



ECOINNOVATIONS IN REGIONS AND NATIONS

CAN POLAND AFFORD **NOT** TO BE ECOINNOVATIVE?



Kraków 2025

Author

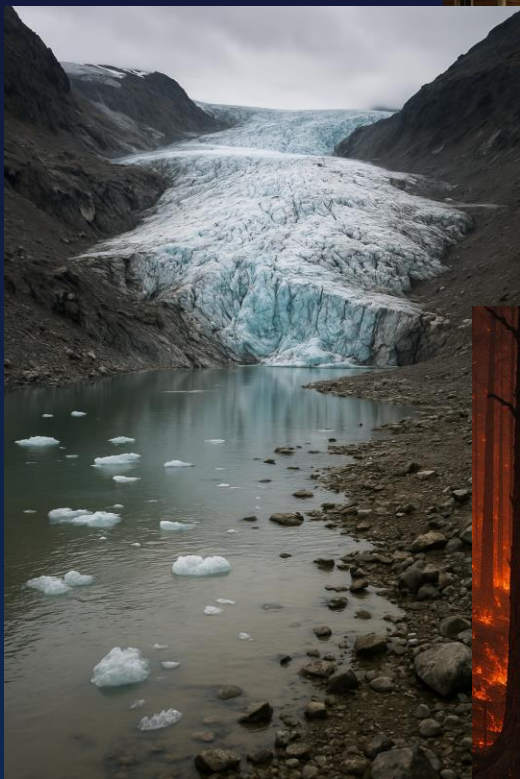


Expert partners

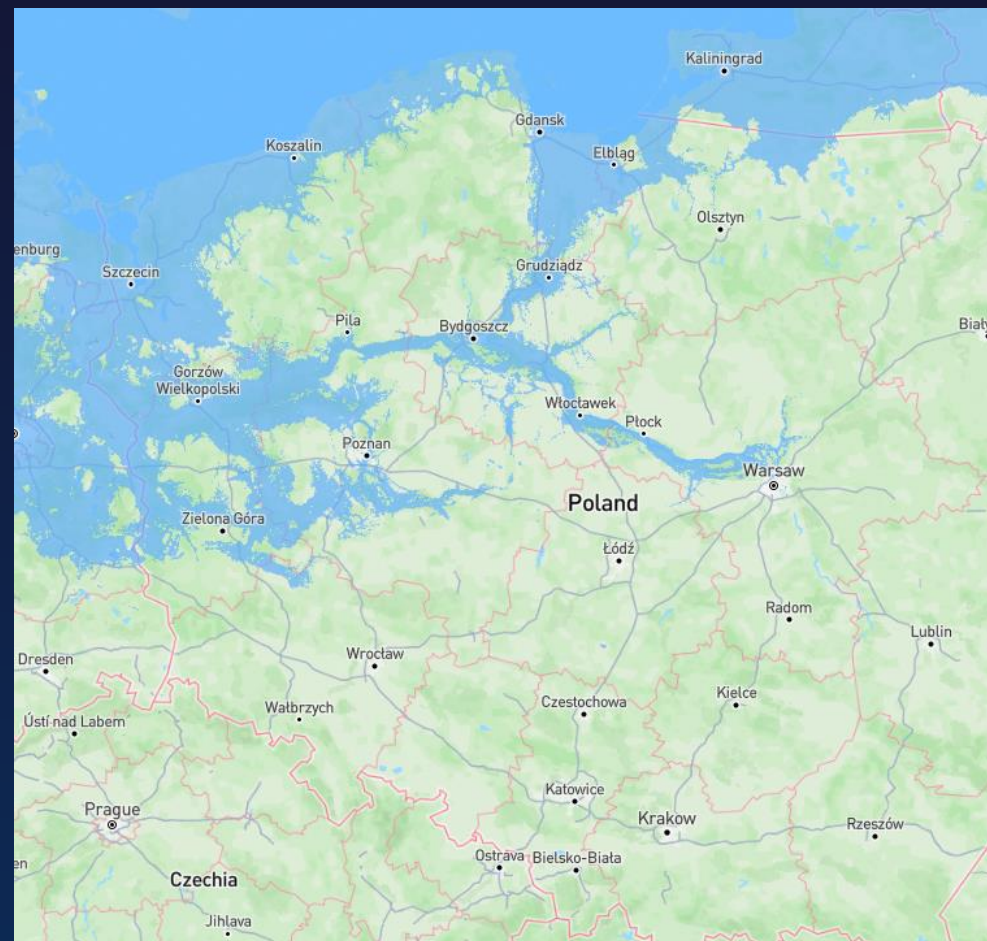




WHY ECOINNOVATIONS IN THE BANK?



Simulation of sea level (+80 m compared to current level)

