CZECH ENERGY MARKET IN EUROPEAN CONTEXT

FUTURE OUTLOOK OF CZECH EXPORTING ABILITIES

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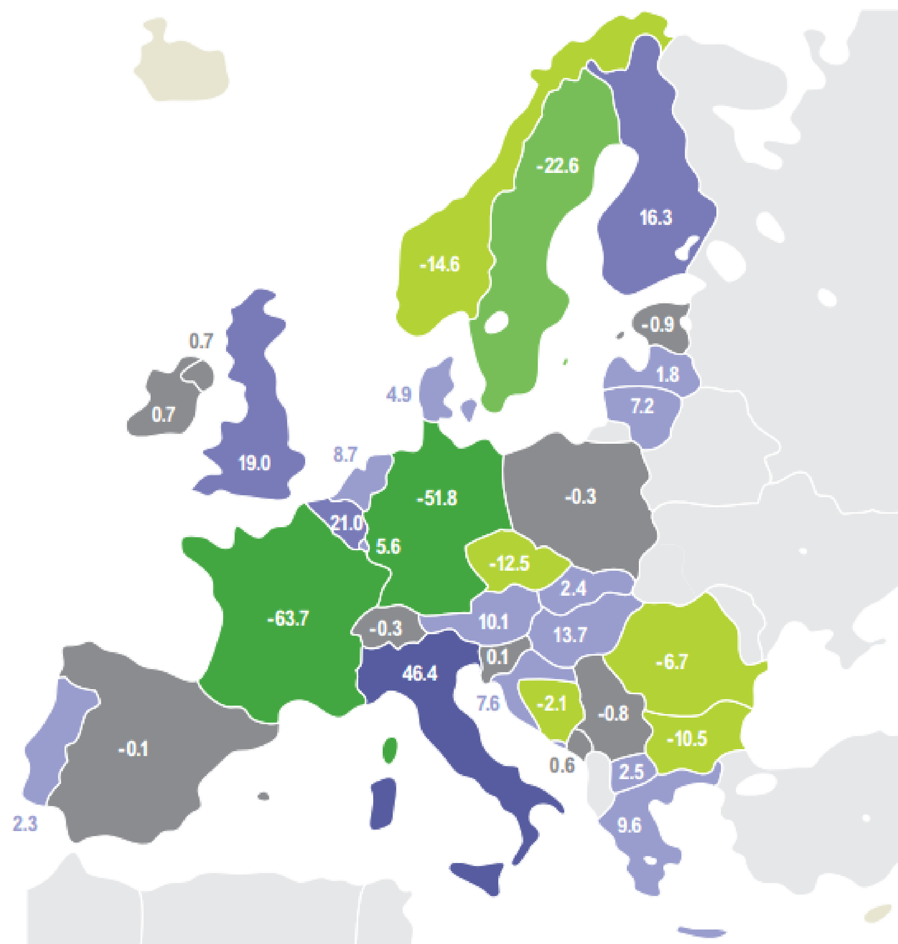
Outline

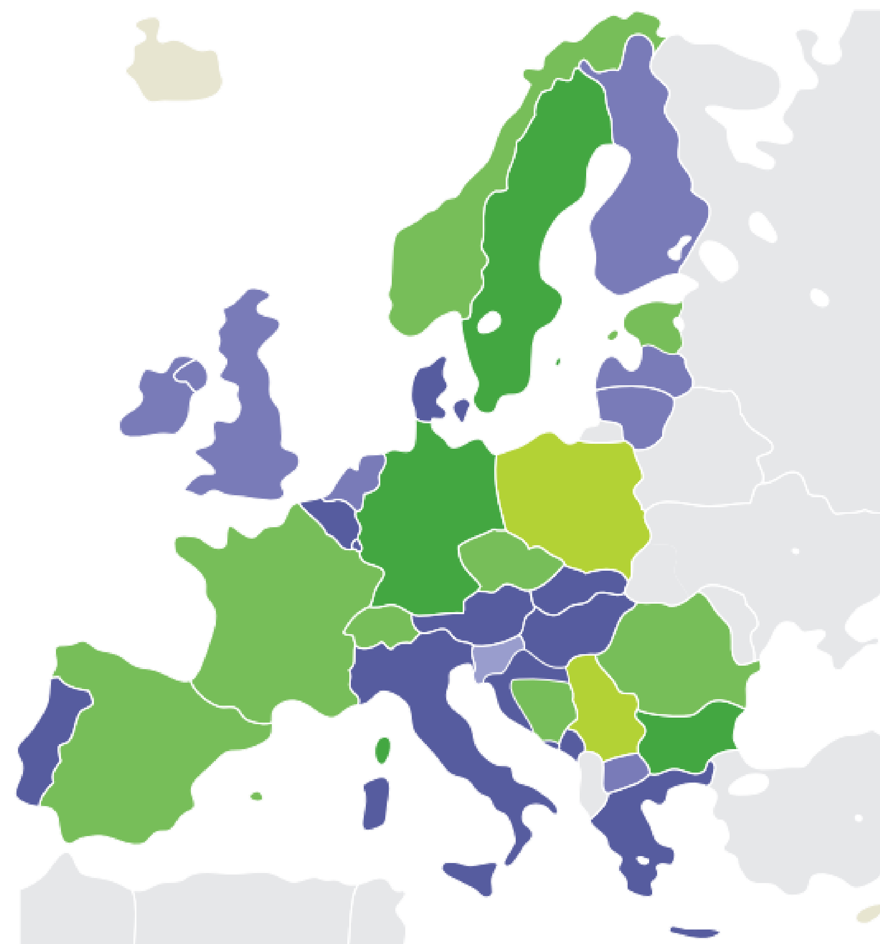
1. Current status in electricity export
2. Power sector development scenarios
3. Current data from coupled market (CZ/SK/HU/RO)

Exchange Balances in Europe

EXCHANGE BALANCES IN 2015



EVOLUTION OF EXCHANGE BALANCES BETWEEN 2014 AND 2015



source: ENTSO-E report „ELECTRICITY IN EUROPE 2015“

Exporting balance:
- ≤ -30 TWh
- ≤ -15 TWh and > -30 TWh
- ≤ -1 TWh and > -15 TWh
- balanced
- isolated

