



THE GREEN DEAL - GENERAL EU TRENDS AND HOW ENERO'S RESEARCH PROJECTS CAN MAKE IT A REALITY

Jan Bondaruk

Brussels, 01.06.2022



ENERO

A network of research and technology organizations (RTOs) conducting environmental research at the interface between public authorities (national and European) and industry.

The ability of the economy to adapt and become more climate change resilient, resource efficient and at the same time remain competitive depends on high levels of eco-innovation, of a societal, economic, organisational and technological nature.

The World Business Council for Sustainable Development estimates that we will need a 4 to 10 fold increase in resource efficiency by 2050.

Transformation the EU economy
for a sustainable future

CLIMATE PACT
AND CLIMATE LAW

Economic growth decoupled
from resource use



Climate neutrality in
2050

No person and no
place left behind

PILLARS OF THE EUROPEAN GREEN DEAL



ENERGY

Decarbonise the energy sector



The production and use of energy account for more than **75%** of the EU's greenhouse gas emissions

BUILDINGS

Renovate buildings, to help people cut their energy bills and energy use



40% of our energy consumption is by buildings

INDUSTRY

Support industry to innovate and to become global leaders in the green economy



European industry only uses **12%** recycled materials

MOBILITY

Roll out cleaner, cheaper and healthier forms of private and public transport



Transport represents **25%** of our emissions

SDG 12 - Responsible consumption and production

Indicator	Long-term trend (past 15 years)	Short-term trend (past 5 years)
Decoupling environmental impacts from economic growth		
Consumption of hazardous chemicals	↗	↘
Material footprint	↗	↘
🎯 Average CO ₂ emissions from new passenger cars	↗ ⁽¹⁾	↘
Energy productivity (*)	↑	↑
Green economy		
Gross value added in the environmental goods and services sector	↑	↑
Waste generation and management		
Circular material use rate	↑	↑
Generation of waste excluding major mineral wastes	↘ ⁽²⁾	↘ ⁽³⁾

(*) Multi-purpose indicator.

⁽¹⁾ Past 13-year period.

⁽²⁾ Past 14-year period.

⁽³⁾ Past 4-year period.

EU ENVIRONMENTAL R&D DRIVERS

**Climate and energy package +
Ambient Air Quality directives**

**Fit for 55 <->
ETS**

**EU strategy to
reduce methane
emissions
(COM(2020) 663)**

Water Framework Directive

EU Taxonomy Regulation*

**Circular economy package +
Action Plan**

**The Roadmap to a Resource
Efficient Europe (COM(2011) 571)**

**A New Industrial Strategy for
Europe (COM(2020) 102)**

Biodiversity strategy for 2030

**In line with the European Green Deal objectives, research and
innovation activities should comply with the
'DO NO SIGNIFICANT HARM'**

* REGULATION (EU) 2020/852 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, and amending Regulation (EU) 2019/2088

GREEN DEAL SUPPORTED BY R&D

Green Deal driving R&D&I activities:

- ☐ accelerating and navigating the necessary transitions
- ☐ deploying, demonstrating and de-risking solutions
- ☐ engaging citizens in social innovation