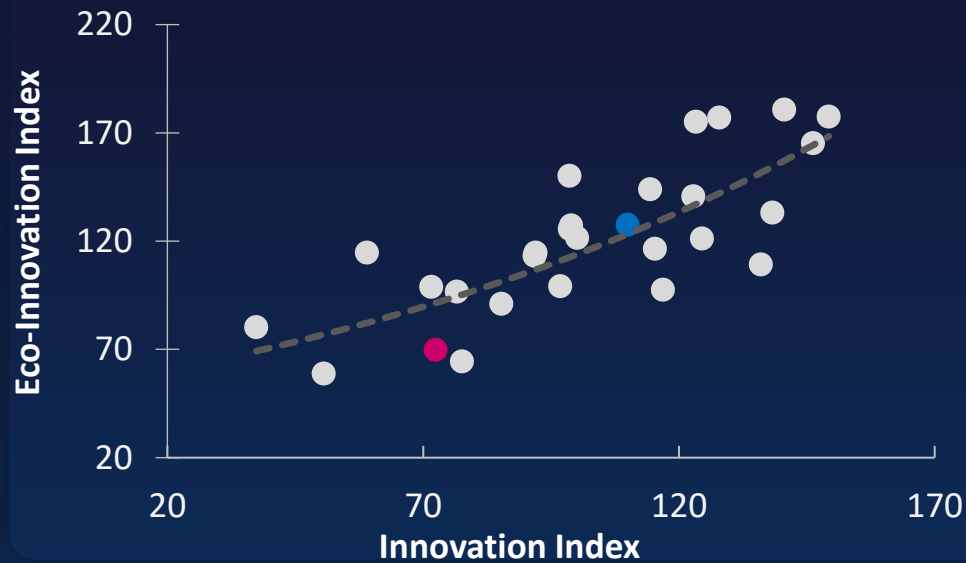




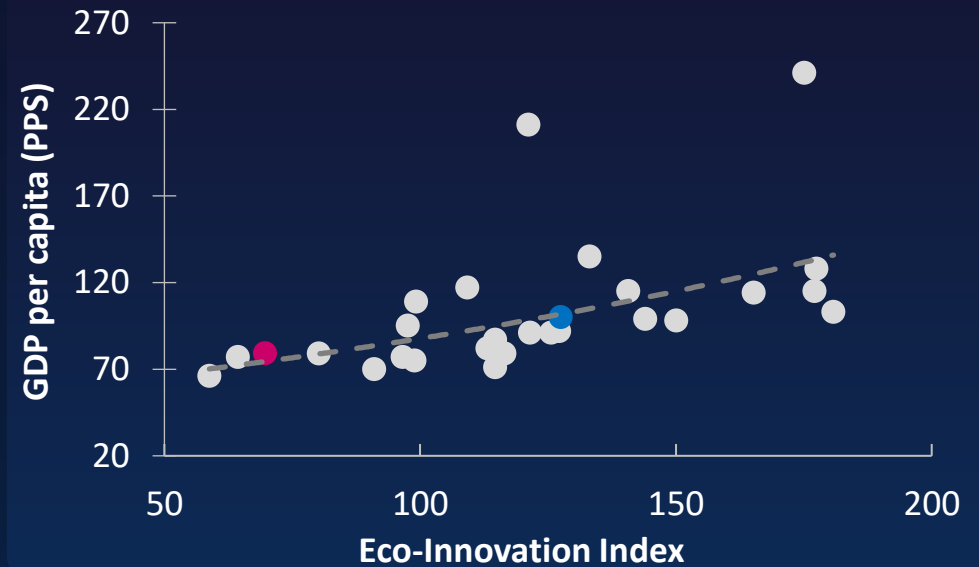
ECO-INNOVATION AND INNOVATION

The level of eco-innovation is strongly correlated with overall country's innovation, which in turn drives productivity, national wealth, and economic resilience.

