

DECARBONIZATION IN POLAND - its Tools, Paths and Faces - (Upper Silesia Region)

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I PART - INTRODUCTION



To remind you what the essence of decarbonization is:

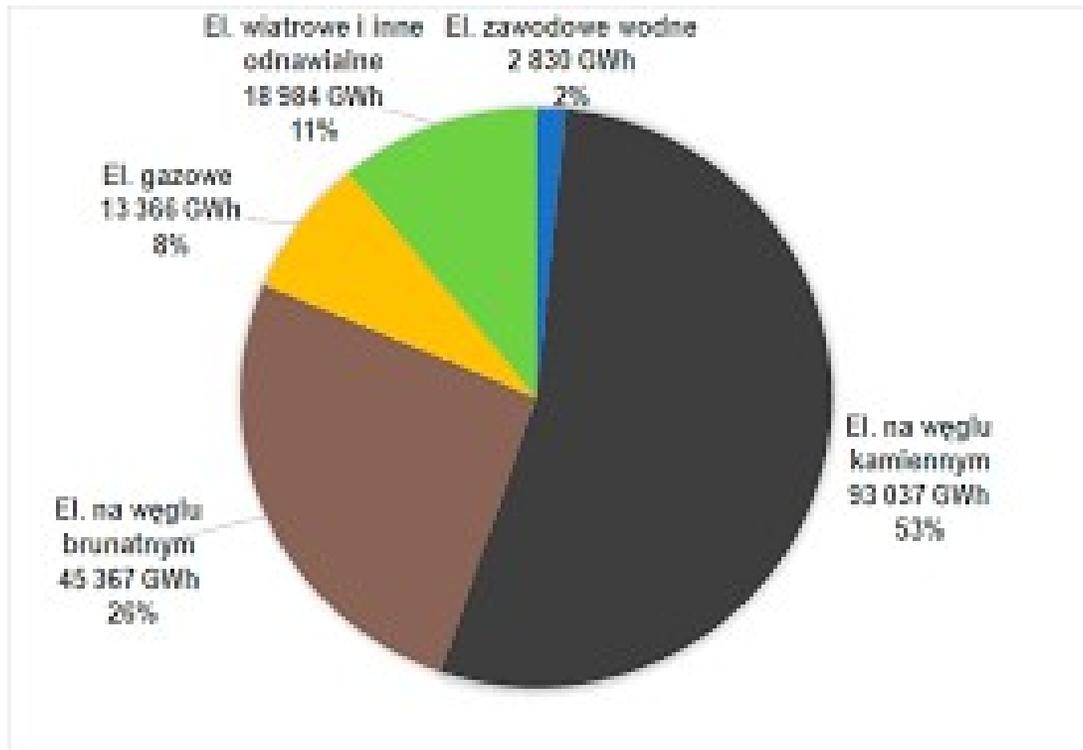
⇒ As shown by widely accepted and well-documented research results science, humanity, in order to avoid the most dramatic effects of anthropogenic climate warming, must radically reduce, within a 10-year perspective, by half, and ultimately by 2050, to zero greenhouse gas emissions.

Decarbonization in Poland - General Assumptions

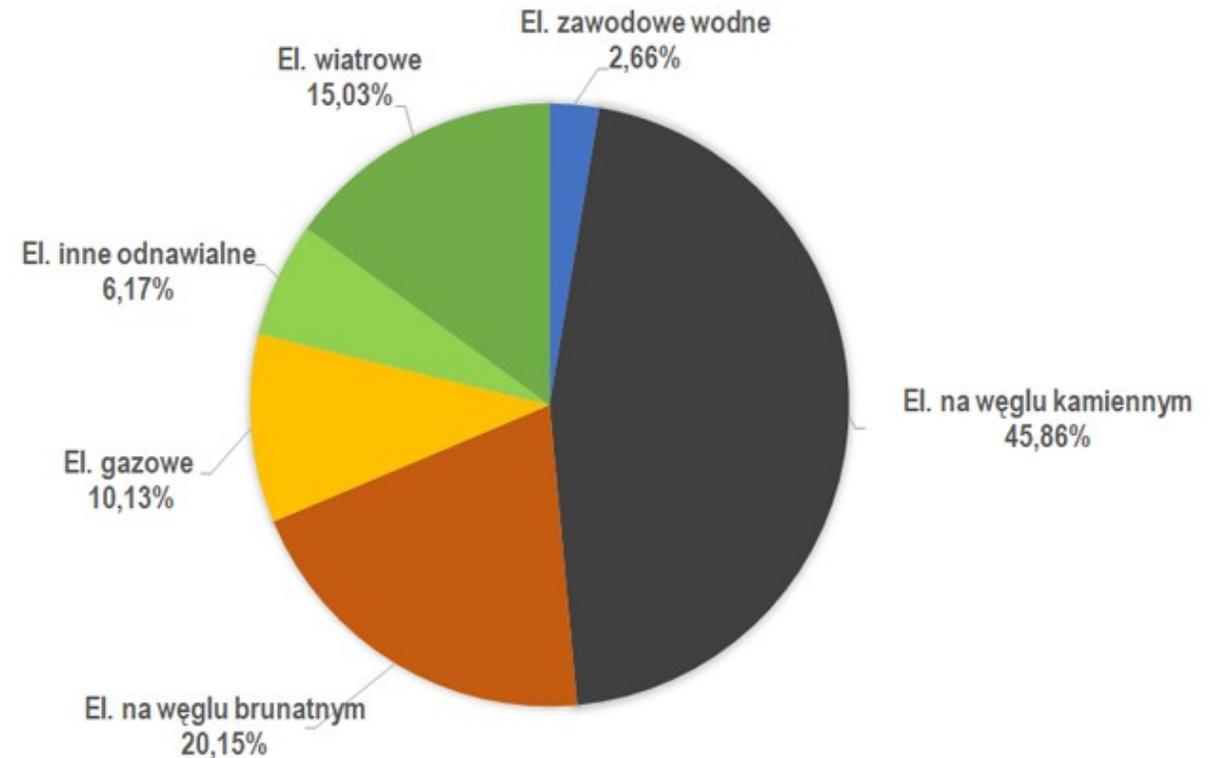
- The decarbonisation of the economy must concern all branches of the economy.
- In Poland, the most urgent task is the rapid decarbonization of the energy sector, because due to the dominant role of coal, and it has the largest share in greenhouse gas emissions.
- However, the transformation of the energy industry must take into account the energy security of the country and its citizens.
- The decarbonisation of the energy sector is associated with the development of wind energy and photovoltaics (Green Energy).
- It is also necessary to intensify actions increasing energy saving.

