



The Norwegian Case

Security of Supply Situation during the Winter 2002/-03

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Data used from a report by

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Outline of presentation

- **The development of power balance in Norway and Scandinavia**
 - ◆ **Generation**
 - ◆ **Demand**
 - ◆ **Transmission (interconnectors)**
- **Particularities of the Winter 2002/-03 situation from a Security of Supply perspective**
- **Some “soft” recommendations and lessons learned**

Development of Supply and Demand in Norway, Sweden, Denmark and Finland

The “comfortable” balance for the region as a whole has dried up although demand growth has been low

Norway almost zero demand growth in recent years

No new interconnectors (cables) to Norway – although several efforts have been done

No major new power plants on the agenda (Finland decided on new nuclear recently)

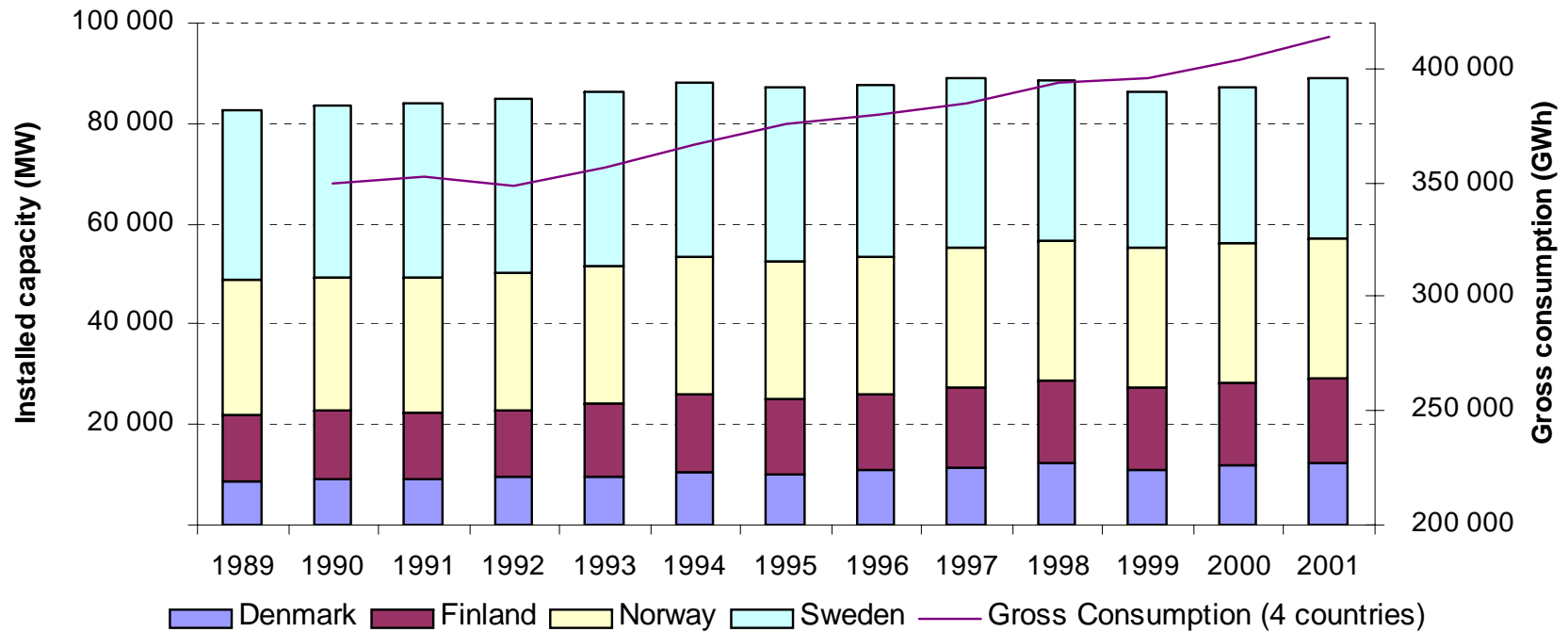
New investments risk according to deregulation and introducing competition

Incentives to remove the “fat” – but incentives to keep a national power balance according the Security of Supply may be weak

In recent years Norway is dependent on import (normal hydro situation)

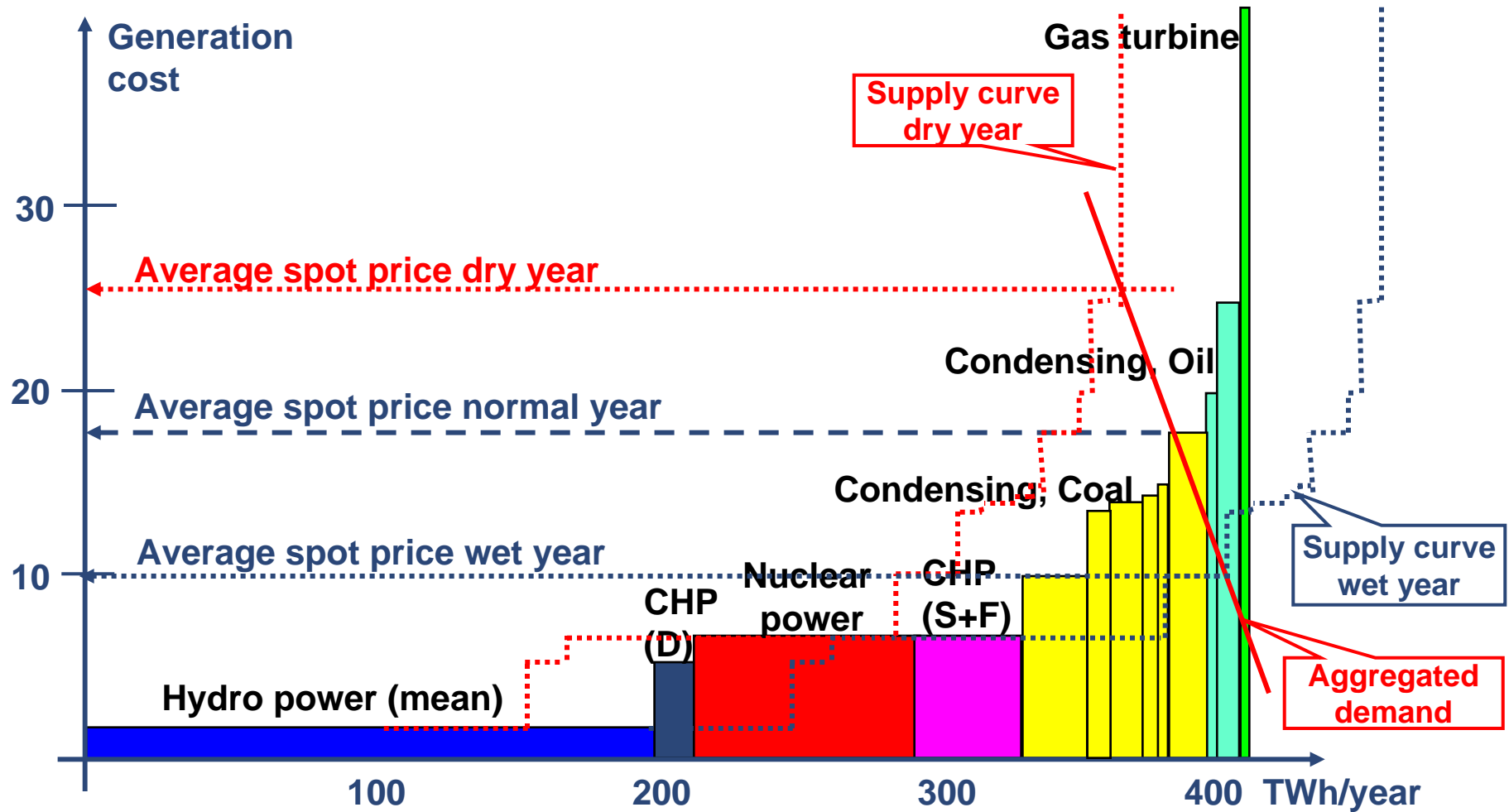
Installed capacity and consumption in Scandinavia