Eco-innovation vs innovation



Eco-innovation and economic development





NEW MODEL OF THE ECONOMY?

The traditional model



Global Risks in 10 Years perspective (ranked by severity)

Extreme weather events
Biodiversity loss and ecosystem collapse
Critical change to Earth systems
Natural resource shortages
Misinformation and disinformation
Adverse outcome of AI technologies
Inequality
Social polarization
Cyber espionage
Pollution

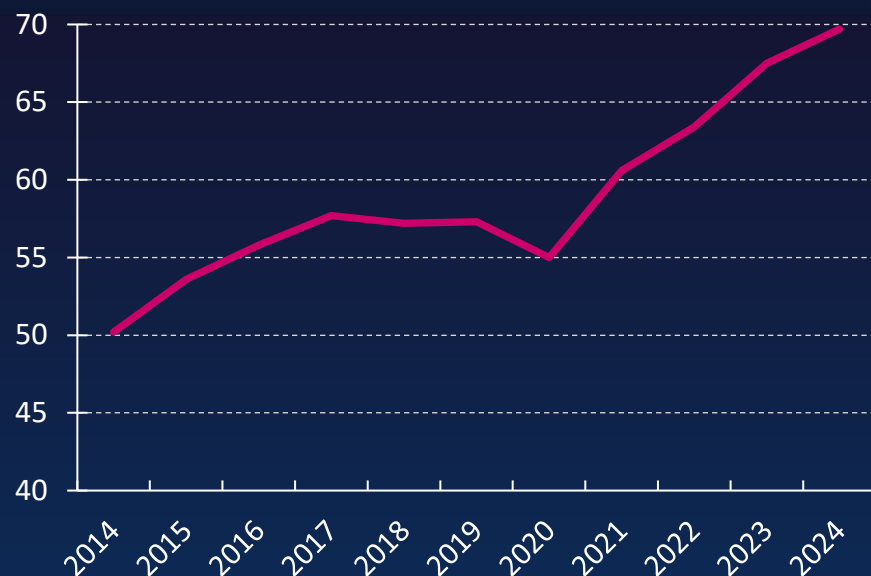
● Environmental ● Technological ● Social



