

# **LIBERALISING THE DUTCH ELECTRICITY MARKET 1998-2004**

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- Some Policy Background
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# POLICY BACKGROUND

## 1998: Energy Law 1998

- ◆ liberalization large user segment (1/3)
- ◆ unbundling generation from transport
- ◆ deregulating generation
- ◆ legal separation of distribution and supply
- ◆ Dte: regulator
- ◆ Tennet: systems operator

## 1999-2004: Discussion

- ◆ privatization of distribution grids
- ◆ strengthening legal separation to come to “real independence” of netco’s
- ◆ regulating distribution
- ◆ market power in generation and concentration

## **POLICY BACKGROUND (2)**

- 2001/7: Full liberalization of the green market
- 2002/1: Liberalization of the middle segment
- 2004/7: Full liberalization
- 2004/7: Implementation Second Directive
- Future: Ownership unbundling of distribution and supply

# INDUSTRY BACKGROUND GENERATION

## Large Scale Production

Elektrabel 4000 MW

Essent/EPZ 4300 MW

Nuon/Reliant 4400-5200 MW

E.On 1800 MW

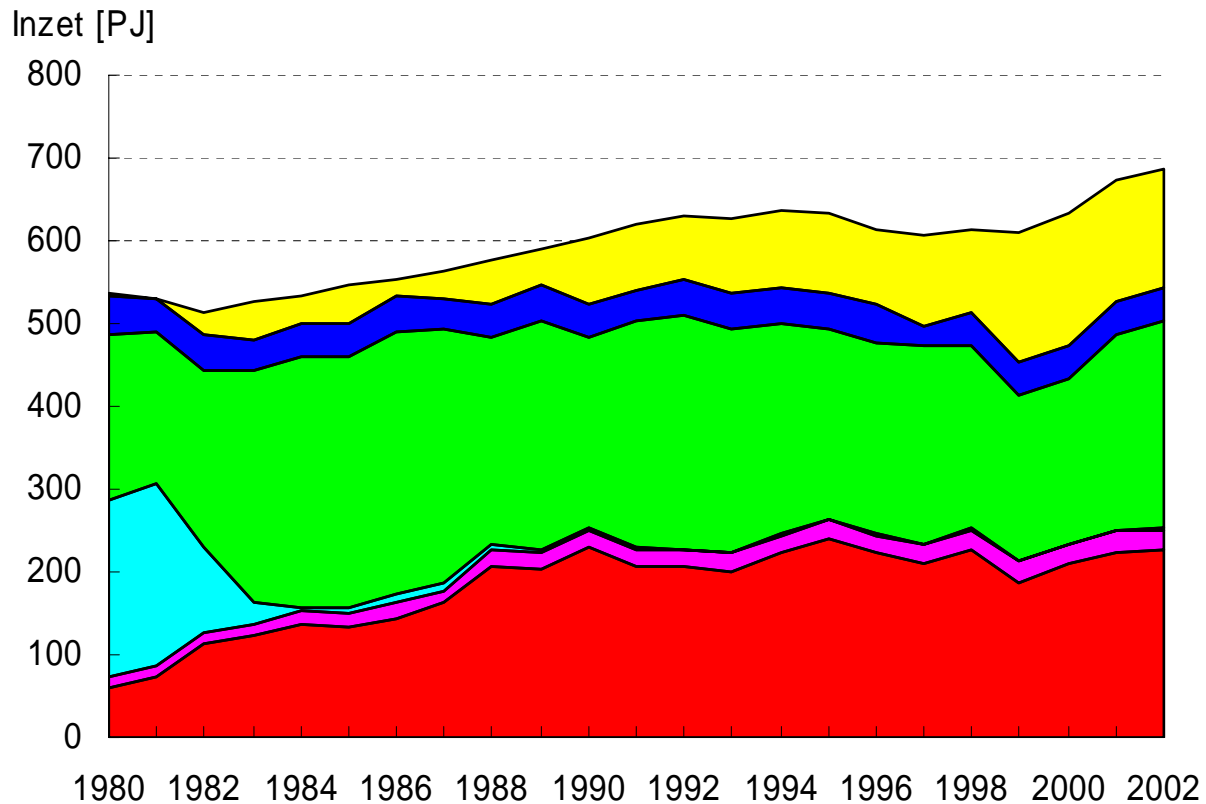
Decentralised Production 5500 MW

## Import Capacity

Germany 2200 MW

Belgium 1150 MW

# Dutch fuel mix



■ Steenkool en bruinkool

■ Aardolieproducten

■ Kern

■ Hoogovengas + cokesovengas

■ Aardgas

■ Import als primair