Decarbonization Dynamic Transformation in Poland

2019



2023



Struktura produkcji energii elektrycznej MARZEC 2023, 14/04/2023,
<https://www.rynekelektryczny.pl/produkcja-energii-elektrycznej-w-polsce/>

Level of permissions to emissions vs. real CO₂ carbon dioxide emission - Poland vs. EU

SYSTEM ETS - PRZYDZIAŁ UPRAWNIEŃ A RZECZYWISTA EMISJA CO₂ W MLN TON DLA WYBRANYCH PAŃSTW UE (LATA 2013-2020)

Dane: Komisja Europejska | lipiec 2021

UNIA EUROPEJSKA ŁĄCZNIE

PRZYDZIAŁ 12 848 mln ton	EMISJE 13 598 mln ton
BILANS -750 mln ton	

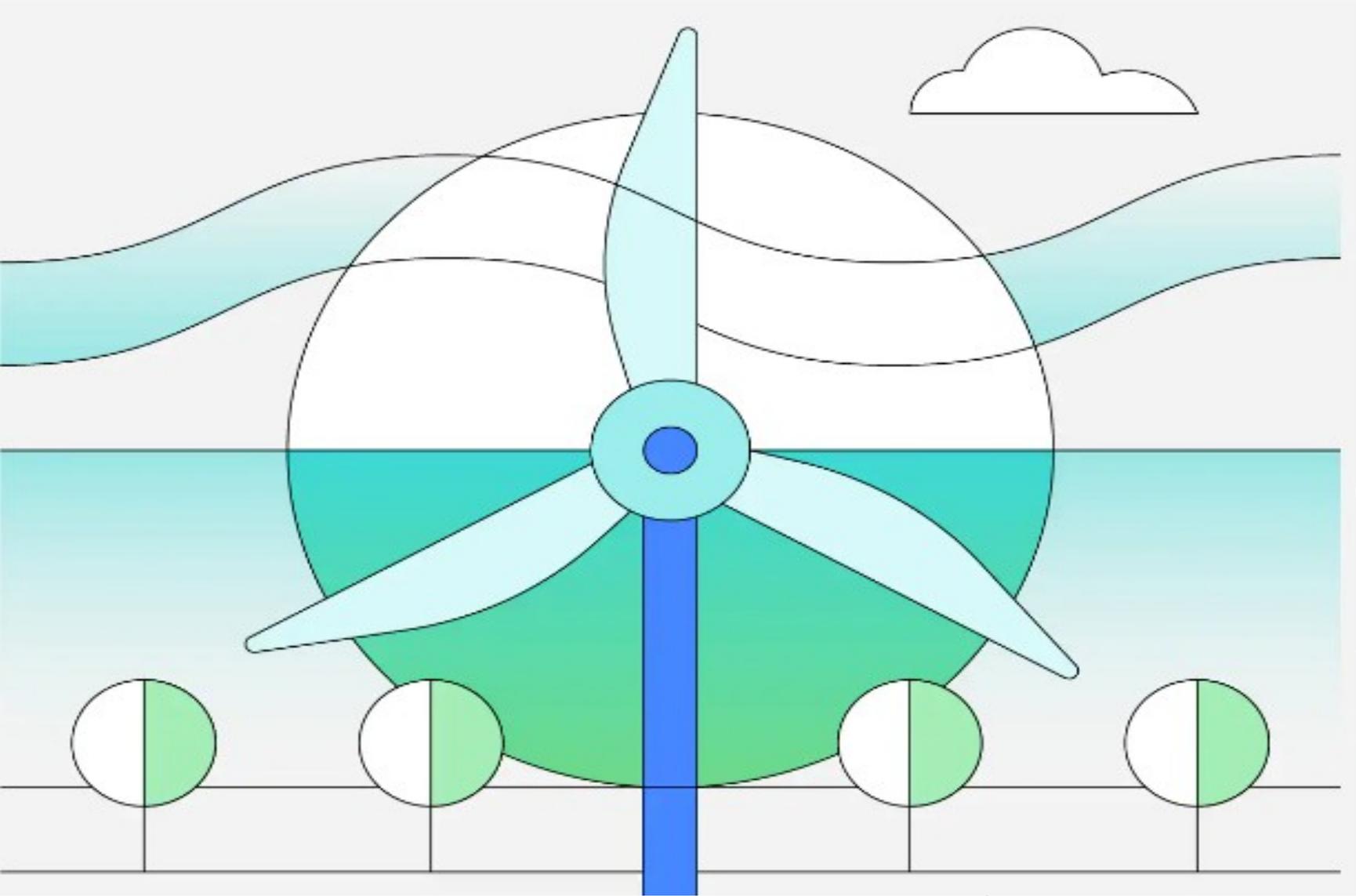


	RUMUNIA	FRANCJA	WŁOCHY	CZECHY	POLSKA	NIEMCY
PRZYDZIAŁ	485 mln ton	924 mln ton	1166 mln ton	471 mln ton	1189 mln ton	2464 mln ton
EMISJA	316 mln ton	797 mln ton	1197 mln ton	520 mln ton	1557 mln ton	3395 mln ton
BILANS	+169 mln ton	+127 mln ton	-31 mln ton	-49 mln ton	-368 mln ton	-931 mln ton