Green missions

**Green
partnerships**

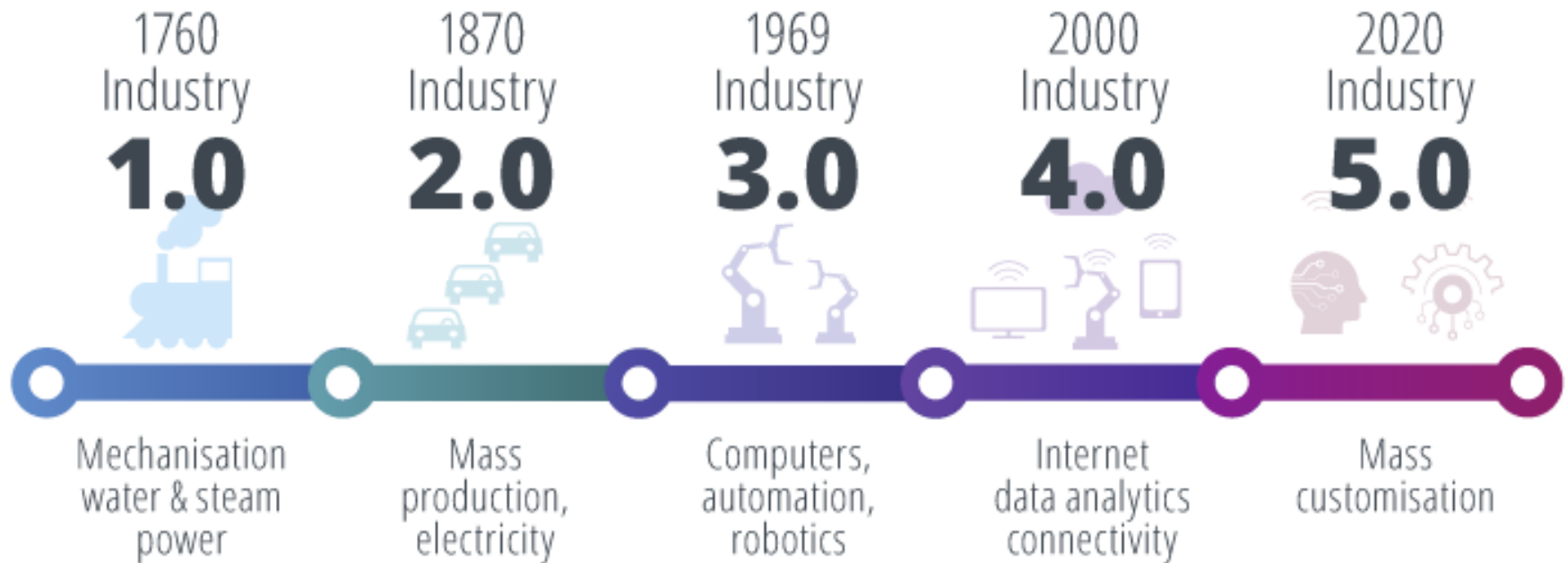
Industrial clusters

Close partnerships between different constituencies and stakeholders – governments, international agencies, legislators, civil society, business, indigenous groups, scientists and local communities.

INDUSTRY 5.0

Industry 5.0 aims to **put the human interests and Industry 5.0 needs at the heart of the production process.**

Industry 5.0 aims to help make processes circular: reuse, repurpose and recycle natural resources and minimize waste and pollution.

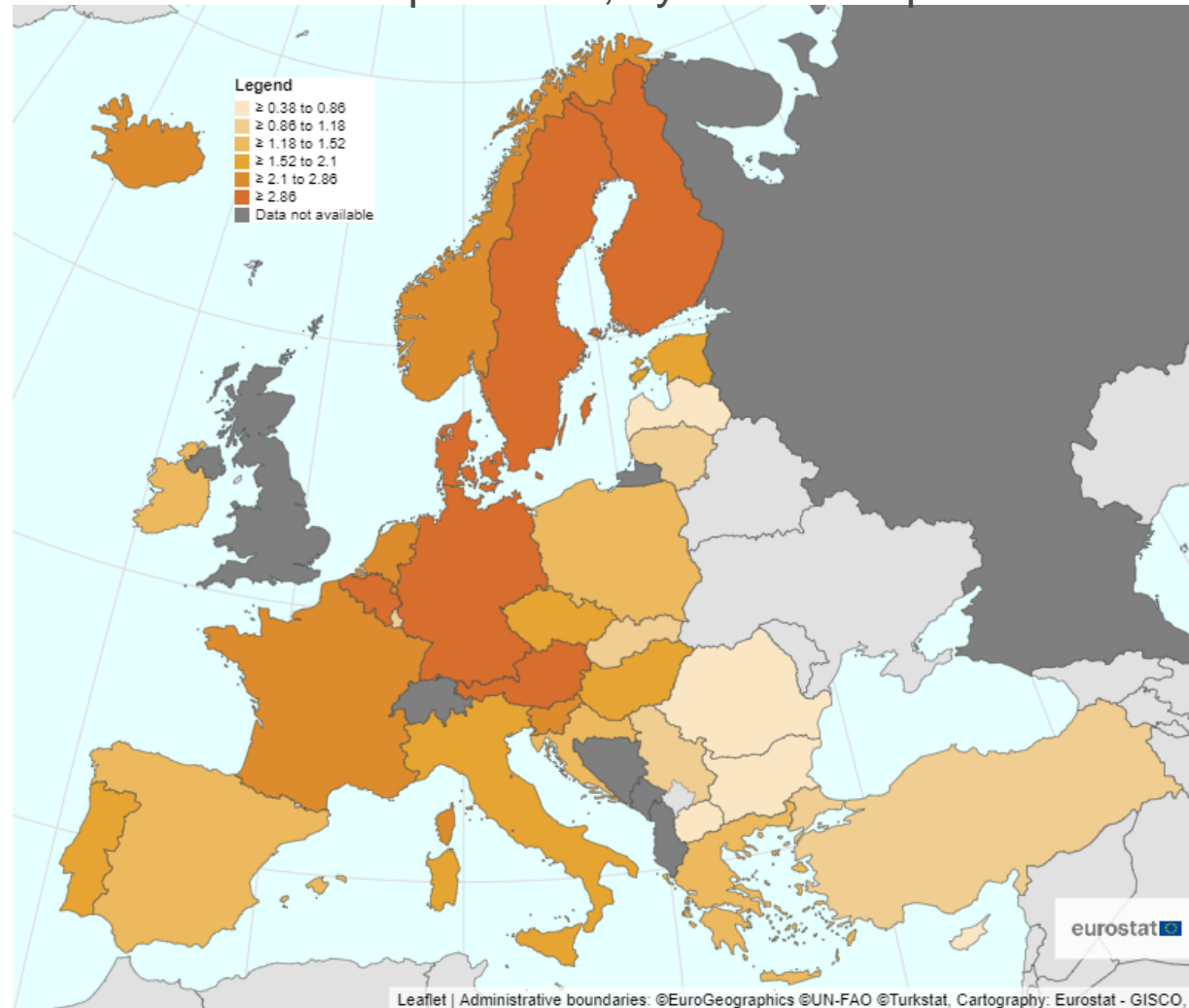
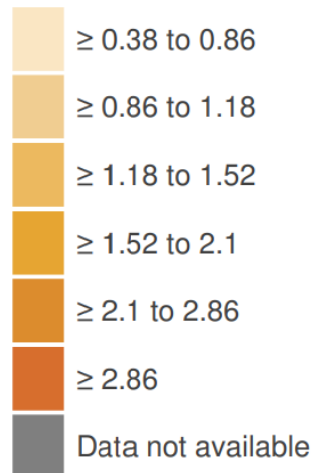


