

Adequacy Mechanisms

from a policy perspective

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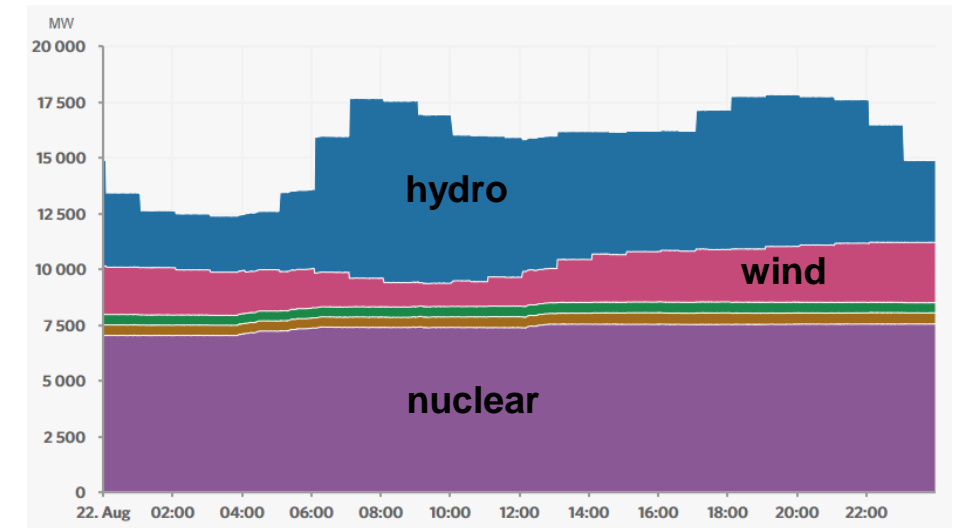
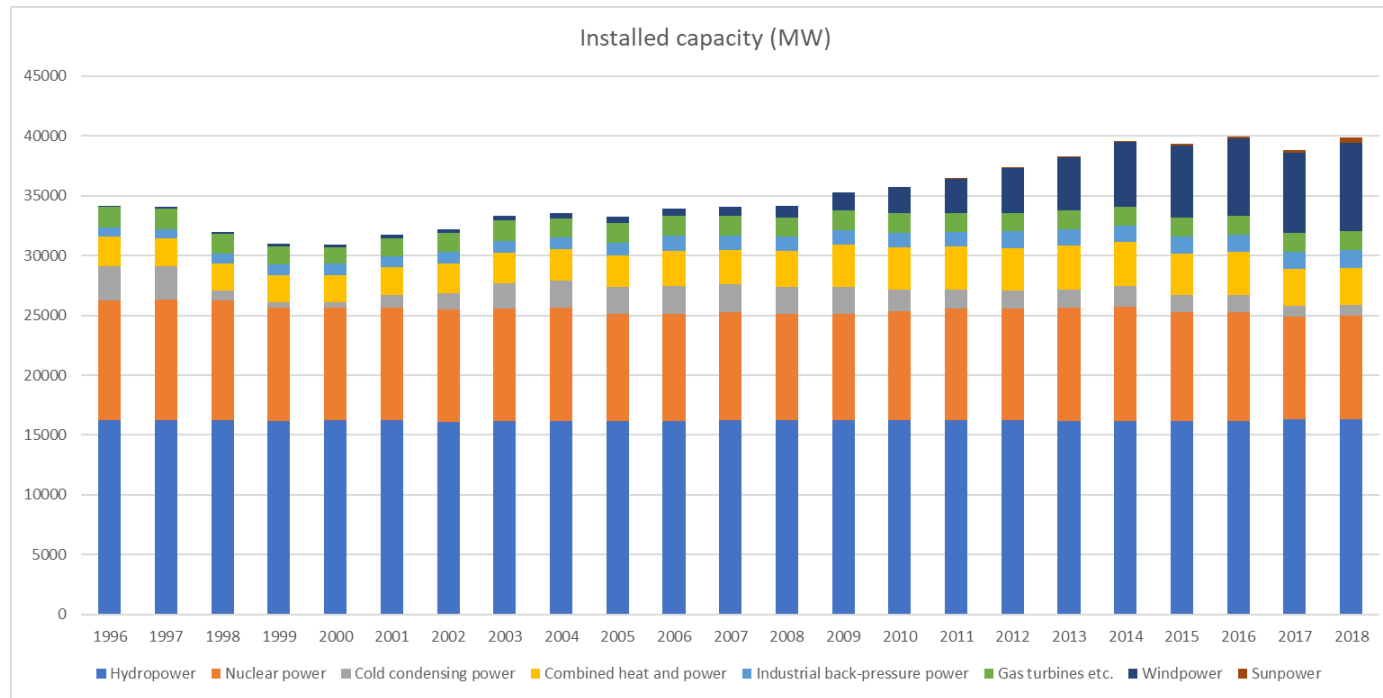