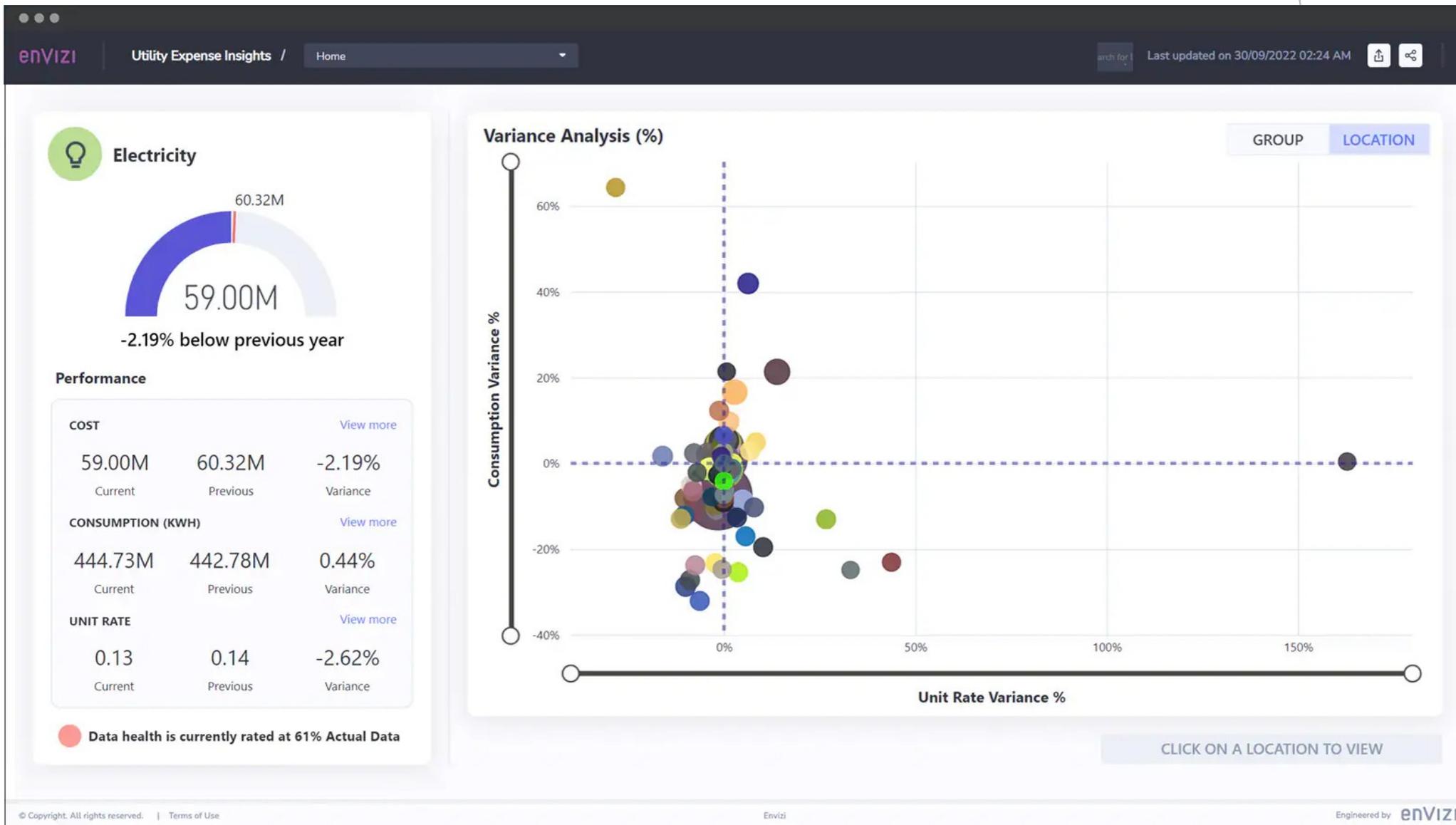
II PART – DECARBONIZATION INNOVATIVE TECHNOLOGICAL SOLUTION



Decarbonization software



Decarbonization software



https://www.ibm.com/products/envizi/decarbonization?utm_content=SRCWW&p1=Search&p4=43700075456621942&p5=p&gclid=EAlaIQobChMI4pTa_tq0_gIVwgqiAx0zrApDEAAYASAAEgKrBvD_BwE&gclidsrc=aw.ds

The decarbonization IBM software platform

This Platform is for acceleration and improvement of the energy management and sustainability initiatives

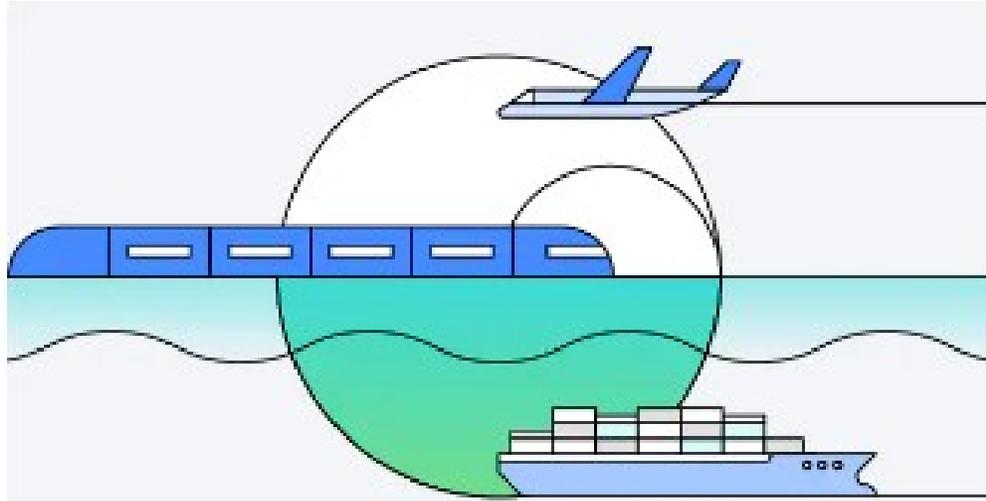
The decarbonization software platform from Envizi is designed to support organizations on their sustainability and decarbonization journey.

This suite of tools facilitates:

- monitoring and analysis,
- management and reporting of energy and emissions across large and complex organizations.

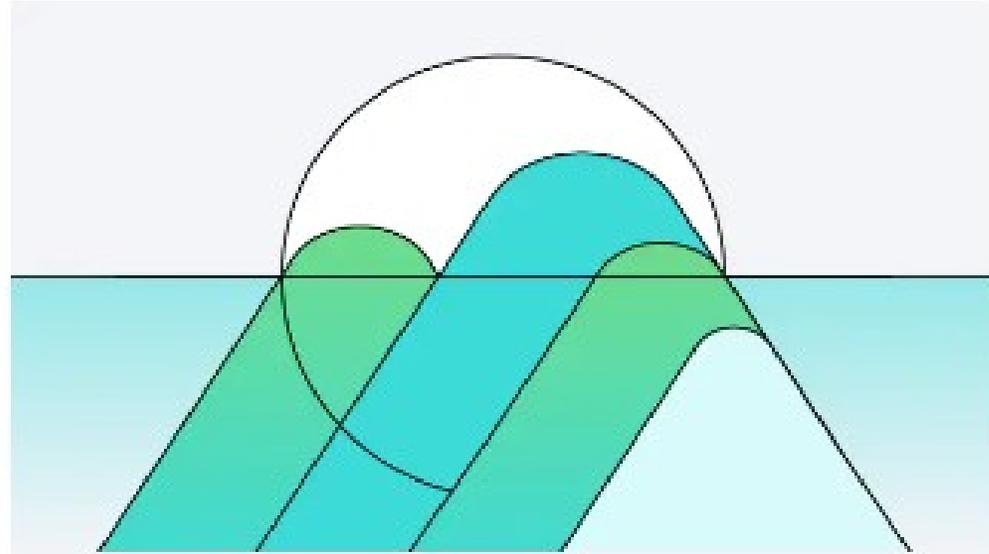
Automated data capture from:

- utility bills,
- interval meters,
- renewable assets,
- combined with other data sources, including weather and facility information, gives users the granular insights to make better decisions about resource allocation, usage



Emissions Management

Accurately track and report Scope 1, 2 and 3 GHG emissions, set decarbonization targets and track progress towards emissions-reduction goals.



ESG Reporting

Build a strong foundation of auditable data and streamline ESG reporting to meet your compliance and reporting requirements.

The decarbonization software platform

Key features of this Platform across the decarbonization suite of tools include:

- Visualization and reporting tools,
- Integrated regression tools,
- Alerting and issue management tools,
- Automated data capture and validation.

Electrification for building decarbonization

Learn what 'electrification' or 'fuel switching' is and how this solution can help with building decarbonization.

HOW DOES THIS PLATFORM WORK?:

Decarbonization, [https://www.ibm.com/products/envizi/decarbonization?](https://www.ibm.com/products/envizi/decarbonization?utm_content=SRCWW&p1=Search&p4=43700075456621942&p5=p&gclid=EAlalQobChMI4pTa_tq0_gIVwgqiAx0zrApDEAAYASAAEgKrBvD_BwE&gclsrc=aw.ds)

[utm_content=SRCWW&p1=Search&p4=43700075456621942&p5=p&gclid=EAlalQobChMI4pTa_tq0_gIVwgqiAx0zrApDEAAYASAAEgKrBvD_BwE&gclsrc=aw.ds](https://www.ibm.com/products/envizi/decarbonization?utm_content=SRCWW&p1=Search&p4=43700075456621942&p5=p&gclid=EAlalQobChMI4pTa_tq0_gIVwgqiAx0zrApDEAAYASAAEgKrBvD_BwE&gclsrc=aw.ds)

Utility Bill Analytics from IBM Envizi

Emissions Management

ESG Reporting

Decarbonization



Scope 1, 2 GHG Accounting + Reporting



ESG Reporting Frameworks



Utility Bill Analytics



Scope 3 GHG Accounting + Reporting



Building Ratings + Benchmarks



Interval Meter Analytics



Target Setting + Tracking



Value Chain Surveys + Assessments



Sustainability Program Tracking

Envizi's Utility Bill Analytics module

Utility Bill Analytics from IBM Envizi



Decarbonization, https://www.ibm.com/products/envizi/decarbonization?utm_content=SRCWW&p1=Search&p4=43700075456621942&p5=p&gclid=EAlaIQobChMI4pTa_tq0_gIVwgqiAx0zrApDEAAYA_AAEgKrBvD_BwE&gclsrc=aw.ds

BENEFITS of PLATFORM

Automate data capture



Eliminate the administrative effort of monitoring multiple platforms with automated utility data capture.