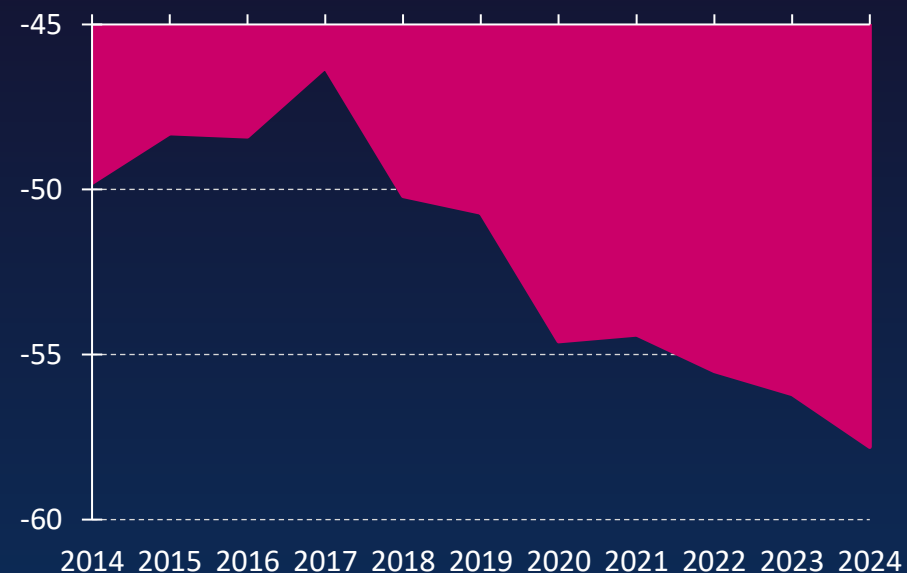
ECOINNOVATION PERFORMANCE IN POLAND AND THE EUROPEAN UNION

There is a steady improvement in eco-innovation in Poland. However, the gap between Poland and the EU is widening – other countries are moving faster.

Eco-Innovation Index in Poland








Gap between Poland and the EU in the
Eco-Innovation Index





CLIMATE CHANGE GIVES WAY TO ARMED CONFLICTS IN THE CONCERNS OF POLES AND EUROPEANS

Which of the following do you consider to be the single most serious problem facing the world as a whole?

		Poverty, hunger, and lack of drinking water	Change vs 2021	Armed conflicts	Change vs 2021	Climate change	Change vs 2021	Economic situation	Change vs 2021
Poland		43%	↑ 3 p.p.	64%	↑ 34 p.p.	28%	↓ 13 p.p.	33%	↓ 9 p.p.
EU (27)		58%	↑ 4 p.p.	52%	↑ 29 p.p.	46%	↓ 3 p.p.	38%	↓ 5 p.p.
Finland		56%	↑ 11 p.p.	56%	↑ 36 p.p.	55%	↑ 4 p.p.	20%	— 0 p.p.
Denmark		61%	↑ 12 p.p.	54%	↑ 30 p.p.	74%	↑ 4 p.p.	37%	↑ 2 p.p.
Austria		60%	↑ 10 p.p.	53%	↑ 30 p.p.	48%	↑ 1 p.p.	41%	↓ 6 p.p.

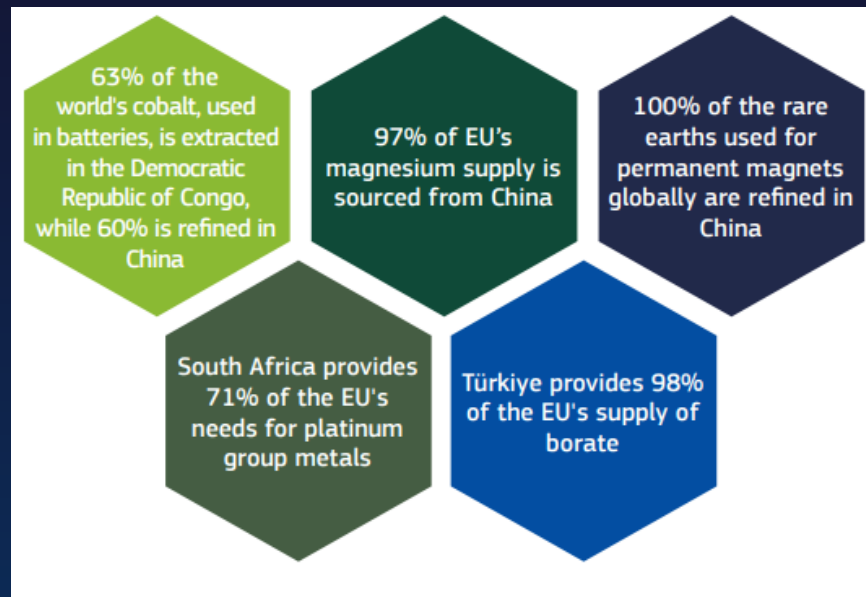


NATIONAL SECURITY = RESILIENT ECONOMY

Imports as a share of domestic supply of selected resources [2022]

Resource	%	Resource	%
Natural gas	90	Chromium	100
Oil	99	Cobalt	100
Copper	10	Nickel	100
Aluminium	100	Molybdenum	100
Lithium	100	Titanium	100
Rare-earth elements	100	Tungsten	100