R&D EXPENDITURES

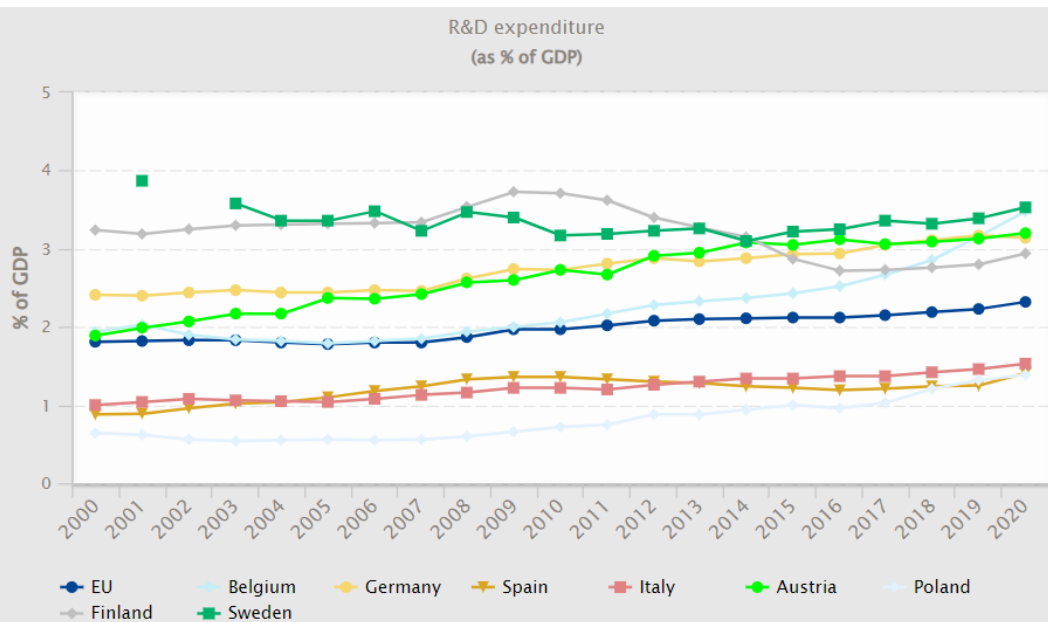
Research and development
expenditure, by sectors of performance

Percentage of gross
domestic product (GDP)
Sector of performance:
All sectors, 2020