Minimize energy costs



Reduce energy costs with energy consumption alerts that might otherwise go unnoticed for long periods.

Deliver on KPIs



Measure and track energy usage performance over time against pre-determined benchmarks or KPIs.

Monitor usage patterns



Increase visibility of energy and water usage patterns, from monthly aggregates at the portfolio level, right down to interval data for sub-meters within individual facilities.

Track ESG initiatives



Track ESG and sustainability initiatives, compare projects across your portfolio and record waste and water programs, social initiatives and more.

Inform decisions



Make smarter decisions about energy efficiency programs by prioritizing activities and investments based on analysis of benchmarking and savings potential.

PART III - Paths of Decarbonization

Poland - PGE ENERGY CONCERN - Green Change

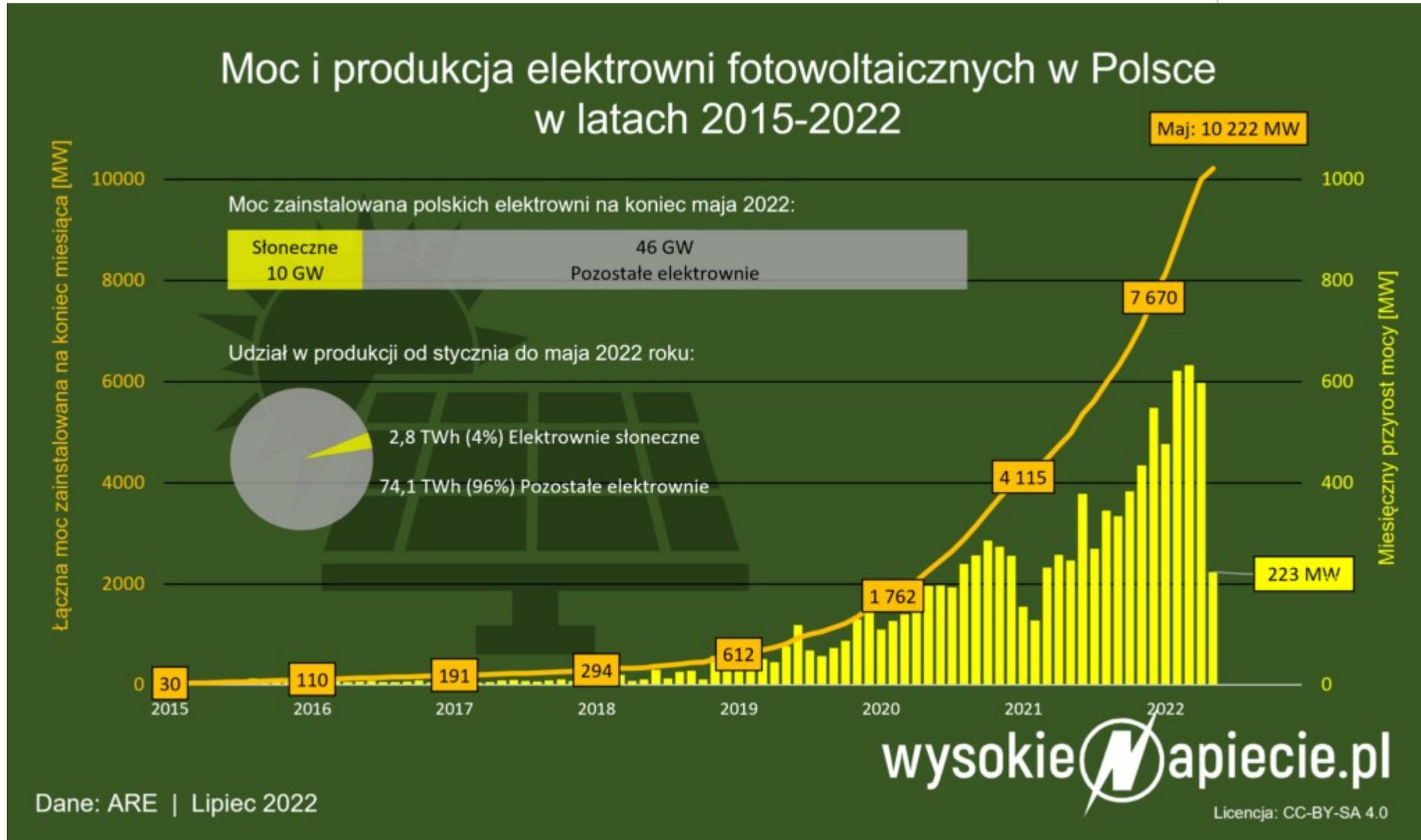
Strategy: „Prowadzimy w Zielonej Zmianie” -

*„We are a leader
in the green
transformation”*



„PGE Prowadzimy w zielonej zmianie” – PGE startuje z kampanią nowej strategii marki, 1.10.2021,
<https://nowymarketing.pl/a/34459,pge-prowadzimy-w-zielonej-zmianie-pge-startuje-z-kampania-nowej-strategii-marki>

Paths of Decarbonization - Poland - Photovoltaics



Paths of Decarbonization - Poland - Photovoltaics



Paths of Decarbonization - Poland - Photovoltaic Farm



D.Ciepiela, Największa farma fotowoltaiczna w Polsce rozpoczęła produkcję energii, 28.10.2021, <https://www.wnp.pl/energetyka/najwieksza-farma-fotowoltaiczna-w-polsce-rozpoznala-produkcje-energii,502380.html>