UE's reliance on imports of key raw materials

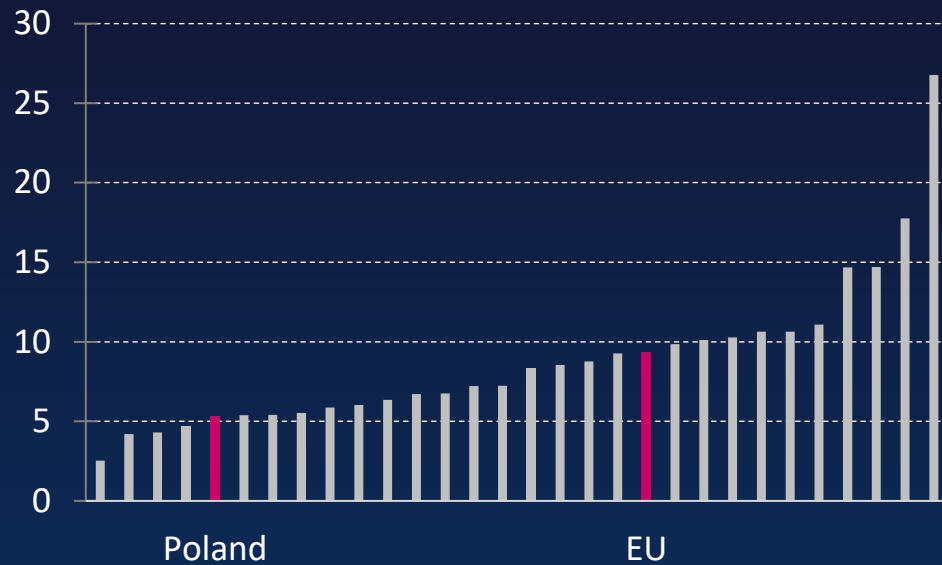




RESOURCE PRODUCTIVITY IN POLAND AND OTHER EU COUNTRIES

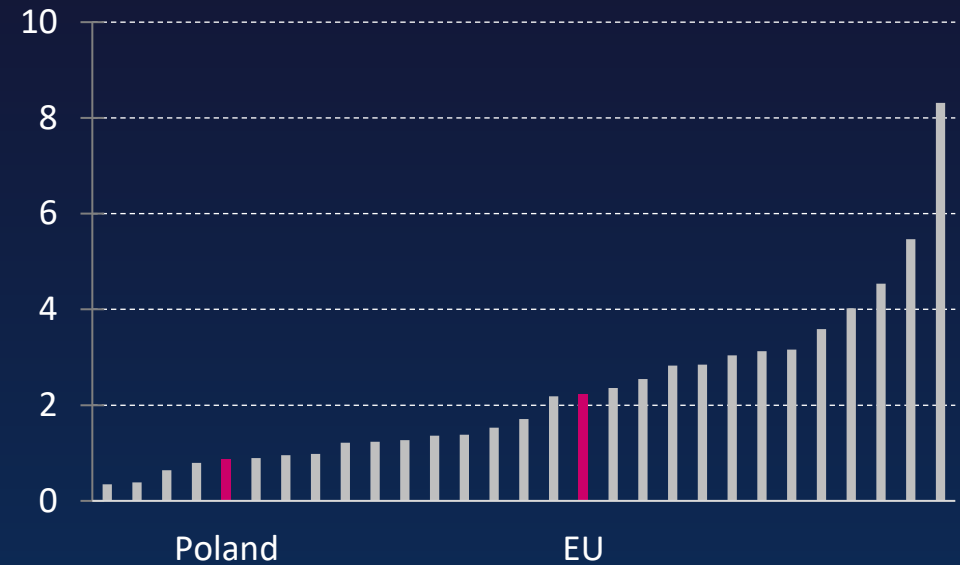
Energy productivity

[euro, 2022]



Material productivity

[euro, 2022]





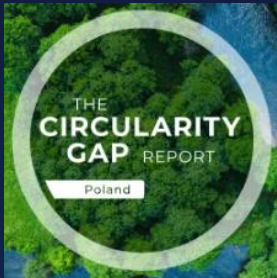
WHY ECOINNOVATION IN REGIONS?

