - Finnish Electricity Association, Finland
 Ólafur Pálsson - Iceland Energy Agency, Iceland
 Arne Hjelle and Hanne Høyseveen - Nord Pool ASA, Norway
 Lars Nilsson - Swedish Power Association, Sweden

Responsible for processing of the statistics:

Laura Karjalainen - Imatran Voima Oy, Finland

The present statistics were prepared before the 1996 official statistics for the individual countries had become available. Certain figures in the Annual Report may thus differ from the official statistics.

INSTALLED CAPACITY

S1 INSTALLED CAPACITY ON 31 DEC. 1996, MW

	Denmark	Finland	Iceland	Norway	Sweden	Nordel
Installed capacity, total	10 937	14 963	1 049	27 631	34 158	88 738
Hydropower	10	2 850	880	27 334	16 203 ¹⁾	47 277
Nuclear power	.	2 350	.	.	10 055	12 405
Other thermal power	10 141	9 756	119	293	7 795 ²⁾	28 104
- condensing power	4 910 ³⁾	3 673	.	73	2 842	11 498
- CHP, district heating	4 757	3 037	.	.	2 464	10 258
- CHP, industry	187	2 168	.	185	776	3 316
- gas turbines, etc.	287	878	119	35	1 713	3 032
Other renewable power	786	7	50	4	105	952
- wind power	786	7	.	4	105	902
- geothermal power	.	.	50	.	.	50
Commissioned in 1996	323	290	0	429	135	1 177
Decommissioned in 1996	70	73	0	355	-	498

¹⁾ Includes the Norwegian share of Linnvasselv (25 MW)
²⁾ Thermal power has been subject to an inventory, which has altered the previous data
³⁾ Includes the German share of Enstedværket (300 MW)

S2 AVERAGE-YEAR GENERATION OF HYDROPOWER IN 1996, GWH

	Denmark	Finland	Iceland	Norway	Sweden	Nordel
Average-year generation 1996	-	12 608	4 950	112 597	63 645	193 800
Average-year generation 1995	-	12 600	4 950	112 249	63 645	193 444
Change	-	8	0	348	0	356

S3 CHANGES IN INSTALLED CAPACITY IN 1996

Power category	Power plant	Commissioned	Decommissioned	Change in average-year generation (hydropower)	Type of fuel
		MW	MW	GWh	
Denmark					
CHP, district heating	FVA I	11			Waste, refuse
	Hjørring	60			Natural gas
	LKV anlæg	45			Natural gas
	Sønderborg	56			Natural gas
	Viborg	57			Natural gas
	Århusværket		70		Coal/Oil
CHP, industry	Fiskernes Fiskeindustri	21			Natural gas
Wind power	Several small plants	169			
Finland					
Hydropower	Petäjäskoski I	8		8	
Nuclear power	Loviisa	30			
	Olkiluoto	10			
CHP, district heating	Forssa	15			Wood chips/Bark
	Others	15			
CHP, industry	MB Kemi	30			Internal fuel
	Metsä-Rauma	85			Internal fuel
	VTS Kemi	93	73		Internal fuel/Peat
	Others	3			
Wind power	Lammasoaiivi	1			
Norway					
Hydropower	Gravfoss II	30	19	52	
	Svartisen	340	310	172	
	Others	59	26	125	
Sweden					
Hydropower	Juktan	26		-	
CHP, district heating	Skellefteå	34			Wood chips
	Växjö	37			Wood chips
Wind power	Several small plants	38			

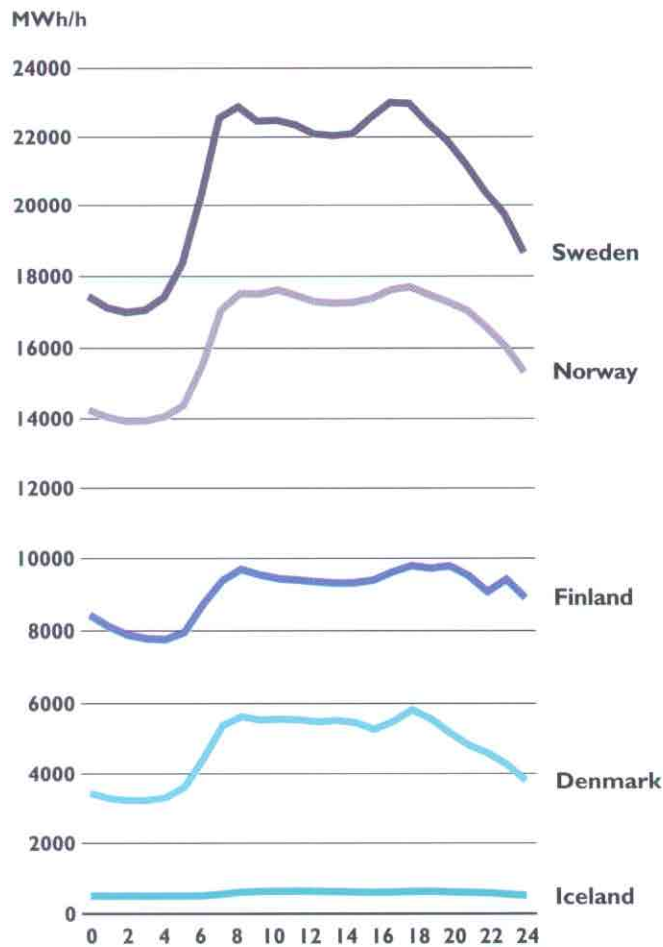
S4 POWER PLANTS (LARGER THAN 10 MW): DECISIONS TAKEN

Power category	Power plant	Capacity	Estimated start-up	Average-year generation (hydropower)	Type of fuel
		MW	Year	GWh	
Denmark					
CHP, district heating	Ringsted	12	1997		Natural gas
	Skærbækværket 3	394	1997		Natural gas
	DTU 2	33	1998		Natural gas
	Maribo / Sakskøbing	10	1998		Biofuel
	Nordjyllandsværket 3	385	1998		Coal/Oil
	Århusværket	88	1999		Coal/Oil/Biofuel
	Avedøreværket 2	500	2001		Natural gas/Straw/ Wood chips/(Oil)
Finland					
Hydropower	Pamilo	26	1997	0	
	Raasakka	20	1997	25	
	Vuotos	37	2004	430	
Nuclear power	Olkiluoto	20	1997		
CHP, district heating	Kotka	49	1997		Natural gas
	Vuosaari B	450	1997		Natural gas
CHP, industry	Kirkniemi	70	1997		Natural gas
	Neste POVO	70	1997		Natural gas
	PVO Nokia	45	1997		Natural gas
	VTS/Oulu	70	1997		Internal fuel
Condensing power	Vaskiluoto	230	1998		Coal/Oil
Iceland					
Geothermal power	Krafla	30	1997		
	Nesjavellir	60	1998		
Norway					
Hydropower	Skjerka	95	1997	80	
	Svartisen II	10	1998	79	
Condensing power	Kårstø	350	1999		Natural gas
	Kollsnes	350	2000		Natural gas
Sweden					
CHP, district heating	Brista	41	1997		Wood chips

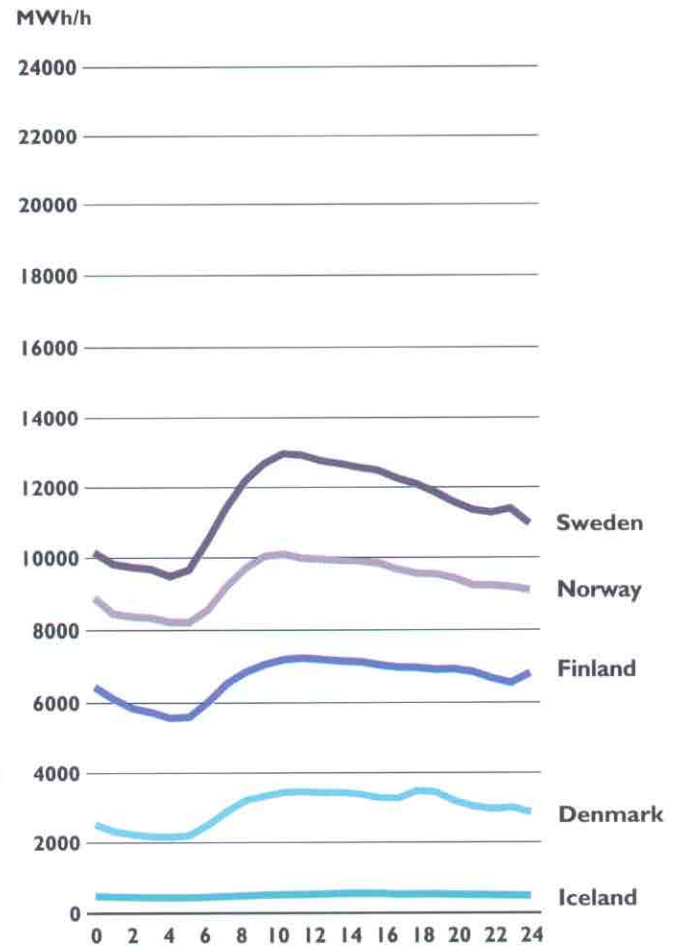
SYSTEM LOAD

S5 SYSTEM LOAD 3RD WEDNESDAY IN JANUARY AND 3RD WEDNESDAY IN JULY 1996

Average 24-hour load 3rd Wednesday in January (17-01-96)

