Nuclear power program in Poland

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Spotlight Nuclear Poland,
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The total maximum capacity in Polish Power System (PPS) reached 43421 MW (as of 31 December 2017).

Coal-fired power plants – 20247 MW
Lignite-fired power plants – 9352 MW
Gas power plants – 2341 MW
Industrial power plants – 2813 MW
Hydroelectric power plants – 2328 MW
Renewable resources – 6341 MW
Nuclear: 0 MW

Energy consumption:
168 139 GWh/year (2017)
4.37 MWh/per citizen/year; one of the lowest in Europe.
According to all estimations energy consumption in Poland will grow in coming decades.

Transmission grid - 14 195 km:
1 line of 750 kV (114 km),
93 lines of 400 kV (6 326 km),
164 lines of 220 kV (7 755 km),
Under-sea 450 kV DC connection between Poland and Sweden(245 km)
Current and future energy generation structure

Assumptions:

- slight decline of consumption of coal by 2031 and without changes after 2031
- 1,5 GW by NPP in 2031, 6-9 GW by 2050
- Average increase of production by 0.86% y/y (accelerated increase by 2030, slowdown by 2050)
Peak load and current and planed capacity

- **Dispatchable capacity of wind (existing)**
- **Dispatchable power plants**
- **Wind power plants dispatchable capacity**
- **Dispatchable capacity of small power plants and renewables without wind**
- **Reserve gap**
- **Demand gap**
- **Capacity demand**
- **Capacity demand plus reserve**
- **5,8 GW * 0,9**
Main challenges

Aging structure of the existing power plants in Poland (2016)

Lignite resources already mined out (2040)

Increasing costs of coal power generation (CO2, air pollutants)

Source: Polish Energy Market Agency 2017. Projection based on:
Electricity generation – CO₂ emission intensity

Source: European Environment Agency
Polish Nuclear Power Program

PNPP was approved on January 28th 2014 by the Council of Ministers. Its key goals resulting from the Energy Policy of Poland until 2030 are following:

- assuring long-term security of electricity supply
- maintaining electricity prices at levels acceptable by the national economy and the society
- reducing emissions of CO₂ and other air pollutants

2 NPP planned with total installed capacity: 6000 Mwe

Current status:
The government is working on update of the document and new business model for the first NPP.
Average CO₂ emission per 1 MWh

Assumptions:

✓ 1,5 GW since 2031, further 2 units after 2 and 4 years
✓ 7,5-10 GW installed capacity in wind turbines
✓ Included CCGT, new coal power units, gas units, oil units and other renewables.
Thank You