Legend

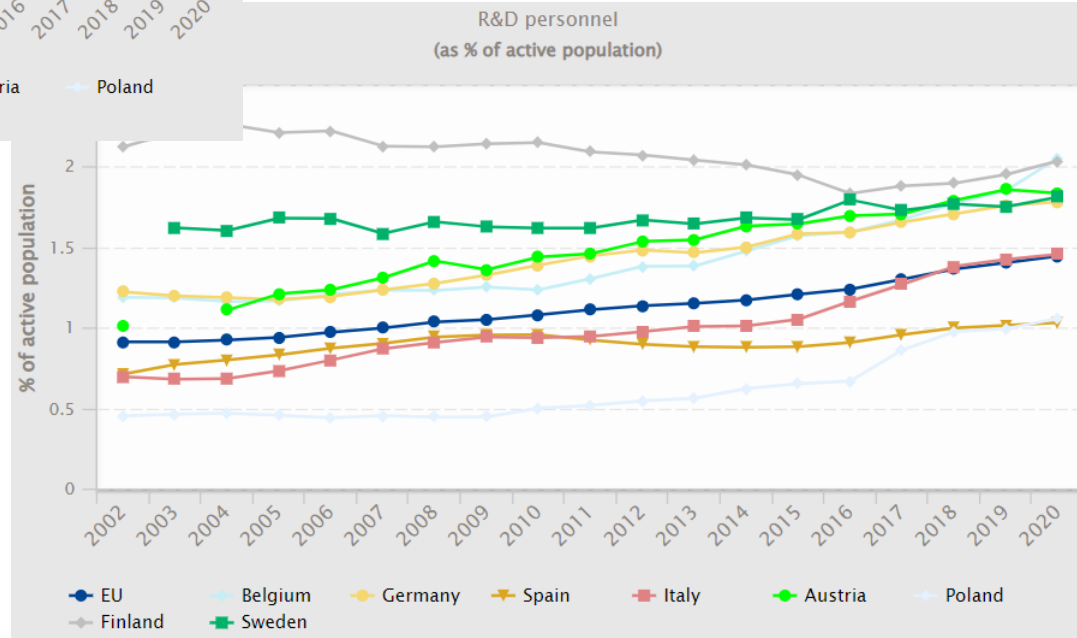


R&D EXPENDITURES AND PERSONNEL



ENERO members:
R&D Staff – approx. 4500

ENERO members
periodically benchmark
R&D expenditures and
research staff engagement



ENERO COMPETENCIES

The R&D services and projects, innovative discoveries and eco-innovative solutions of ENERO members are linked to sustainable development and strengthen the adaptive processes of ecosystems and economies



ENERO FINGERTIPS DOMAINS



ENERO FINGERTIPS SELECTED SUBJECTS

INFRASTRUCTURE & DATA

water, emissions, air,
soil, health, biodiversity



SPACE

development of space
surveillance and
tracking (SST),
exploitation of scientific
space data

NANO

Nano-Material-Process
risk based science,
energy-efficient buildings
(EeB)

ENERGY

upgrading buildings' energy
performance and smartness,
energy efficient industry and
services, renewable energy
solutions, renewable fuels for
transport, smart and clean
energy for consumers, smart
cities and communities,
enabling near-zero CO2
emissions from fossil fuel
power plants and carbon
intensive industries

HEALTH

personalised medicine,
Innovative health &
care industry,
improving global
health, trusted big data
solutions for health
and care

FOOD AND BIOECONOMY

new bio-based value
chains and open up new
markets, circular
bioeconomy, environment
and climate smart food
production and
consumption

ENVIRONMENT

adaptation and climate
services, inter-relations
between climate change,
biodiversity and ecosystems,
circular economy, raw material,
cryosphere
Water for our environment,
economy and society,
innovating cities for
sustainability and resilience

INTERNAL KNOWLEDGE CONSOLIDATION

WG Air ENERO



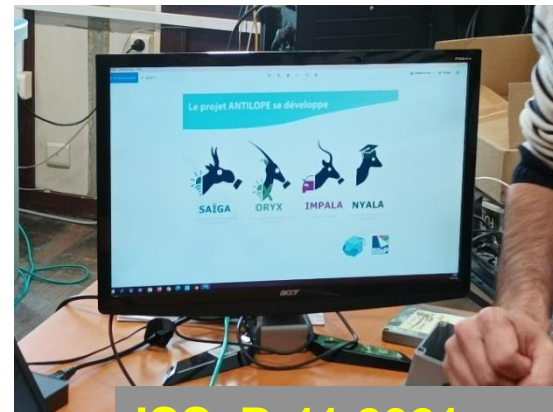
Subjects

- ☐ Large network of low-cost sensors
- ☐ High resolution model
- ☐ Vehicle emissions testing
- ☐ Natural base solution for climate and air quality
- ☐ Indoor / outdoor air interaction
- ☐ COVID 19
- ☐