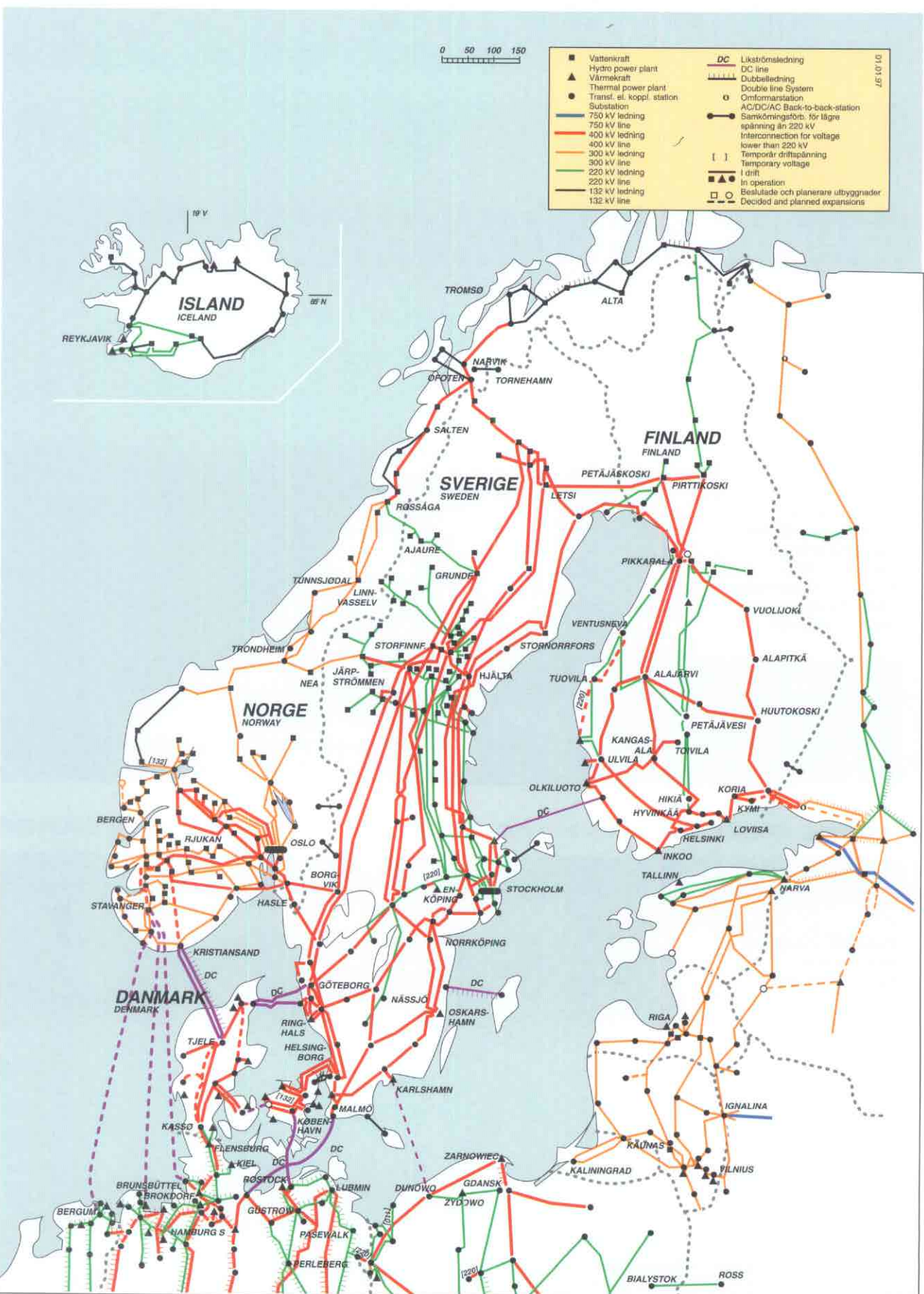


Average 24-hour load 3rd Wednesday in July (17-07-96)



	Installed net capacity	Maximum system load	Minimum system load
	31 Dec. 1996	3rd Wednesday in Jan. 1996, 5:00-6:00 p.m.	3rd Wednesday in July 1996, 4:00-5:00 a.m.
	GW	GWh/h	GWh/h
Denmark	10.9	5.8	2.1
Finland	15.0	9.8	5.5
Iceland	1.0	0.6	0.4
Norway	27.6	17.7	8.2
Sweden	34.2	23.0	9.5
Nordel	88.7	56.9	25.7
All hours are local time			

THE GRID SYSTEM IN THE NORDIC COUNTRIES



INTERCONNECTIONS

S6 EXISTING INTERCONNECTIONS BETWEEN THE NORDEL COUNTRIES

Countries Stations	Rated voltage	Transmission capacity as per design rules ¹⁾		Total length of line	Of which cable
	kV	MW		km	km
Denmark - Norway		From Denmark	To Denmark		
Tjele-Kristiansand	250/350	1040	1040	240/pol	127/pol
Denmark - Sweden		From Sweden	To Sweden		
Teglstrupgård - Mörap 1 och 2	132~	350 ²⁾	350 ²⁾	23	10
Hovegård - Söderåsen 1	400~	800 ²⁾	800 ²⁾	91	8
Hovegård - Söderåsen 2	400~	800 ²⁾	800 ²⁾	91	8
Vester Hassing - Göteborg	250=	290	270	176	88
Vester Hassing - Lindome	285=	380	360	149	87
Hasle (Bornholm) - Borrbj	60~	60	60	48	43
Finland - Norway		From Finland	To Finland		
Ivalo - Varangerbotn	220~	70	70	228	.
Finland - Sweden		From Sweden	To Sweden		
Ossauskoski - Kalix	220~	900 ³⁾	700	93	.
Petäjäskoski - Letsi	400~			230	.
Keminmaa - Svartbyn	400~			134	.
Hellesby (Åland) - Skattbol	70~	35	35	77	56
Raumo - Forsmark	400=	500	500	235	198
Norway - Sweden		From Sweden	To Sweden		
Sildvik - Tornehamn	132~	50	120	39	.
Ofoten - Ritsem	400~	750	750	58	.
Rössåga - Ajaure	220~	285 ⁴⁾	250 ⁴⁾	117	.
Linnvasselv, transformer	220/66~	50	50	.	.
Nea - Järpströmmen	275~	450 ⁴⁾	450 ⁴⁾	100	.
Lutufallet - Höljes	132~	40	20	18	.
Eidskog - Charlottenberg	132~	100	100	13	.
Hasle - Borgvik	400~	1650 ⁴⁾	1800 ⁴⁾	106	.
Halden - Skogssäter	400~			135	.

¹⁾ Maximum permissible transmission.
²⁾ Thermal limit. The total transmission capacity is $\pm 1,600$ MW. It can be higher if no restrictions have been imposed on imports/exports in the Danish or Swedish network.
³⁾ Further 100 MW for power balance deviation.
⁴⁾ The transmission capacity can in certain situations be lower, owing to bottlenecks in the Norwegian network. 1,800 MW requires a network protection system during operation (production disconnection).

S7 EXISTING INTERCONNECTIONS BETWEEN THE NORDEL COUNTRIES AND OTHER COUNTRIES

Countries Stations	Rated voltage	Transmission capacity		Total length of line	Of which cable
	kV	MW		km	km
Denmark - Germany		From Nordel	To Nordel		
Kassø - Audorf	2 x 400~	1400 ¹⁾	1400 ¹⁾	107	.
Kassø - Flensburg	220~			40	.
Ensted - Flensburg	220~			34	.
Bjæverskov - Rostock	400=	600	600	166	166
Finland - Russia		From Nordel	To Nordel		
Imatra - GES 10	110~	.	100	20	.
Yllikkälä - Viborg	±85=	.	900	.	.
Nellimö - Kaitakoski	110~	60	60	20	.
Norway - Russia		From Nordel	To Nordel		
Kirkenes - Boris Gleb	154~	50	50	10	.
Sweden - Germany		From Nordel	To Nordel		
Västra Kärrstorp - Herrenwyk	450=	600 ²⁾	600 ²⁾	250	220

¹⁾ Transmission capacity varies between 1,200 and 1,500 MW, depending on operating conditions.
²⁾ Owing to restrictions in the German network, transmission capacity is currently limited to 450 MW from Nordel and 370 MW to Nordel.

S8 INTERCONNECTIONS: DECISIONS TAKEN

Countries Stations	Rated voltage	Transmission capacity as per design rules	Total length of line	Of which cable	Estimated commis- sioning
	kV	MW	km	km	Year
Denmark - Denmark (Storebælt / The Great Belt) Elsam - Elkraft	400=	500 - 600	ca 70	ca 70	¹⁾
Finland - Russia Kymi - Viborg	±85=	300 ²⁾			1997
Norway - The Netherlands (NorNed Kabel) Fedra - Eemshaven	400-600=	min 600	ca 550	ca 550	2001
Norway - Germany (Euro Cable) Øksendal (Tonstad) ³⁾ - Brunsbüttel	400-600=	min 600	ca 550	ca 550	2002
Norway - Germany (Viking Cable) Øksendal (Tonstad) ³⁾ - Wilhelmshaven	400-600=	min 600	ca 550	ca 550	2003

¹⁾ According to plans, the Great Belt connection will be in operation in 2003. The Minister of the Environment and Energy has the authority to decide on the connection.
²⁾ Transmission capacity initially 150 MW to Nordel.
³⁾ Cable to Lista, overhead line to Tonstad.

