



Institute for Renewable Energy

Franco-German Energy Forum:
*Europe post-COVID-19—political and economic agendas
for the energy transition and climate change mitigation*
Tuesday, November 3th 2020

Wind and PV projects in Poland

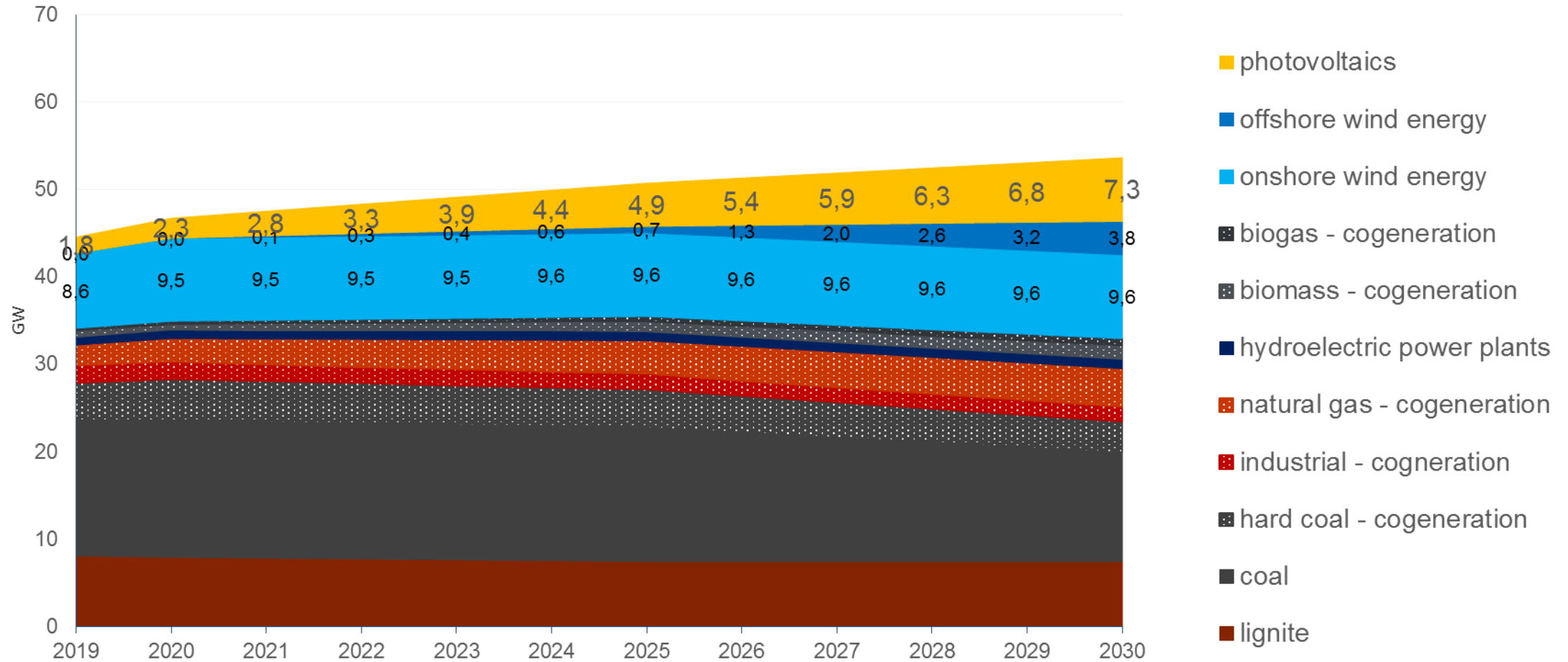
Potentials for transnational cooperation and the emergence of new markets in the Weimar Triangle