INSPIRATION BY NETWORKING



INERIS, 04.2017



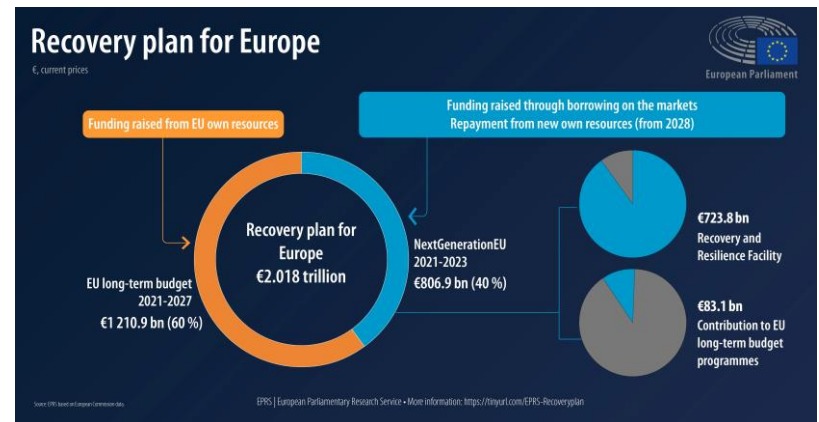
ISSeP, 11.2021



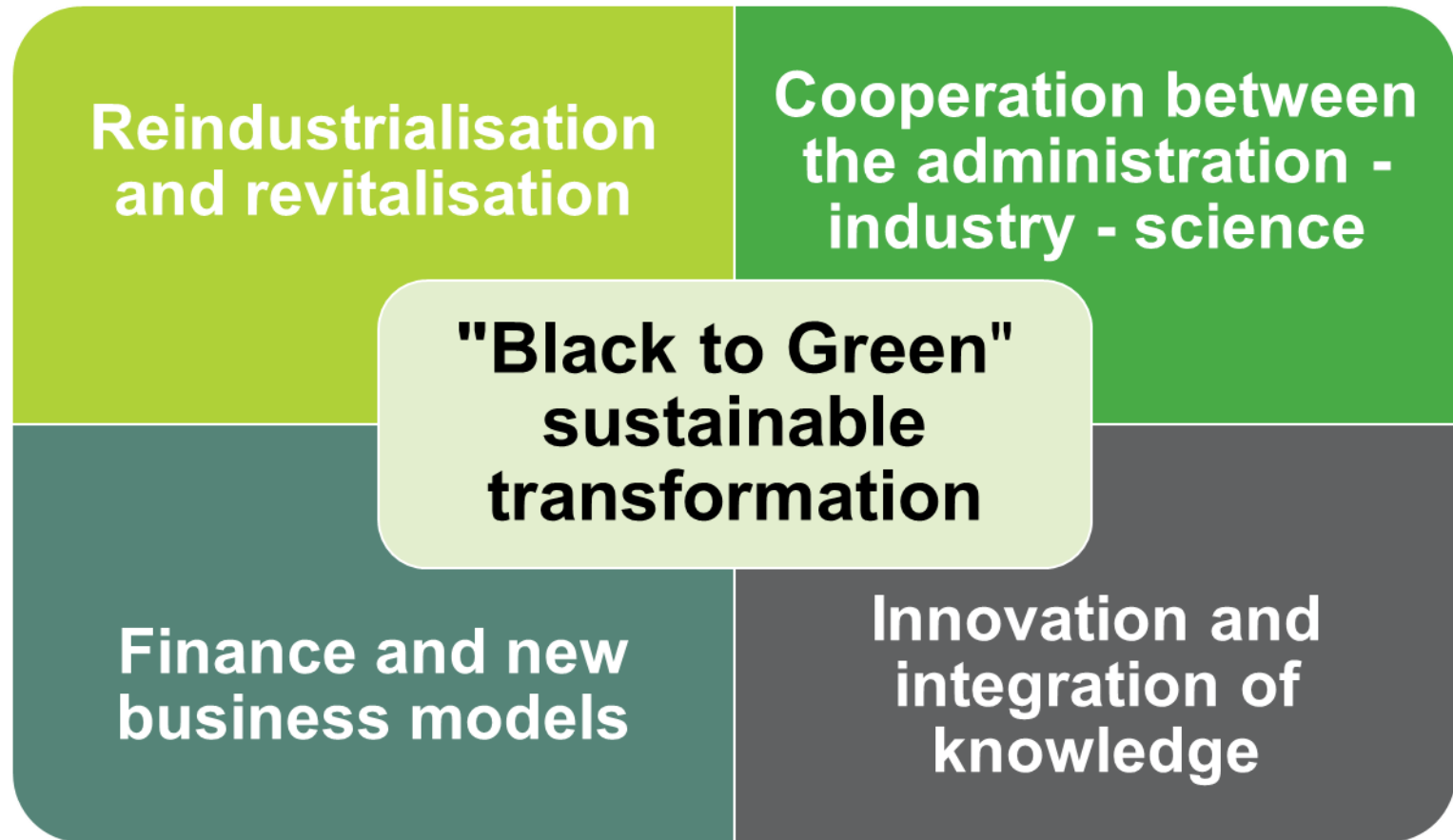
ENEA, 05.2019



R&D FINANCE OPPORTUNITIES



STRATEGIC CHALLENGES



Focused on assessing and minimising the environmental impact of extreme weather events on mining operations, **TEXMIN** project aims to provide guidance to all stakeholders on gradual and sudden impacts on operating, closed and abandoned coal mines brought about by climate change and extreme weather events, as this issue is currently affecting sites in Europe and the rest of the world.

