

# LIFE Climate CAKE PL project

## Challenges in transforming the Poland's energy sector

EU ETS and the Electricity Sector:  
Fuel Switching in Germany and Poland

23.06.2020



# LATEST DEVELOPEMENT ON POLISH ENERGY SYSTEM

## ▶ Fossil fuelled power plants

- ▶ About 4 GW of new coal power plants in 2017-2020
- ▶ Suspended construction of 1 GW coal power plant in Ostrołęka
- ▶ Significant increase of natural gas units between 2015 and 2018

## ▶ Renewables

- ▶ 13% of electricity from renewables in 2018
- ▶ 1.95 GW PV installed (fast growth in 2018 and 2019)
- ▶ About 4 GW of new onshore wind by 2023

## ▶ Future plans

- ▶ Around 6.5 GW of offshore wind planned (probably in 2030-2035)
- ▶ Nuclear power plant 1-1.5 GW by 2033

# LOW EMISSION SCENARIOS FOR EU ENERGY SECTOR

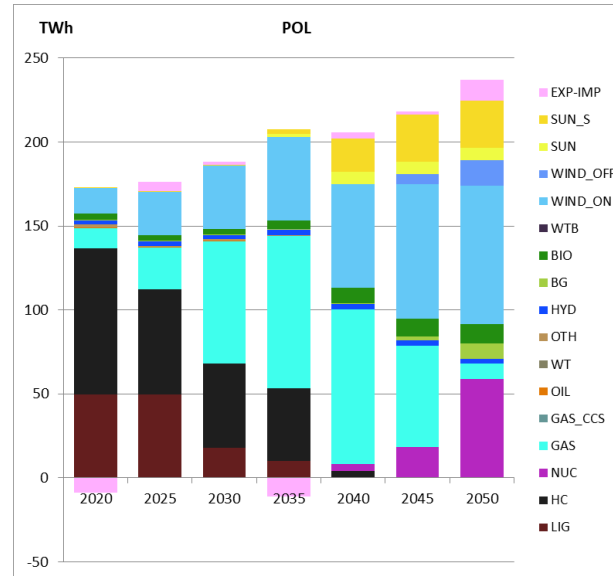
## ▶ Energy model and key assumptions

- ▶ MEESA (Model for European Energy System Analyses) has been developed as a part of modelling toolkit within LIFE Climate CAKE PL project
- ▶ Fuel prices - [WEO 2017 - Current Policies Scenario](#)
- ▶ Technologies cost and parameters - [Technology pathways in decarbonisation scenarios 2018 \(Asset project\)](#)
- ▶ Demand scenarios for electricity and district heating based on PRIMES 2016 Reference Scenario
- ▶ Two scenarios:
  - ▶ DEEP - emission reduction by 95%
  - ▶ DEEP NN - emission reduction by 95%, but without new nuclear power plants in EU