Paths of Decarbonization - Poland - Photovoltaics



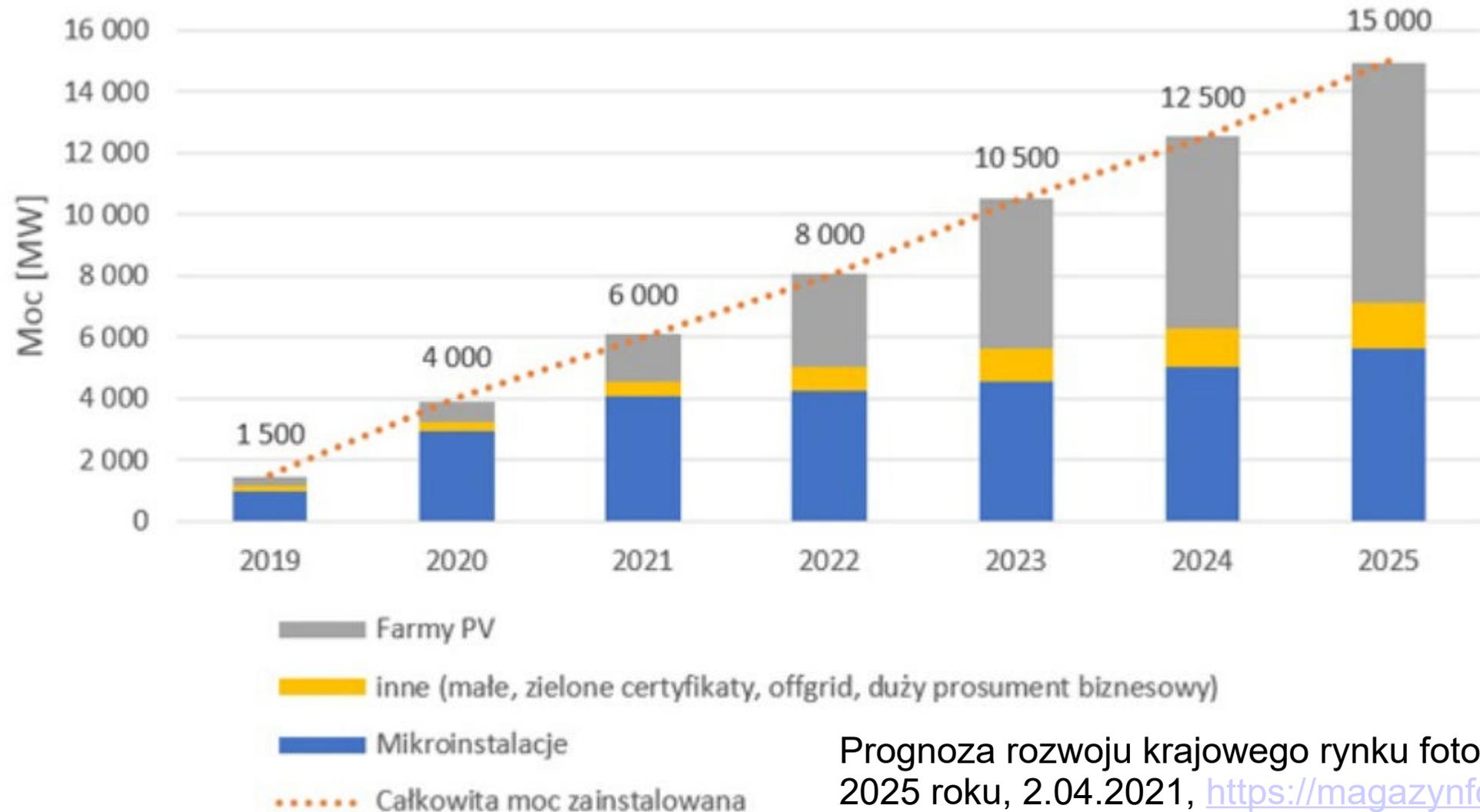
Polska **ponownie w czołówce UE**
pod względem przyrostu nowych mocy w PV



Paths of Decarbonization - Poland - Photovoltaics

- During the year 2023, the power of photovoltaics in Poland doubled and at the end of May it exceeded 10.2 GW.
- The share of photovoltaic panels in energy supplies exceeded 7% in May.
- The Energy Policy of Poland, adopted by the government a year ago, assumed that we would achieve such power... in 20 years.
- Exactly 10221.6 MW photovoltaic capacity in Poland at the end of May 2022. Most of it (7797.36 MW) was installed by over a million Polish families on the roofs of their homes,
- The Institute of Renewable Energy has prepared an updated forecast of the installed capacity in photovoltaics until 2025. According to the IEO, in the coming years the photovoltaic market will continue to maintain its dynamics of development.

Paths of Decarbonization - Poland - Photovoltaics



Prognoza rozwoju krajowego rynku fotowoltaiki do 2025 roku, 2.04.2021, <https://magazynfotowoltaika.pl/prognoza-rozwoju-krajowego-ryнку-fotowoltaiki-do-2025-roku/>

**Paths of Decarbonization - Poland - PGE Green
Change Campaign - „Łasice lubią wodne prądnice” -
"Weasels like water dynamos"**



PGE - prowadzimy w zielonej zmianie



W IV kwartale 2023 roku PGE **odda do użytku dwa bloki gazowo - parowe** przy Elektrowni Dolna Odra, które będą wsparciem dla morskiej energetyki wiatrowej.



W latach 2023-2029 w większości elektrociepłowni Grupa PGE **odejdzie od wytwarzania ciepła z węgla.**



Grupa PGE rozpoczęła inwestycje w OZE, Centrum Rozwoju Kompetencji i Centrum Badań i Rozwoju Gospodarki Obiegu Zamkniętego w ramach transformacji regionu bełchatowskiego.



Do 2040 roku Grupa PGE wybuduje morskie farmy wiatrowe o mocy co najmniej 6,5 GW.



Grupa PGE inwestuje w rozwój sieci dystrybucyjnej. Obecnie kończy największą na Mazowszu inwestycję dystrybucyjną w Czosnowie.



Grupa PGE realizuje budowę i testy systemu nowoczesnej łączy dla sektora energetyki LTE450 na obszarze wschodniej i południowej Polski.