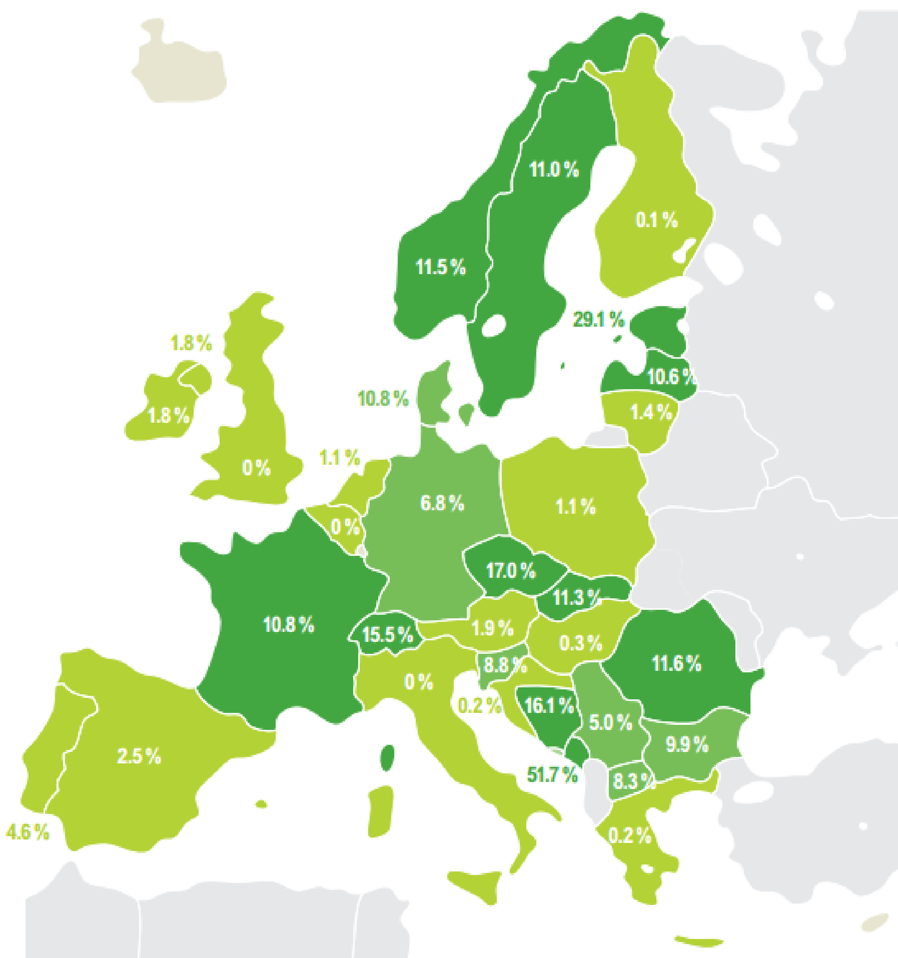
Importing balance:
- ≥ 1 TWh and < 15 TWh
- ≥ 15 TWh and < 30 TWh
- ≥ 30 TWh

Balance:
- more exporting
- less exporting
- becomes exporting
- stable
- isolated

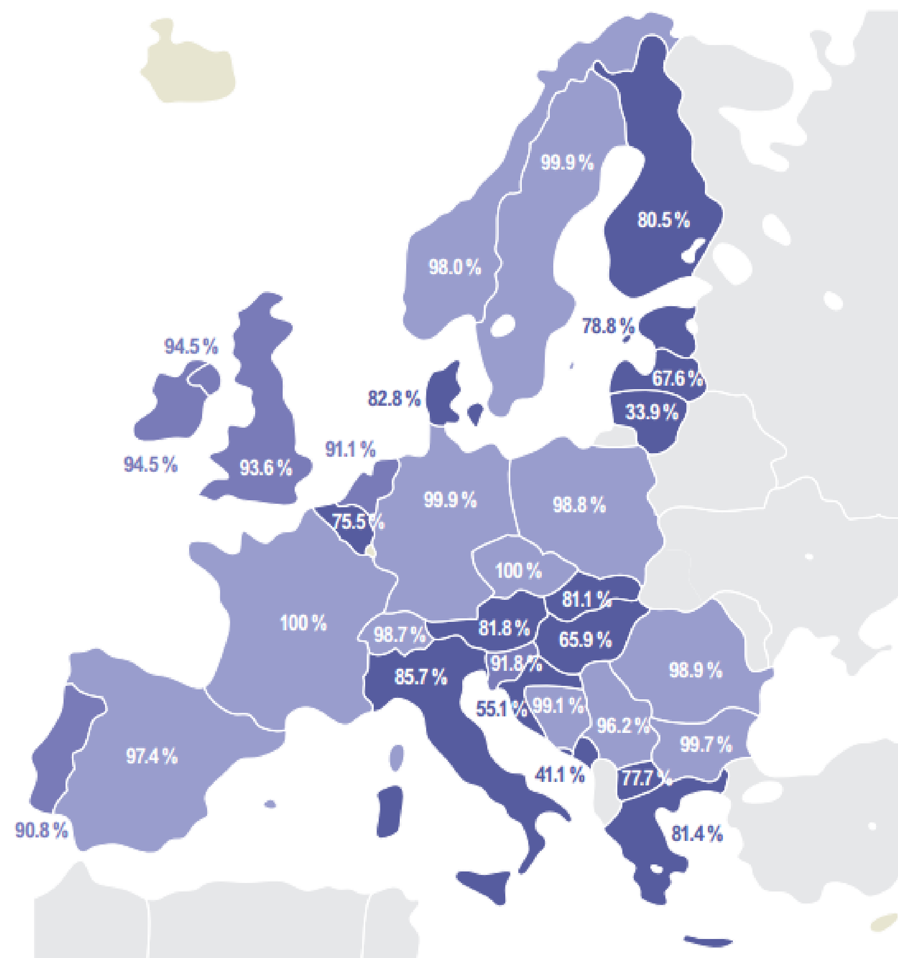
Balance:
- becomes importing
- less importing
- more importing