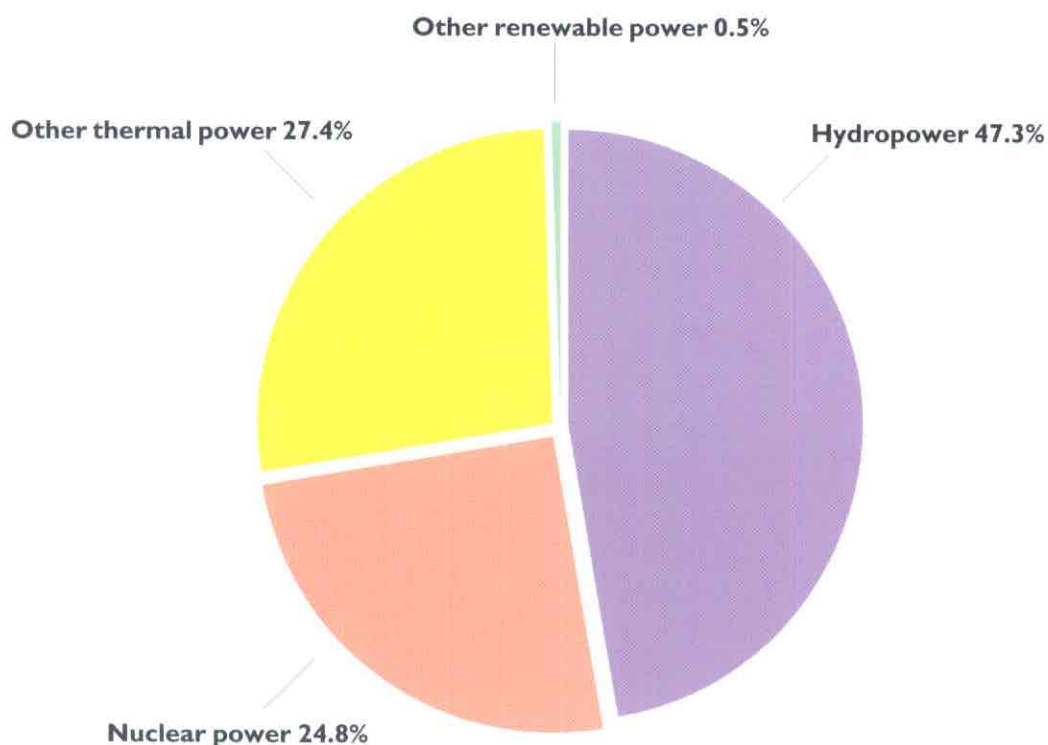
LINE LENGTHS

S9 TRANSMISSION LINES OF 110-400 KV IN SERVICE ON 31 DEC. 1996

	400 kV, AC and DC	220-300 kV, AC and DC	110, 132, 150 kV
	km	km	km
Denmark	1 285 ¹⁾	435 ²⁾	3 949 ³⁾
Finland	3 821 ⁴⁾	2 660	14 850
Iceland	.	492	1 315
Norway	2 110	5 782 ²⁾	10 300
Sweden	10 954 ⁴⁾	4 389 ²⁾	15 000

¹⁾ Of which 2 km in service with 150 kV and 46 km with 132 kV
²⁾ Of which 80 km in Denmark and 96 km in Sweden (KontisKan), 89 km in Denmark and 382 km in Norway (Skagerrak) in service with 250 kV DC, and 75 km in Denmark and 74 km in Sweden (KontisKan 2) in service with 285 kV DC.
³⁾ Of which 13 km in service with 60 kV and 105 km with 50 kV.
⁴⁾ Consisting of submarine cable (DC), 99 km in Finland and 99 km in Sweden; and land cable (DC), 34 km in Finland and 2 km in Sweden (Fenno-Skan).

S10 TOTAL ELECTRICITY GENERATION WITHIN NORDEL 1996



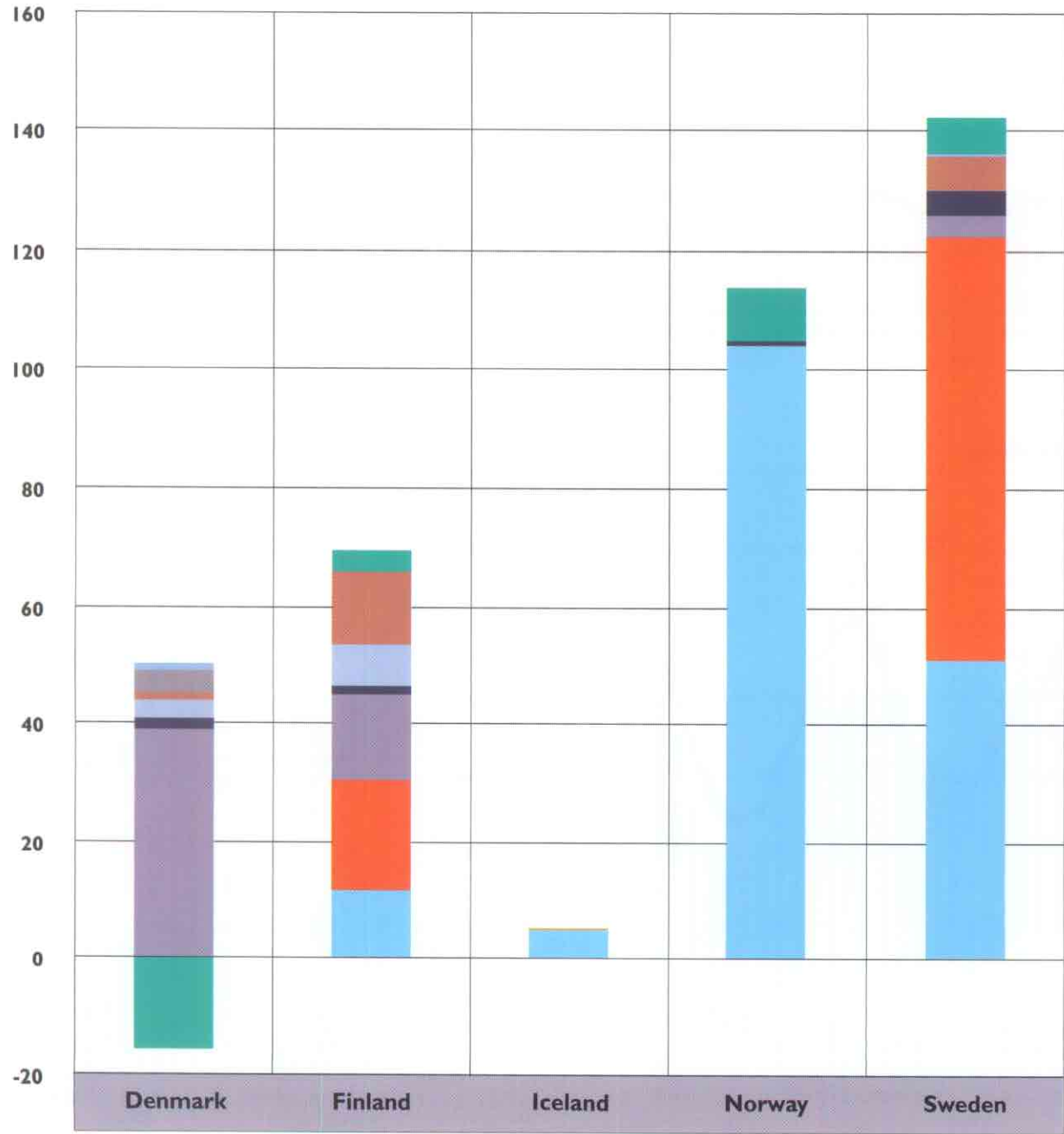
S11 ELECTRICITY GENERATION 1996, GWH

	Denmark	Finland	Iceland	Norway	Sweden	Nordel
Total generation 1996	50 367	66 367	5 113	104 878	136 011	362 736
Hydropower	19	11 713	4 765	104 091	50 951	171 539
Nuclear power	.	18 662	.	.	71 385	90 047
Other thermal power	49 098	35 981	3	781	13 530	99 393
- condensing power	48 250 ¹⁾	13 496	.	119	3 547	65 412
- CHP, district heating	..	12 660	.	.	5 434	18 094
- CHP, industry	848	9 800	.	382	4 530	15 560
- gas turbines, etc.	-	25	3	280	19	327
Other renewable power ²⁾	1 250	11	345	6	145	1 757
Total generation 1995	34 339	60 541	4 975	123 499	143 700	367 054
Change as against 1995	46.7%	9.6%	2.8%	-15.1%	-5.4%	-1.2%