NATIONAL



Circular economy country profiles 2024

Published 05 Dec 2024



EU Eco-Innovation Index 2024



Environmental
Performance
Index

REGIONAL

DEVELOPING A CIRCULAR ECONOMY INDEX TO MEASURE THE MACRO LEVEL OF CIRCULAR ECONOMY IMPLEMENTATION IN INDONESIA

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STRUCTURE OF THE ECO-INDEX MILLENNIUM 2024

SUBINDEX ECO-INNOVATION INPUTS

- Expenditures on fixed assets for environmental protection and water management
- Internal expenditures on R&D - natural, agricultural and veterinary sciences, technical and engineering
- R&D personnel
- Graduates in the biology, environmental sciences, engineering and technology, production and processing, agriculture, forestry, fishery

SUBINDEX ECO-INNOVATION OUTPUTS

- Energy production from renewables
- Wastewater treated with enhanced nutrient removal (municipal and industrial)
- Vehicles powered by fuels other than gasoline, diesel, and LPG gas
- Changed in 2024**
 - Granted patents for eco-innovations
- Gross value added in green industries

SUBINDEX SOCIO-ECONOMIC ACTIVITIES IN ECO-INNOVATION

- Employees in green industries (with low and medium environmental risk)
- Changed in 2024**
 - Innovative enterprises that introduced innovations - new or improved products
- Bicycle paths
- Public transit

SUBINDEX RESOURCE EFFICIENCY OUTCOMES

- Changed in 2024**
 - Emission intensity of the economy (in CO2 equivalent)
- Electricity usage efficiency
- Water usage efficiency

First time in 2024

SUBINDEX CIRCULAR ECONOMY

- Municipal waste generated over the year
- Industrial waste (without mining and energy related)
- Recycled industrial waste
- Percentage of municipal waste recycled
- Employees in industries related to circular economy



CHECK OUT THE ECO-INDEX MILLENNIUM





MAJOR CHALLENGE – DATA AVAILABILITY

Number of ISO 14001
certificates

Material productivity

<i>DMC</i>	Domestic material consumption	n.a.	$DMC = DE + IMP - EXP$
<i>DMI</i>	Domestic material input	n.a.	$DMI = DE + IMP$
<i>PTB</i>	Physical trade balance	n.a.	$PTB = IMP - EXP$

Mineral
fertiliser use

[Mineral fertiliser use](#)

Green

Eco-innovation related patents
**New data from the
Polish Patent Office !!**

Material footprint

Online data code: [cei_pc020](#) | DOI: [10.2908/cei_pc020](#) | last update: 31/03/2025 11:00 | view: FULL

Exports of environmental goods
and service sector

Domestic material consumption by selected material category, EU and Poland, 2023, per cent



ECO-INNOVATION PERFORMANCE IN REGIONS

2024

POSITION OF REGIONS

2024 vs 2023

Regions with strong
economic and academic
centres lead in
eco-innovation .



1. MAŁOPOLSKIE
2. POMORSKIE
3. MAZOWIECKIE
4. DOLNOŚLĄSKIE
5. PODKARPACKIE
6. PODLASKIE
7. ŚLĄSKIE
8. WARMIŃSKO-MAZURSKIE
9. WIELKOPOLSKIE
10. LUBUSKIE
11. KUJAWSKO-POMORSKIE
12. LUBELSKIE
13. ŁÓDZKIE
14. ZACHODNIOPOMORSKIE
15. OPOLSKIE
16. ŚWIĘTOKRZYSKIE