Exports in Europe 2015

SHARE OF YEARLY GENERATION EXPORTED



SHARE OF YEARLY CONSUMPTION COVERED BY NATIONAL GENERATION

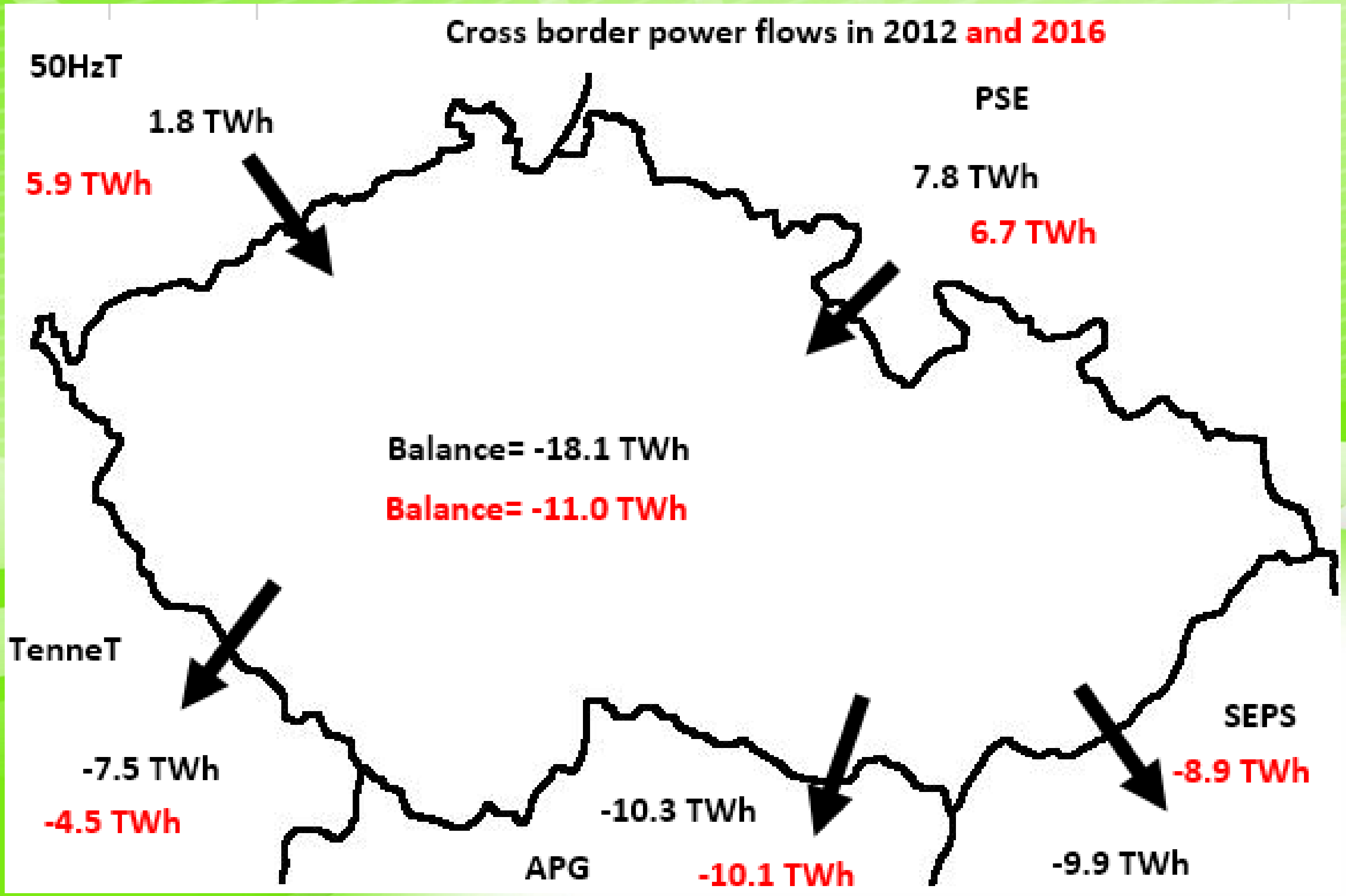


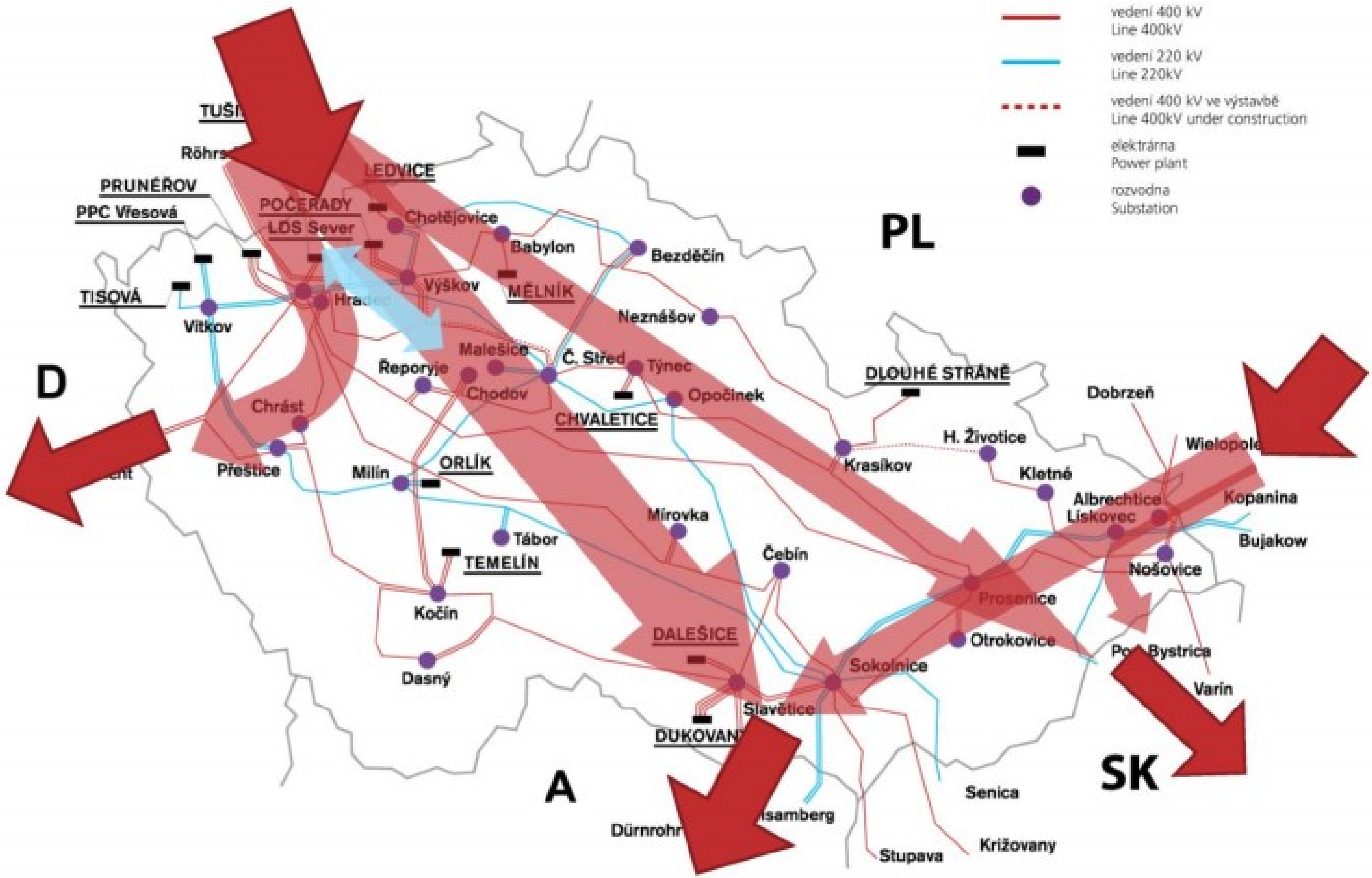
source: ENTSO-E report „ELECTRICITY IN EUROPE 2015“

Exports: ≥ 10 % of its generation; ≥ 5 % and < 10 % of its generation; < 5 % of its generation; isolated/ no data