(Source: Nordel)

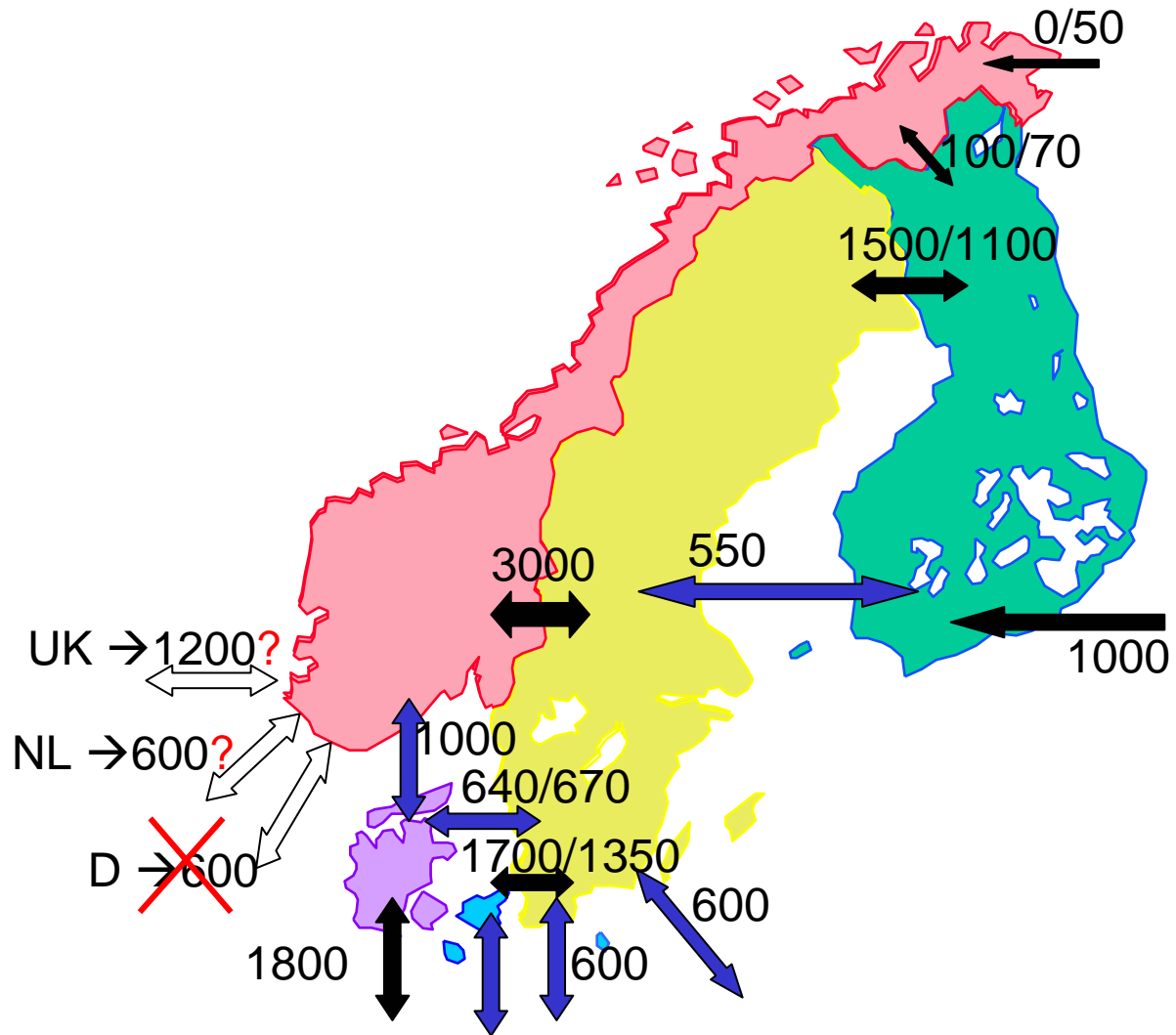


Annual average growth rate (%) (1990-2001): Gross consumption - 1,55% ; Installed capacity - 0,55%