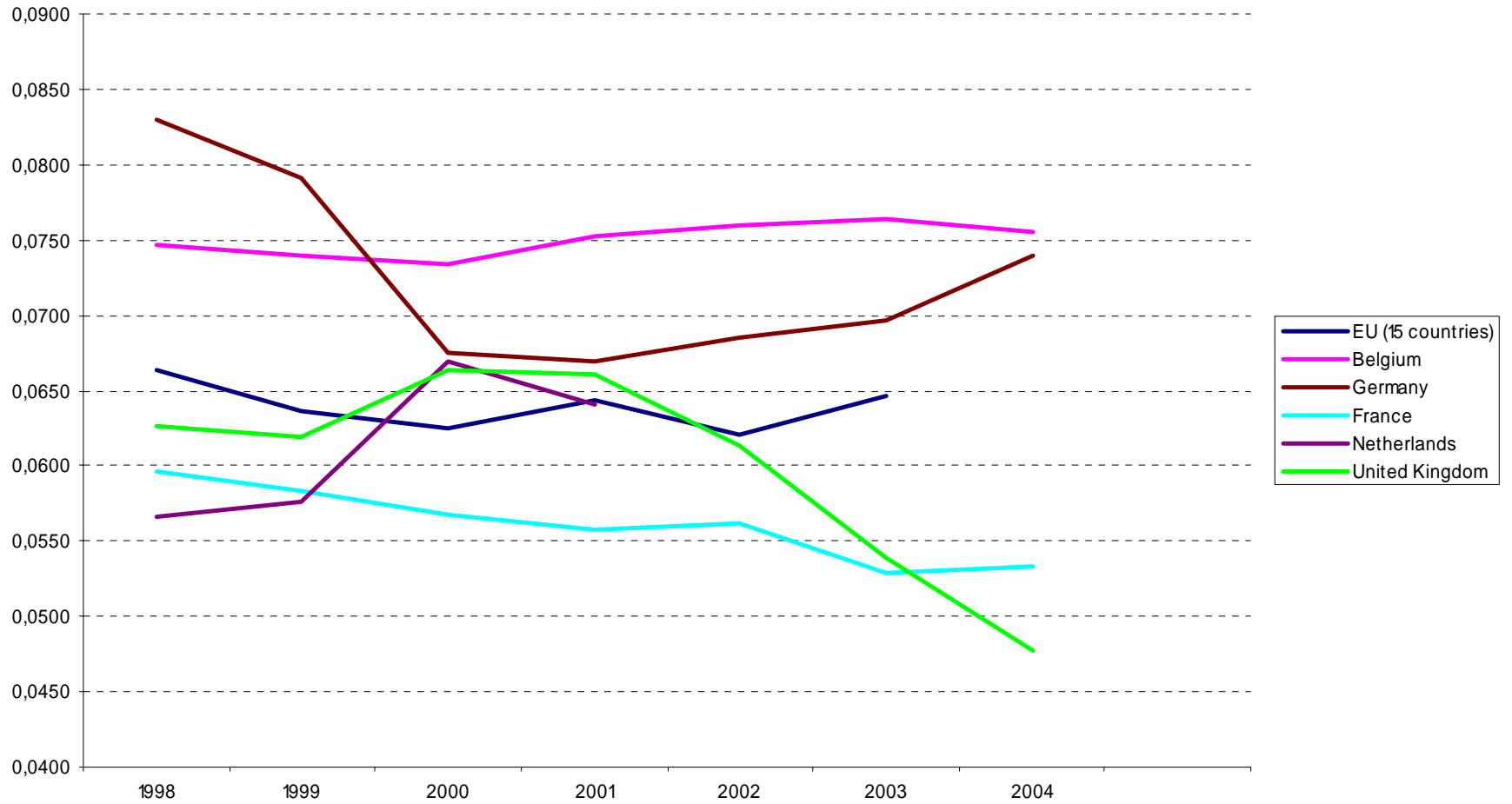
# INDUSTRY BACKGROUND CONSUMPTION

Centralised 60%

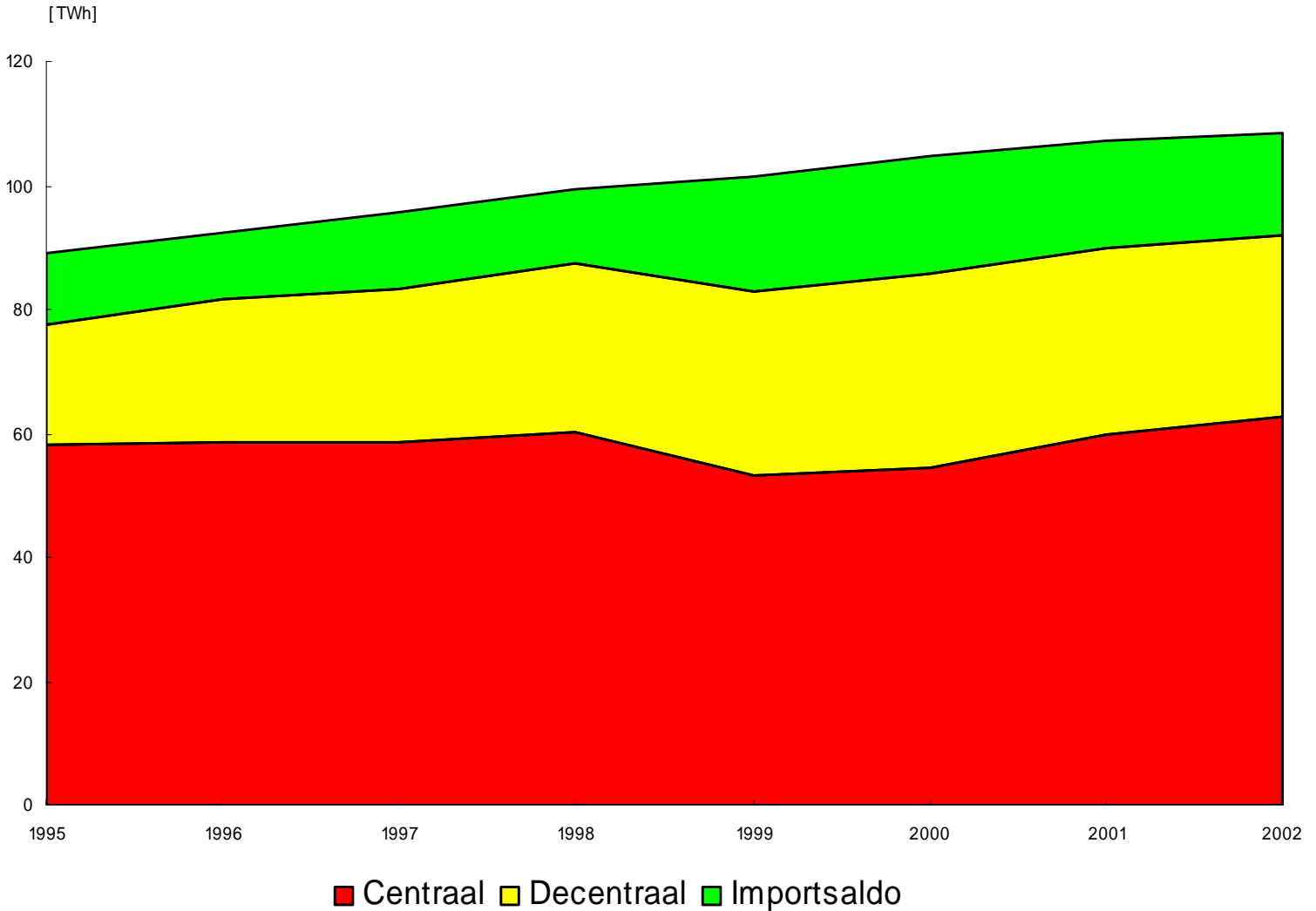
Decentralised 25%

Imports 15%

# Prices industrial users

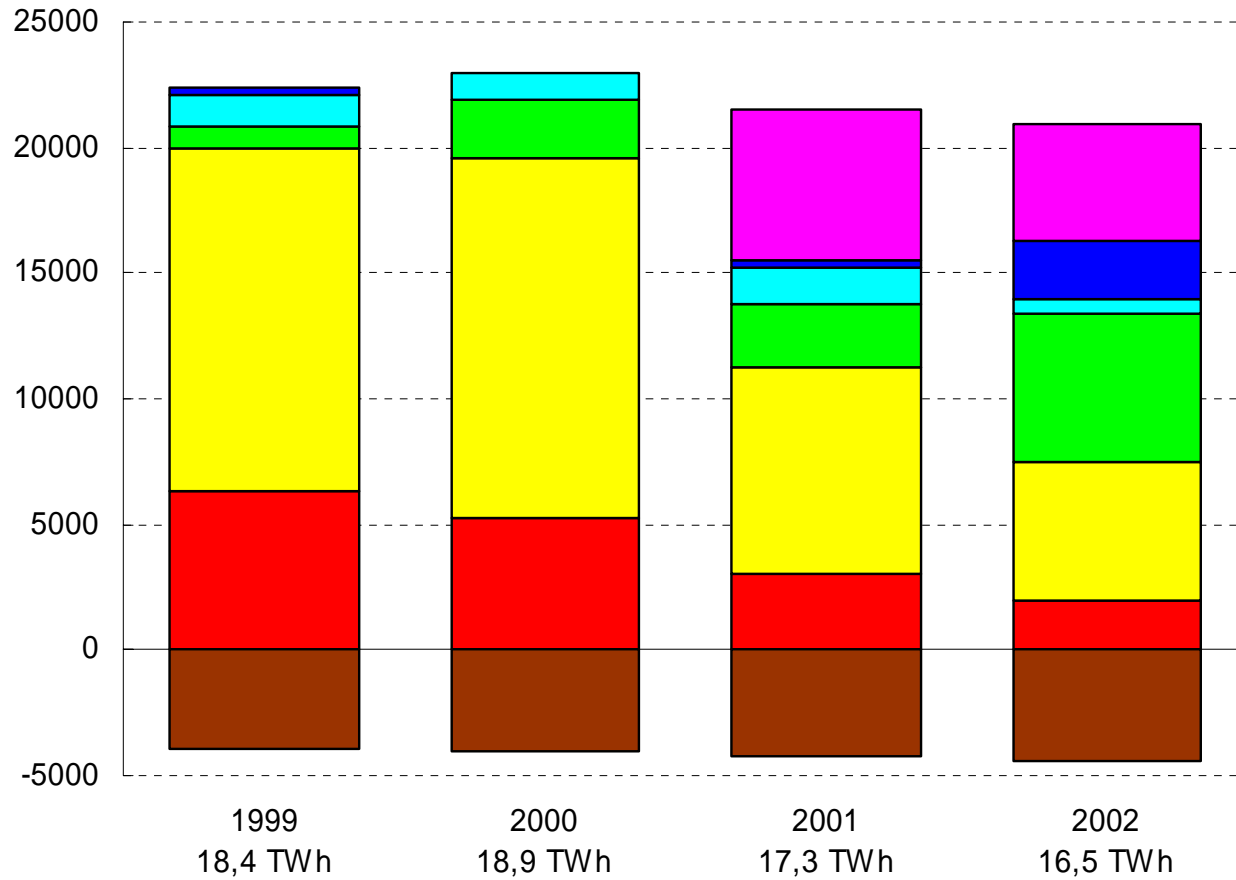


# PRODUCTION AND CONSUMPTION



# IMPORTS

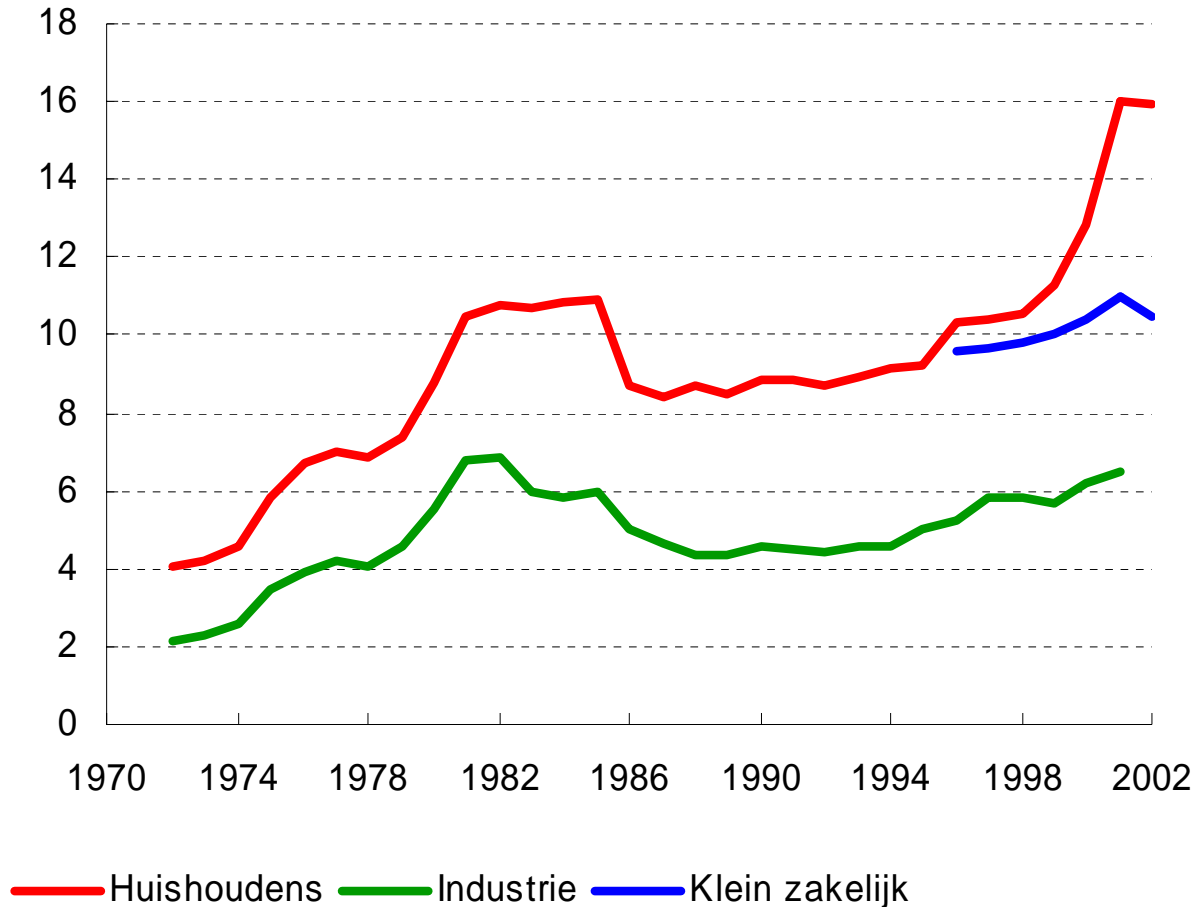
[GWh]



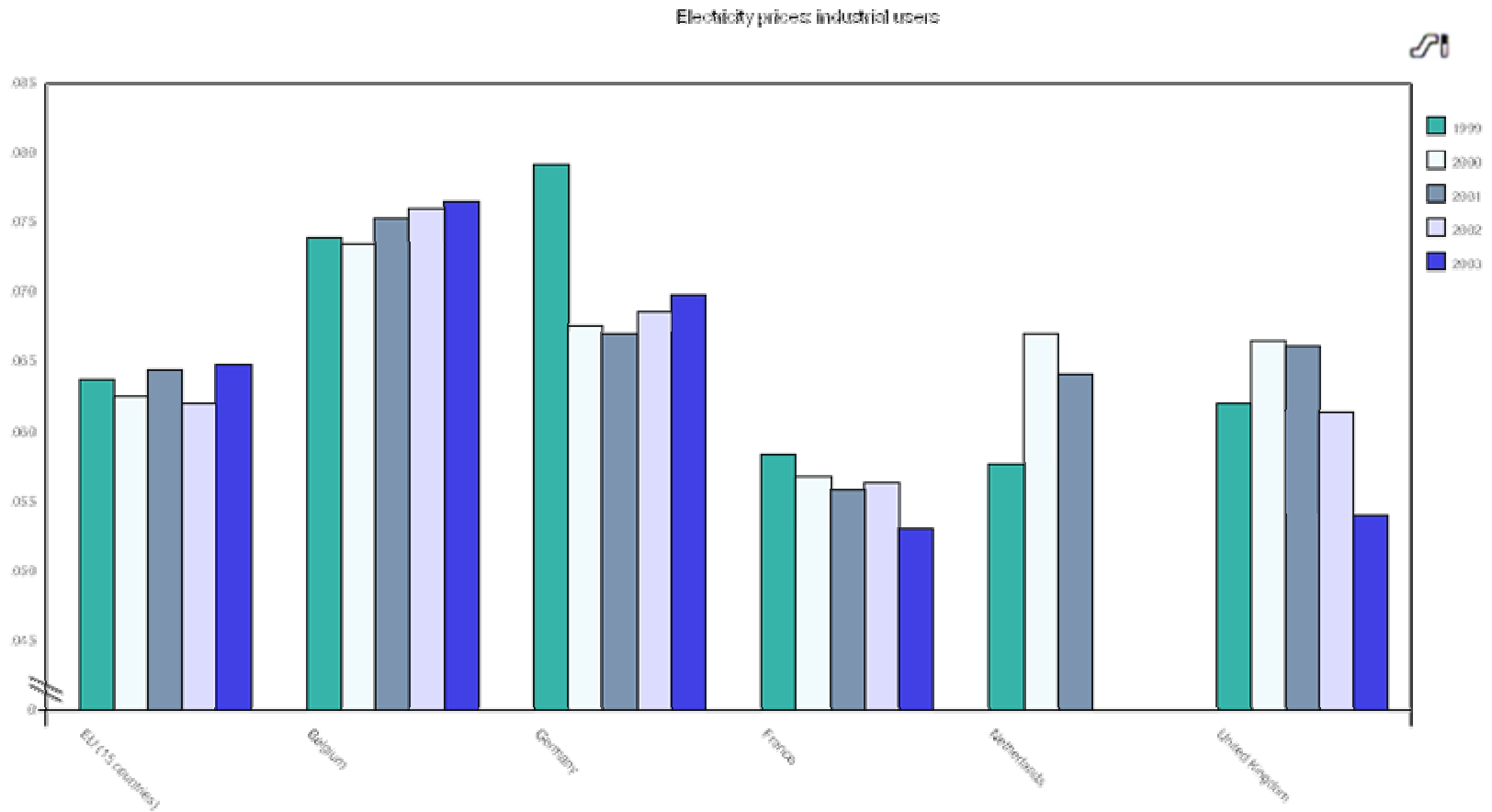
■ Frankrijk ■ Duitsland ■ België ■ Engeland ■ Overig bekend ■ Onbekend ■ Export