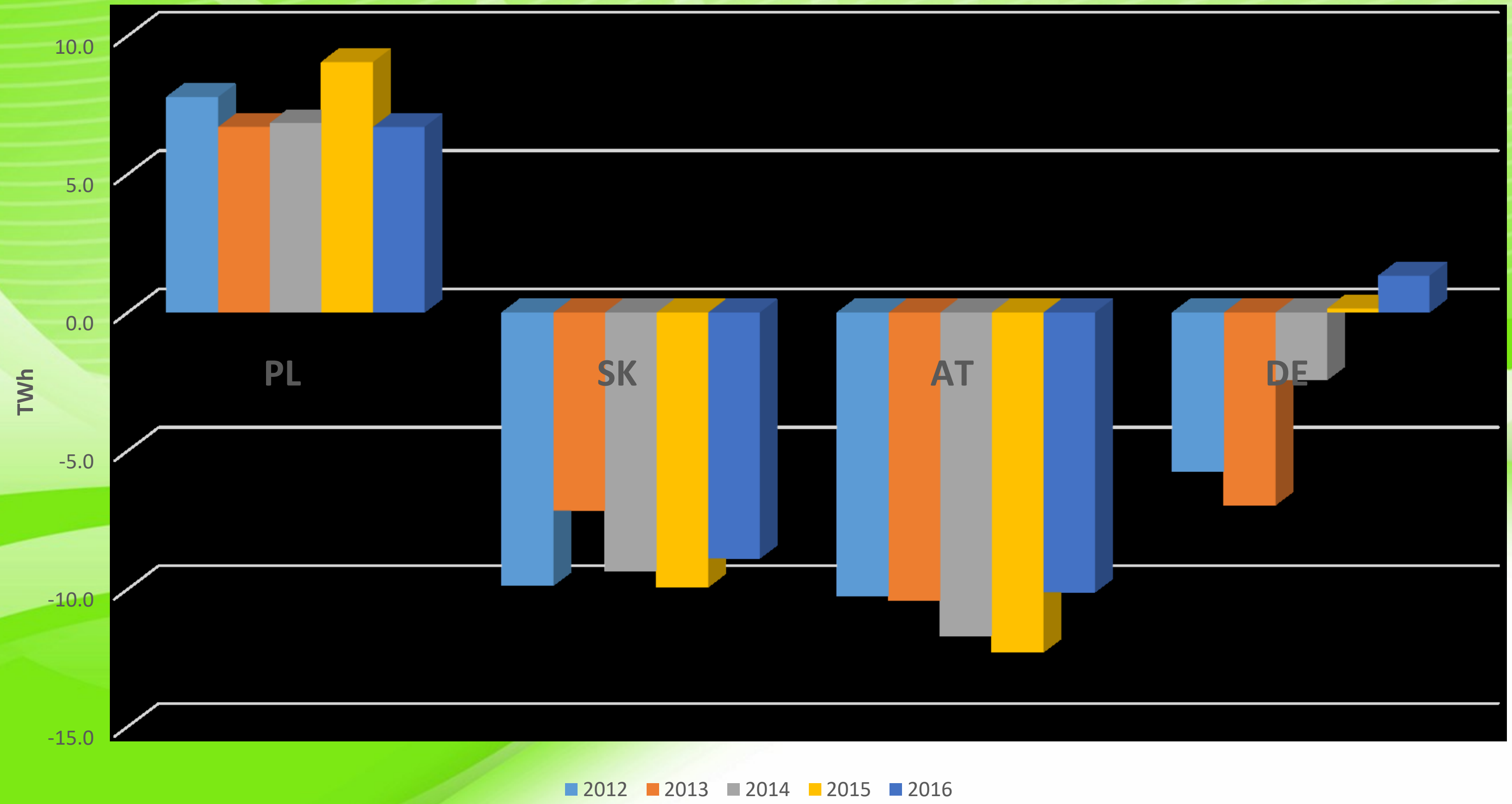
Imports: ≥ 10 % of its consumption; ≥ 5 % and < 10 % of its consumption; < 5 % of its consumption; isolated/ no data

Physical Import and Export 2012 vs. 2016




vedení 400 kV
Line 400kV
vedení 220 kV
Line 220kV
vedení 400 kV ve výstavbě
Line 400kV under construction
elektrárna
Power plant
rozvodna
Substation
PL
D
A
SK
PRUNÉŘOV
PPC Vřesová
POČERADY
LDS Sever
LEDVICE
Chotějovice
Babylon
Bezděčín
Výškov
MĚLNÍK
TISOVÁ
Vítkov
Neznášov
Malešice
Č. Střed
Týnec
Řeporyje
Chodov
Opočínek
CHVALETICE
DLOUHÉ STRÁNĚ
Dobrzeń
Chrást
H. Životice
Wielopole
Přeštice
Krasíkov
Milín
ORLÍK
Kletné
Albrechtice
Kopanina
Lískovec
Bujakow
Mírovka
Tábor
TEMELÍN
Čebín
Nošovice
Prosenice
Kočín
Otrokovice
DALEŠICE
Sokolnice
Varín
Dasný
Slavětice
Senica
Križovany
Stupava

Physical Import (+) and Export (-) in years 2012 - 2016



Planed vs. Physical Flows

Plan	PL	SK	AT	DE
2012	1,5	-8,1	-2,9	-8,6
2013	1,3	-5,1	-2,5	-11,6
2014	0,2	-8,4	-1,4	-6,9
2015	0,3	-10,2	0,6	-3,6
2016	0,5	-9,4	1,5	-3,4

Reality	PL	SK	AT	DE	Total
2012	7,8	-9,9	-10,3	-5,8	-18,1
2013	6,7	-7,2	-10,4	-7,0	-17,8
2014	6,8	-9,3	-11,7	-2,4	-16,6
2015	9,0	-9,9	-12,3	0,1	-13,0
2016	6,7	-8,9	-10,1	1,3	-11,0

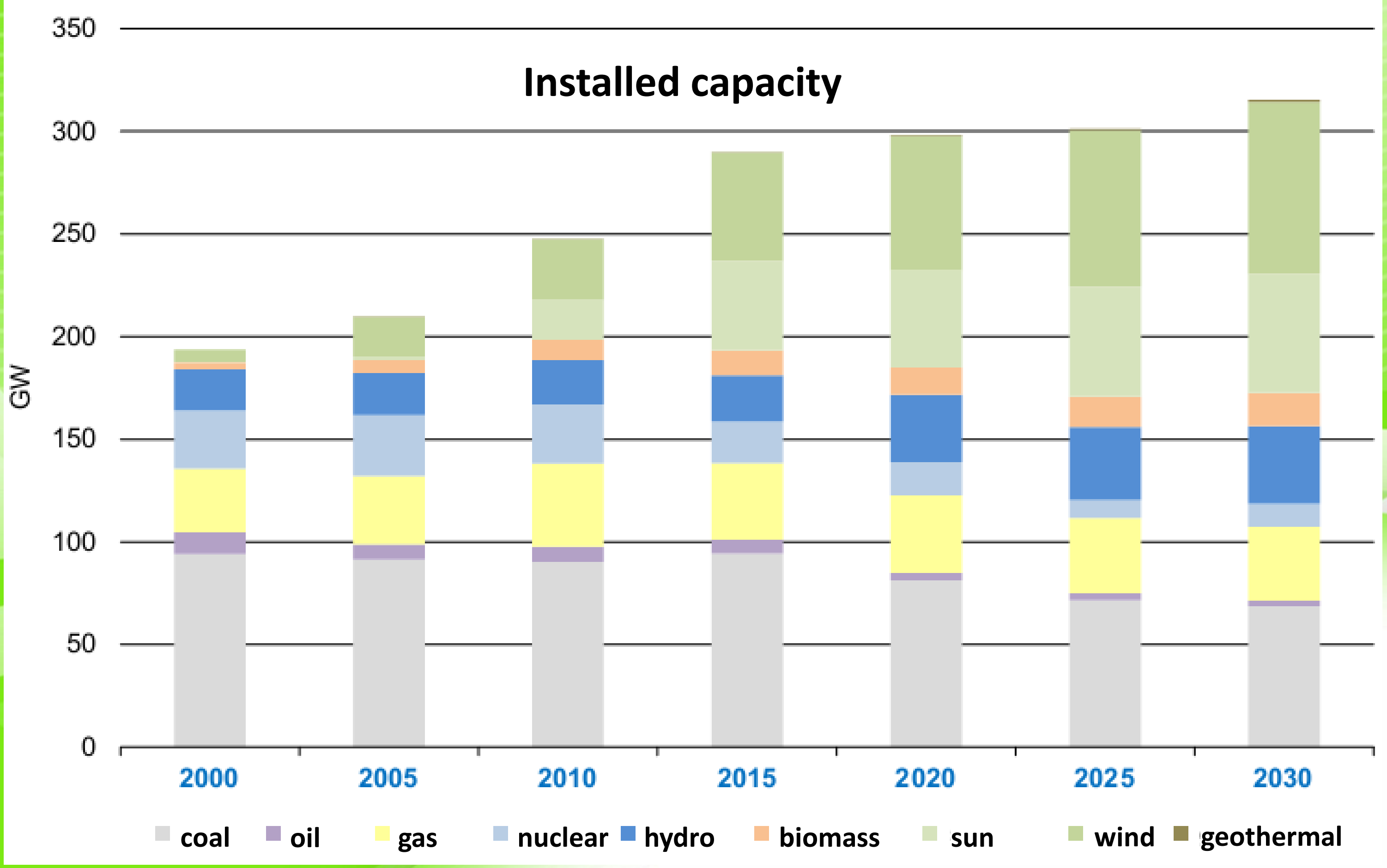
Difference	PL	SK	AT	DE
2012	-6,3	1,7	7,4	-2,9
2013	-5,4	2,0	7,9	-4,6
2014	-6,7	0,9	10,3	-4,5
2015	-8,7	-0,3	12,9	-3,8
2016	-6,2	-0,5	11,6	-4,8