Grzegorz Wiśniewski, President of Institute for Renewable Energy

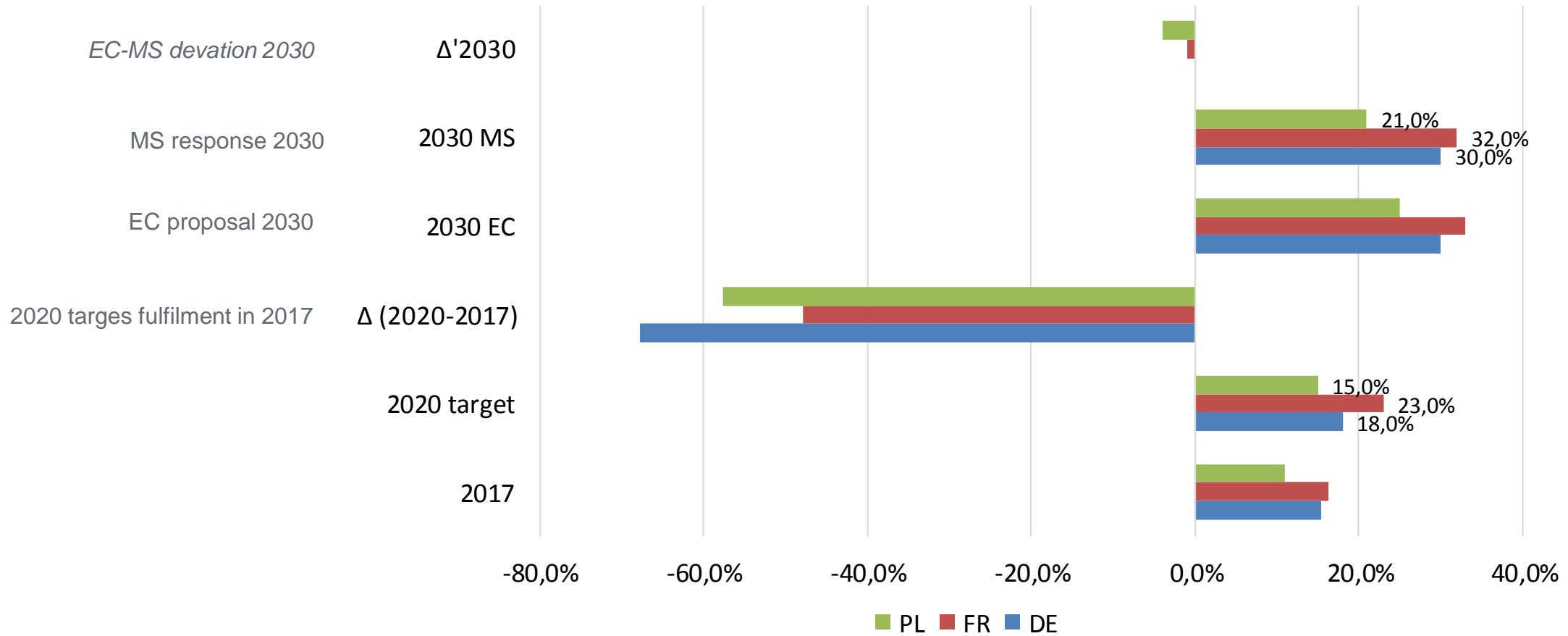


1. The development of RES in Poland
2. PV market in Poland
3. Wind market in Poland
4. Cooperation opportunities for Weimar Triangle countries

PV and wind in national 2030 energy and climate plan



Deviation of RES national targets for 2020 and EC expectations for 2030

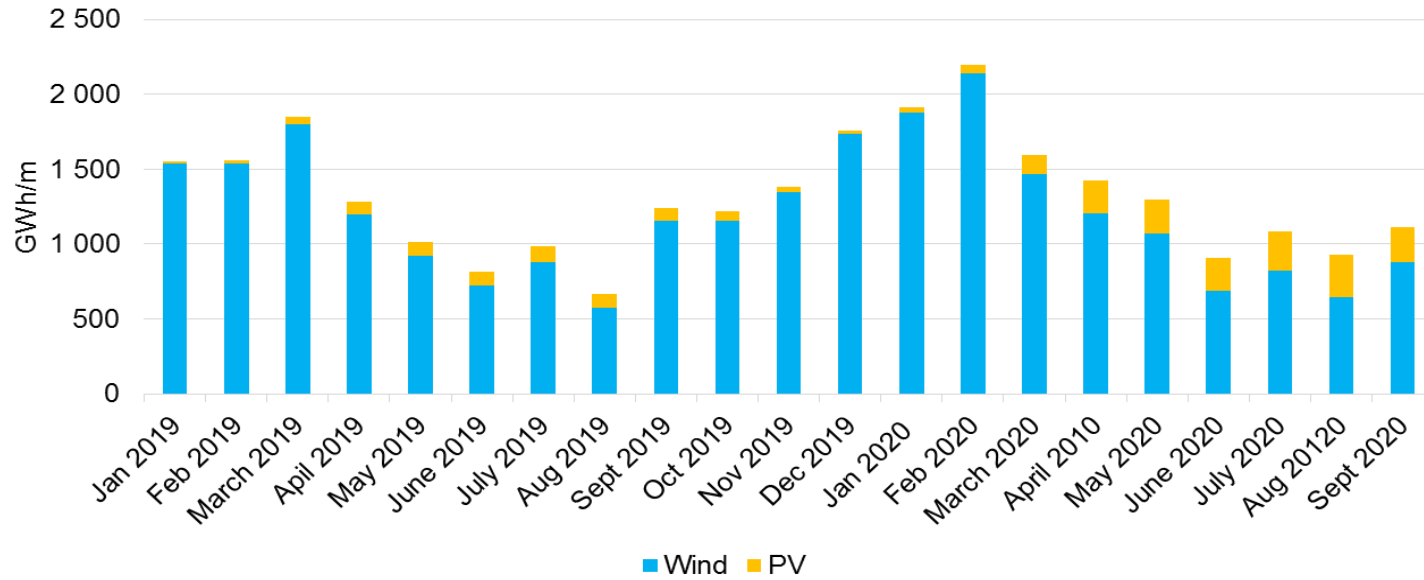


- EU funding?? Depends on climate and RES targets, and its fulfilling. Can we do that?
- Coal phase out (by 2049) just officially approved by trade unions and government, but no clear steps forward defined yet
- RES:
 - slow development of bioenergy and limited potential of hydro and geothermal for 2030
 - huge wind potential, both on shore (Poland is a large country and potential=space) and offshore (very good wind conditions and large areas of the sea available for wind development)
 - fast development of PV, both PV prosumers and PV farms (agricultural land 60% of the country area)
 - Very strong support of Poles for PV (all electorates) and generally positive attitude to wind
- **Fast project development and bankability is a clue for fulfilling of 2030 RES targets, grid integration of RES and fast transformation of energy sector is a challenge**