¹⁾ Includes generation in combined heat and power stations

²⁾ Wind power and, for Iceland, geothermal power

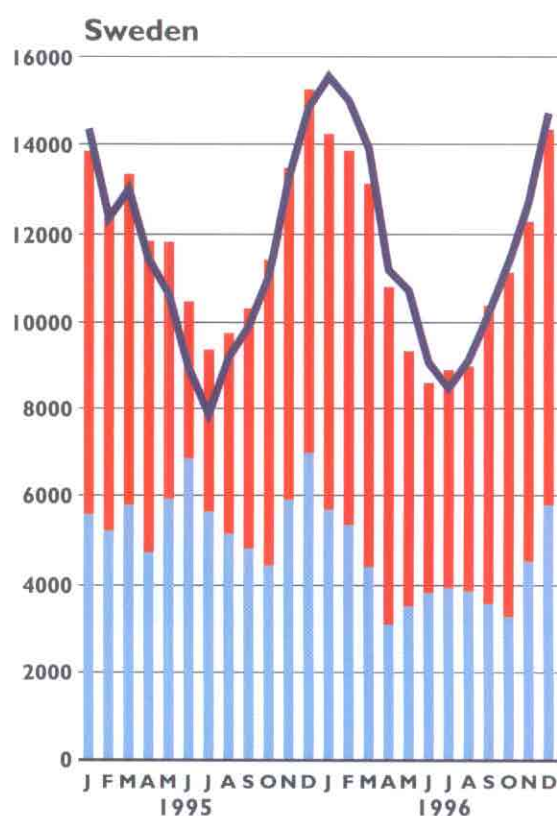
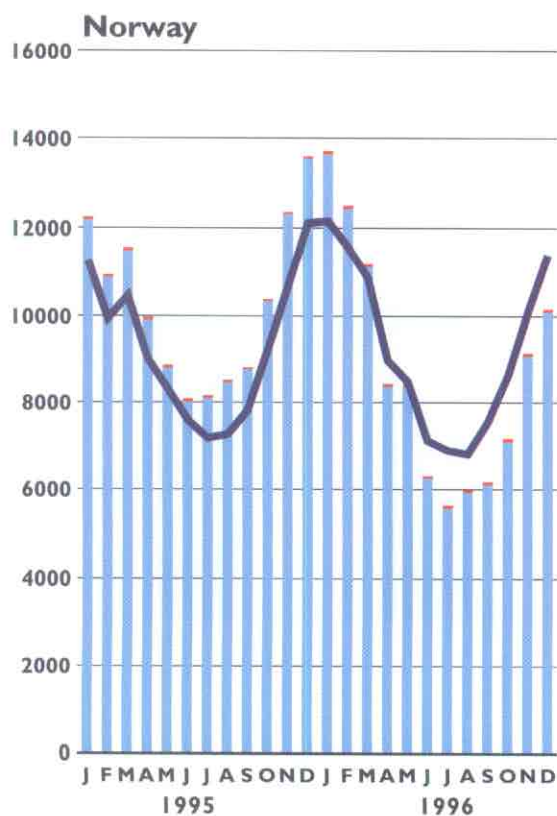
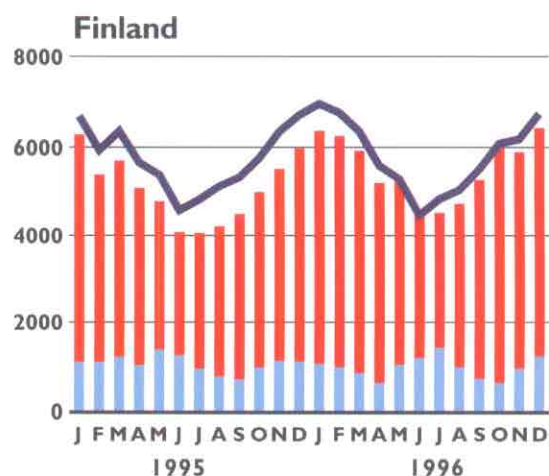
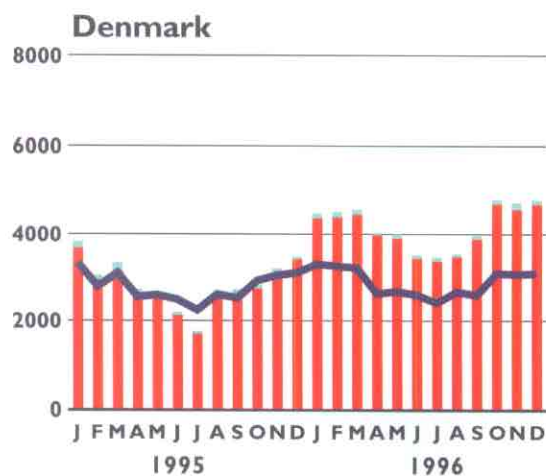
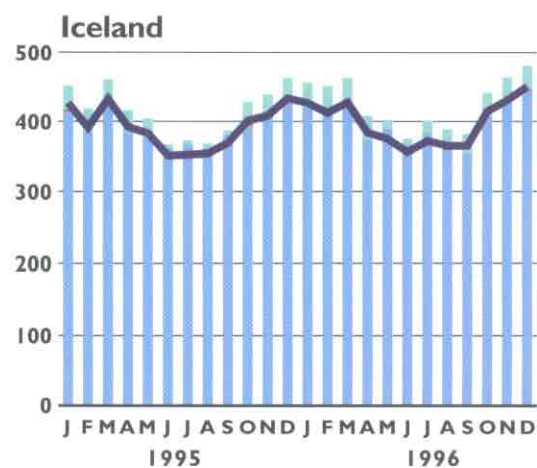
S12 TOTAL ELECTRICITY GENERATION
BY ENERGY SOURCE, AND NET IMPORTS
AND EXPORTS 1996, TWH



S13 MONTHLY GENERATION AND GROSS CONSUMPTION OF ELECTRICITY 1995-1996, GWH

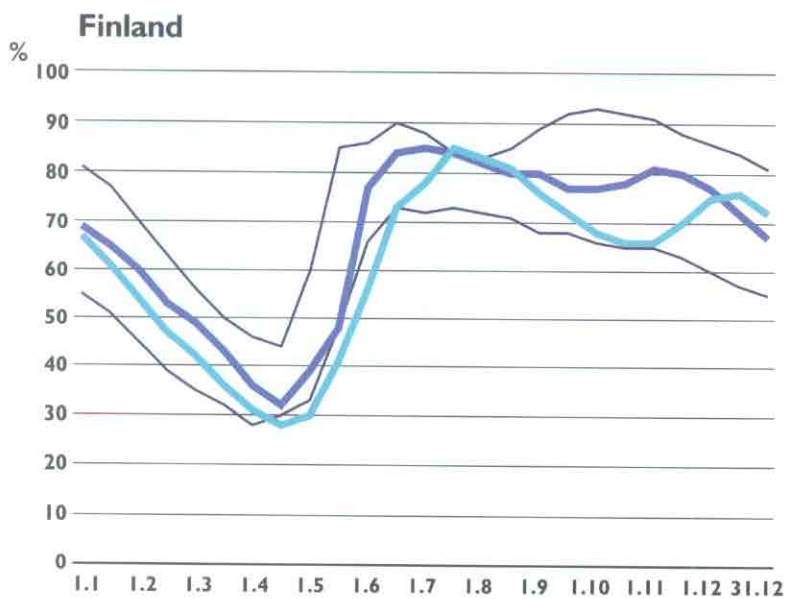
- Gross consumption
- Wind power or geothermal power
- Nuclear power and other thermal power
- Hydropower

N.B. Consumption in Sweden in 1996 also includes supply to electric boilers. It is therefore not directly comparable with consumption in 1995.