Difference	PL	SK	AT	DE
2012	421%	21%	258%	-33%
2013	413%	40%	316%	-40%
2014	4451%	11%	715%	-65%
2015	2524%	-3%	-2161%	-104%
2016	1355%	-5%	-771%	-139%

- Big difference on PL/AT/DE borders caused by loop flows (unschedulled flows).
- Czech export position becomes weaker:
  - cheap electricity from Germany
  - shut down of coal power plants (structural changes in production)
  - Czech grid is used as a transport grid for DE/AT

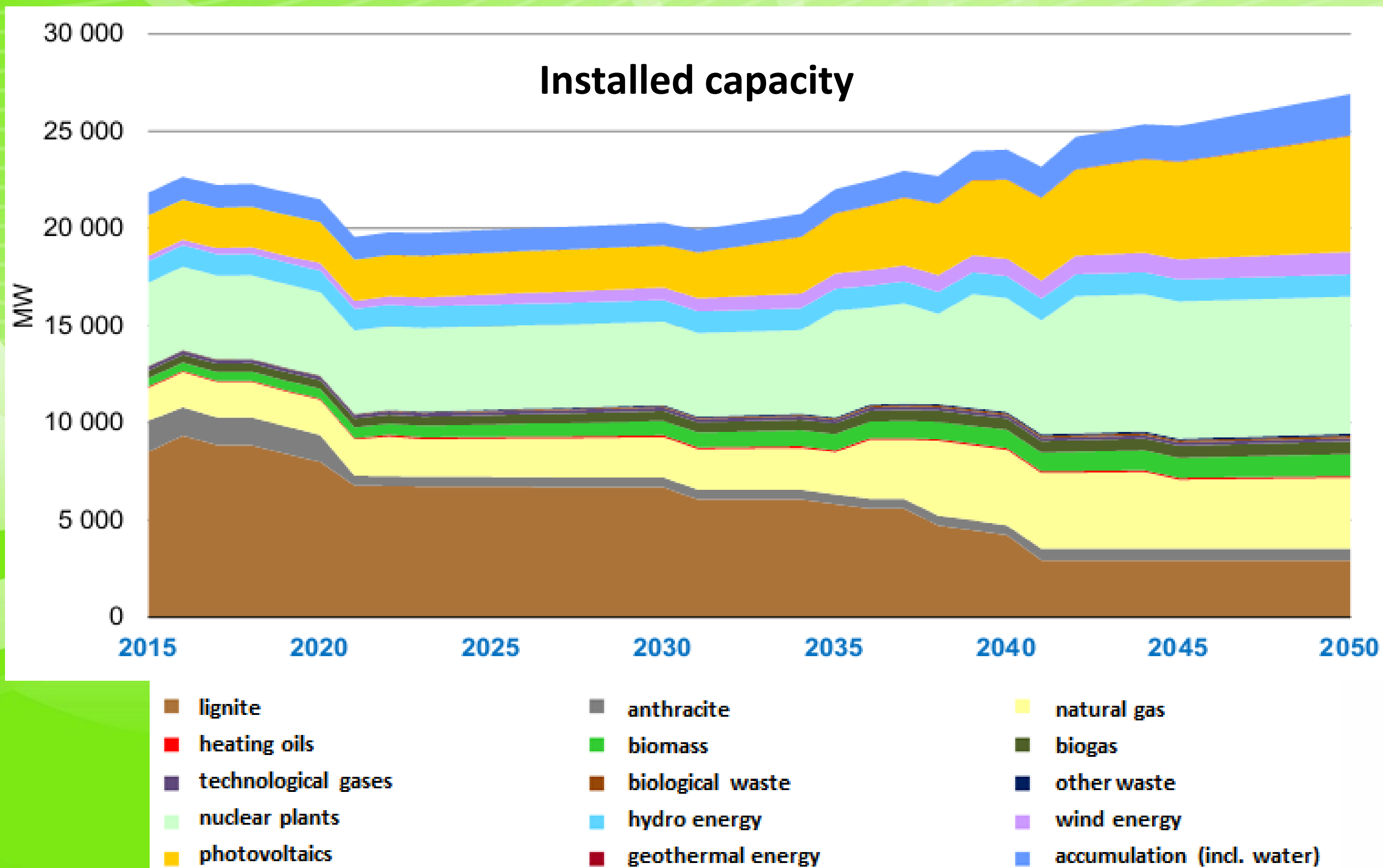
Power Sources in Central Europe - Outlook

(CZ, SK, AT, HU, PL, DE)