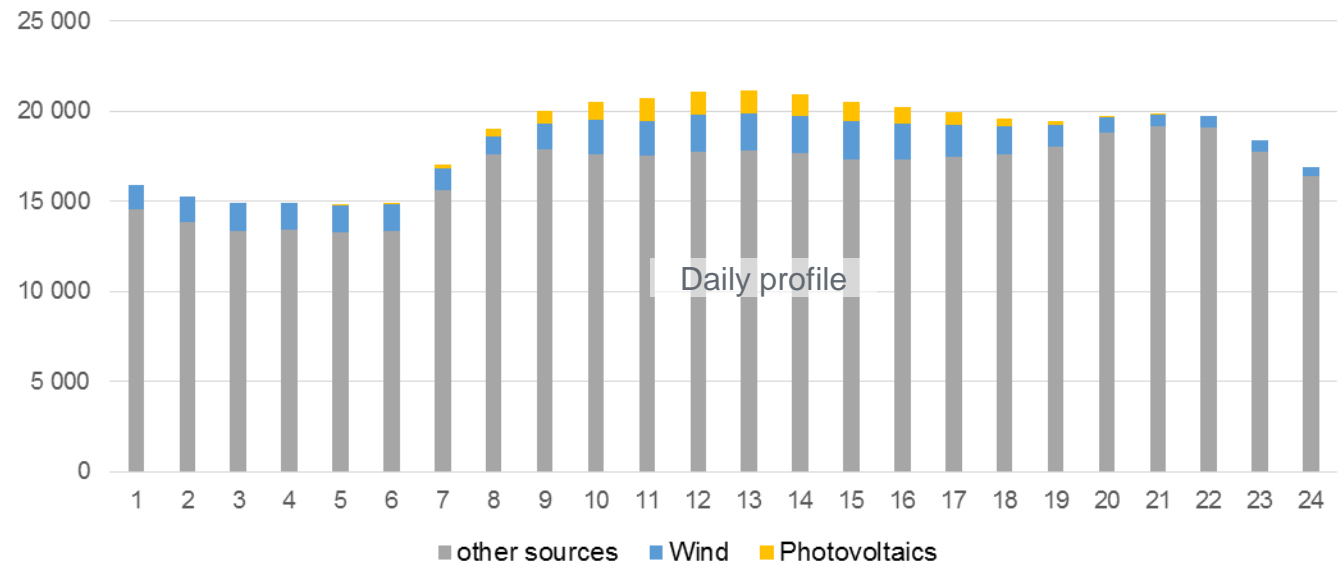


by Jerzy Górecki

Electricity production from wind and PV, monthly



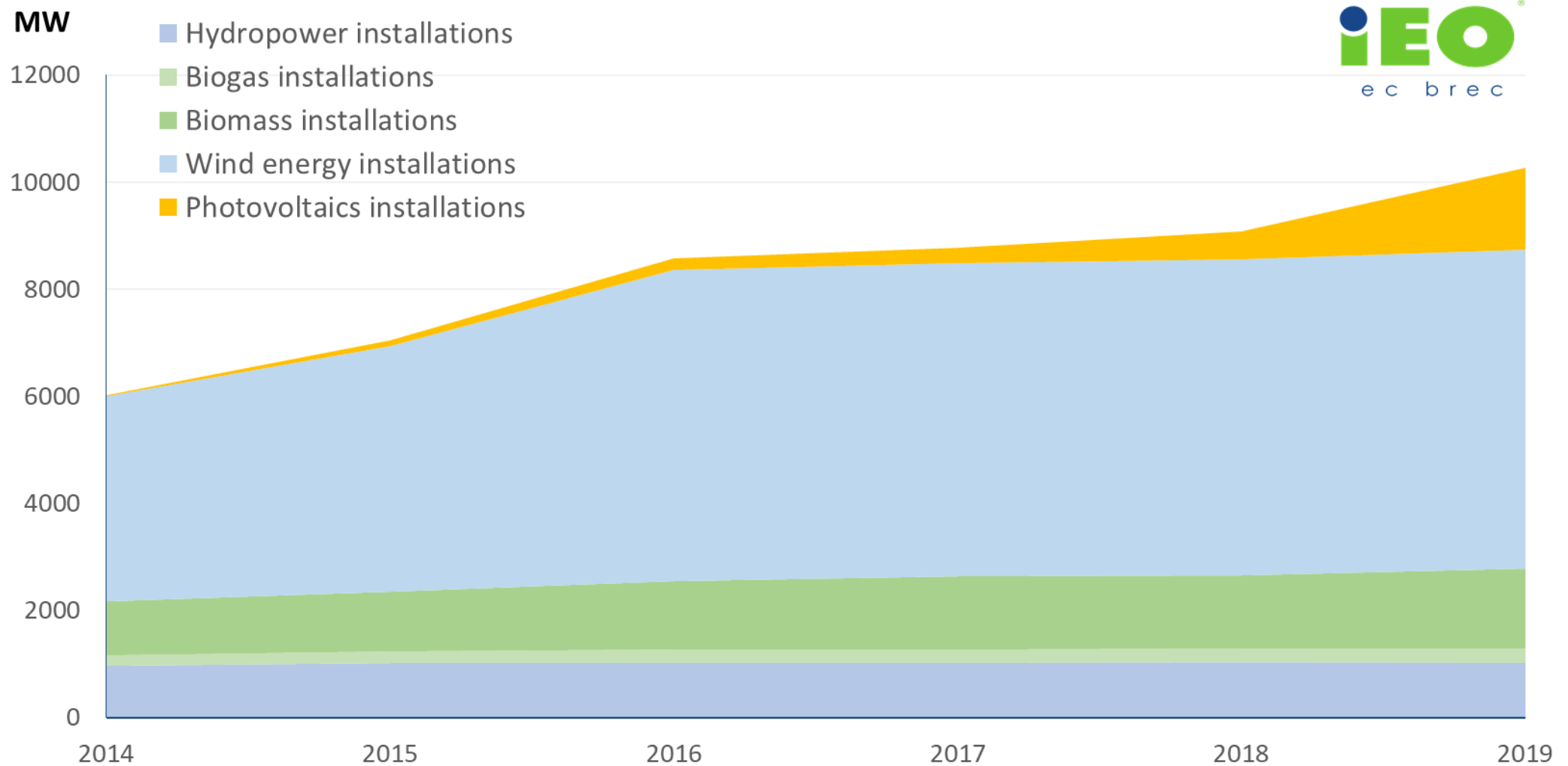
Power demand cover in Poland - working day [MW]