A few facts on Sweden

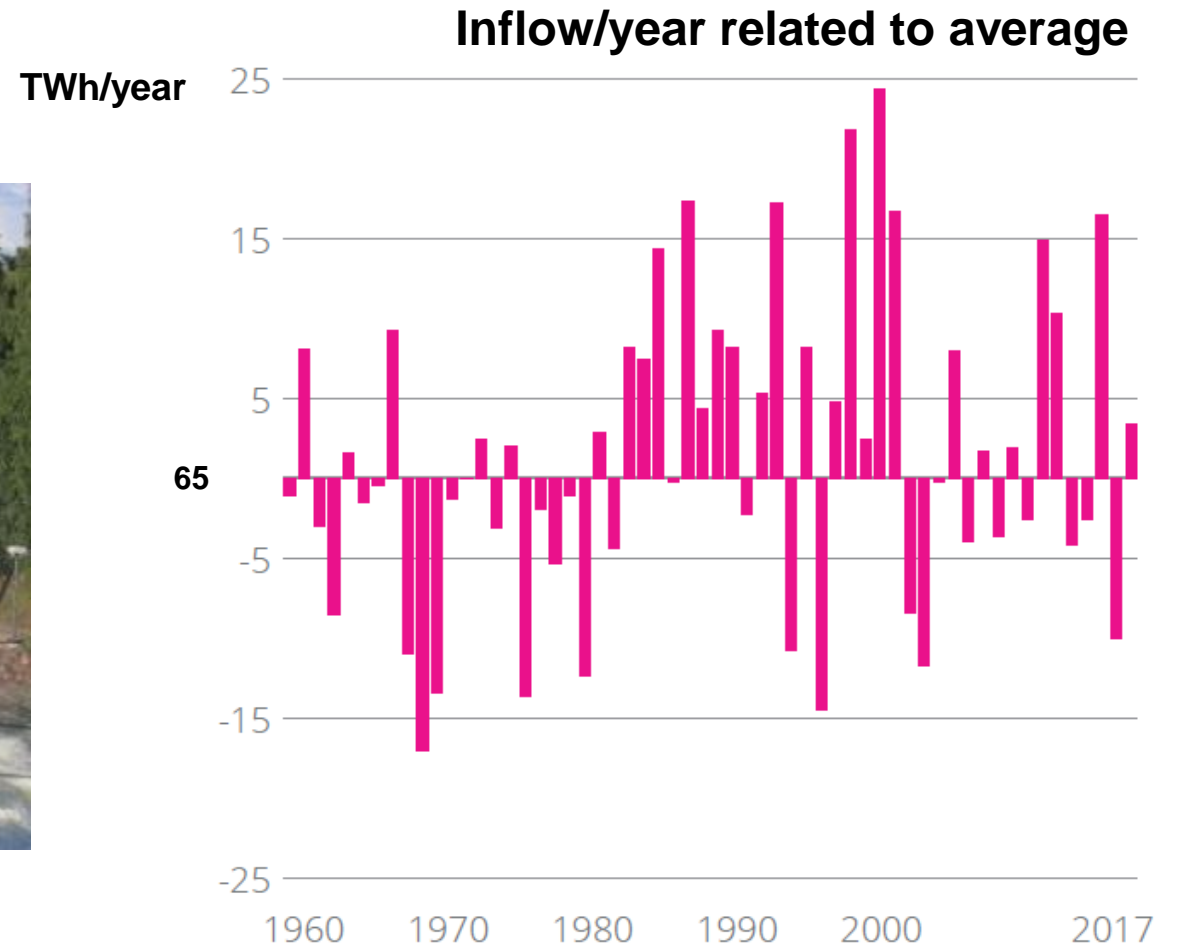
- Population: 10,2 million
- GDP/capita 45 700 USD
- Size: 447 435 km² (5 % of Brazil)
- Sparsely populated, 85 % in the south
- Capital: Sweden
- Constitutional monarchy
- Member of the European Union since 1995