RESULTS IN INDIVIDUAL SUBINDEXES

SUBINDEX ECO-INNOVATION INPUTS

1. Małopolskie
2. Mazowieckie
3. Dolnośląskie
4. Podkarpackie
5. Pomorskie

SUBINDEX ECO-INNOVATION OUTPUTS

1. Pomorskie
2. Małopolskie
3. Podlaskie
4. Łódzkie
5. Podkarpackie

SUBINDEX SOCIO-ECONOMIC ACTIVITIES IN ECO-INNOVATION

1. Mazowieckie
2. Pomorskie
3. Wielkopolskie
4. Zachodniopomorskie
5. Kujawsko-Pomorskie

SUBINDEX RESOURCE EFFICIENCY OUTCOMES

1. Pomorskie
2. Warmińsko-Mazurskie
3. Podkarpackie
4. Lubuskie
5. Podlaskie

First time in 2024

SUBINDEX CIRCULAR ECONOMY

1. Warmińsko-Mazurskie
2. Śląskie
3. Świętokrzyskie
4. Podlaskie
5. Opolskie



STRENGTHS OF THE REGIONS



Eco-Index Millennium
helps identify regional
strengths and weaknesses
in eco-innovation enabling
better policy targeting and
interregional cooperation



REGIONAL STRENGTHS AND WEAKNESSES ANALYSIS

ECO-INNOVATION INPUTS

1. Expenditures on fixed assets for environmental protection and water management
2. Internal expenditures on R&D - natural sciences, agricultural sciences, veterinary sciences, technical and engineering
3. R&D personel
4. Graduates in the fields related to eco-innovation

ECO-INNOVATION OUTPUTS

5. Energy production from renewables
6. Wastewater treated with enhanced nutrient removal
7. Vehicles powered by fuels other than gasoline, diesel, and LPG gas
8. Granted patents for eco-innovations
9. Gross value added in green industries

SOCIO-ECONOMIC ACTIVITIES IN ECO-INNOVATION

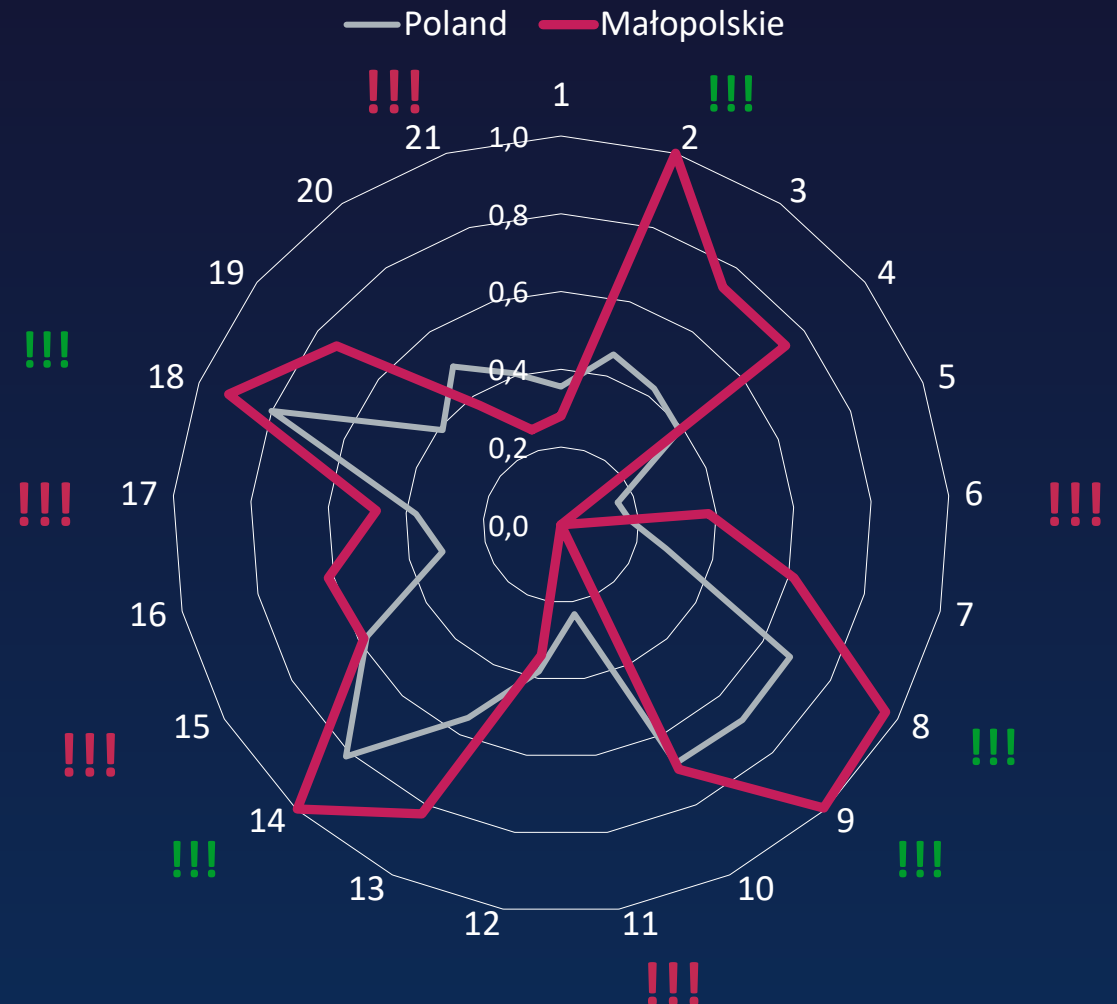
10. Employees in green industries
11. Innovative enterprises that have introduced innovations
12. Bicycle paths
13. Public transit