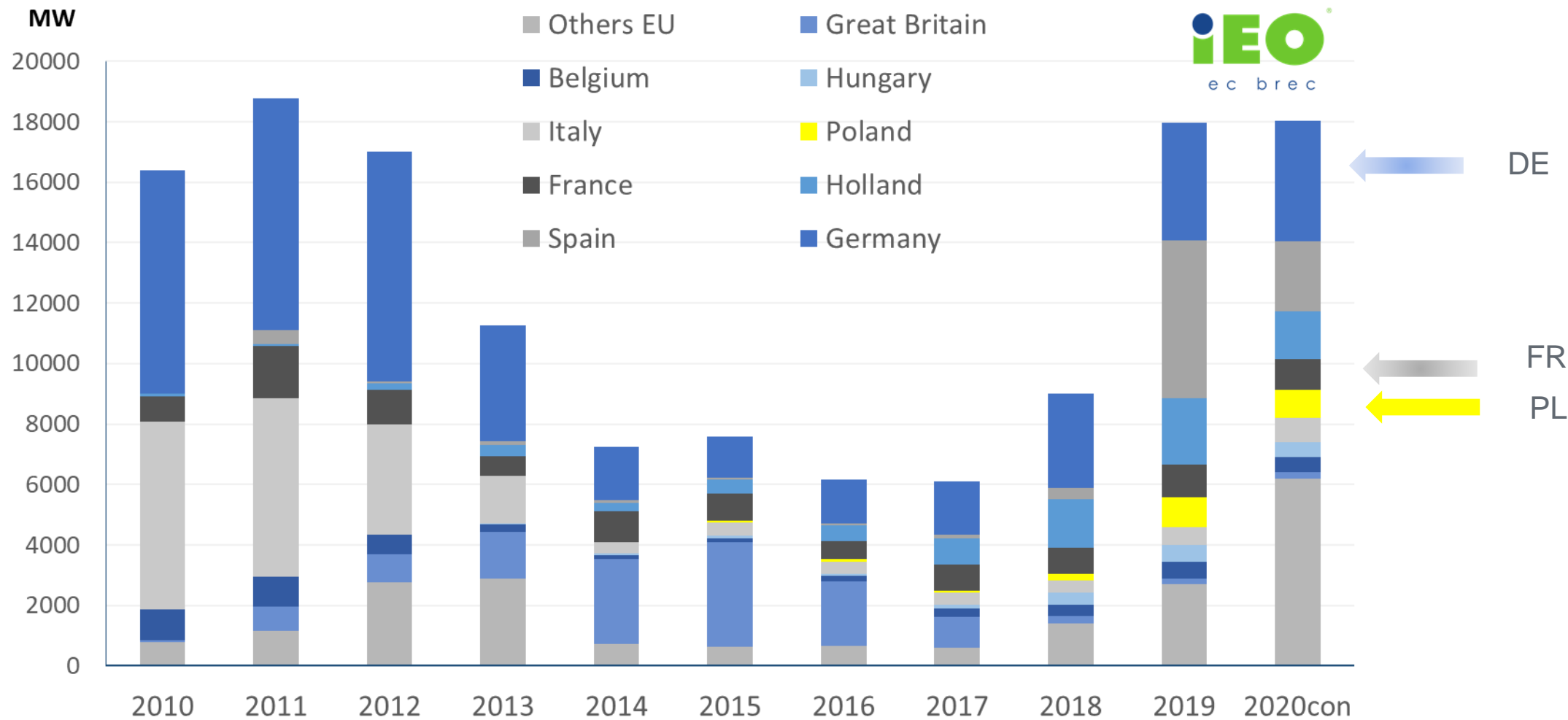


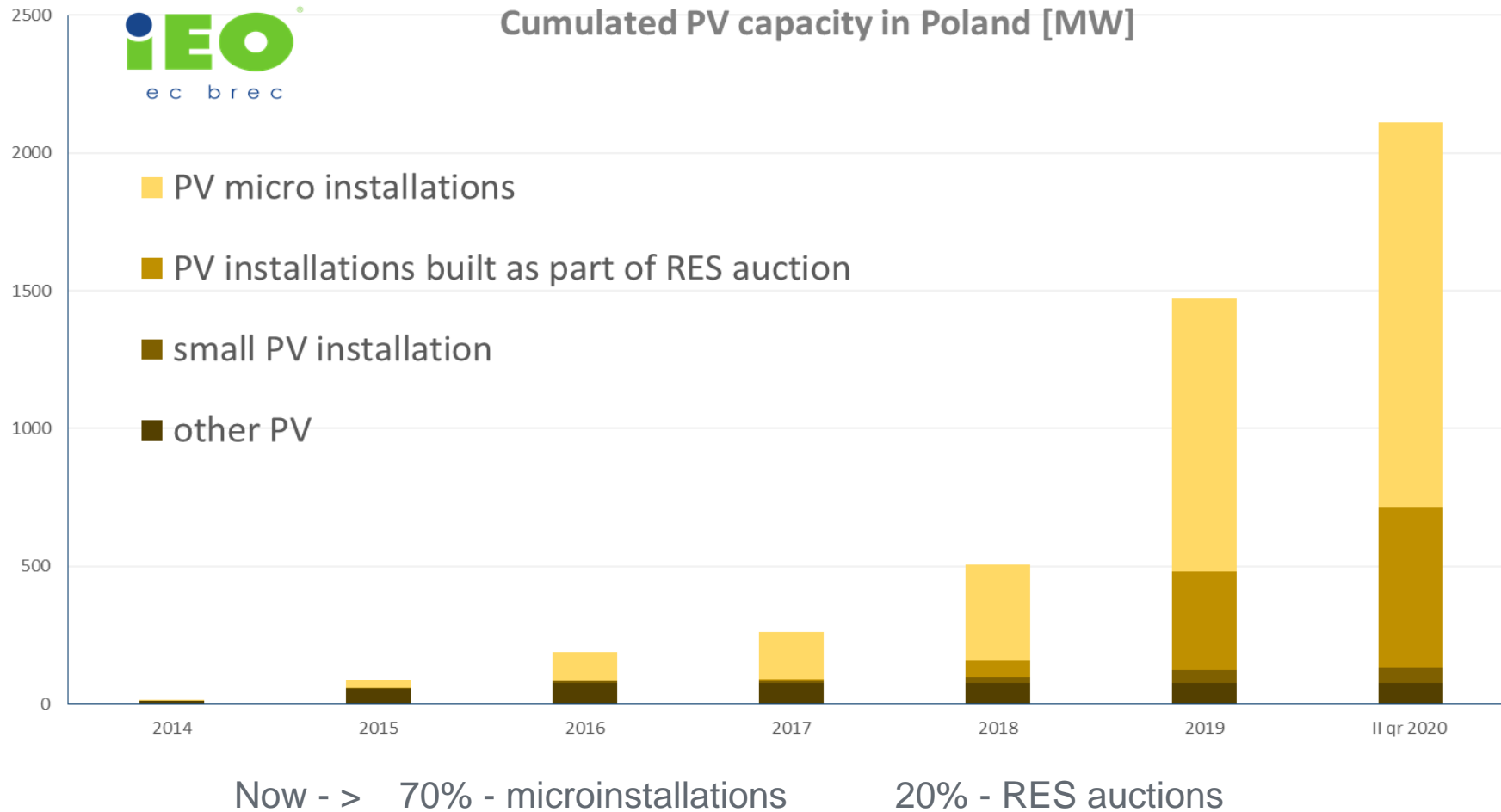
Weather depended RES (VRE) delivered **11%** of the electricity generation for last 12 months

VRE delivered **82 %** of the electricity from RES for last 12 months