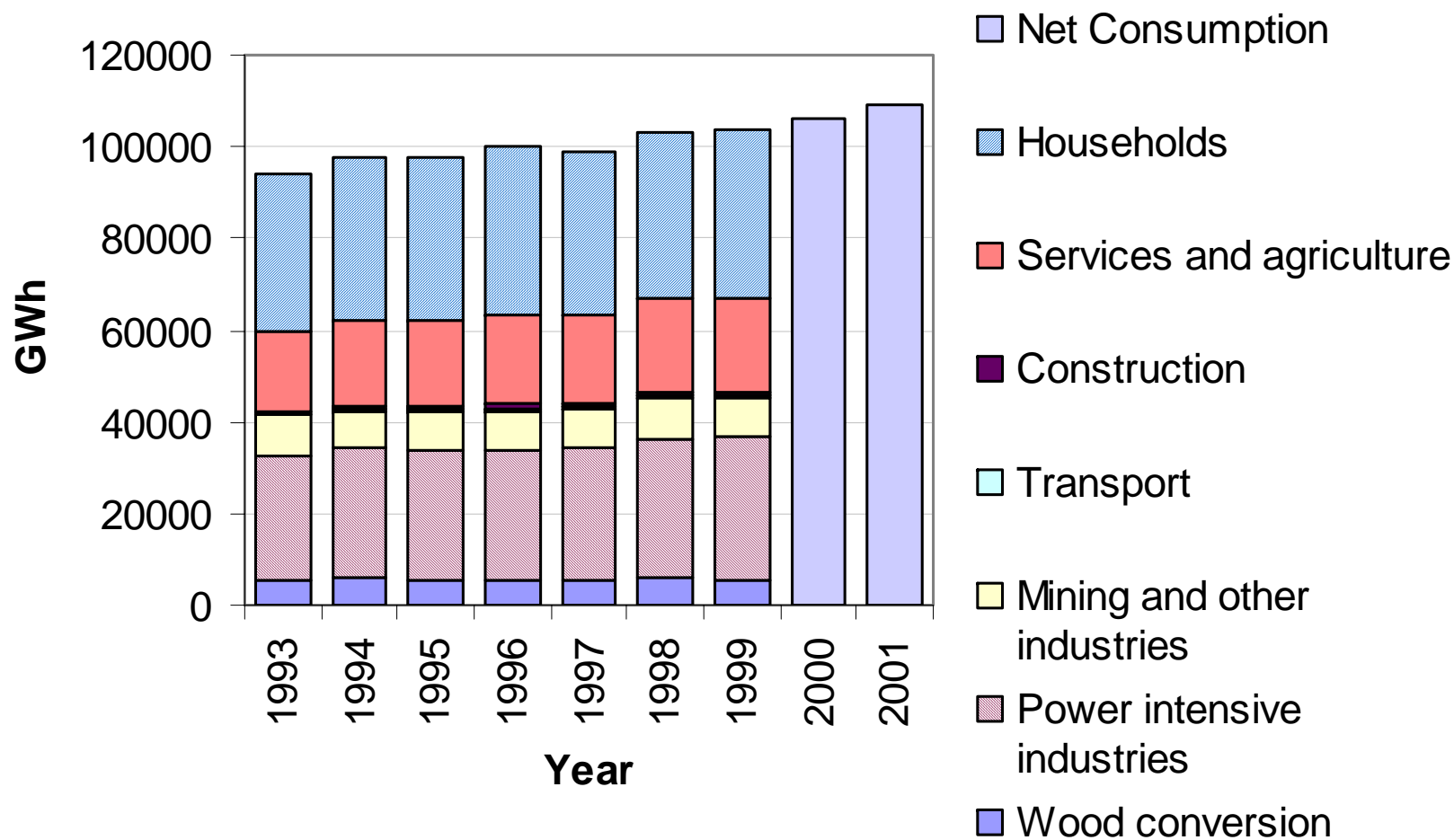
Illustration of price determination in Scandinavia