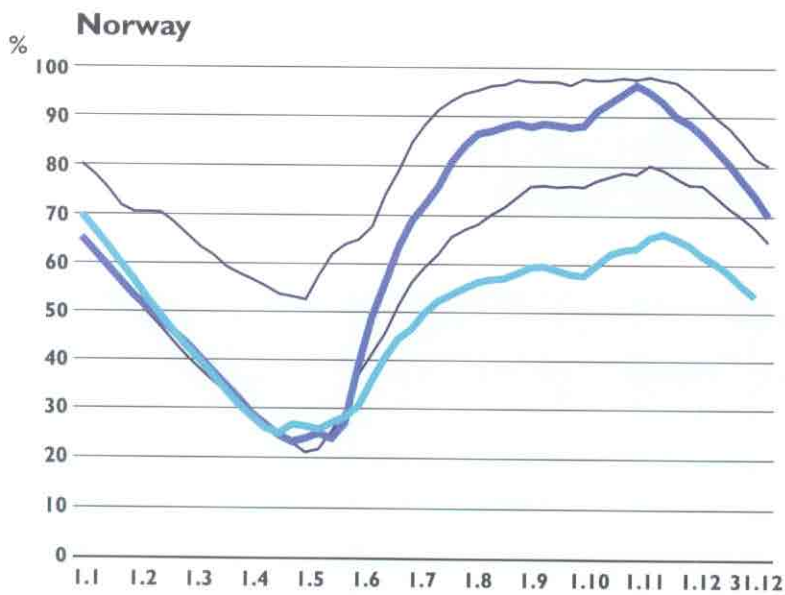
WATER RESERVOIRS

S14 WATER RESERVOIRS 1996



Reservoir capacity 4 900 GWh

Minimum and maximum limits are based on values for the years 1986-1995

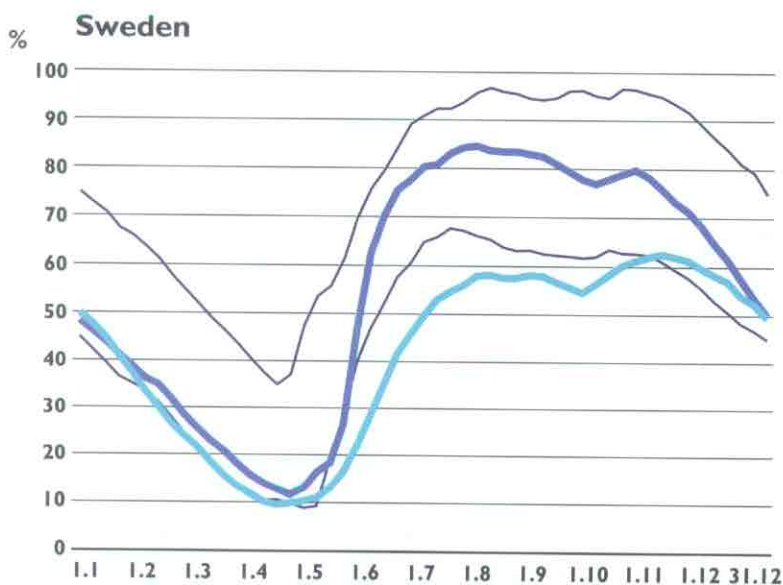


Reservoir capacity

1.1.1996 77 888 GWh

31.12.1996 78 121 GWh

Minimum and maximum limits are based on values for the years 1982-1991

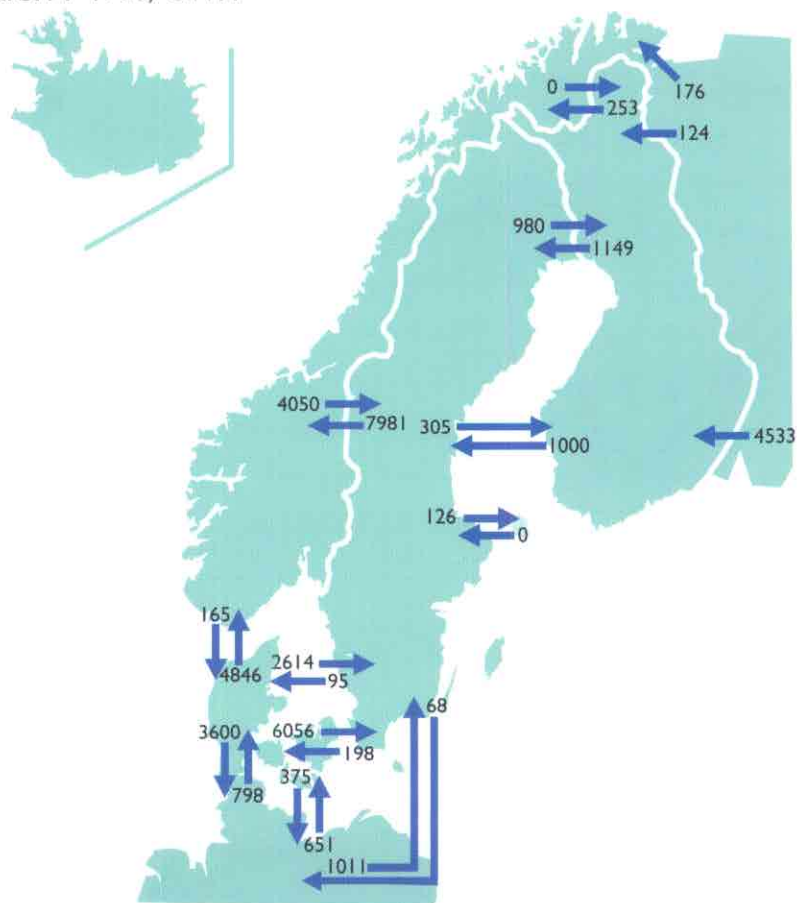


Reservoir capacity 33 550 GWh

Minimum and maximum limits are based on values for the years 1980-1994

EXCHANGE OF ELECTRICITY

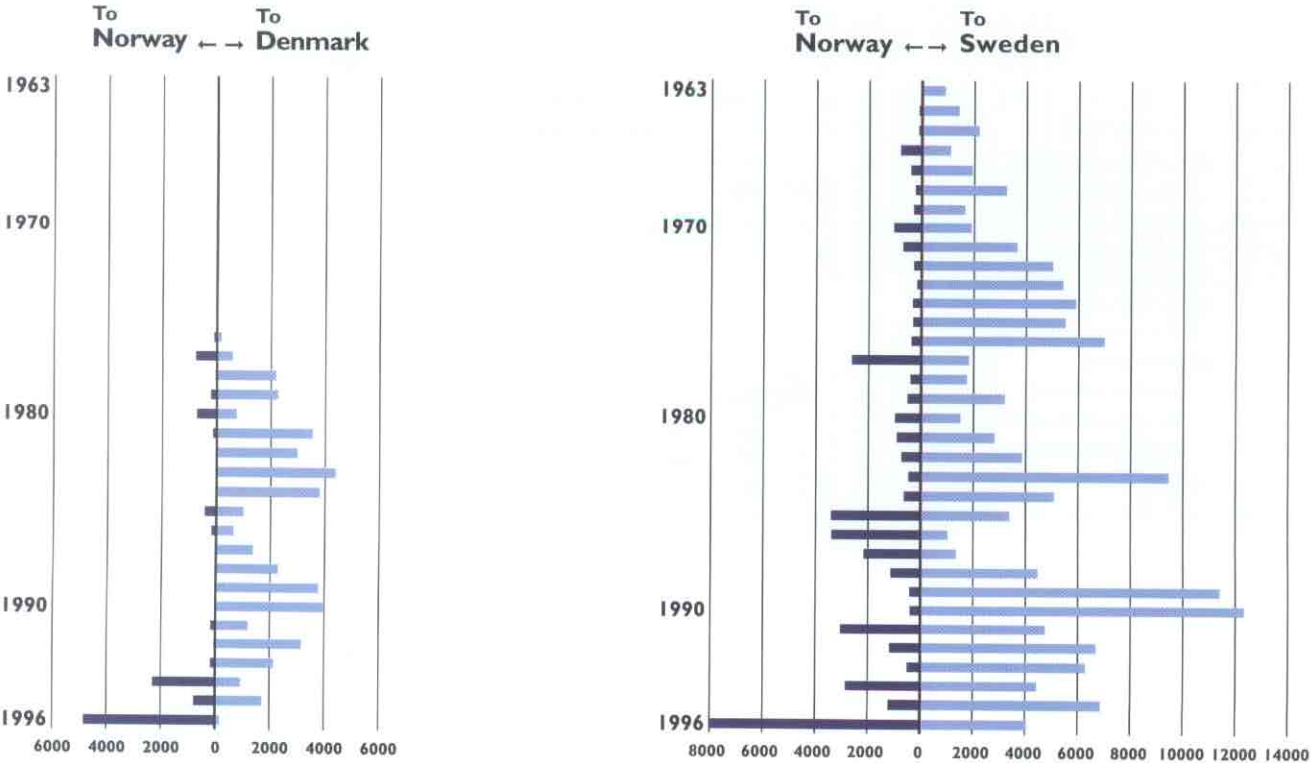
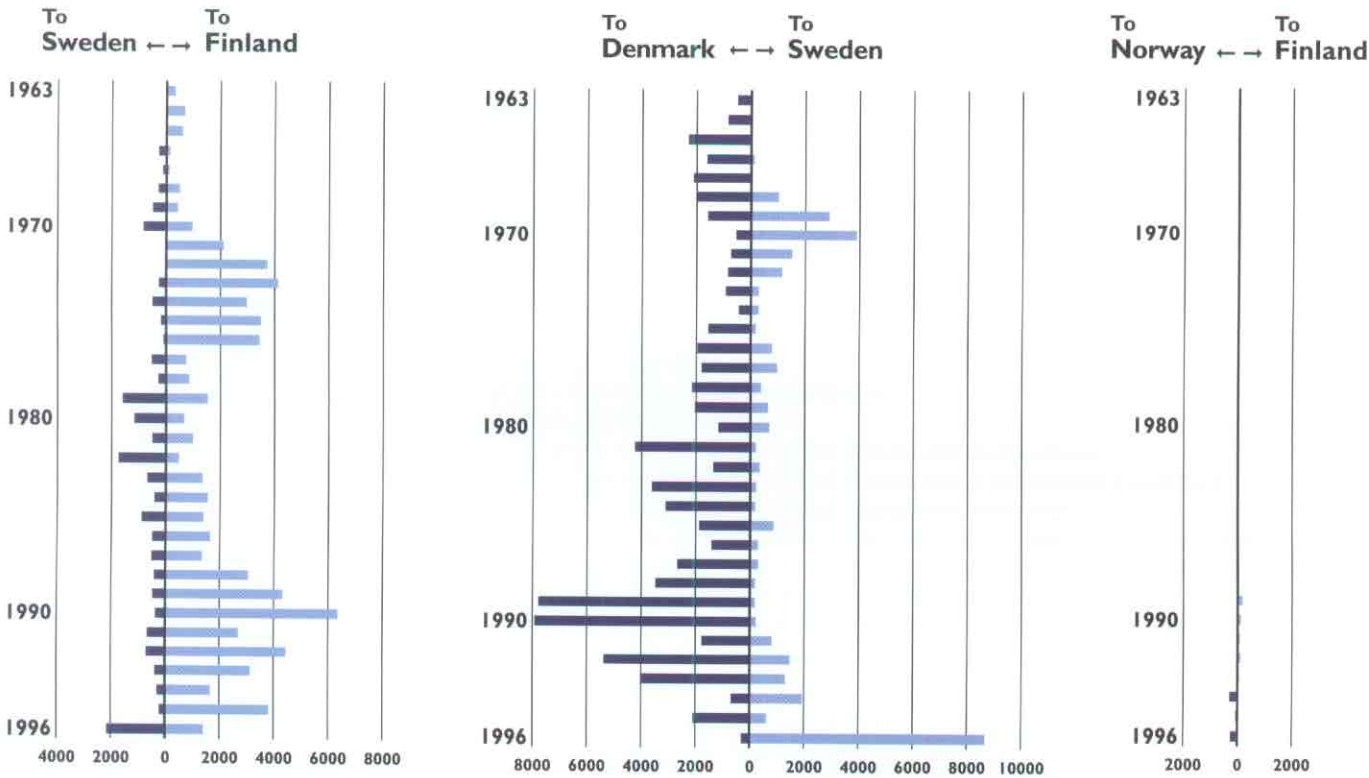
S15 EXCHANGE OF ELECTRICITY 1996, GWH