RESOURCE EFFICIENCY OUTCOMES

14. GHG emissions intensity
15. Energy productivity
16. Water usage efficiency

CIRCULAR ECONOMY

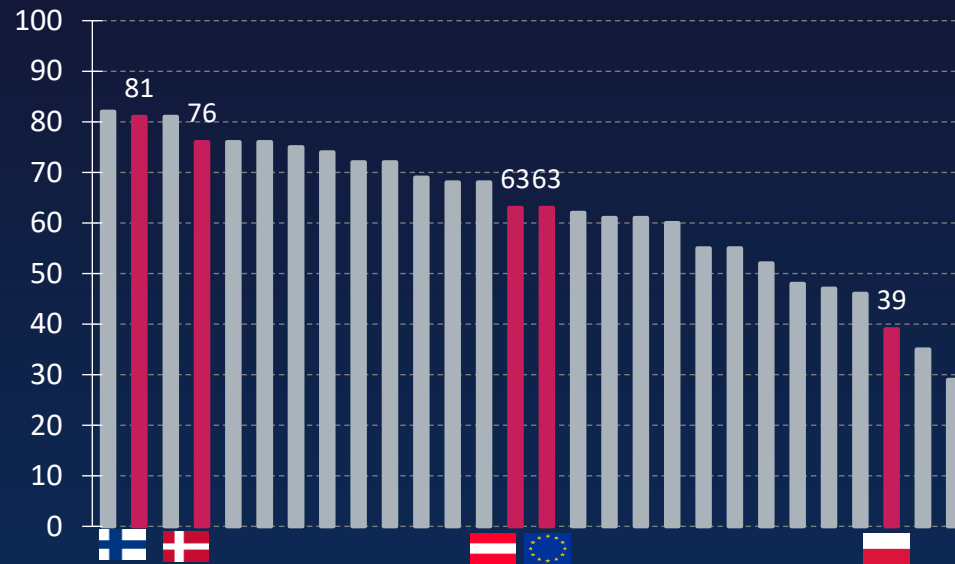
17. Municipal waste generated over the year
18. Industrial waste
19. Recycled industrial waste
20. Percentage of municipal waste recycled
21. Employees in industries related to circular economy





ENVIRONMENTAL AWARENESS IS RISING, BUT CONSUMERS' HABITS NOT NECESSAIRLY

Have you taken any personall actions to fight climate change over the past six months



Environmental attitudes of Poles

- **76%** of Poles believe that the country needs **more innovations supporting environmental protection**
 - **71%** of Poles believe that the regional authorities are responsible for improving the ecological situation in Poland
- BUT...
- **18%** of Poles say it is important to buy smaller quantities and reduce food waste
 - **22%** of people consider public transport, cycling or walking as effective ways to reduce emissions



LET'S TALK ABOUT ECO-INNOVATIONS