Electricity production in Sweden



Large share of hydropower

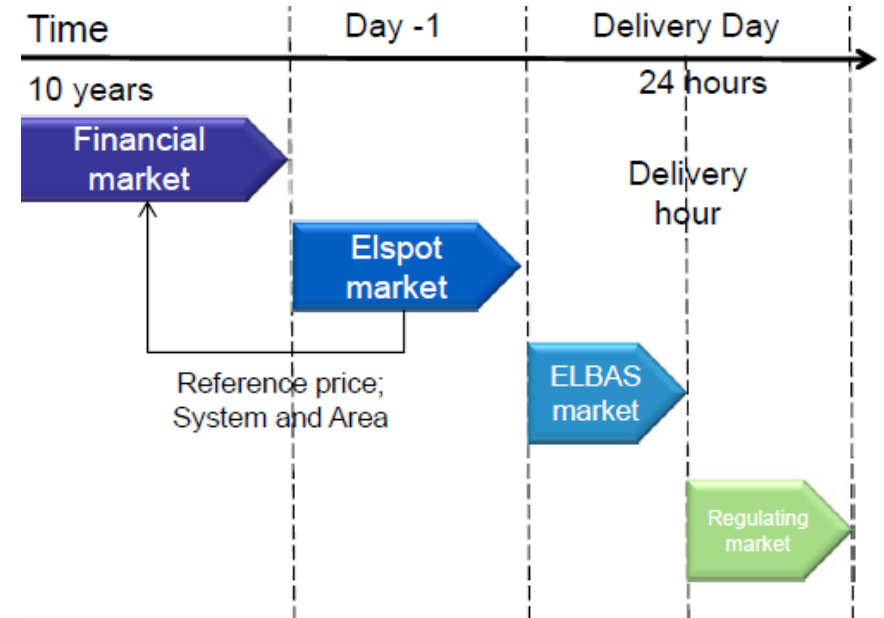
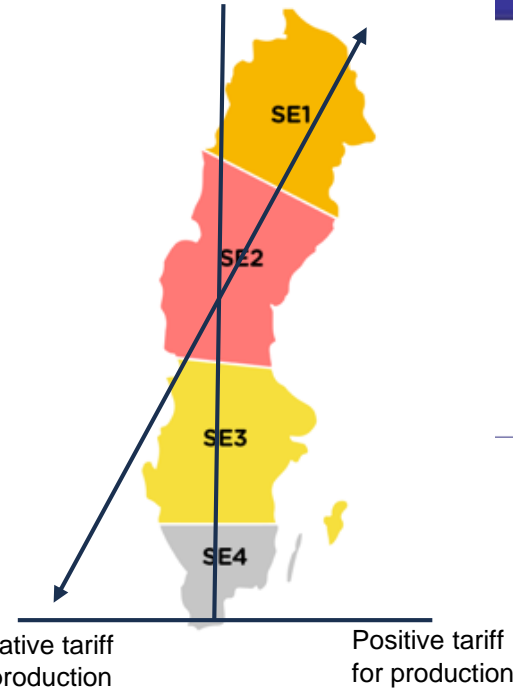
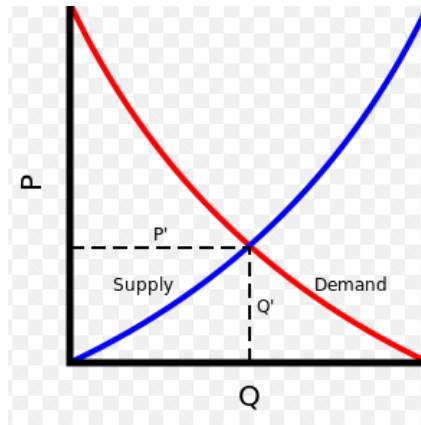


Policy on adequacy before and after the deregulation



Deregulation of the electricity sector in 1996 introduced...