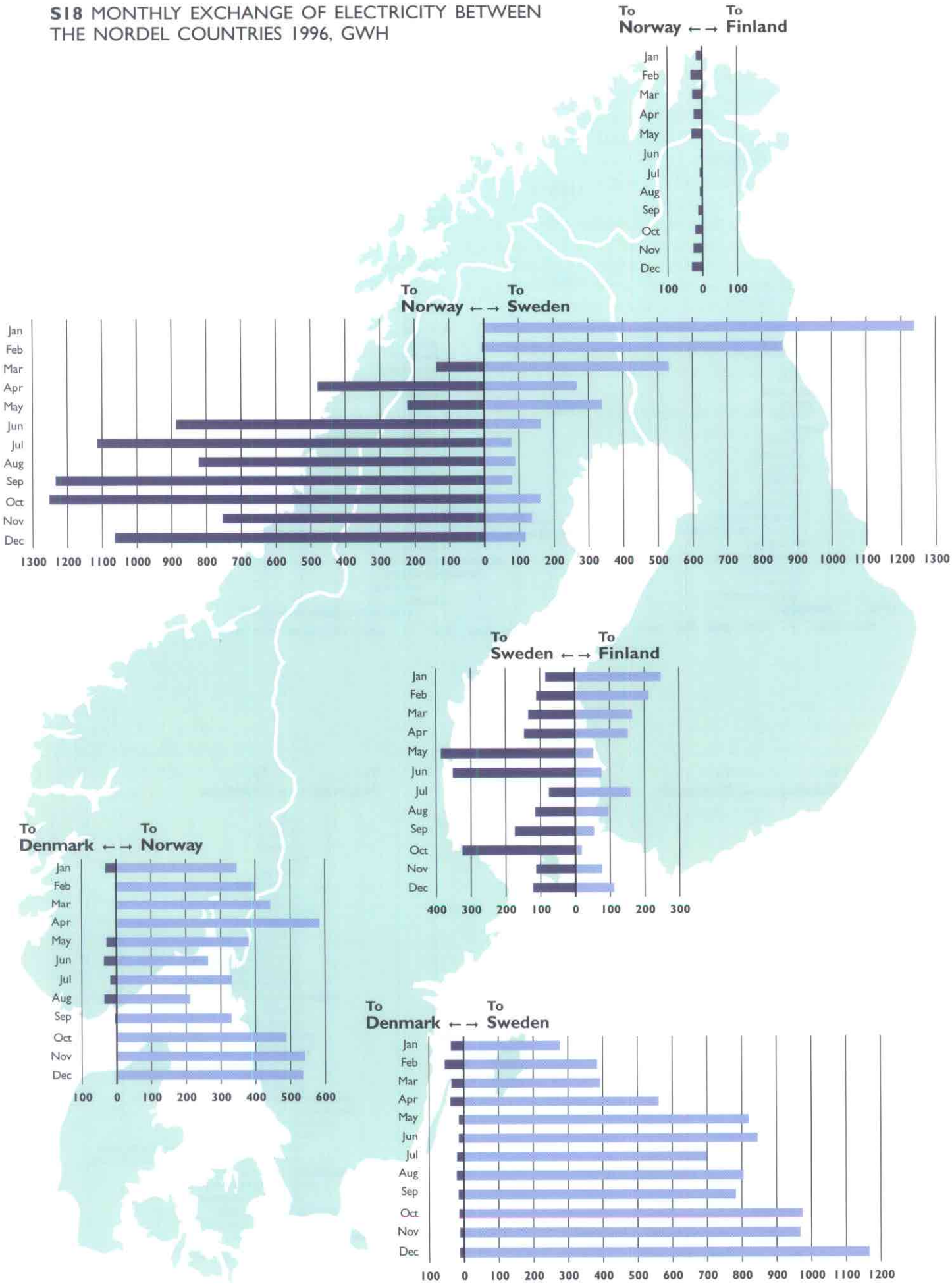
S16 IMPORTS AND EXPORTS 1996, GWH

		Imports to:					Σ
		Denmark	Finland	Norway	Sweden	Other countries ¹⁾	Exports
Exports from:							
Denmark		.	.	4 846	8 670	3 975	17 491
Finland		.	.	253	2 149	.	2 402
Norway		165	0	.	4 050	.	4 215
Sweden		293	1 411	7 981	.	68	9 753
Other countries ¹⁾		1 449	4 657	176	1 011	.	7 293
Σ Imports		1 907	6 068	13 256	15 880	4 043	41 154
		Denmark	Finland	Norway	Sweden	Nordel	
Total imports		1 907	6 068	13 256	15 880	37 111	
Total exports		17 491	2 402	4 215	9 753	33 861	
Net imports		-15 584	3 666	9 041	6 127	3 250	
Net imports / gross consumption		-44.8%	5.2%	8.2%	4.4%	0.9%	
¹⁾ Germany and Russia							