# ELECTRICITY PRICES

Elektriciteitsprijs  
[€ct/kWh]



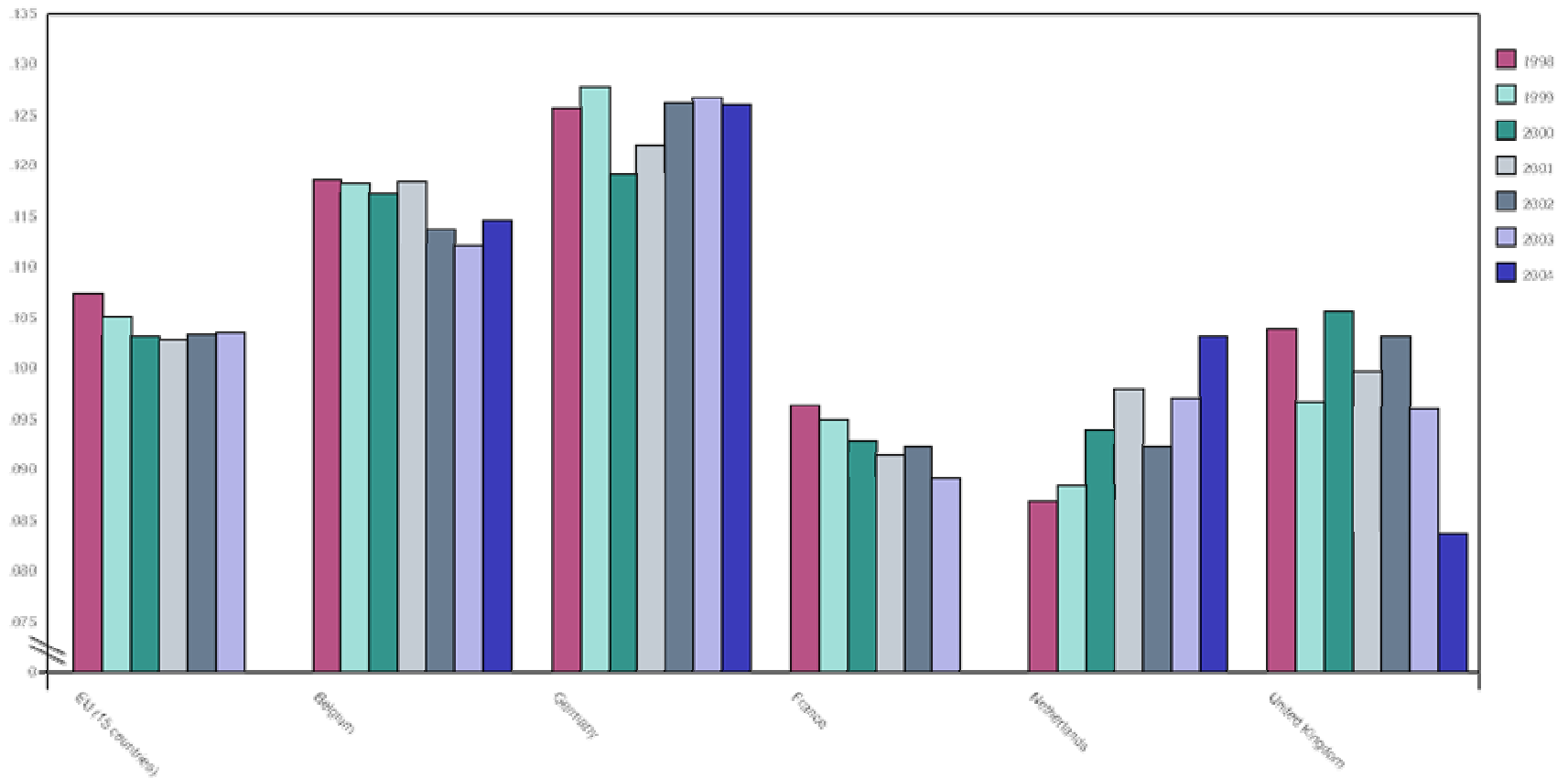
# Electricity Price Industrial Users



Source: Eurostat

# Prices for households without taxes

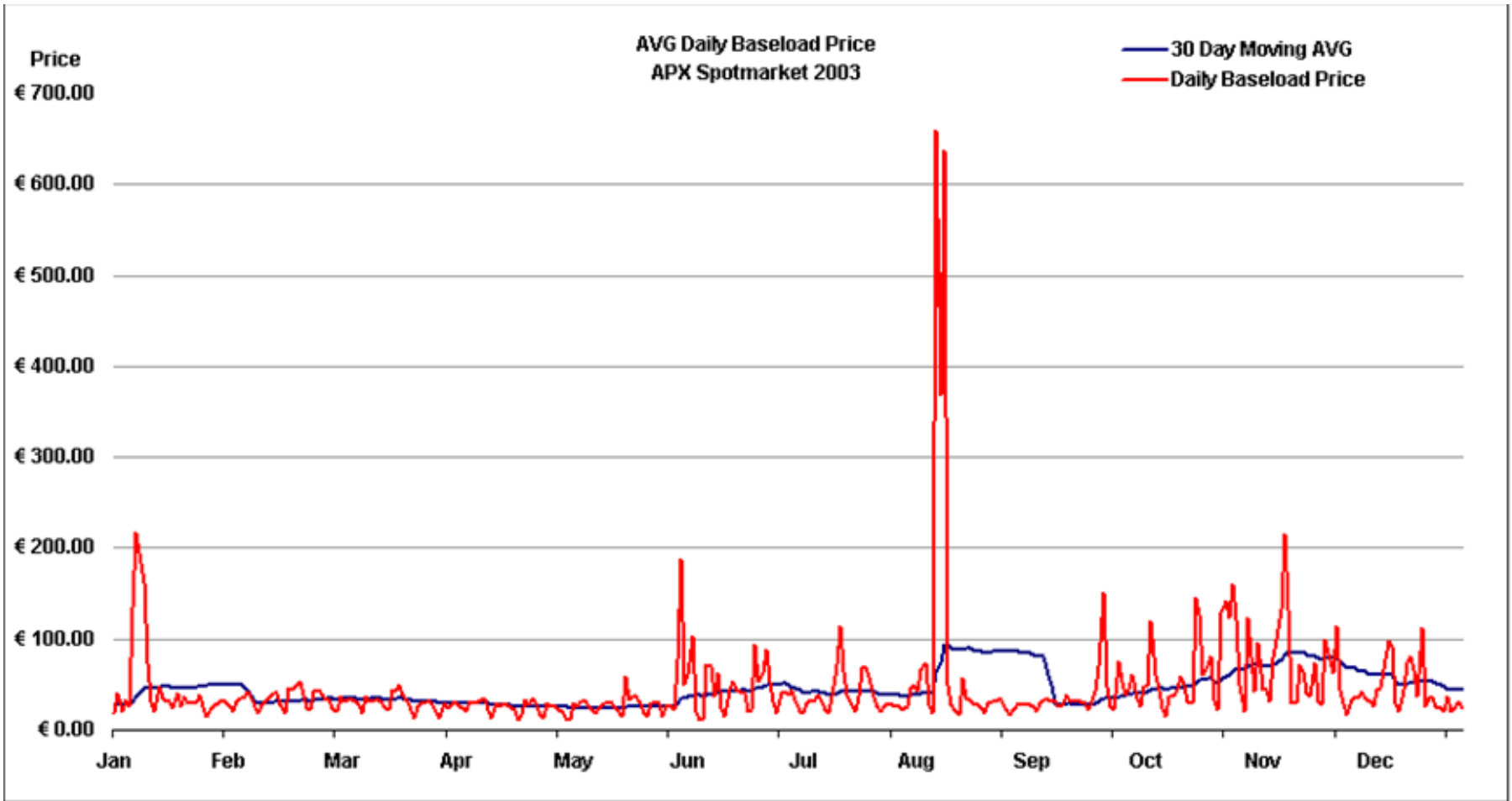
Electricity prices: households

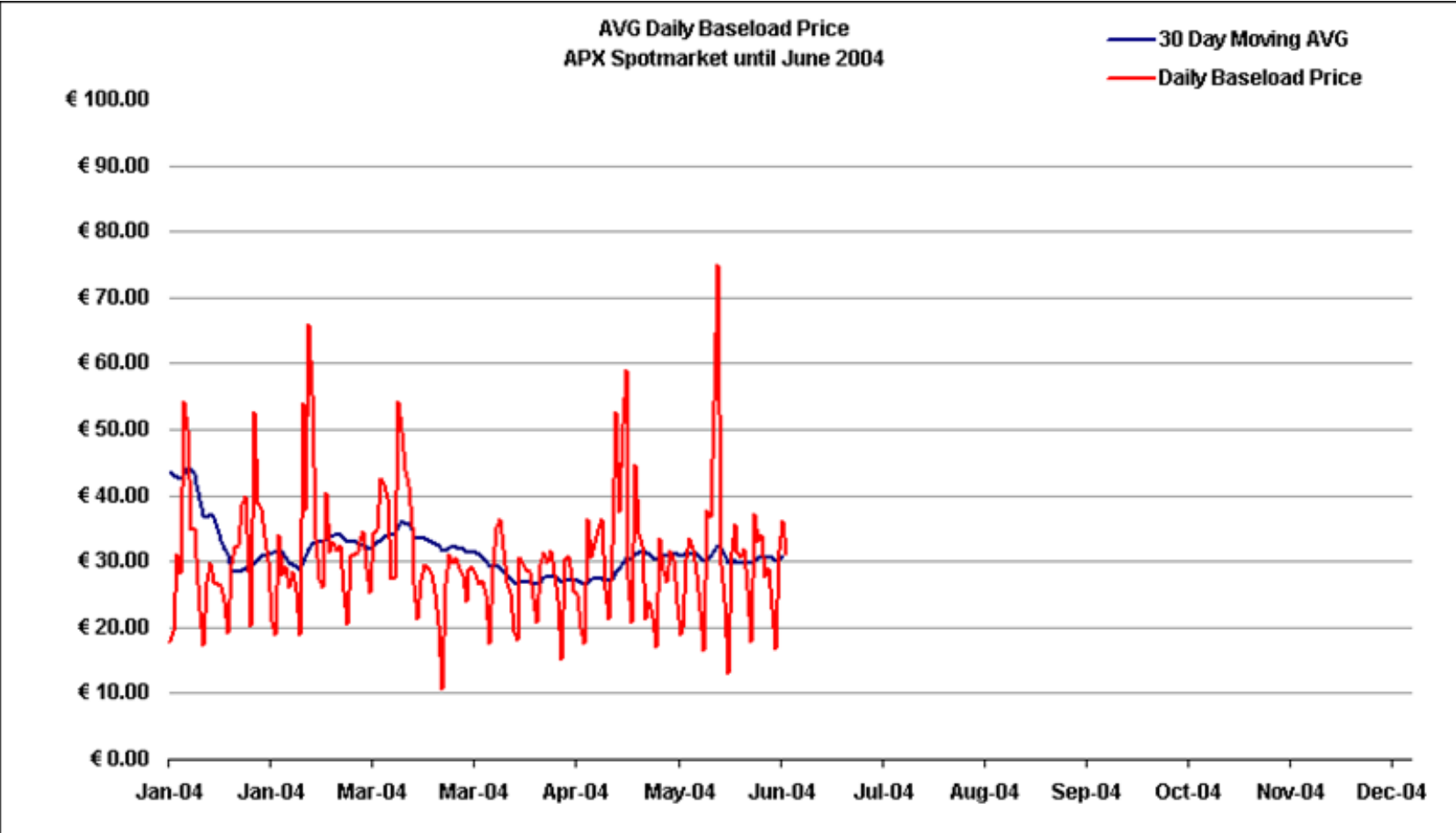


Source: Eurostat

# GENERATION

- Concentrated Market
- Concerns of Market Power
- APX is quite volatile
- Market widening
  - ◆ increasing interconnector capacity
  - ◆ cable to UK
  - ◆ cable to Norway
  - ◆ market integration (B, G, F)
- Reliant/Nuon merger further increases concentration





# THE NUON/RELIANT MERGER

- Creates another large strategic player: what will be the effect?
- Frontier: supply side model
  - ◆ 17 mark-up levels
  - ◆ discrete demand levels
  - ◆ full information
- ECN: competes model
  - ◆ Cournot
  - ◆ linear demand
  - ◆ calibrated and  $\varepsilon = -0.2$

# THE NUON/RELIANT MERGER

## Frontier's Price Effects

		Min	Max	Med
Pre	Average (volume weighted)	30	82	44
	Average (time weighted)	28	70	40