Interconnections within and to/from Scandinavia

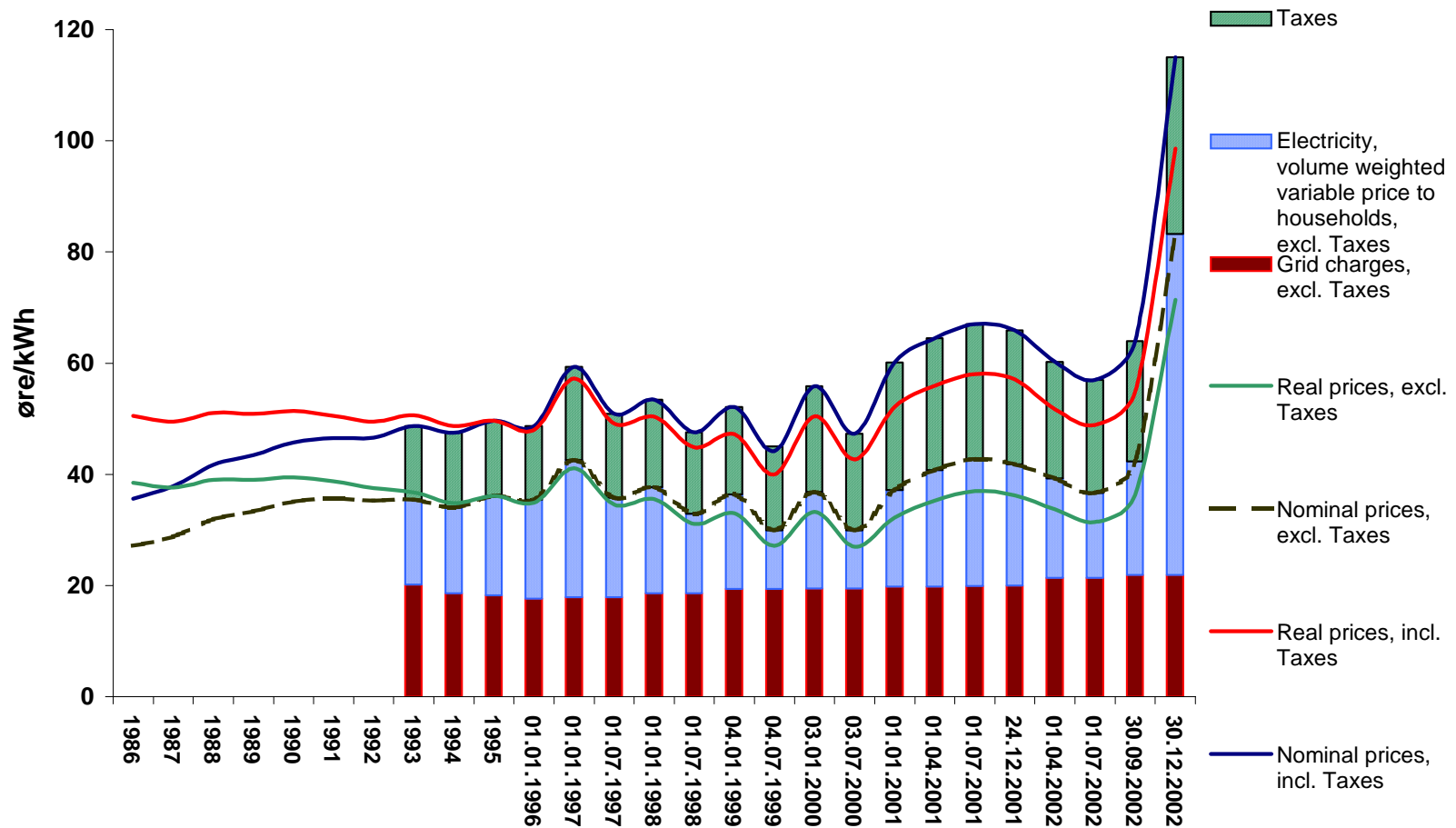


Consumption development and distribution. 1993-2001

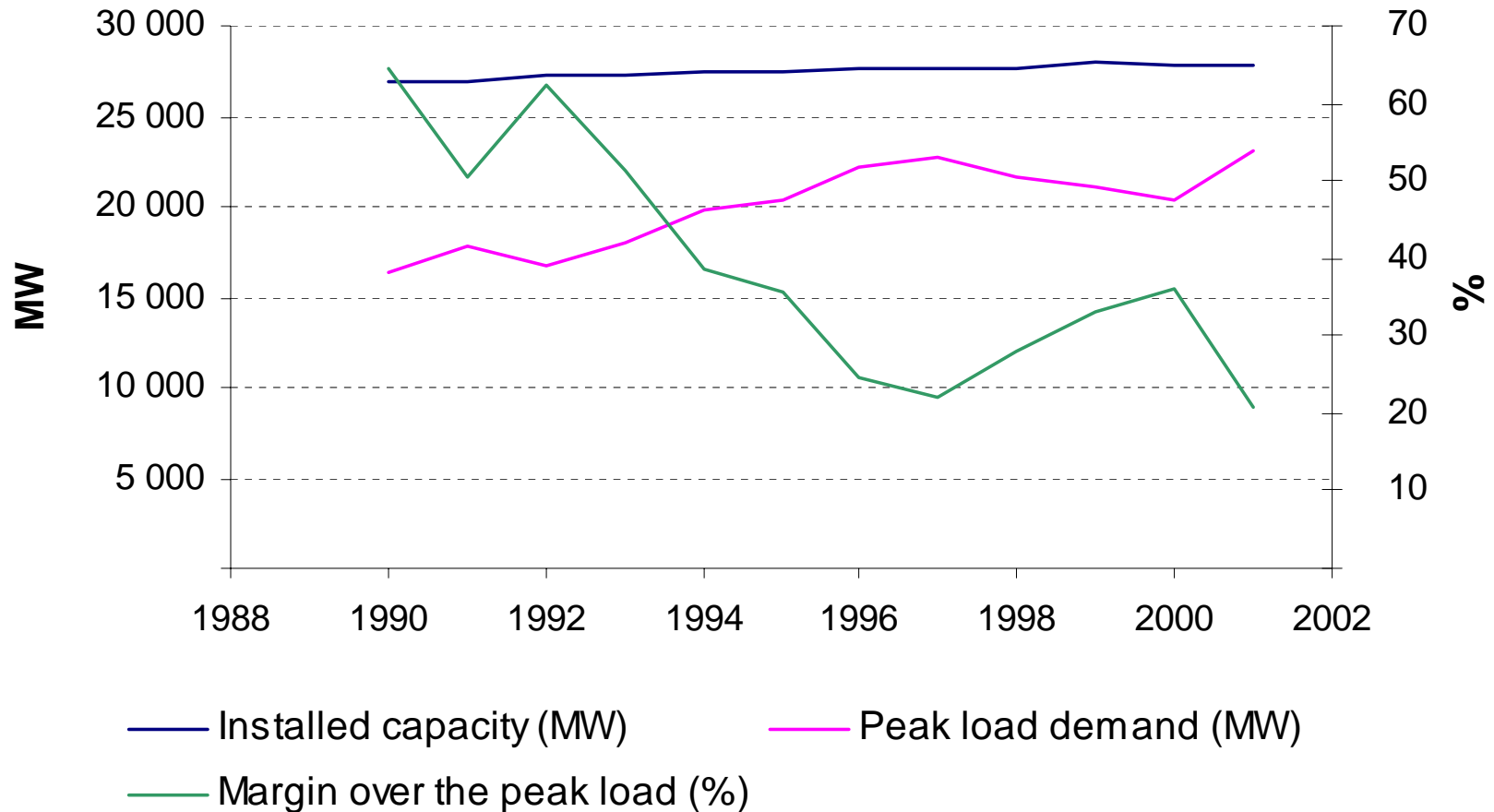


A Majority of the household customers are on variable price contracts