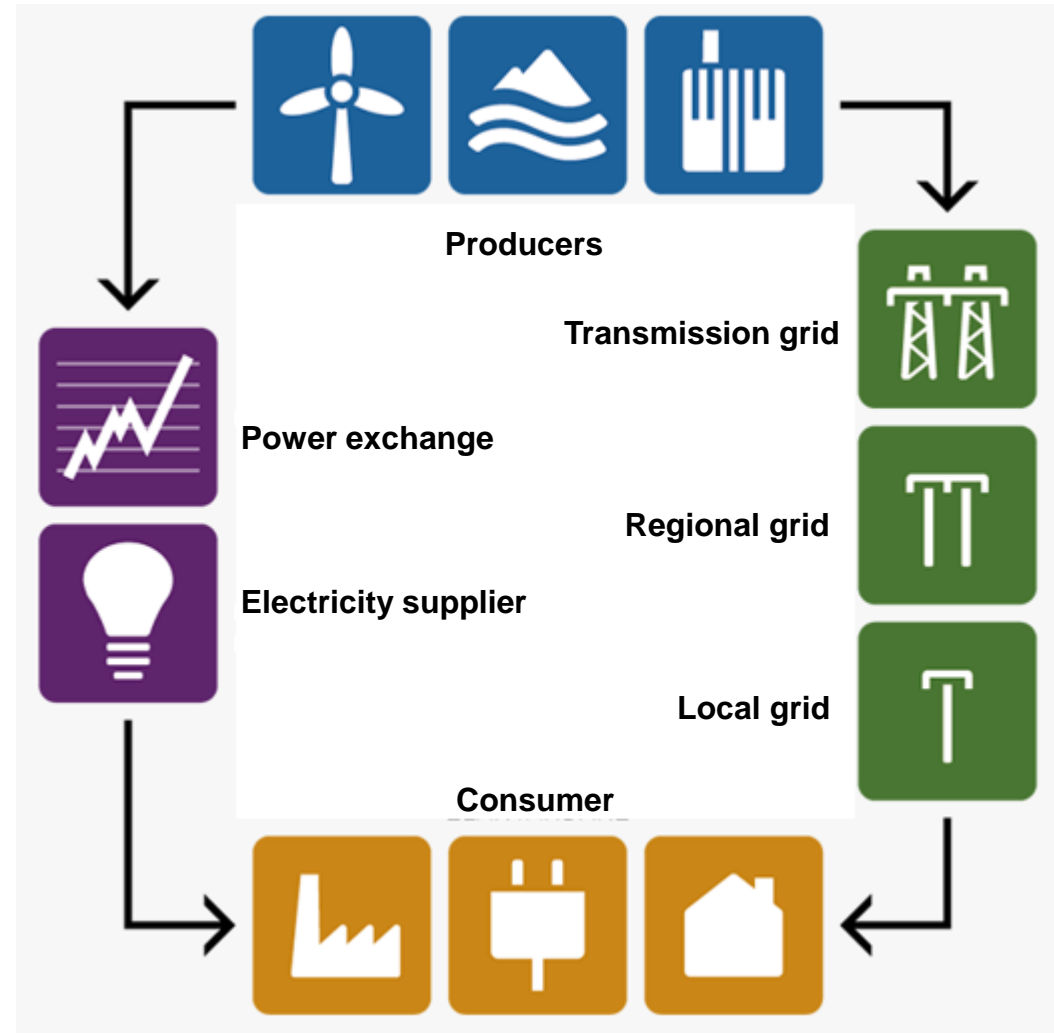
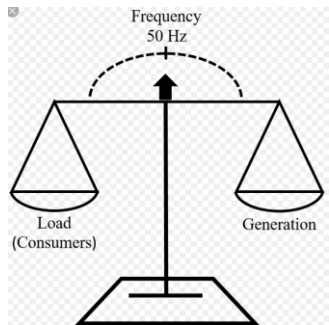
...an energy-only system



- Bidding zones introduced in 2011
- Geografically differentiated transmission tariffs



Delegated balance responsibility



Adequacy cold winter days



Power balance (MW)