Cummulated installed capacity in Renewable Energy Sources in Poland - years







The database *Photovoltaic Projects in Poland* contains 4081 PV projects including:



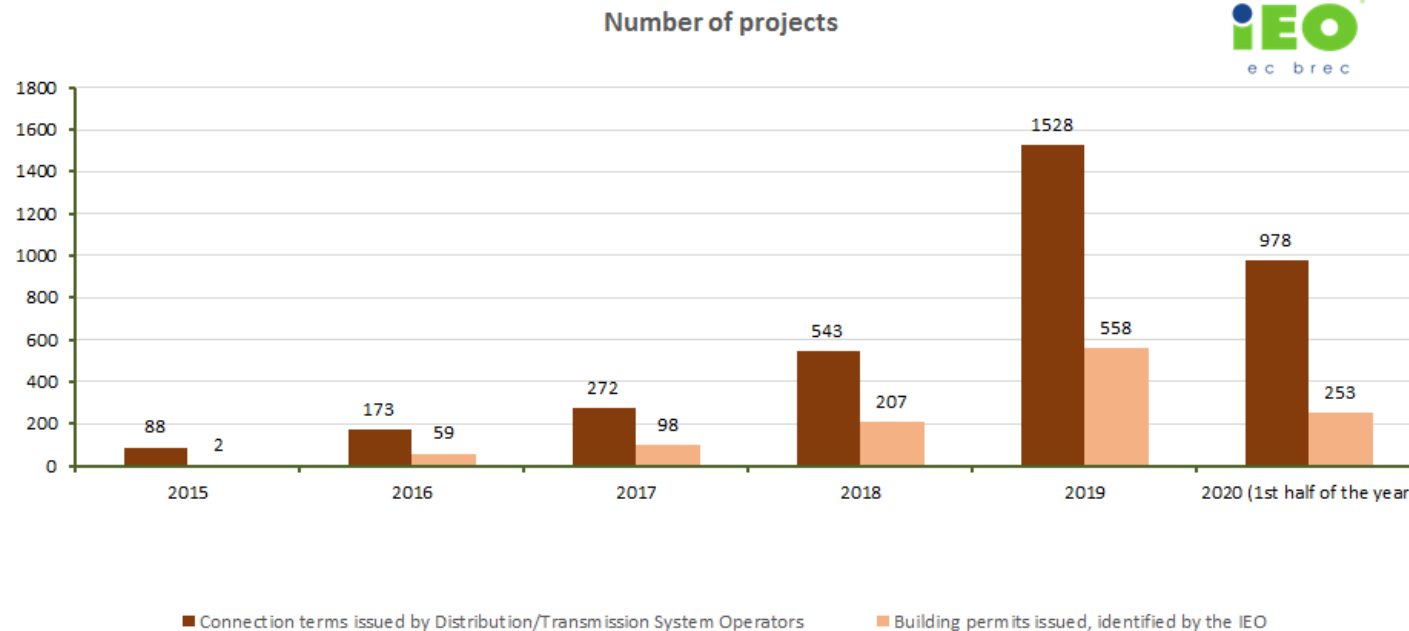
1186 projects with a building permit issued with a **total capacity of 1306 MW**