Post	Average (volume weighted)	30	128	50
	Average (time weighted)	28	109	44

# ECN: PRICE EFFECTS

Period		Pre Merger EUR/MWh	Post Merger EUR/MWh	% Increase
Winter	super peak	62.5	65.4	4.7
	peak	59.8	64.5	7.9
	shoulder	43.6	46.4	6.6
	base	40.0	42.2	5.5
Fall/Spring	super peak	59.4	61.9	4.3
	peak	47.4	50.4	6.3
	shoulder	42.5	44.9	5.7
	base	39.1	41.1	5.2
Summer	super peak	49.8	52.9	6.2
	peak	49.1	52.2	6.3
	shoulder	42.7	45.1	5.6
	base	42.5	43.9	3.4
	Average	44.9	47.5	5.9

# NMa's REMEDY: VPP

- Divest 900 MW (= 90 × 10)
- Standard Auction
- $p = 13.37 + 0.082 P_{q,y} + 0.11 K_{q,y}$
- Take or pay 75% on average
- A buyer can acquire at most 23 blocks
- Essent, Elektrabel excluded

# COURT: REMEDY DISPROPORTIONATE

- 5 years too long
  - ◆ 1 year for the moment
- Exclusion
  - ◆ Essent should be allowed

# TenneT

- 100% state owned
  - ◆ Original plan:
    - 50% + 1 and divest after some time
- Manager Transport grid
  - ◆ transport
  - ◆ interconnector auctions
- System Operator
  - ◆ balancing market
- Since 2001 TenneT owns APX