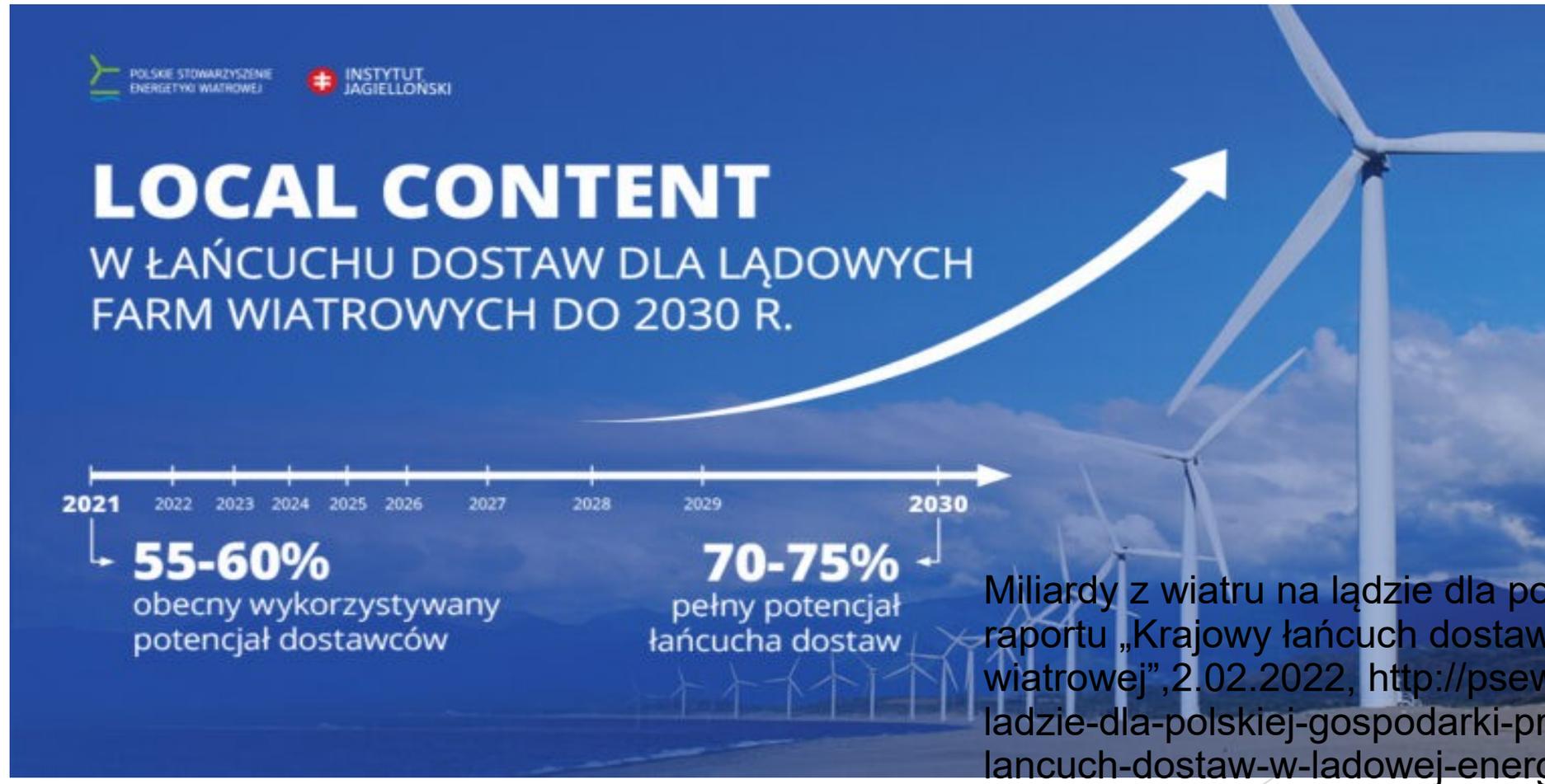
Paths of Decarbonization - Poland - PGE Green
Change Strategy - „Świstaki lubią wiatraki” -
"Groundhogs like windmills"



Paths of Decarbonization - Poland - PGE ENERGY CONCERN

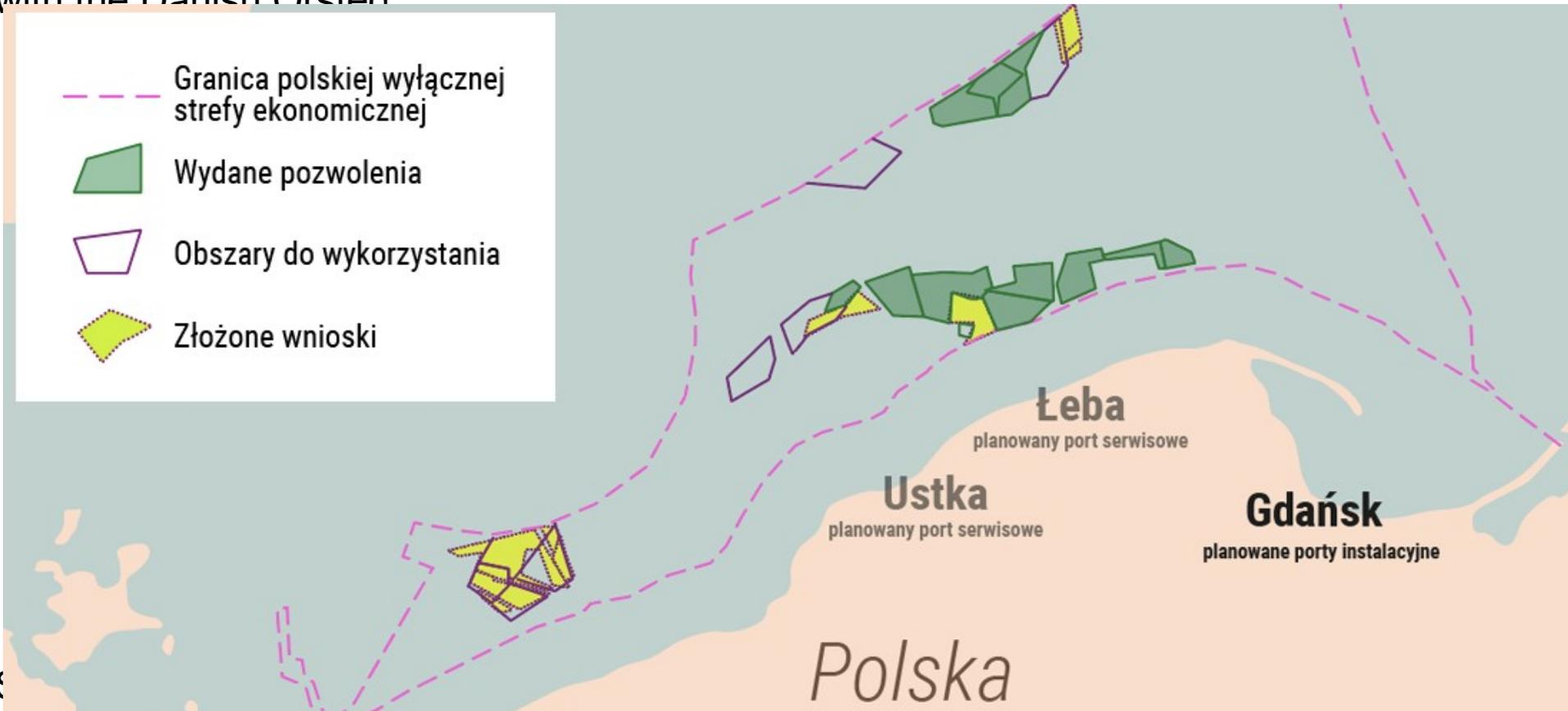
- Innovations and Green Change Strategy

The potential of the domestic contribution in the supply chain for onshore wind farms is currently estimated at 55-60%, and in the next 10 years it is possible to reach even 75%. In 2020, the total capacity of wind farms in Poland may amount to approx. 13.6 thousand MW.