S17 EXCHANGE OF ELECTRICITY BETWEEN THE NORDEL COUNTRIES 1963 - 1996, GWH

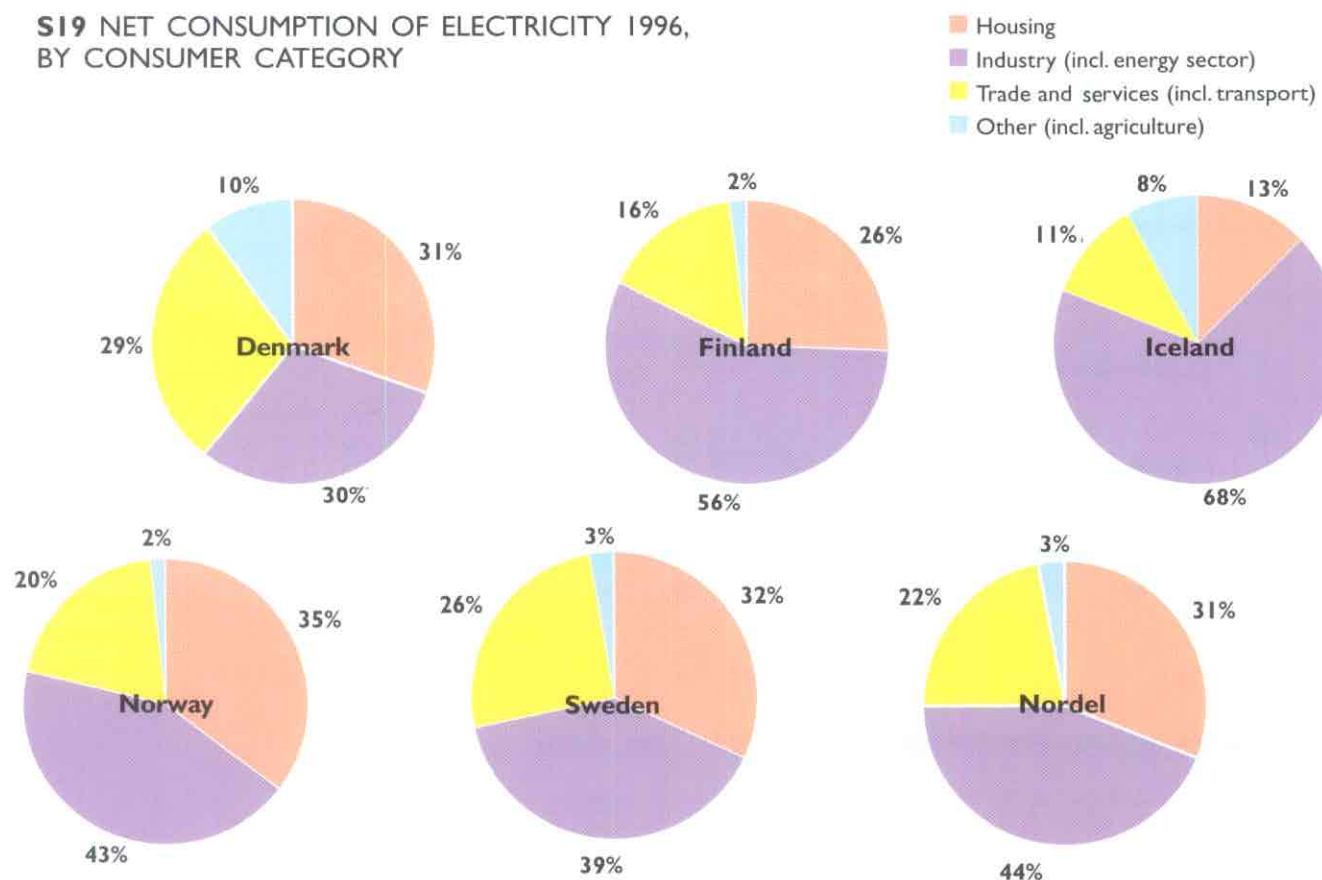


S18 MONTHLY EXCHANGE OF ELECTRICITY BETWEEN THE NORDEL COUNTRIES 1996, GWH



ELECTRICITY CONSUMPTION

**S19 NET CONSUMPTION OF ELECTRICITY 1996,
BY CONSUMER CATEGORY**



S20 ELECTRICITY CONSUMPTION 1996, GWH

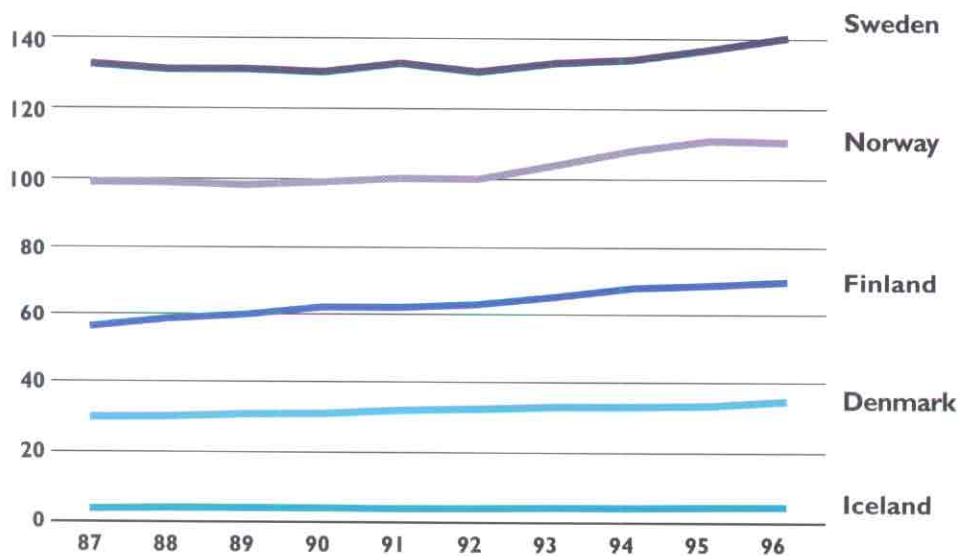
	Denmark	Finland	Iceland	Norway	Sweden	Nordel
Total consumption	34 783	70 033	5 113	113 919	142 138	365 986
Occasional power to electric boilers	.	54	325	3 222	1 700 ¹⁾	5 301
Gross consumption	34 783	69 979	4 788	110 697	140 438	360 685
Losses, pumped storage power	2 617	2 959	312	9 105 ²⁾	9 738	24 731
Net consumption	32 166	67 020	4 476	101 592	130 700	335 954
- housing	9 833	17 200	570	35 760	41 700	105 063
- industry (incl. energy sector)	9 775	37 880	3 044	44 091	51 800	146 590
- trade and service (incl. transport)	9 223	10 590	501	20 141	33 700	74 155
- other (incl. agriculture)	3 335	1 350	361	1 600	3 500	10 146
Population (million)	5.3	5.1	0.3	4.4	8.9	23.9
Gross consumption per capita, kWh	6 563	13 654	17 733	25 268	15 867	15 074

N.B. Consumption in 1996 is not directly comparable with consumption in the previous years, owing to different principles in recording the exchange of electricity.

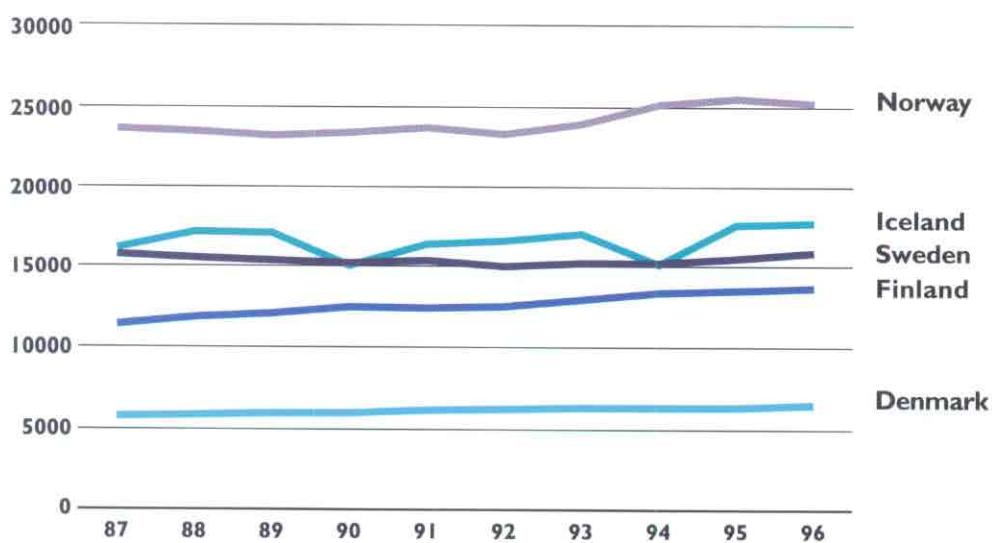
¹⁾ Only electric boilers at district heating plants (the corresponding value 1995 was 3,300 GWh out of a total of 4,500 GWh).

²⁾ Pumped storage power accounts for 415 GWh.

S21 GROSS CONSUMPTION 1987 - 1996, TWH



S22 GROSS CONSUMPTION PER CAPITA 1987 - 1996, KWH



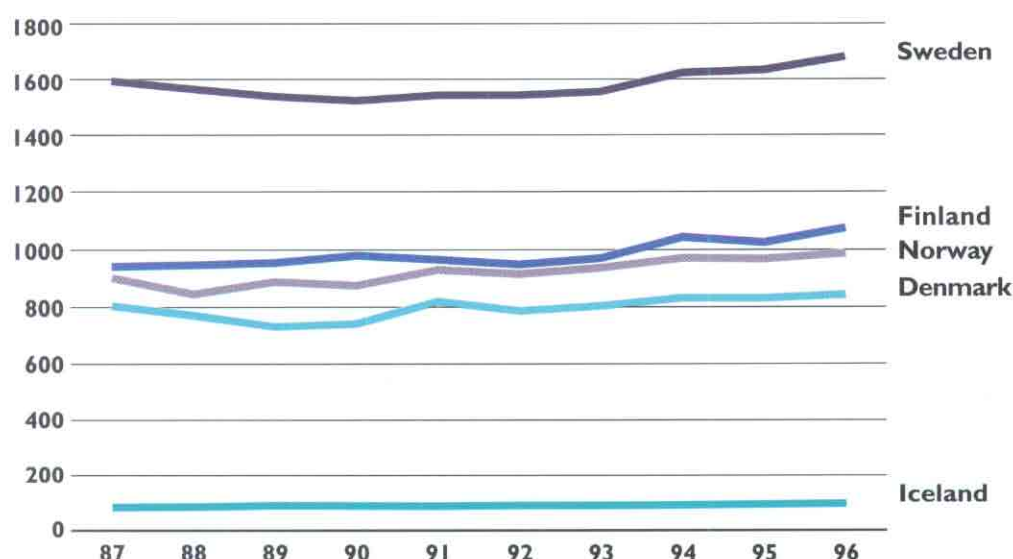
S23 TOTAL CONSUMPTION 1996, GWH

	Denmark	Finland	Iceland	Norway	Sweden	Nordel
Generation 1996	50 367	66 367	5 113	104 878	136 011	362 736
Net imports 1996	-15 584	3 666	.	9 041	6 127	3 250
Total consumption 1996	34 783	70 033	5 113	113 919	142 138	365 986
Generation 1995	34 339	60 541	4 975	123 499	143 700	367 054
Net imports 1995	-795	8 411	.	-6 491	-1 700	-575
Total consumption 1995	33 544	68 952	4 975	117 008	142 000	366 479

N.B. Consumption in 1996 is not directly comparable with consumption in the previous years, owing to different principles in recording the exchange of electricity.