- APX in turn owns APX (UK)

# REGULATING DISTRIBUTION

- $p_t = \left(1 + \frac{cpi - x}{100}\right) p_{t-1}$
- Yardstick competition
- DEA
- Court ruled that the efficiency factors cannot be firm-specific
- Law is now repaired

# THE X-FACTORS

	I 1 <sup>st</sup>	I 2 <sup>nd</sup>	I 3 <sup>rd</sup>	CBB	II
COGA	3.8	-1.1	-10.4	3.2	-3.6
DELT	-4.3	-2.9	-3.1	3.2	6.8
Essent-L	-1.5	--	6.9	3.2	-3.8
Essent-NB	-3.5	--	3.2	3.2	3.8
NUON	7.7	7.2	6.8	3.2	1.3
REND	9.8	-6.9	-3.0	3.2	0.6
WEST	-4.7	-10.5	5.8	3.2	2.5

# PRIVATISING DISTRIBUTION

- Until 2002:
  - ◆ if the network company can operate independently
  - ◆ Chinese Walls
- 2002-2004: moratorium
- 2004: first ownership unbundling
  - ◆ supply can be privatised immediately thereafter
  - ◆ network company??
    - line of business restrictions remain in place

# PRIVATISING: THE ISSUES

- Unfair competition: raising cost of rival supply companies
- Financing advantages and cross subsidies leading to unfair competition
- Sufficiently strong regulatory instruments in case of mismanagement?