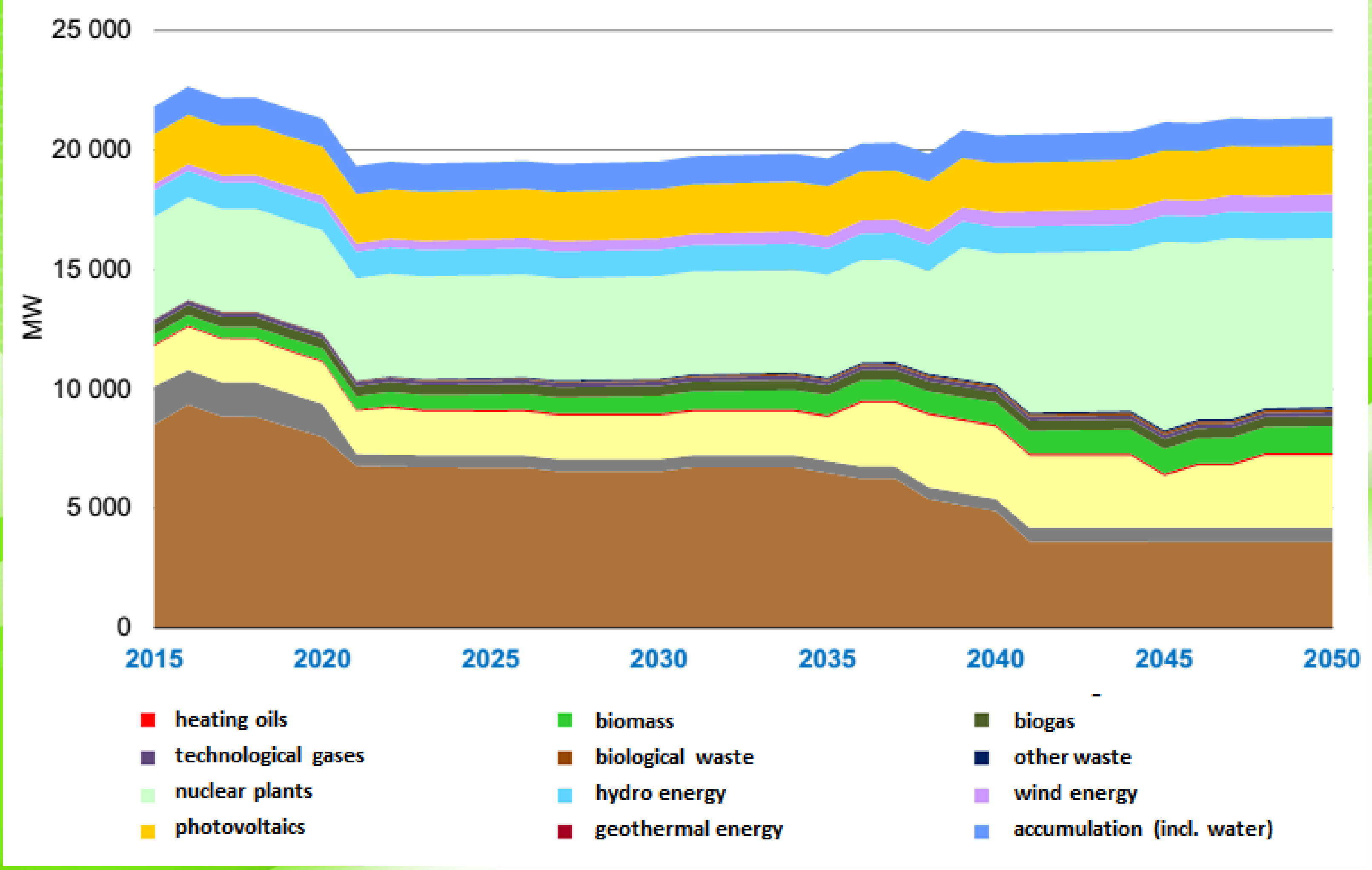
Scenario 1 – the most realistic

- new nuclear power sources, high renewables expansion



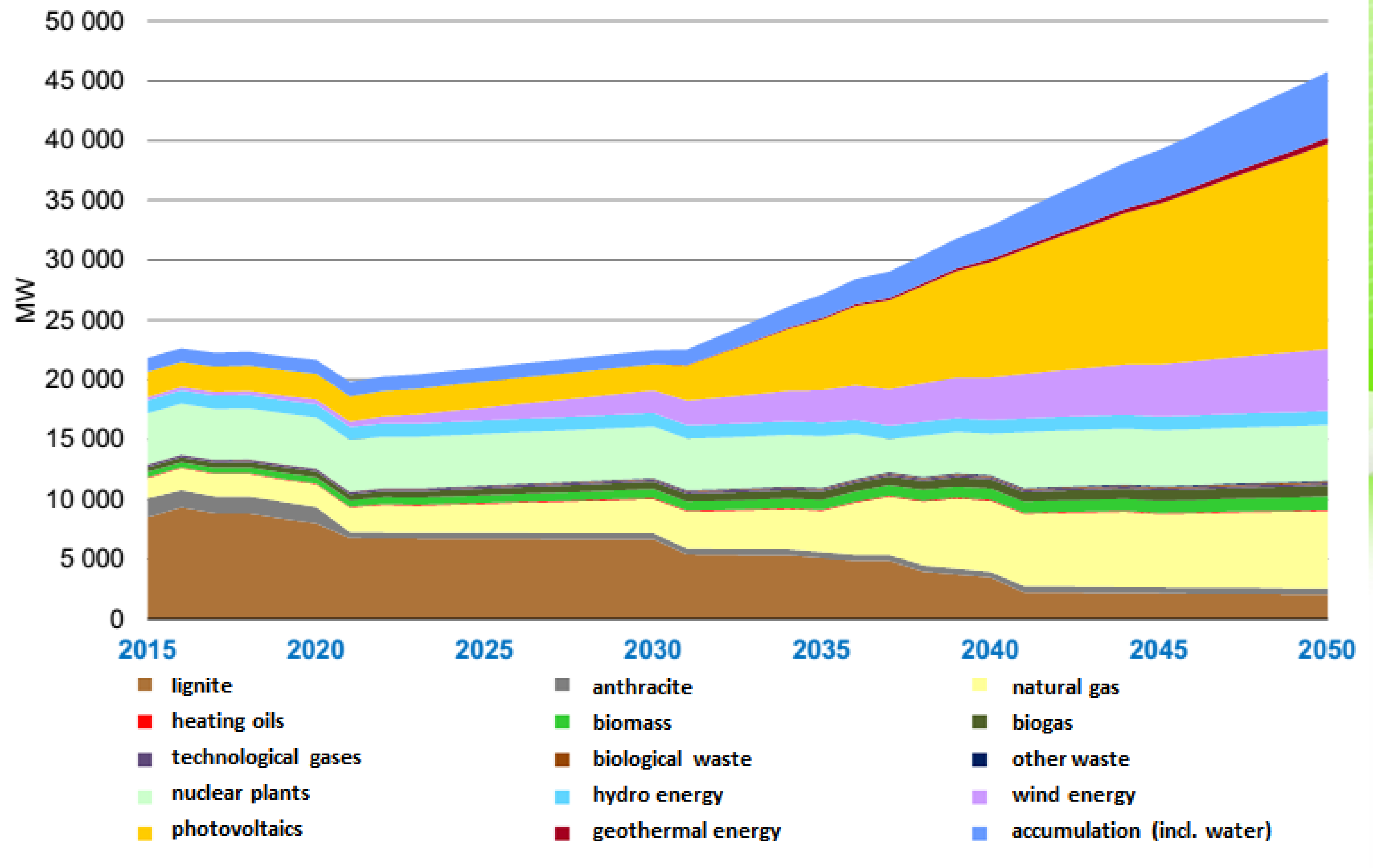
Scenario 2 – centralized