The development of household tariffs and prices, 1986 – 2002. Source: NVE

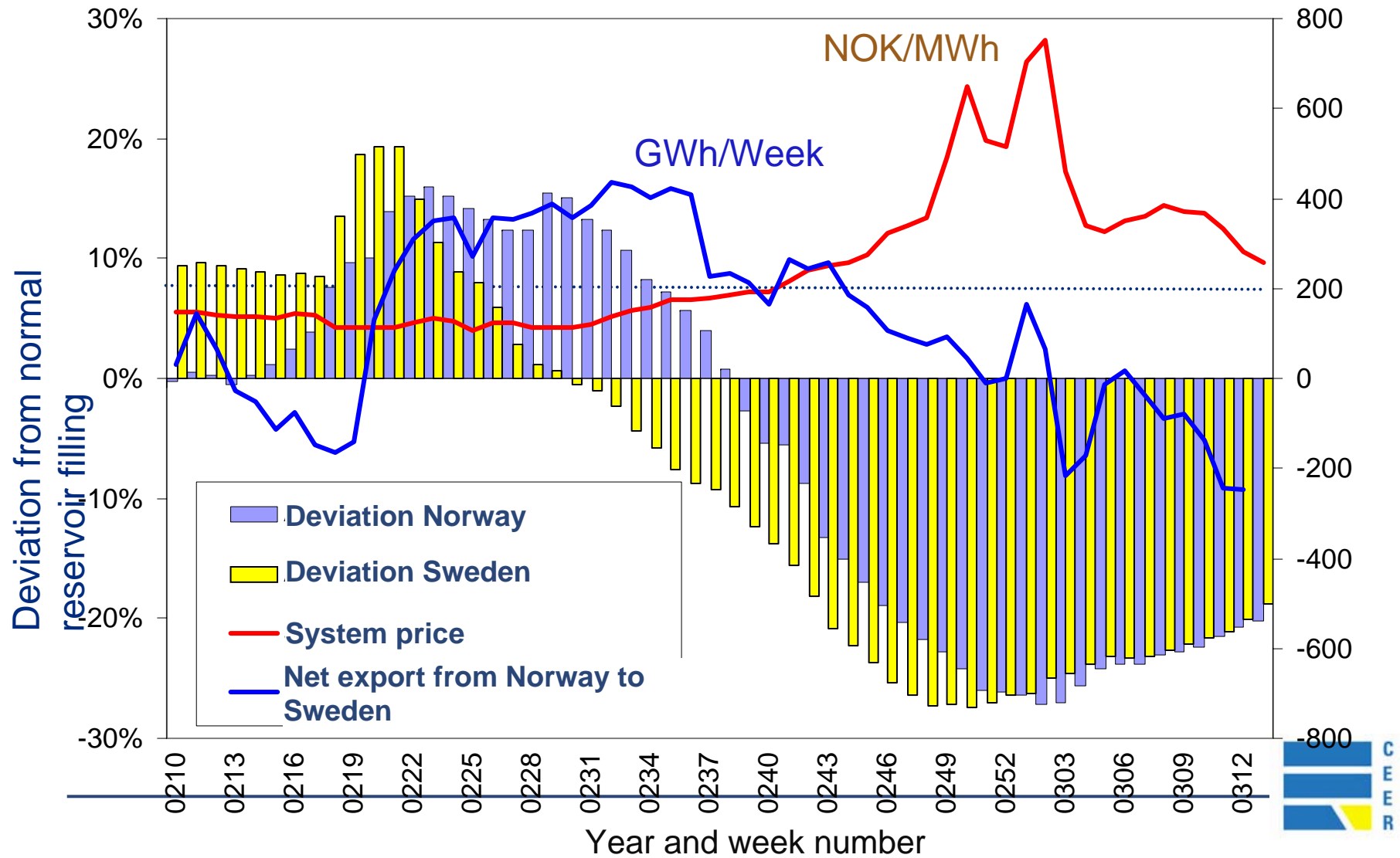


The development of installed capacity, peak load, and the Security of Supply margin. (Nordel 2003)