The impact of coal ash ponds on water resources

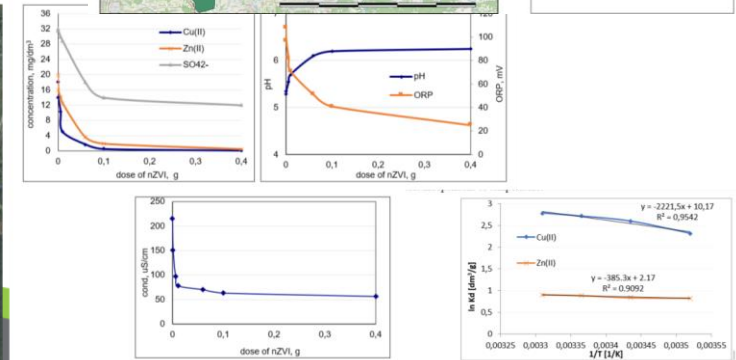
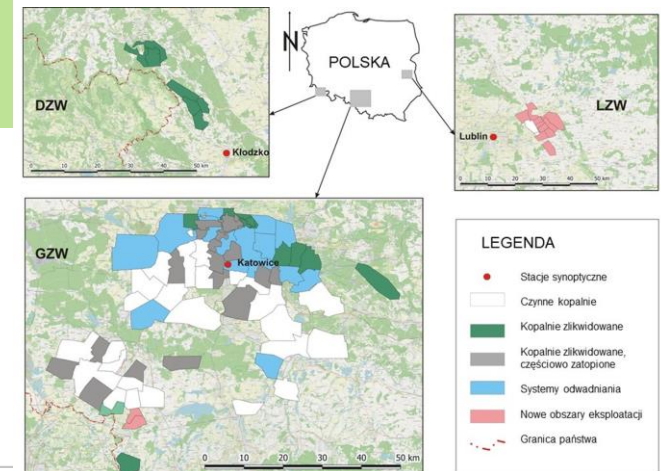
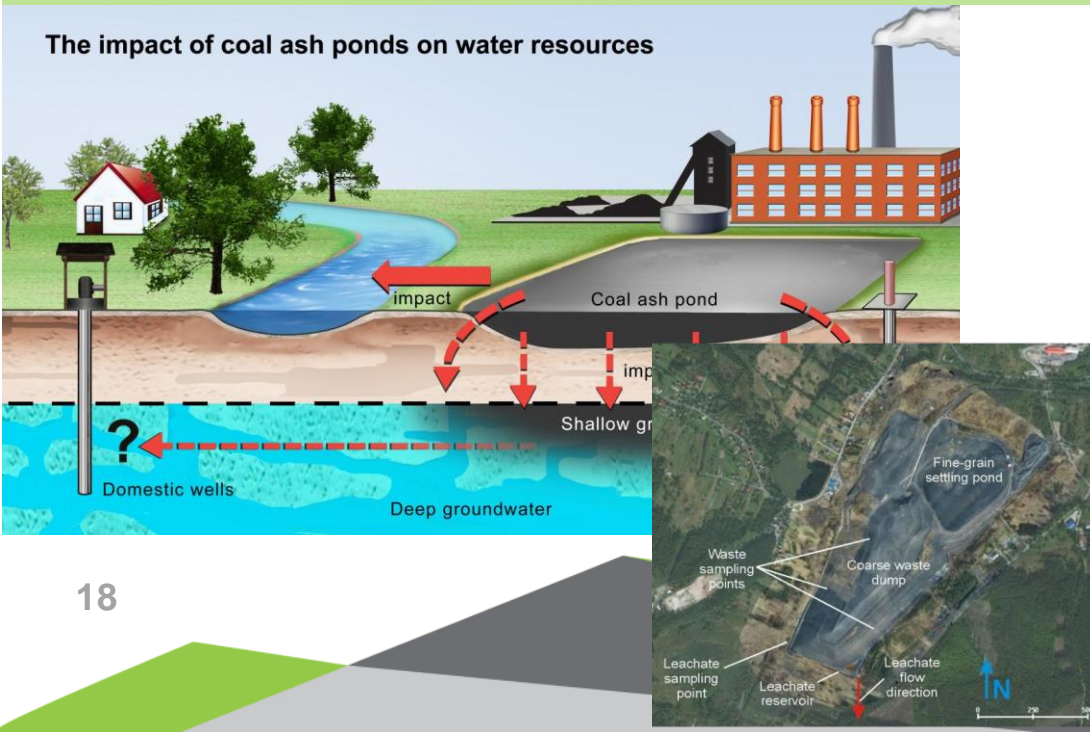
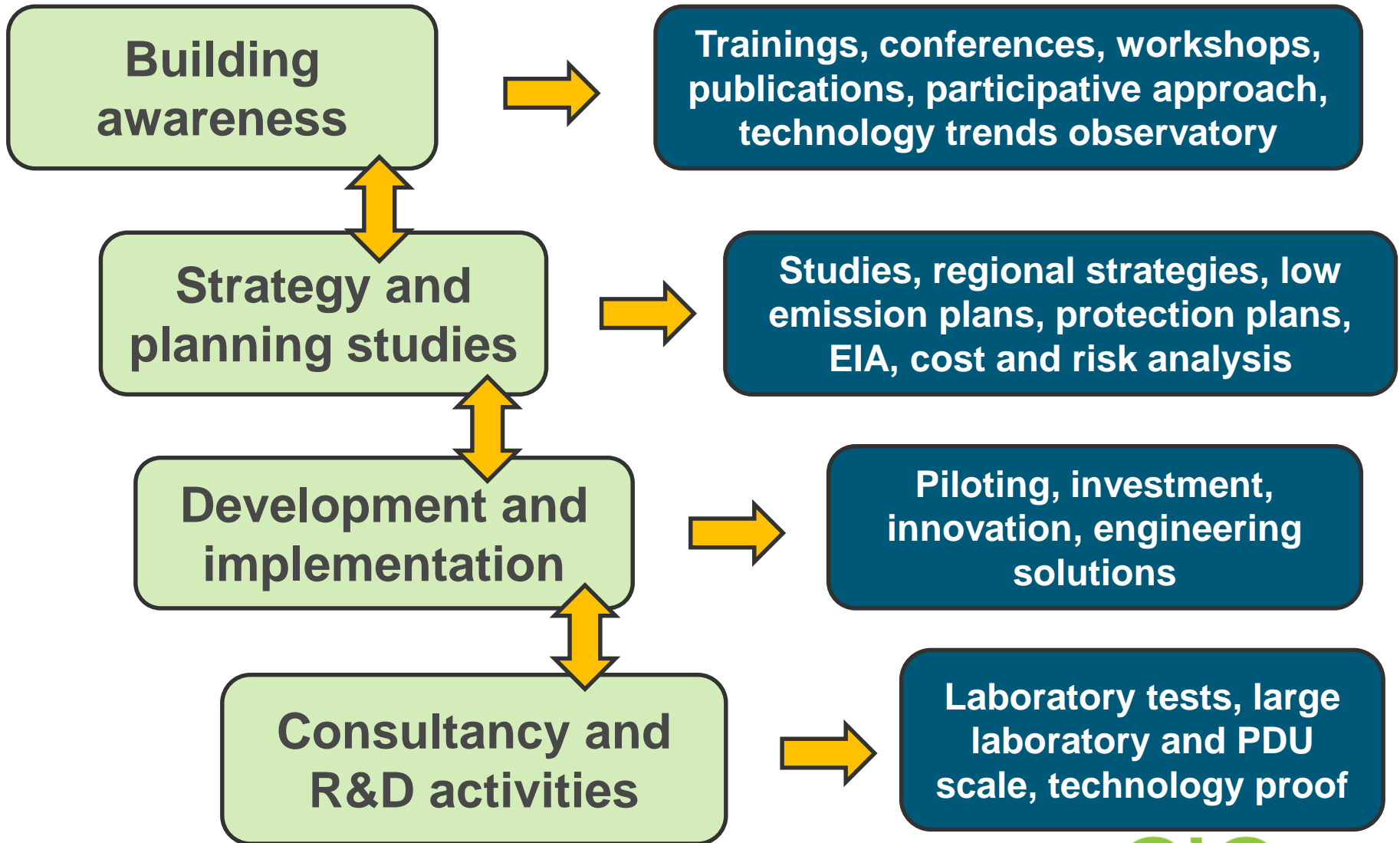