Paths of Decarbonization - Poland - PGE ENERGY - Location of Wind Farms in the economic zone in the Baltic Sea

The construction of offshore wind farms is one of the flagship energy projects in Poland. This type of energy generation is listed among the goals of the Polish Energy Policy until 2040. Already in 2030, we are to have 5.9 gigawatts in this technology. And in 2040 - 11 gigawatts. Both the Baltic Power and Baltica farms are to supply electricity in 2026. The first of them will be built by PKN Orlen with Canadian Northland Power. The second - PGE with the Danish Orsted



orty prąd z wiatraków

nie popłynie, 24.10.2022, <https://300gospodarka.pl/news/polskie-farmy-wiatrowe-na-baltyku-coraz-blizej-ale-bez-inwestycji-w-porty-prad-z-wiatrakow-nie-poplynie>

Paths of Decarbonization - Energy transformation in Poland

The energy transformation in Poland includes all non-emission energy sources, both:

- **RES (renewable energy sources),**
- **wind farms** of various sizes,
- and **nuclear energy.**

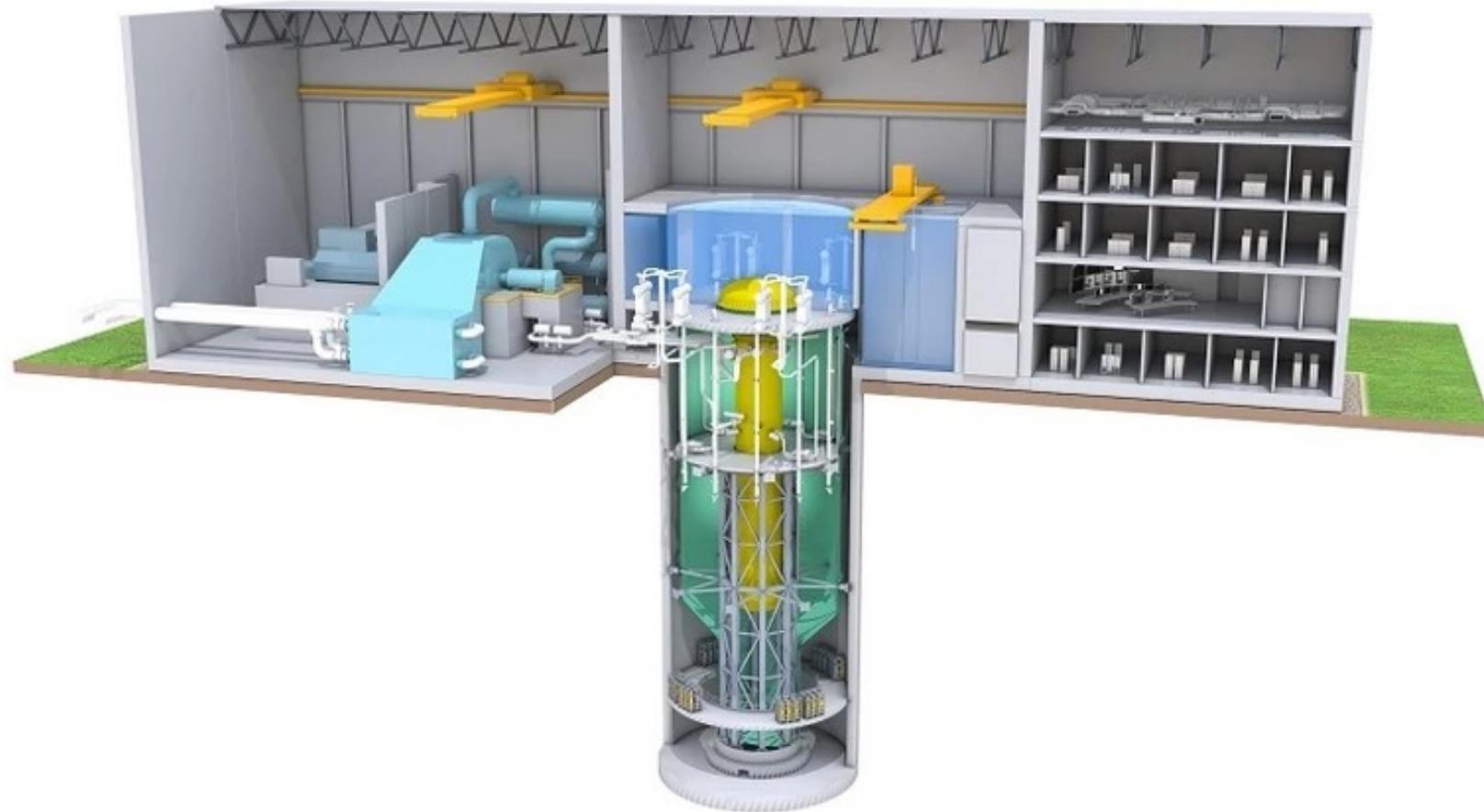
In Polish environmental conditions (no possibility of significant development of hydropower and geothermal energy, low insolation in the cold season and long windless periods over a large part of the European continent) play an important role nuclear energy should play an **important role in completing decarbonisation**

The latter area has undergone a radical transformation recently, as a decision was made to build **small nuclear power plants.**

Since the production of electricity from wind and solar is variable, parallel to the increase in the power of these sources, it is necessary to invest in peak/balancing energy sources and its storage, as well as the possibility of utilizing surpluses of energy produced.

Paths of Decarbonization - PKN ORLEN investments:

BWRX 300 - a small nuclear reactor that will appear in Poland



Source: B.Witoszka, Wiemy, gdzie staną pierwsze reaktory jądrowe SMR, 17.04.2023, www.komputerswiat.pl/artykuly/redakcyjne/te-reaktory-jadrowe-stana-w-polsce-czy-sa-bezpieczne/l4q37sm

Paths of Decarbonization - PKN ORLEN investments: small nuclear reactors

- small nuclear reactors, which are colloquially referred to as SMRs, we are dealing with a standard solution related to the fission of heavy nuclei of elements.
- The main difference is the size, and thus the performance - the 4th generation SMRs can operate with a power of up to 300 MW.
- Those from NuScale Power, which will appear in Poland, will have up to 77 MW each.
- Such modular reactors are also characterized by a greater degree of safety, mainly due to automatic systems operating without human intervention, which is intended to reduce the risk of a potential disaster.

Paths of Decarbonization - PKN ORLEN investments: small nuclear reactors

- The new installations are BWRX-300 reactors from GE-Hitachi Nuclear Energy.
- Their construction takes about 1/3 of the time needed to build a traditional large nuclear power plant.
- In addition, about 30 percent the construction costs of such a unit are lower, per each installed megawatt of power.
- A small nuclear reactor with a capacity of about 300 MW is to be able to generate the electricity needed to power a city of 150,000 a year.
- The cost of producing 1 MWh of electricity should be 30% lower than in the previous year. lower than in the case of gas-steam blocks.

Paths of Decarbonization - PKN ORLEN-Synthos small nuclear reactors



Source: B.Oksińska, Orlen podał siedem lokalizacji małych elektrowni atomowych w Polsce, 17.04.2023, <https://energia.rp.pl/atom/art38331961-orlen-podal-siedem-lokalizacji-malych-elektrowni-atomowych-w-polsce>

Ways of Decarbonization - PKN ORLEN investments: small nuclear reactors

- The construction of the first small nuclear reactor by OSGE is planned to be completed at the turn of 2028 and 2029.
- The first small nuclear reactors (SMR) that Orlen - Synthos Green Energy (OSGE) is to be built in 7 locations:
 - Włocławek,
 - Ostrołęka,
 - Kraków Nowa Huta,
 - Dąbrowa Górnicza,
 - SEZ Tarnobrzeg - Stalowa Wola,
 - Stawy Monowskie (near Oświęcim),
 - the vicinity of Warsaw.