# DEMAND SIDE LIBERALISATION

## Middle Segment (2002)

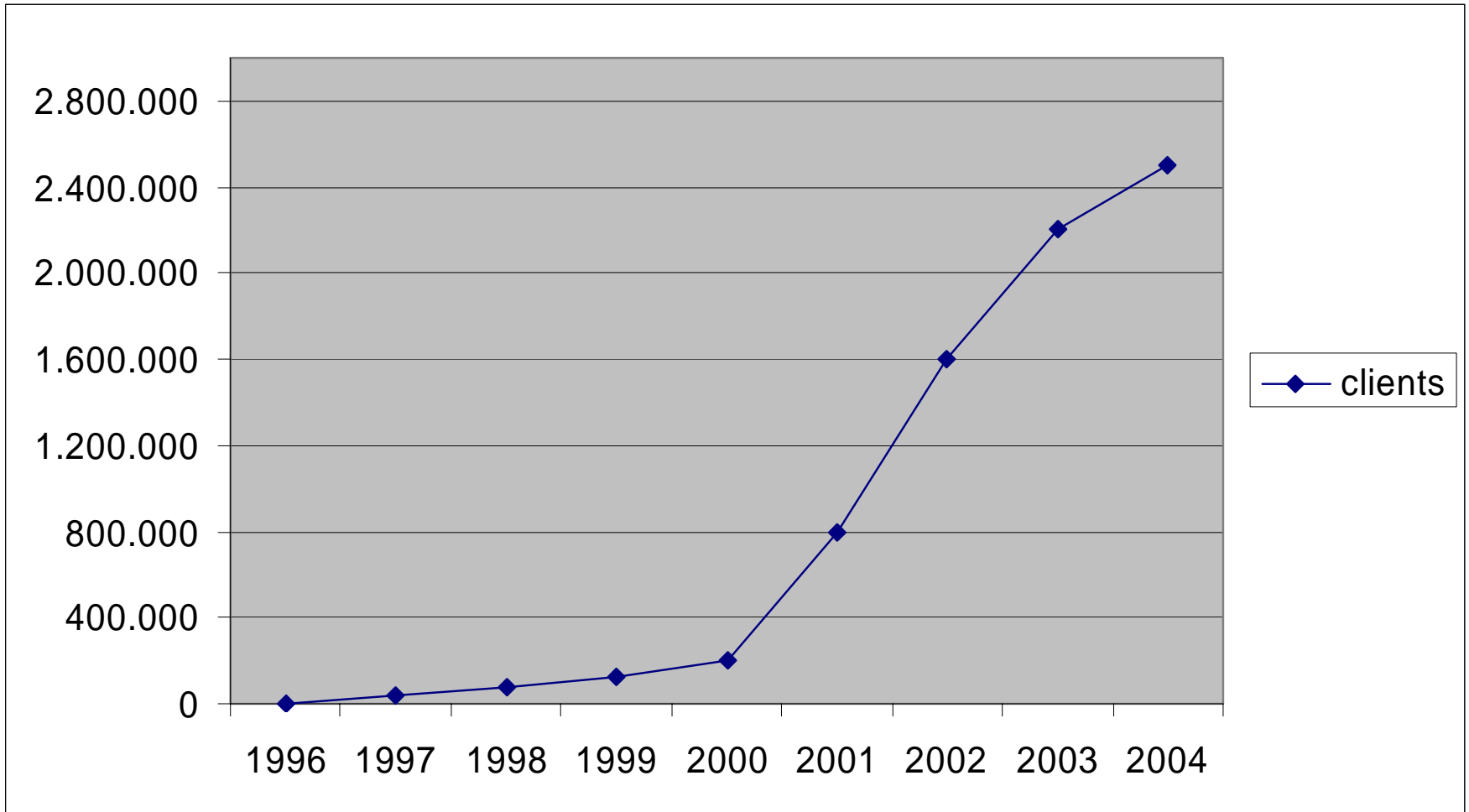
- 30% switched immediately at market opening: chaos
- 50% switches at contract renewal
- 60% switched within 18 months
- willing to switch for low price differences
- dissatisfied with quality delivered by incumbent supplier

# DEMAND SIDE LIBERALISATION

## Household Segment

- 36% is now (after 3 years) buying green electricity
- incumbents, however, still have 94% of their customer base
- on July 1, 2004, only 2% of the households switched
- households less inclined to switch than industrial users

# Households Consuming Green Energy



# SUBSIDIES FOR GREEN ELECTRICITY

- Demand Side
  - ◆ Consumers do not have to pay ecotax (€20 in 1999, €60 in 2002), or pay a reduced tax (linear reduction to 0 in 2005/1)
  - ◆ During 2002 subsidy was also available for imported electricity
- Supply Side Subsidy (1999-2003/7)
  - ◆ €20/MWh
  - ◆ until 2003 also available for imported electricity

# GREEN ELECTRICITY CONSUMED IN THE NETHERLANDS

Source	2000	2001	2002	2003
Hydro	142	117	110	72
Wind	829	825	910	1302
Solar	8	13	17	30
Biomass	1713	1951	2535	2248
Total-Domestic	2692	2906	3572	3650
Hydro	?	?	4232	652
Wind	?	?	80	250
Biomass	?	?	6118	8629
Total-imported	1500	7645	10430	9530
Total	4192	10551	14002	13180
Consumption				109777

# INTERCONNECTOR PRICES (€/MWh)

	2004	2003	2002	2001
Elia	1.10	0.25	2.90	3.00
RWE	6.15	6.75	17.75	10.90
E.On	6.00	6.90	18.35	10.50

# Benefits from Dutch taxes

Location	Player	Amount (€mln)
Home	Government	-550
	producers	107
	Supply	200
	network	52
Abroad	producers	138
	network	52

# CONCLUSION

- Concerns for market power, but weak powers to intervene
- Interaction law making and regulation leading to ambiguities
- Interference of the courts
- Drastic shifts in policy
- Costly mistakes
- Strong belief in consumer rationality remains to be tested