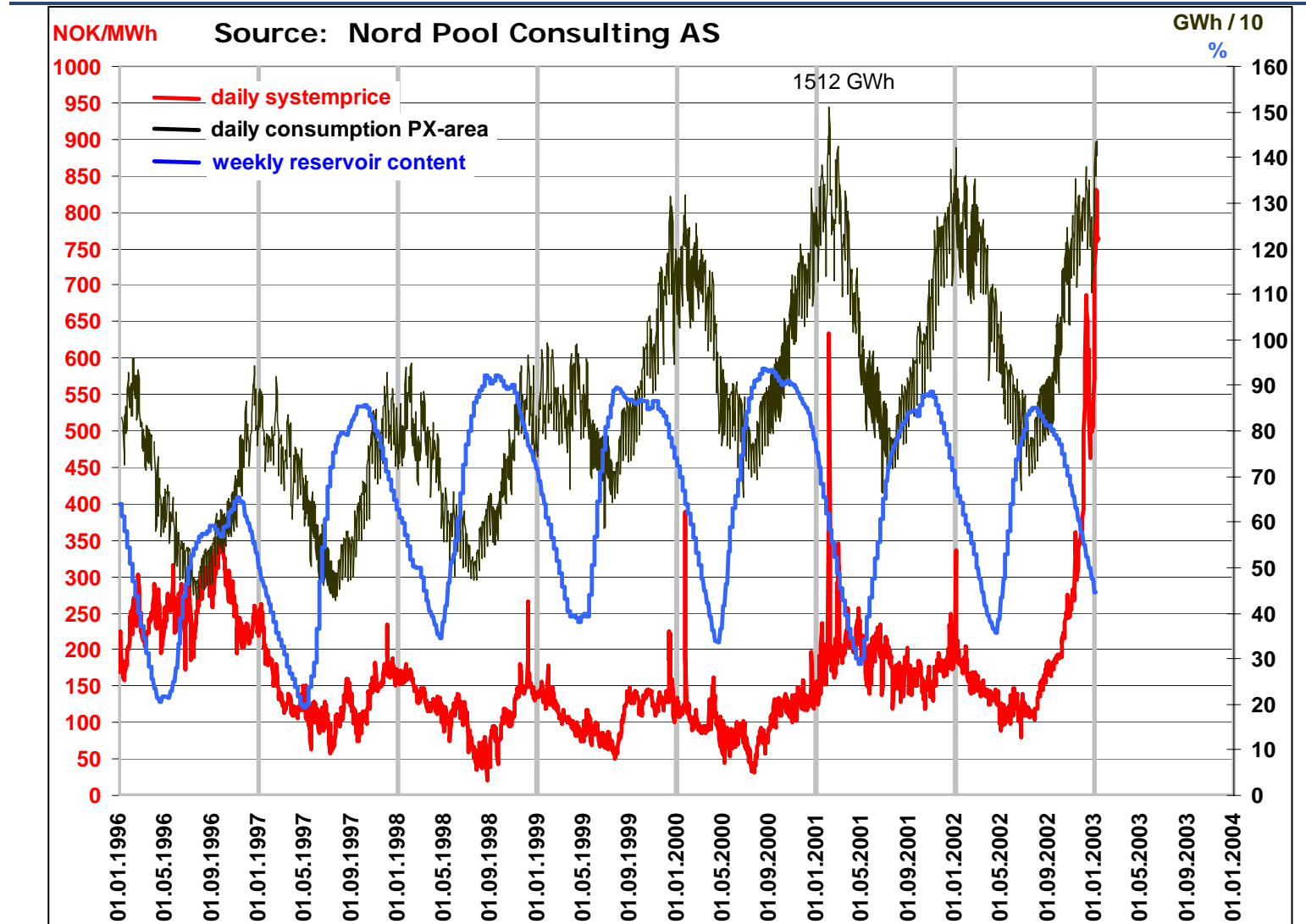


A partly complementary Swedish-Norwegian system

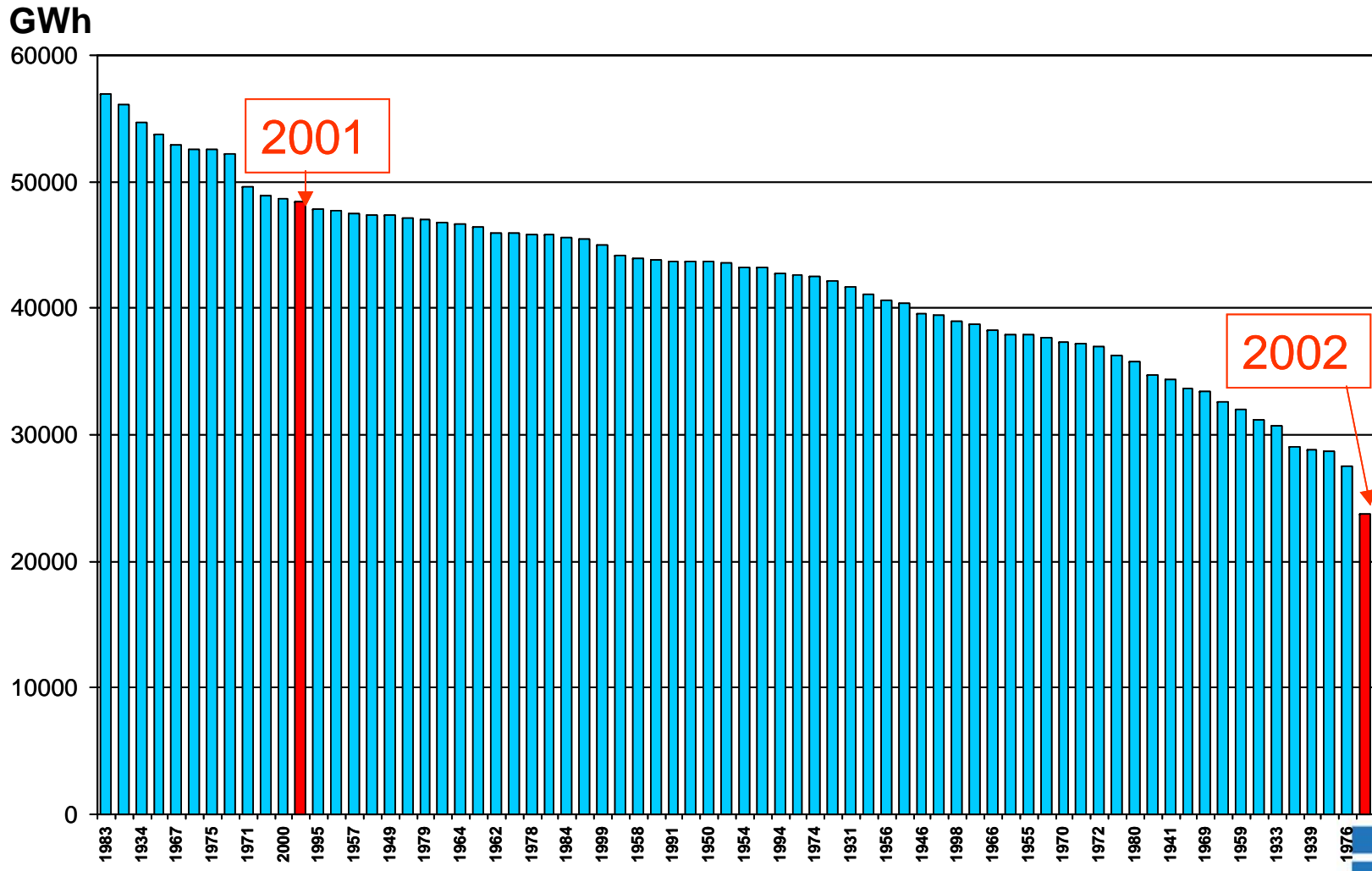
(Source: ECON)



