

Smart Environment

how do digital technologies and standards help
protect the environment in Poland and
Europe?



Aleksandra Piwko

Julia Rejman

Rafał Murgrabia

Why does the environment need technology?

Let's imagine two cities:
Which will detect threats faster?



City A

does not monitor air quality.



City B

- has a sensor network,
- data analysis
- common reporting standards

Modern environmental protection relies not solely on observation

It requires:



Data



Digital technologies



Standards



Citizen cooperation

Monitoring air quality



Monitoring air quality - European Space Agency, ESA (720p, h264).mp4

<https://www.youtube.com/watch?v=W8p6YI45mFs>

EU Green Deal

The European Green Deal assumes:

- climate neutrality by 2050
- reduction of greenhouse gas emissions
- resource efficiency
- protection of citizens' health
- social transformation





Poland



Currently Green Deal

- smog in large cities
- emissions from furnaces
- transport
- low fuel quality



After Green Deal

- cleaner air
- lower health costs
- development of green technologies



EU Digital Strategy – how do technologies help the environment?

Air quality sensors

Sensors measure:

- PM10
- PM2.5
- NO₂
- temperature
- humidity

Data is transmitted online
and analyzed automatically.



EU Digital Strategy – how do technologies help the environment?

Drones

Drones can:

- detect illegal dumps
- monitor forests
- assess the condition of rivers



EU Digital Strategy – how do technologies help the environment?

Artificial intelligence

AI helps:

- predict pollution
- analyze environmental data
- plan remedial actions



Why are standards so important?

Let's assume that:

- each measurement station uses different units,
- each country reports data differently,
- each application saves data in a different format.

Comparing the results would be nearly impossible.



The role of standards

Standards ensure:

- data comparability
- security
- measurement quality
- system interoperability

The EU standardization strategy emphasizes that standards support competitiveness, innovation, and *environmental protection*.



Examples of standards

1. ISO 14001 - Environmental Management System

Benefits:

- reduced environmental impact,
- improved process organization,
- compliance with legal requirements.

2. ISO 50001 - Energy efficiency

3. ISO 14064 - Greenhouse gas emission measurement



European ethics and values

Environmental protection isn't just about technology.

It's also about social responsibility.



Key Values

- **Solidarity**

The current generation should not pass on environmental costs to future generations.

- **Integrity**

Measurement results should not be manipulated.

- **Responsibility**

Companies should limit environmental damage.

- **Transparency**

Environmental data should be publicly available.

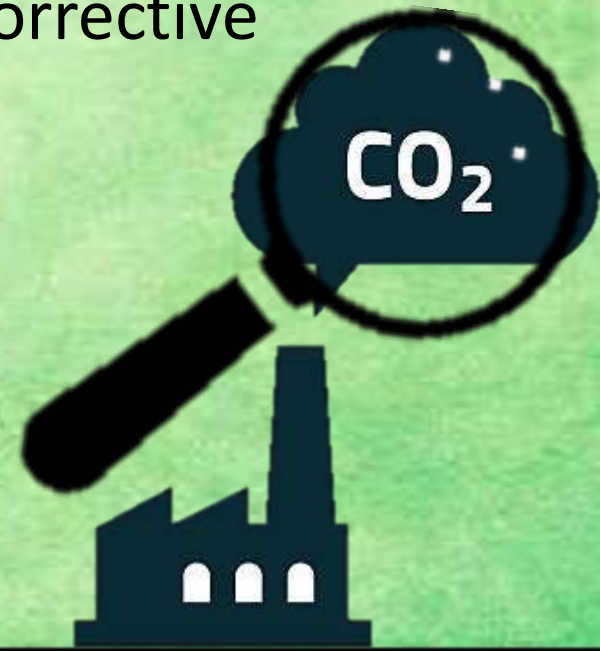


An example of an ethical dilemma

- A company detects emissions standards being exceeded.

What should it do?

- A. Conceal the results.
- B. Publish the results and implement corrective actions.



What can an ordinary citizen do?

Every student can:

- Use environmental applications from the Chief Inspectorate of Environmental Protection
- Report problems including illegal landfills, waste incineration, water pollution
- Develop digital skills data analysis
- Participate in public consultations



Active participation of citizens is an important element of effective ecological transformation.



Summary

- The Green Deal sets the direction for Europe's development
- Digital technologies help protect the environment more effectively
- Standards ensure the quality and comparability of actions
- Ethics guarantee the responsible use of technology
- Every citizen can actively participate in environmental protection



**Thank you for your
attention**