PART IV - REGIONAL CASE -

Faces of Decarbonization in Poland - UPPER SILESIA

- Post-
industrial
area

Silesian Museum
in Katowice -
Capital of Silesian
Region



Faces of Decarbonization Poland - **UPPER SILESIA**



Faces of Decarbonization Poland - UPPER SILESIA

**Silesia City Center
with mine shaft and
coal carts**



**Diving center in
Sosnowiec**



Faces of Decarbonization Poland - UPPER SILESIA



Kopalnia
Guido

ZWIEDZANIE
KOPALNI GUIDO

#MUSISZ_TU_BYĆ

Museum of Coal Mine
in Zabrze

Other faces of Decarbonization in Poland - **UPPER SILESIA** - problem of coal mining waste



Management of coal mining waste after on the site of an open-pit sand mine – large degradation

Faces of Decarbonization Poland - **UPPER SILESIA** - **post-mining heaps**



<https://www.polityka.pl/tygodnikpolityka/spoleczenstwo/1574017,1,haldy--slaskie-fudzijamy-i-wezuwiusze.read>

Faces of Decarbonization Poland - UPPER SILESIA - sinkholes as a result of coal mining

Trzebinia near
Crakow



Faces of Decarbonization Poland - UPPER SILESIA -

Sosnowiec - post-mining tremors - monitoring

facebook

Adres e-mail lub numer

Hasło

Zaloguj się

Nie p



Grupa strony Centrum Szkód Górniczych

Wstrząsy i Tąpnięcia na Śląsku/Szkody Górnicze

Grupa publiczna · 7,3 tys. członków

Dołącz do grupy

A very strong tremor in Upper Silesia.

A strong tremor was felt on Monday after noon. 14.30 residents of Upper Silesia.

Earth. According to the data of the European-Mediterranean Seismological Center (EMSC), the magnitude of the shock recorded at 14.34 in the province of Silesian was 3.8 (this means 3.8 degrees on the so-called Richter scale).

A spokeswoman for the State Mining Authority in Katowice told PAP that the shock had a wide range, it was felt in many Silesian cities, including Katowice, Tychy, Mikołów, Łaziska, Rybnik and Sosnowiec.



Wstrząsy i Tąpnięcia na Śląsku/Szkody Górnicze

https://www.petycjeonline.com/stop_niszczącym_wstrzansom...



PETYCJEONLINE.COM

STOP niszczącym WSTRZĄSOM górniczym od ZG Janina w Libiążu!

Libiąż, dn. 25 marca 2023 r. PETYCJA – sprzeciw MIESZKAŃCÓW wobec WSTRZĄSÓW GÓRNICZYCH pochodzących z Zakładu...

Polub to

Komentarz

Udostępnij



Mateusz Bartuła

28 marca o 03:55

Chrzanów kołysze.

Polub to

Komentarz

Udostępnij



Piotr Cebula

24 marca o 23:46

Łaziska Górne - 4 w skali Łokurła

21

5

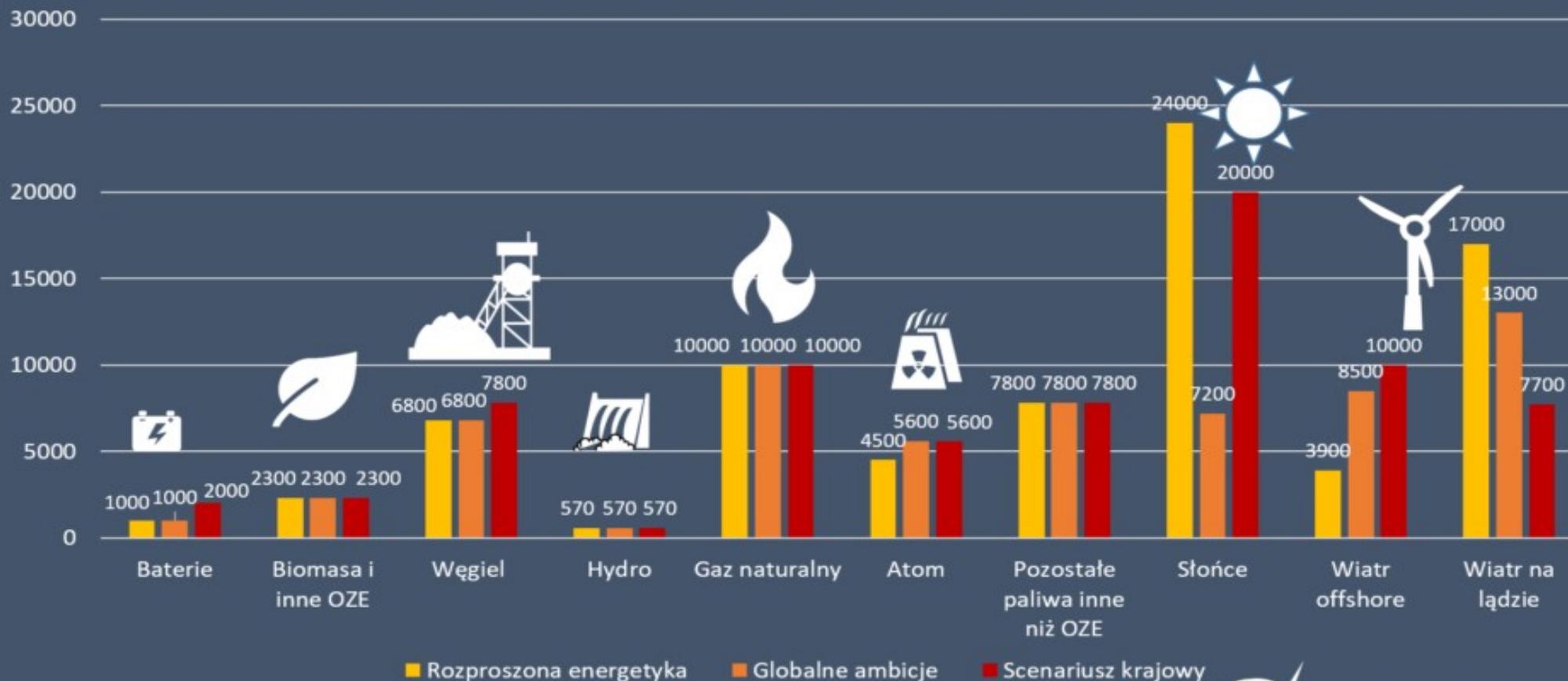
Polub to

Komentarz

Udostępnij

Scenarios of Decarbonization for Poland - 2040

Scenariusze dla Polski na 2040 r. według mocy w MW



Źródło: ENTSOE, Listopad 2019

wysokie napięcie.pl

War in Ukraine, energy crisis and Decarbonization

- It is not a paradox: the war in Ukraine will accelerate the transformation into decarbonization,
- in the initial period, it slowed down the decarbonization processes,
- Russian invasion of Ukraine means faster decarbonization,
- According to the State Inspectorate for Environmental Protection, as of February 18, 2023, 14 million square meters of land were contaminated with the remains of destroyed facilities and ammunition, including debris, and 280,000 square meters of soils were contaminated with hazardous substances.

War in Ukraine, and Decarbonization - air quality

■ **WHAT ARE RESULTS of THAT POLLUTIONS FOR EUROPE?**

■ Terrible air quality in Poland. The reason is PM10 dust from Eastern Europe. According to the Chief Inspectorate for Environmental Protection, increased concentrations of particulate matter PM10 are again recorded in the eastern part of Poland. Experts believe that the reason is the influx of air masses from Eastern Europe.

War in Ukraine - post-bomb attack pollutions from Ukraine near Silesia Region



Source: Private Archive

THANK YOU