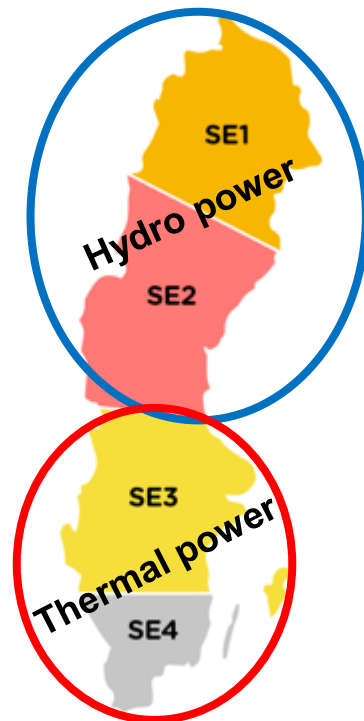
	Normal winter	10-year winter	20-year winter
SE1	3 100	3 000	3 000
SE2	4 200	4 100	4 000
SE3	- 5 200	- 5 800	- 6 200
SE4	- 3 100	- 3 300	- 3 400
	- 1 000	- 2 000	- 2 600
Max. consumption:	26 700	27 700	28 200

Max. import capacity: 10 350 MW



Challenges ahead

- Power balance in the south
- Balancing
- Inertia
- The government is closely following the development
- Framework agreement from 2016 on energy policy

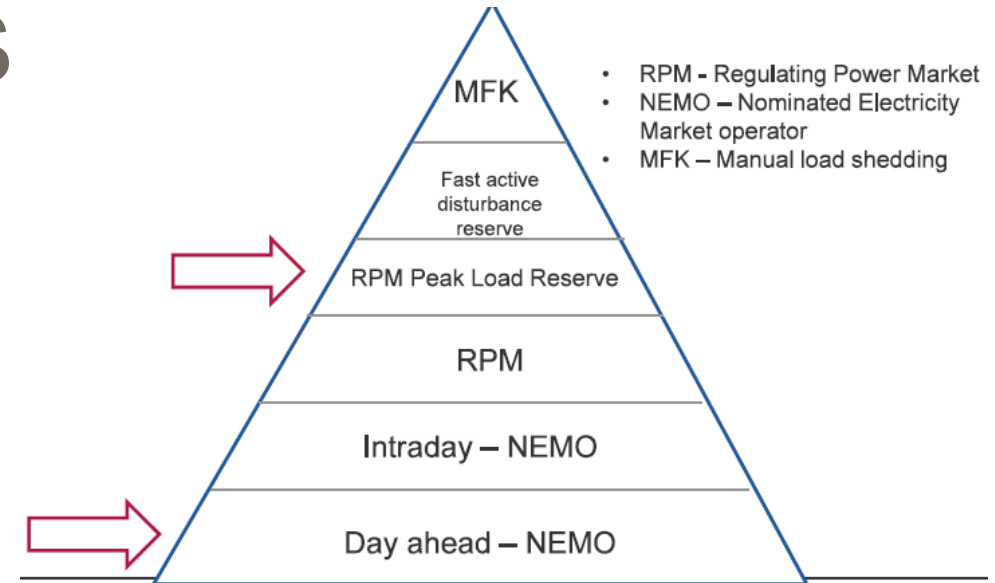


<u>Reactor</u>	<u>Capacity (MW)</u>	<u>Decommissioning (year)</u>
Barsebäck 1	600	1999
Barsebäck 2	600	
Ringhals 1	865	2005
Ringhals 2	865	2020
Oskarshamn 1	473	2019
Oskarshamn 2	638	2017
		2015



Current policy measures

- Balance established first-hand by the market place
- Bidding zones and differentiated tariffs
- Strategic reserve since 2003.
Available between mid November to mid March
- Disturbance reserve
- Manual load shedding as last resort



Winter	Max volume, MW	Min volume consumption
2003/04 – 2007/08	2000	(0%)
2008/09 – 2010/11	2000	(0%)
2011/12 – 2012/13	1750	(25%)
2013/14 – 2014/15	1500	(25%)
2015/16 – 2016/17	1000	(25%)
2017/18 – 2024/25	750	(25%)



New EU-legislation

General

- European methodology for adequacy assessments
- National reliability standard
- Implementation plan

Strategic reserve

- Technology neutral, open to competition and open cross-border
- Not to be activated in the DA market
- When activated, imbalances are to be settled at least at VoLL
- Emission performance standard



Lessons learned

- Strategic reserve not activated after 2012..
- ...but challenges ahead
- Ongoing discussion on all levels
- Potential for market driven demand response solutions