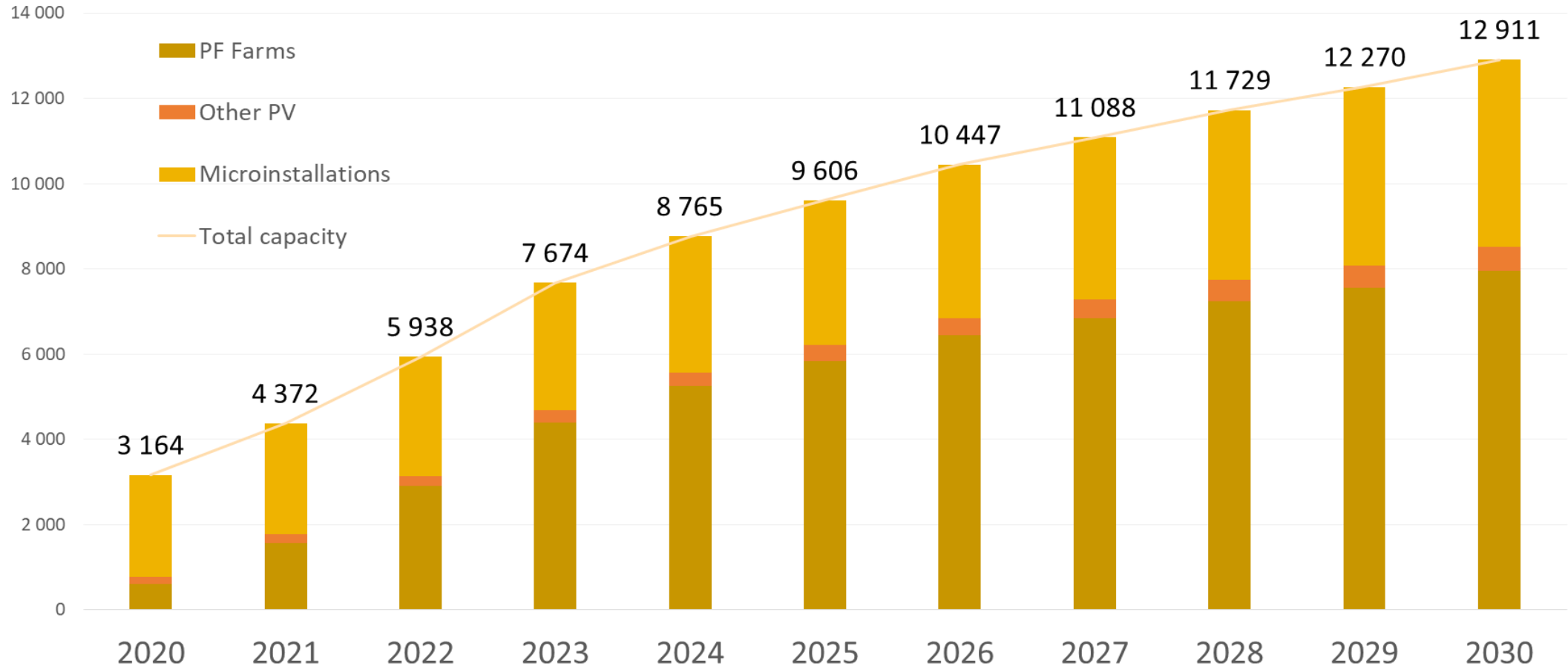
3744 projects with issued connection terms with a **total capacity of 4637 MW**



2126 projects with a concluded connection contract with a **total capacity of 2293 MW**



Forecast of installed power in PV– conservative scenario [MW]