TOTAL ENERGY SUPPLY

S24 TOTAL ENERGY SUPPLY 1987 - 1996, PJ



PROGNOSES

S25 GROSS CONSUMPTION OF ELECTRICITY 1996 AND PROGNOSES FOR 2000 AND 2005, TWH

Year	Denmark	Finland	Iceland	Norway	Sweden
1996	35	70	4.8	111	140
2000	36	81	6.2	117	146 ¹⁾
2005	38	89	6.5	125	148 ¹⁾

¹⁾ Net consumption, prognoses based on the Climate Report issued by NUTEK

S26 PEAK LOAD DEMAND 1996 AND PROGNOSES FOR 2000 AND 2005, MW

Year	Denmark	Finland	Iceland	Norway ¹⁾	Sweden
1996	7 410	11 200	750	22 200	26 300
2000	7 753 ²⁾	14 200	900	22 900	27 450 ³⁾
2005	8 262 ²⁾	15 600	950	25 000	27 890 ³⁾

¹⁾ Excl. reserve requirements

²⁾ VEAG's share accounts for 350 MW

³⁾ Prognose based on the Climate Report issued by NUTEK

S27 INSTALLED CAPACITY 1996 AND PROGNOSES FOR 2000 AND 2005, MW

Year	Denmark	Finland	Iceland	Norway ¹⁾	Sweden
1996	10 937 ²⁾	14 963	1 049	27 631	34 158
2000	9 561 ³⁾	16 000	1 174	28 700	⁴⁾
2005	9 024 ³⁾	⁴⁾	1 174	30 000	⁴⁾

¹⁾ Prognoses are based on report 96/16 issued by the Central Statistical Office in Norway: "Det norske kraftmarkedet til år 2020 Nasjonale og regionale framskrivninger"

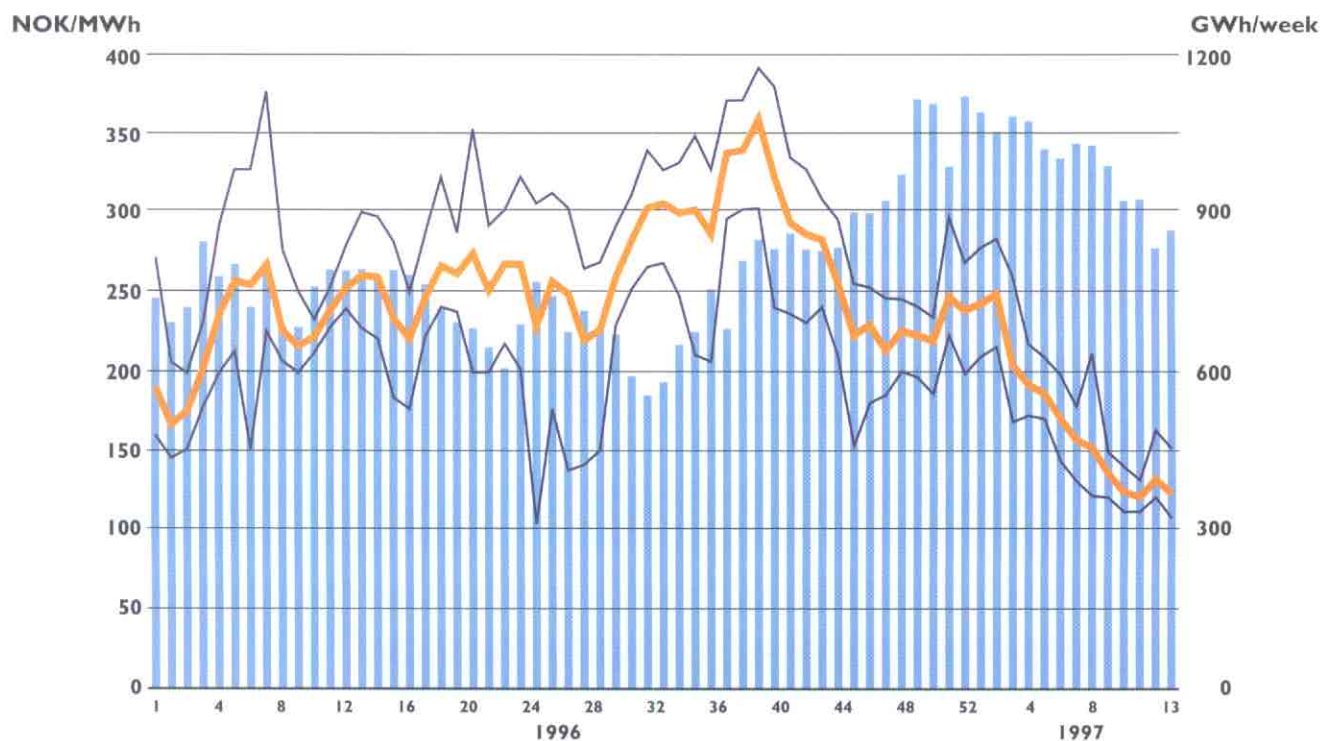
²⁾ The capacity of autoproducers comes to 1,587 MW

³⁾ Excl. capacity of autoproducers

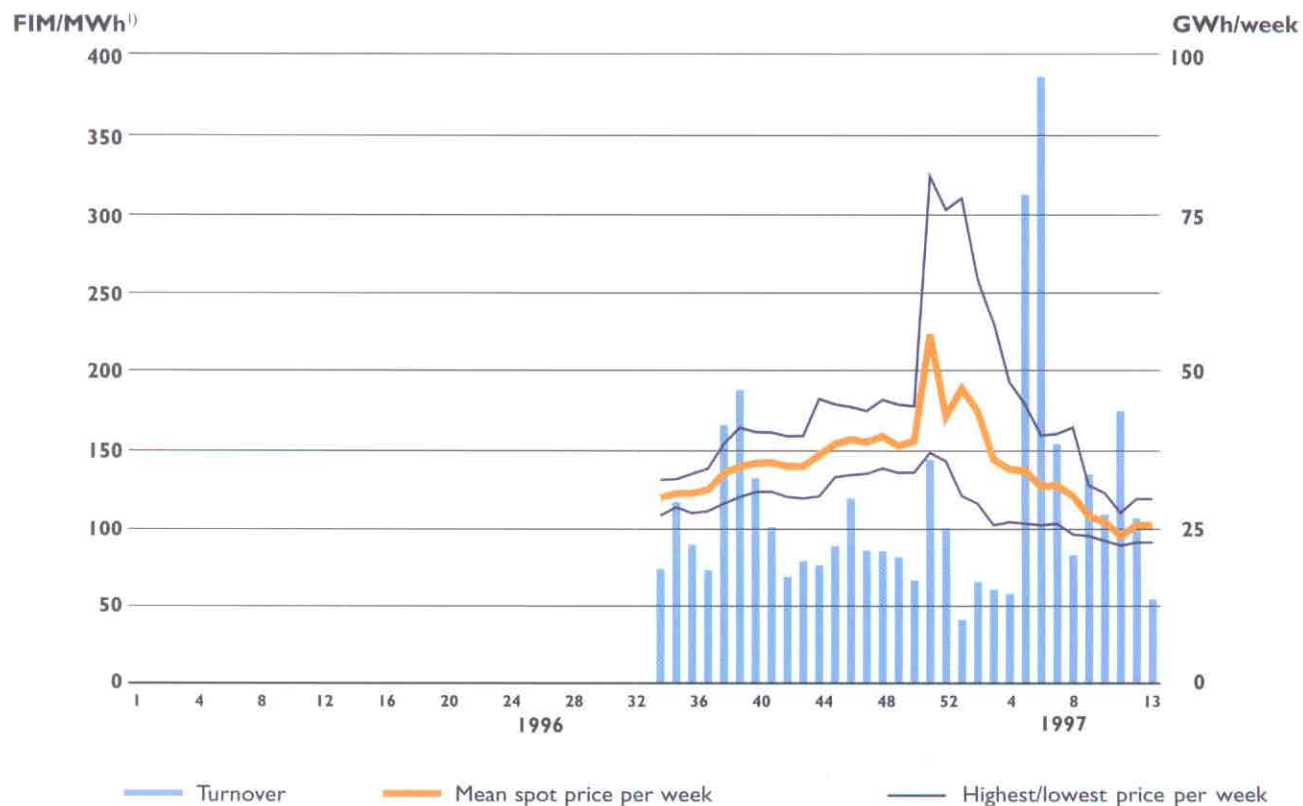
⁴⁾ N.A.

S28 SPOT PRICES AND TURNOVER ON THE NORDIC ELECTRICITY EXCHANGES

Nord Pool ASA's spot market: Mean price (system price) and turnover per week



EL-EX's spot market: Mean price and turnover²⁾ per week



¹⁾ The average NOK/FIM currency exchange rate in 1996 was 0.7111.

²⁾ Trading on EL-EX is based on the principle of continuous trading, which means that the turnover may be greater than the physical supply.