Spot prices compared to daily consumption and reservoir content. 1996-2003

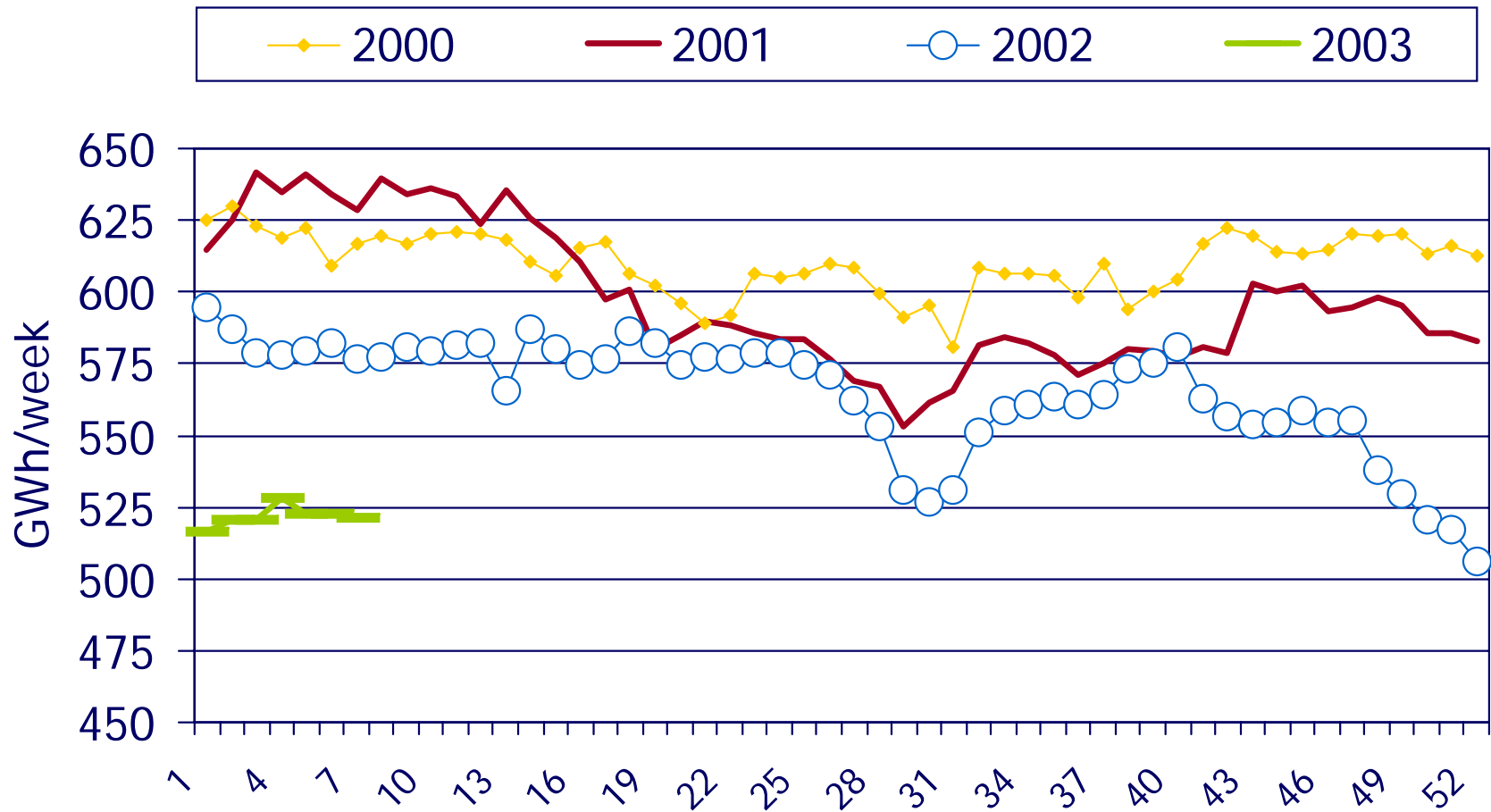


The driest autumn in 70 years

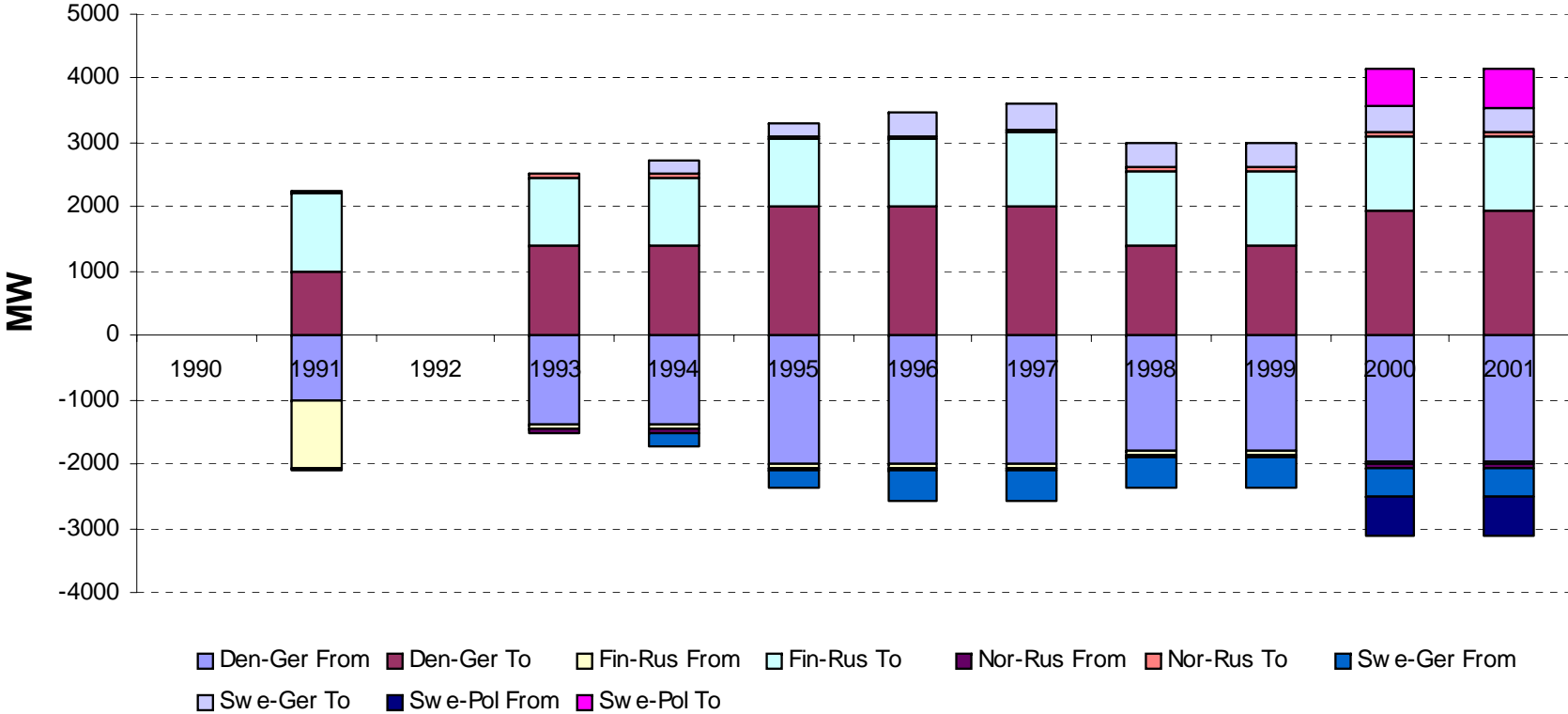


Weekly consumption power intensive industries

2002 - 2003 (Source: PIL)