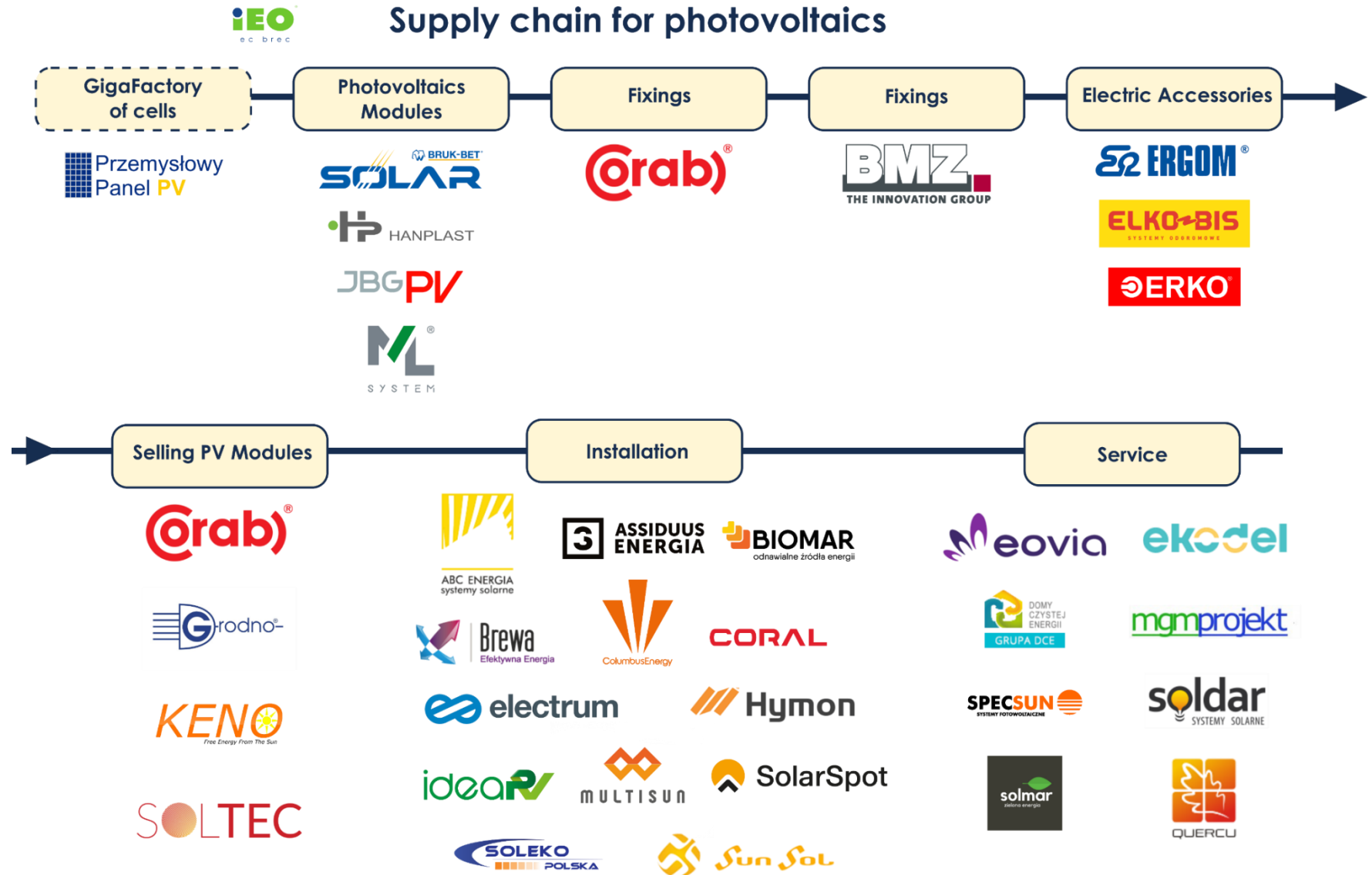
By 2023 PV capacity will reach levels assumed in NECP for 2030

In Poland there are more than 3000 PV companies (*some examples only => on the right*)

6 manufacturers of **PV modules** (app. 10% of EU manufacturing capacity)

GigaFactory of **PV cells** is under development initiative of *Przemysłowy Panel PV* (Manufacturing PV Platform)

In Sept 2020, Polish PV industry signed Lol on „**PV sectorial deal**” with the Ministry of Climate



The database *Wind Projects in Poland* contains 534 wind projects including:



112 projects with a building permit issued with a **total capacity of 1,4 GW**



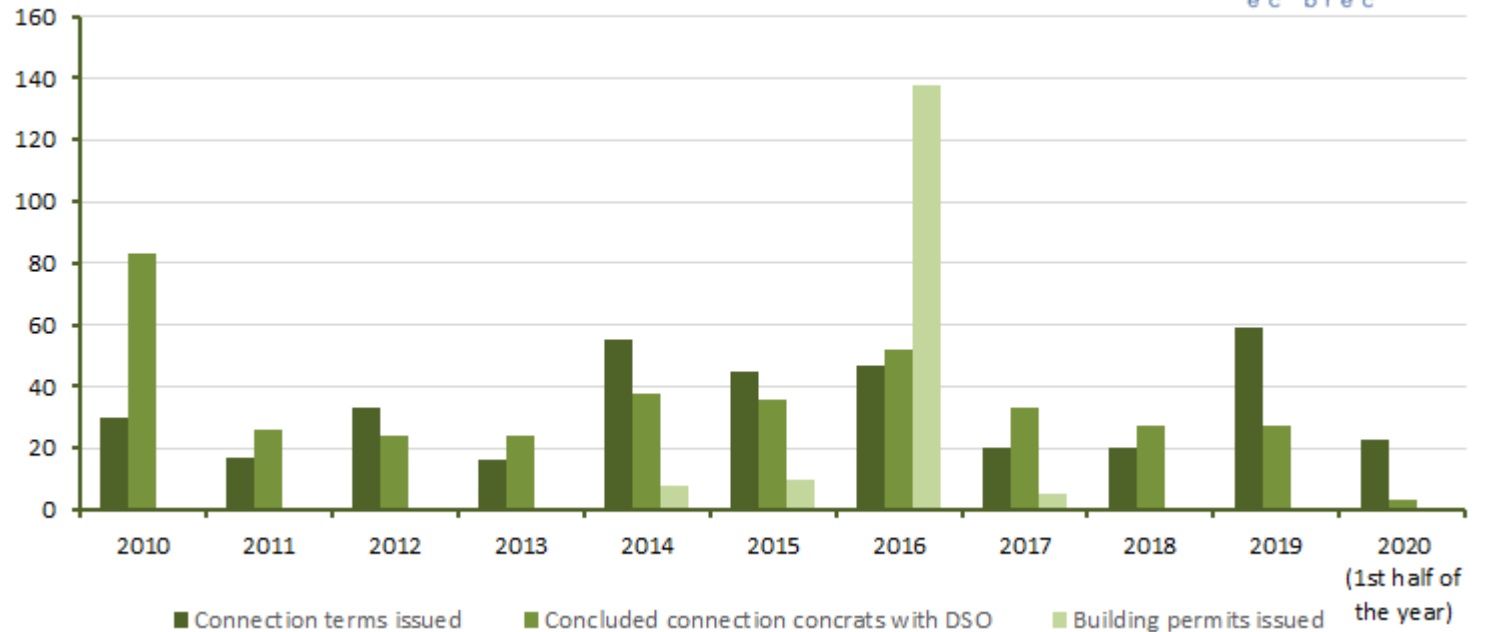
534 projects with issued connection terms with a **total capacity of 7,68 GW**



452 projects with a concluded connection contract with a **total capacity of 6,8 GW**

- ❑ Installed capacity in the wind energy sector **by 2020** is **6,04 GW**.
- ❑ In two RES auctions for wind, **3364 MW** of wind projects received support.