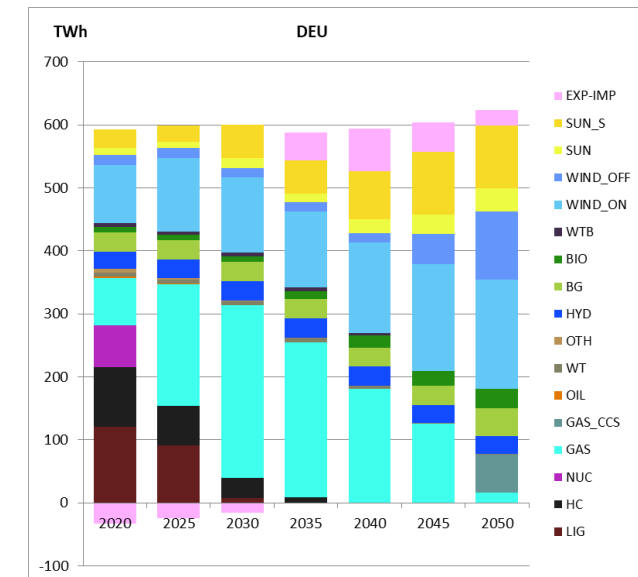
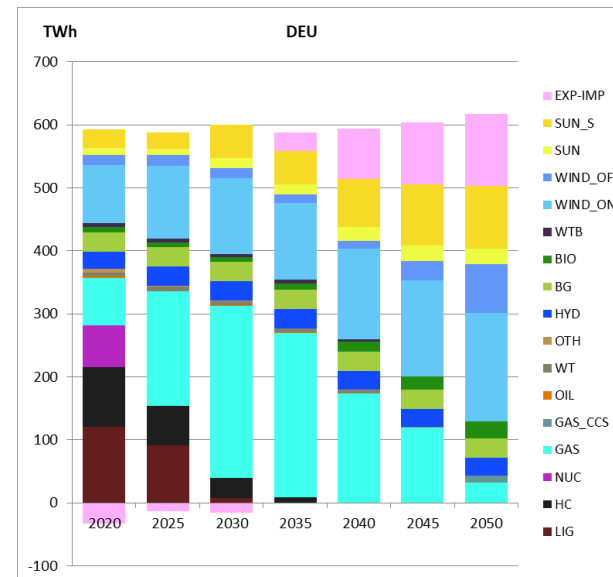
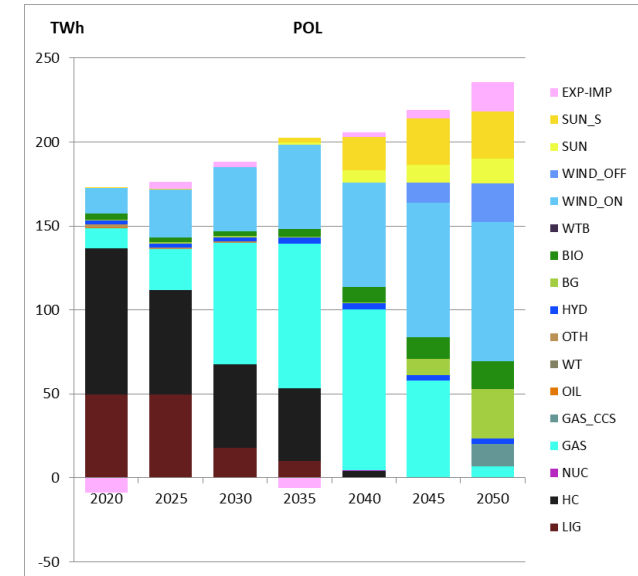
# LOW EMISSION ENERGY SECTOR IN EU

- ▶ Electricity generation in 95% emission reduction scenario – **Germany vs Poland**
- ▶ **Poland** – price driven coal phase-out, cost competitive nuclear energy – no final political decision, gas power plants at early stage of development in electricity mix,
- ▶ **Germany** – policy driven coal phase-out, policy driven nuclear phase-out, highly developed gas power plants in electricity mix,