- new nuclear and coal power sources, moderate RES expansion

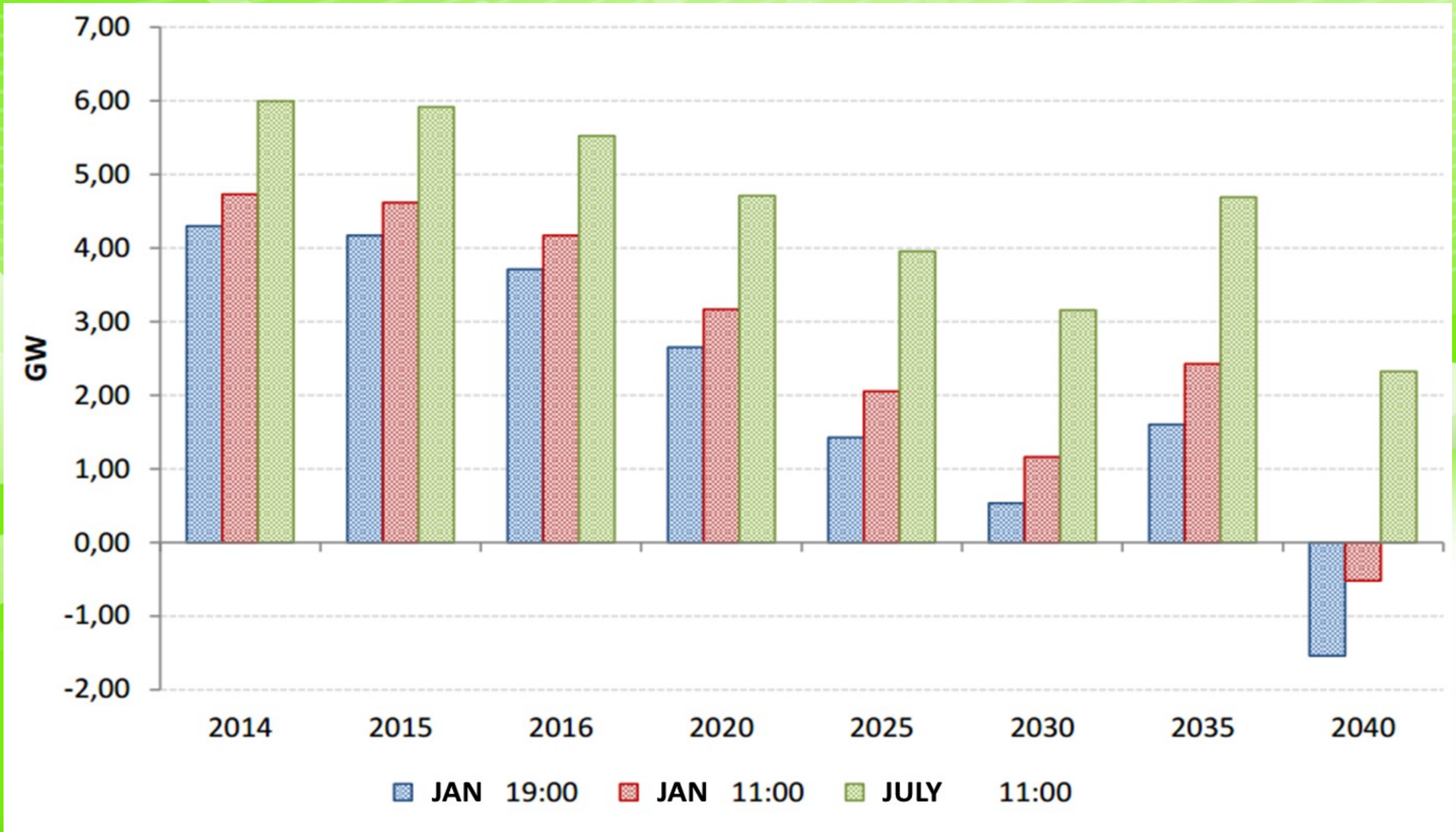


Scenario 3 – decentralized

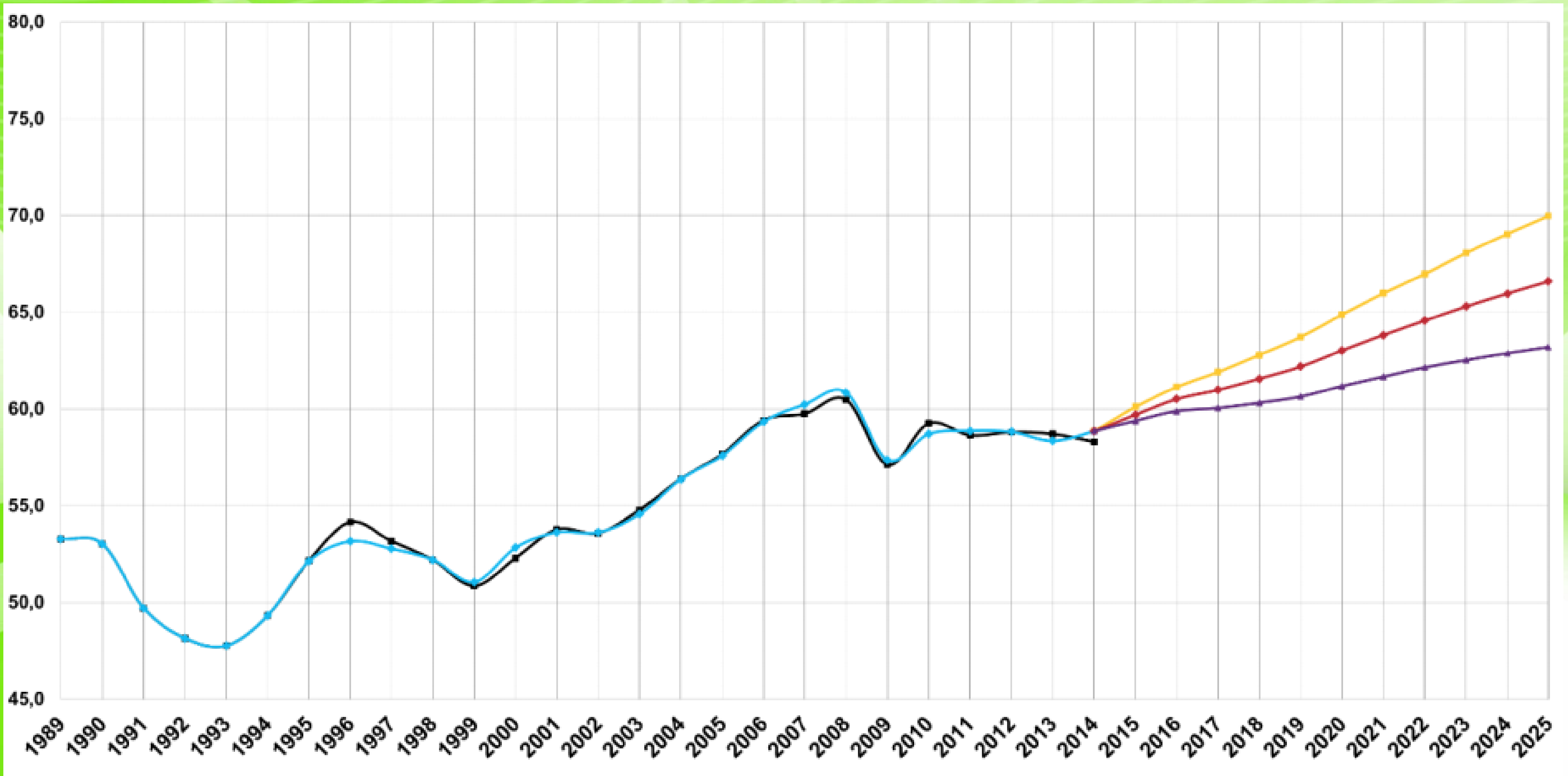
- massive expansion of decentralized power sources