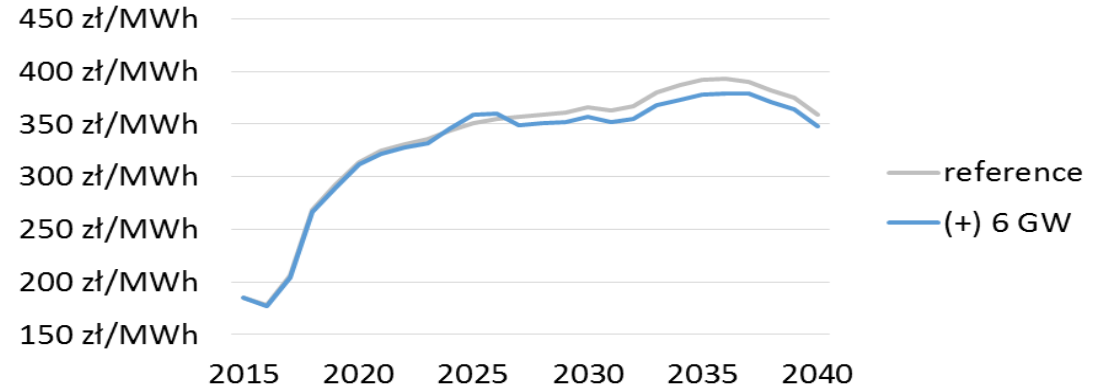
Number of projects



Wind energy potential in PL and scenarios for 2030

Technical potential	Technical potential including environmental limitations	Economic potential	Market potential for 3030 (MIN) reference	Market potential for 3030 (MAX)
GW	GW	GW	GW	GW
448	259	51	11	22

Cost of electricity generation in PL vs. wind investment up to 2030



Minimum distances from households areas for typical wind turbines in FR, DE and PL and EU
 Source: JRC elab. by IEO

Countries and regions		Minimum distance of turbines from buildings [m]
France	All territory/regions	500
Germany	All territory out of: Baden-Württemberg, Bayern, Brandenburg, Mecklenburg-Vorpommern, Rheinland-Pfalz, Sachsen, Thüringen	550 (500-800)
Poland	All territory/regions	1250
EU average	All territory/regions	750

- Wind energy is cheapest RES-E technology in Poland and key player on the market – leader of new investments in generation capacity (6 GW in 2020, 10 GW in 2022)
- It's potential is restricted by requested minimum distance of turbines from buildings; legislation is to be revised by the end of the year; more „wind friendly” **governmental proposal is pending**
- Still, the recovery of the market after unlocking „dystanse” regulations will take up to 5 years (IEO diagnose)

- **PV manufacturing industry (GigaFactories of PV cells and modules).**

Cooperation already started (Manufacturing PV Panel, Fraunhofer, IPVF), project supported by Ministry of Climate, as a part of sectorial deal with PV industry

- **RES development in (post) coal regions in transition**

Energy transition based on RES is a key proposal in the strategies of all Polish coal regions, e.g. green manufacturing and cleantech in Silesia and wind and PV farms and prosumers in lignite regions (sites Bełchatów, Turów etc.). Form of cooperation: sharing of experiences

- **RES integration and sectors coupling**

Surplus of unbalanced and cheapest (even negative prices) electricity from wind and solar might be directly used or stored in the form of heat in District Heating Systems (DHS). In Poland there is 55 GW installed in municipal DHS (mostly coal boilers). Green-Power-to-Heat could contribute to green transition of DHS and in reduction of local atmospheric pollutants (smog). Cooperation with FR and DE already started within Horizon 2020 joint projects (concerted action: Solar District Heating)

- **Hydrogen and off shore wind**

In Poland there are already LoI signed by Minister of Climate with hydrogen and off-shore wind industry. To strengthen the role of „green hydrogen” RTD cooperation with FR, DE is very welcome

- **Cleantech export strategy and promotion of EU local content**

- **Promotion of innovation and joint infrastructure projects (e.g. *Projects of Common Interest*) between Poland, France and Germany for smooth and effective fulfillment of EU 2030 targets**

Contact and additional information:

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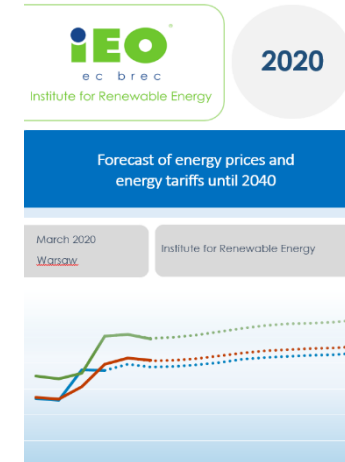
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PV projects in Poland



Forecasts of Energy prices



PV MARKET REPORT
8th edition



Winners of PV auction



Wind projects in Poland