Fig. 2 Influence of nZVI doses on mine drainage chemistry

Influence of temperature on Cu(II) and Zn(II) adsorption on nZVI; $C_0 = 20 \text{ mg/L}$

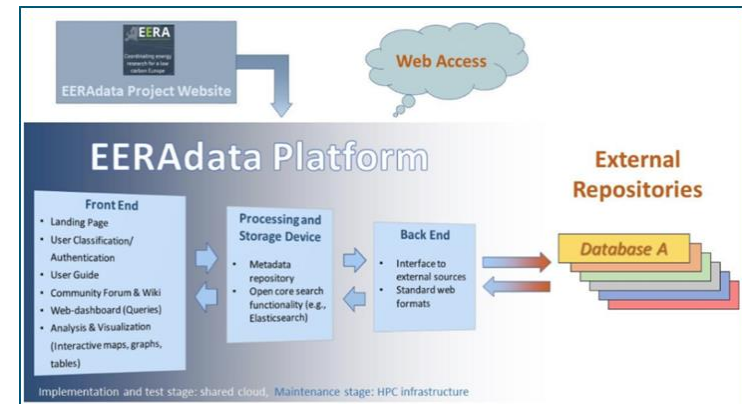
SUPPORTING TRANSITION PROCESSES



INFRASTRUCTURE & DATA PROJECTS



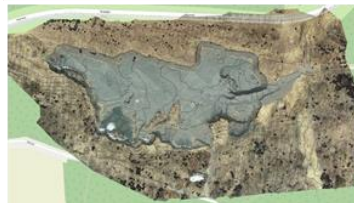
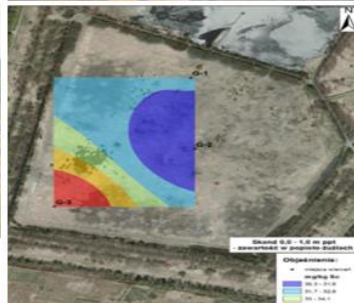
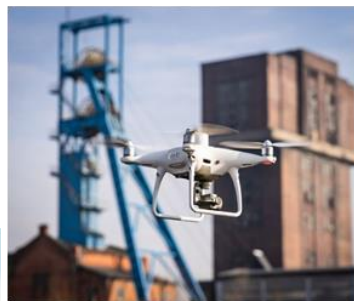
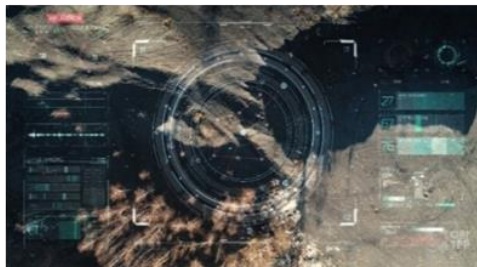
Towards a FAIR and open data ecosystem in the low carbon energy research community (EERAdata) - develop, explore, and test a FAIR and open data ecosystem for low-carbon energy research data, where FAIR stands for F-indable, A-ccessible, I-nteroperable, R-e-usable.



Opportunities and barriers for opening of research databases in low carbon energy research – OPEN DATA

The study was aimed at taking stock of the situation and at providing insights into practices to accelerate the re-use and sharing of data in research on energy.





ENVIRONMENTAL ENGINEERING GIG CONTRIBUTION

Environmental monitoring and assessment

Waste management

Water management

Air protection

Land revitalization

Assessment of radioactivity and radioactive contamination

Energy and regional transition

Eco-innovative solutions and technologies

3912 
research and contract
works for over **1555** clients

17 
applications for an
invention, **8** industrial
designs and **4** trademarks

132 
people with academic
degrees and titles among
of about **472** employees

210 
scientific publications

93,9 
million zł
of revenue

19
accredited
testing
laboratories



59
projects
22 national ones and
37 international



15 
prizes
and awards

Mission

*We support development with
knowledge*

Vision

*GiG as a leader in
implementing modern solutions*

TAKEAWAYS

ENERO members promote the principles of the Green Deal, strengthen the transition process and broaden new perspectives on this pan-European challenge.

ENERO members' multidisciplinary scope of competencies corresponds to Green Deal challenges

ENERO supports our industrial and public partners in their green transition

ENERO provides credible, trusted knowledge and eco-innovative solutions

ENERO convenes and enhances partnerships for R&D initiatives and projects

WE INVITE YOU TO COOPERATION

Jan BONDARUK

Deputy Director for Environmental Engineering

Central Mining Institute

Plac Gwarków 1

40-166 Katowice

Poland

m: +48 512 293 850

jbondaruk@gig.eu

www.gig.eu