DEEP

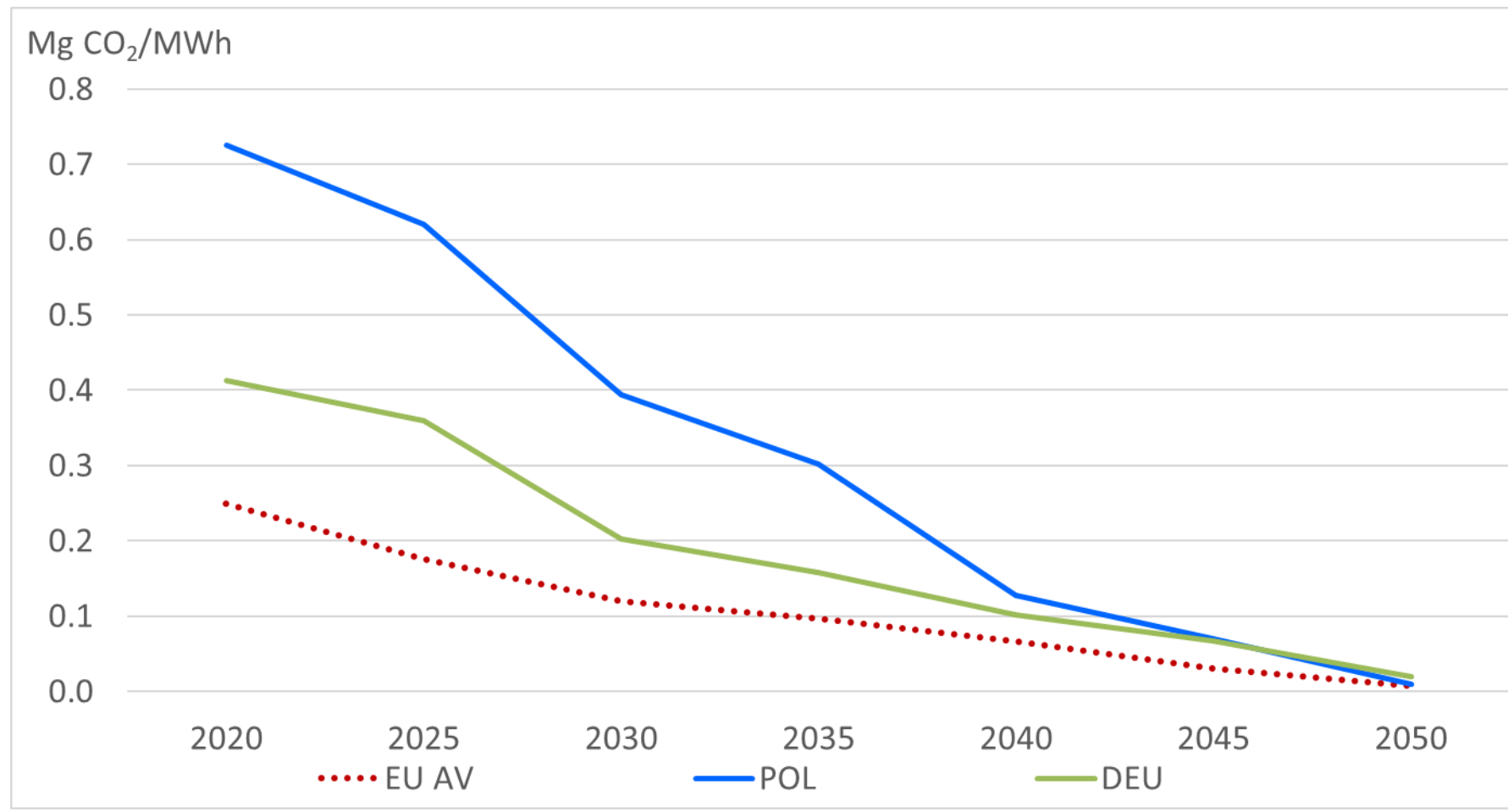


DEEP NN (no new nuclear)



# LOW EMISSION ENERGY SECTOR IN EU

- ▶ CO<sub>2</sub> average emission factor in Energy sector **EU, Poland and Germany**



## CONCLUSIONS - Electricity generation

- ▶ Emission reduction by 2030 are mainly driven by domestic policies concerning coal phase-out (Germany) or growing costs (Poland), and by renewable sources development.
- ▶ Natural gas (without CCS) in the long term is only a temporary solution, however remains important as a backup technology.
- ▶ Nuclear power is very important in deep reduction scenario providing stable energy supply at moderate cost.
- ▶ Energy transmission capacity will be an important factor in achieving reduction goals because of uneven distribution of nuclear power and different RES potentials in particular countries.
- ▶ Without new nuclear investments in Europe accomplishment of reduction target is still possible but at significantly higher cost of energy supply (the gap is filled by gas power plants with CCS and renewable sources).

Full report:

[http://climatecake.pl/wp-content/uploads/2019/11/CAKE\\_energy-model\\_EU\\_low\\_emission\\_scenarios\\_paper\\_final.pdf](http://climatecake.pl/wp-content/uploads/2019/11/CAKE_energy-model_EU_low_emission_scenarios_paper_final.pdf)



# Thank you!

Igor Tatarewicz

LIFE Climate CAKE PL Team

The National Centre for Emissions Management (KOBiZE)/  
Institute of Environmental Protection – National Research Institute (IOS-PIB)

e-mail: [cake@kobize.pl](mailto:cake@kobize.pl)

[www.climatecake.pl](http://www.climatecake.pl)