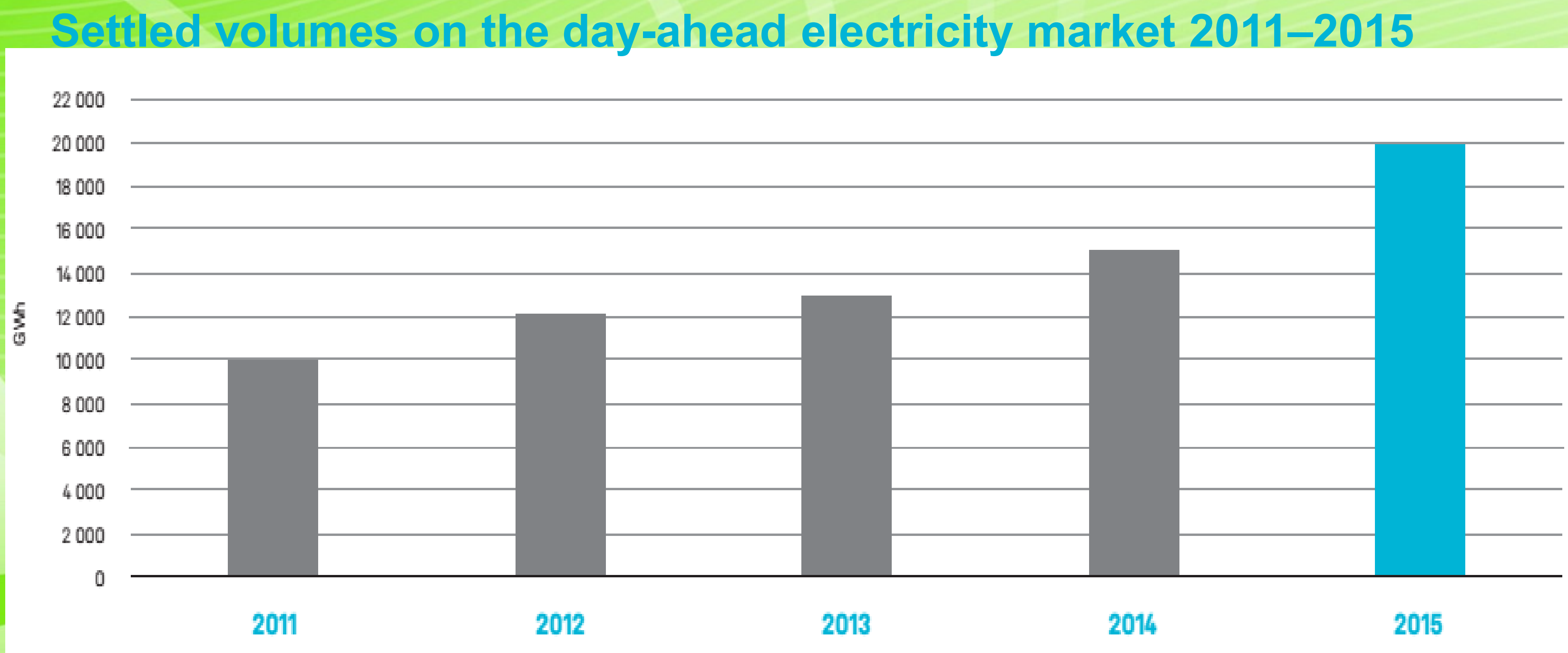
Power Reserve Outlook



Power Consumption Forecast

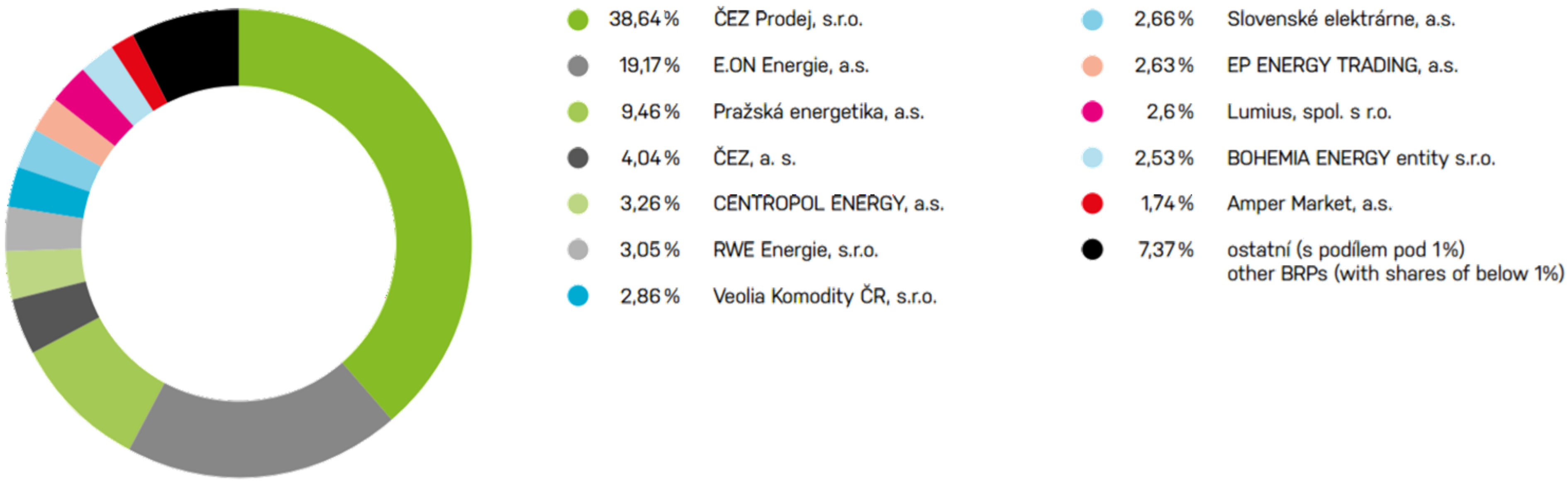


Day-ahead Market Increasing Liquidity



- 111 registered participants on short-term market
- 2016: 20,1 TWh – 1/3 of domestic net power consumption
- intraday market volumes are 2,5% from day-ahead volumes

Shares of specific BRPs



- High competition on electricity market
- 2015 – 280 000 customers changed electricity supplier

Conclusions

- Transmission system strenghten to keep grid reliable
  - New power sources connection (wind parks, nuclear blocks)
  - Reflect cross-border power flows
- Czech Republic will significantly reduce power export
  - All future development scenarios assume increase in domestic consumption
  - Shut-down of several coal fire power plants and delay in nuclear blocks construction
  - In one decade CZ will not be electricity exporter
- Further development in short-term market
  - High competition on power market
  - plans for interconnection 4M MC with MRC

Thank you for attention