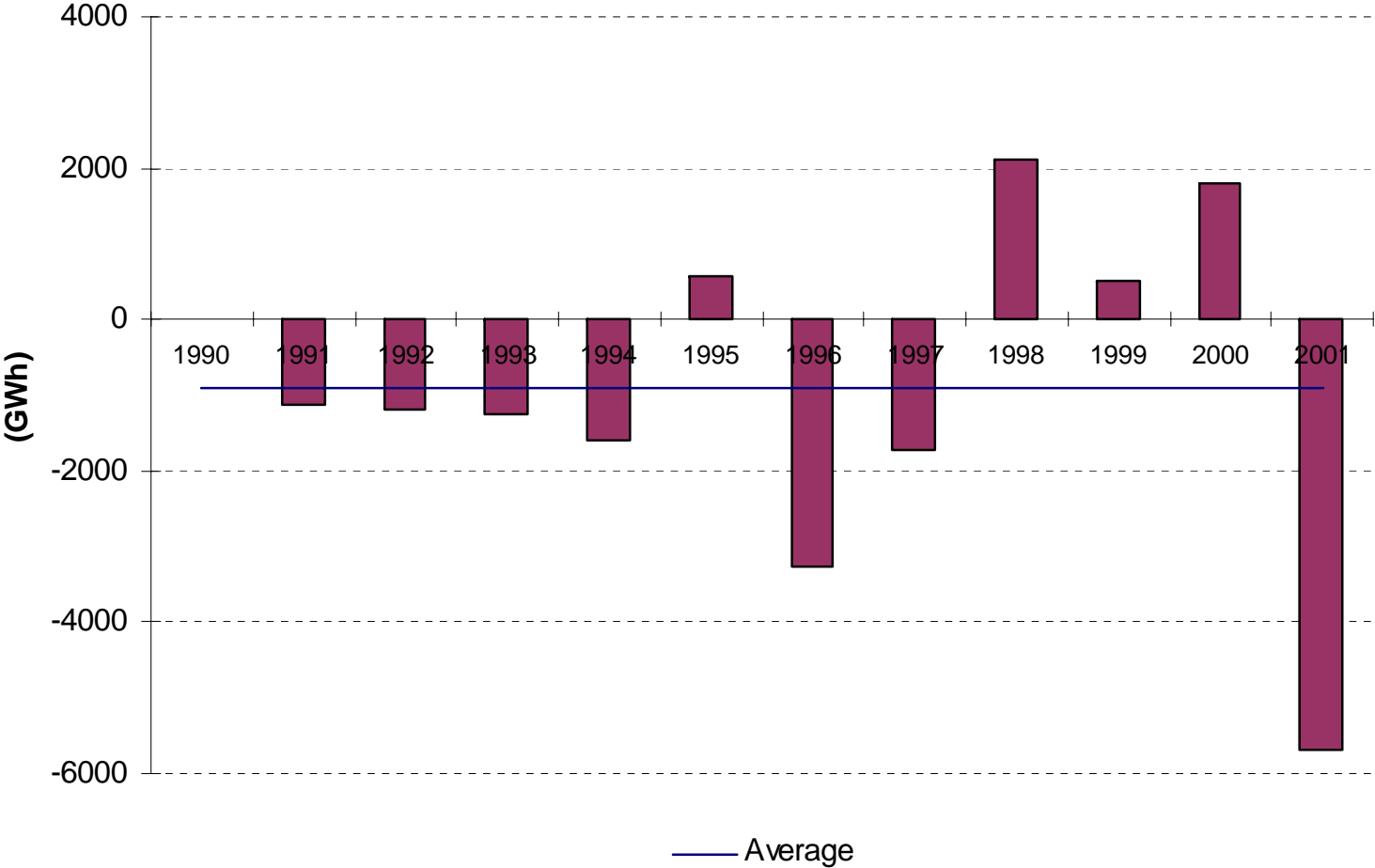


Transmission capacity between Scandinavian countries and other countries



Import (-) and export in Scandinavia. 1990-2001

(Source: Nordel)



What happened during the last winter ?

- The driest **Autumn** in 70 years in Scandinavia- but as a whole the hydro situation was not „special“
- A colder than normal Autumn (and the normal autumn rain did not arrive but export from Norway still on !)
- Net import to Norway arrived- but later than expected ?
- Prices to household customers went very high and hot debate over the high billsNet import to Scandinavia relatively late
- Actions that has been discussed
 - ◆ Mobile gas power stations
 - ◆ Reduce luxury consumption
 - ◆ Low income support
 - ◆ Saving programs
 - ◆ Regualtion of hydro reservoirs
 - ◆ Rationing

Conclusions and recommendations I

Clear and well-functioning market design

- The market functioned technically well **NordPool** included-efficient prices according to supply and demand without any interference from politicians → Refrain from disrupting a market that works, as long as there are „reasonable“ market responses
- The customers reacted to the high prices → involving demand side reactions through allowing for customer load responses is important
 - ◆ Diversification of the energy systems
 - ◆ „Real time“ price signals
- More information was provided to the market than before → remove any barriers to effective competition
 - ◆ Rational behaviour
 - ◆ Harmonisation

Conclusions and recommendations II

Clearly defined roles and responsibilities

- There are no official Security of Supply plans in place, neither in the individual Scandinavian countries nor on a regional level
- Who is responsible?
 - ◆ Investments in sufficient interconnections
 - ◆ Adequate (and diversified) generation
 - ◆ Monitoring and reporting on security of supply
- Increased transparency is necessary for all market participants
- Responsibilities have to be defined by each country and on a regional level (NORDEL)
- NORDEL and TSO coordination can be improved
- A White Paper will be made during this spring and a Parliament debate will take place soon