Wednesday 1 July, 14:45 – 17:00

Stakeholder seminar for carbon-intensive regions

Welcome to the carbon-intensive regions

14:45 – 14:50

Carbon-intensive regions in the Just Transition

Mathieu Fichter, DG REGIO, European Commission

European Commission

14:50 – 16:05

Roundtable

Planning the just transition in carbon-intensive regions: common challenges and solutions

- **Professor Cristiano Galbiati**, Princeton University and Gran Sasso Science Institute: ***The case of the areas of Taranto and Sulcis in Italy***

- **Alexandre Varela**, Technical Director of the Energy Agency of Porto, Portugal: ***The case of the region of Porto in Portugal***

- **Liana Gouta**, Group Director, Energy Policy and International Affairs, HELLENIC PETROLEUM SA: ***A perspective from the Refineries and Fuels sector***

- **Radosław Żydok**, Director of the Department of Regulatory and Strategic Analysis, KGHM: ***Insights from the Polish Copper and Silver industry***

- **Anders Wijkman**, Honorary President of the Club of Rome, Chairman of the Swedish Association of Recycling Industries and Chairman of the Governing Board of EIT Climate-KIC: ***The role of circular economy and low-carbon innovations in the just transition***

- **Judith Kirton-Darling**, Deputy General Secretary of industriAll Europe: ***A just transition for workers in carbon-intensive sectors***

Professor Cristiano Galbiati, Princeton University and Gran Sasso Science Institute

The case of the areas of Taranto and Sulcis in Italy

The case of the areas of Taranto and Sulcis in Italy

Seminar: Launch of the Just Transition Platform - Coal Regions in Transition Virtual Week and Carbon Intensive Regions
Session: Carbon-intensive regions in the Just Transition
Wednesday, July 1, 2020

Cristiano Galbiati
Princeton University and Gran Sasso Science Institute

Outline

- Broader Context
- The Just Transition in Taranto: the hotbed for the European radical transformation of the steel making process
  - Switch to decarbonization and green steel production
- The Just Transition in Sulcis-Iglesiente: from active coal mine to center of excellence in advanced medical technologies
  - Production of isotopes for advanced medical diagnostics, proteomics, and fundamental research in astroparticle physics
- Le Fil Rouge: advances in technical gases and a prominent link to COVID-19 mitigation
- Conclusions

Broader Context

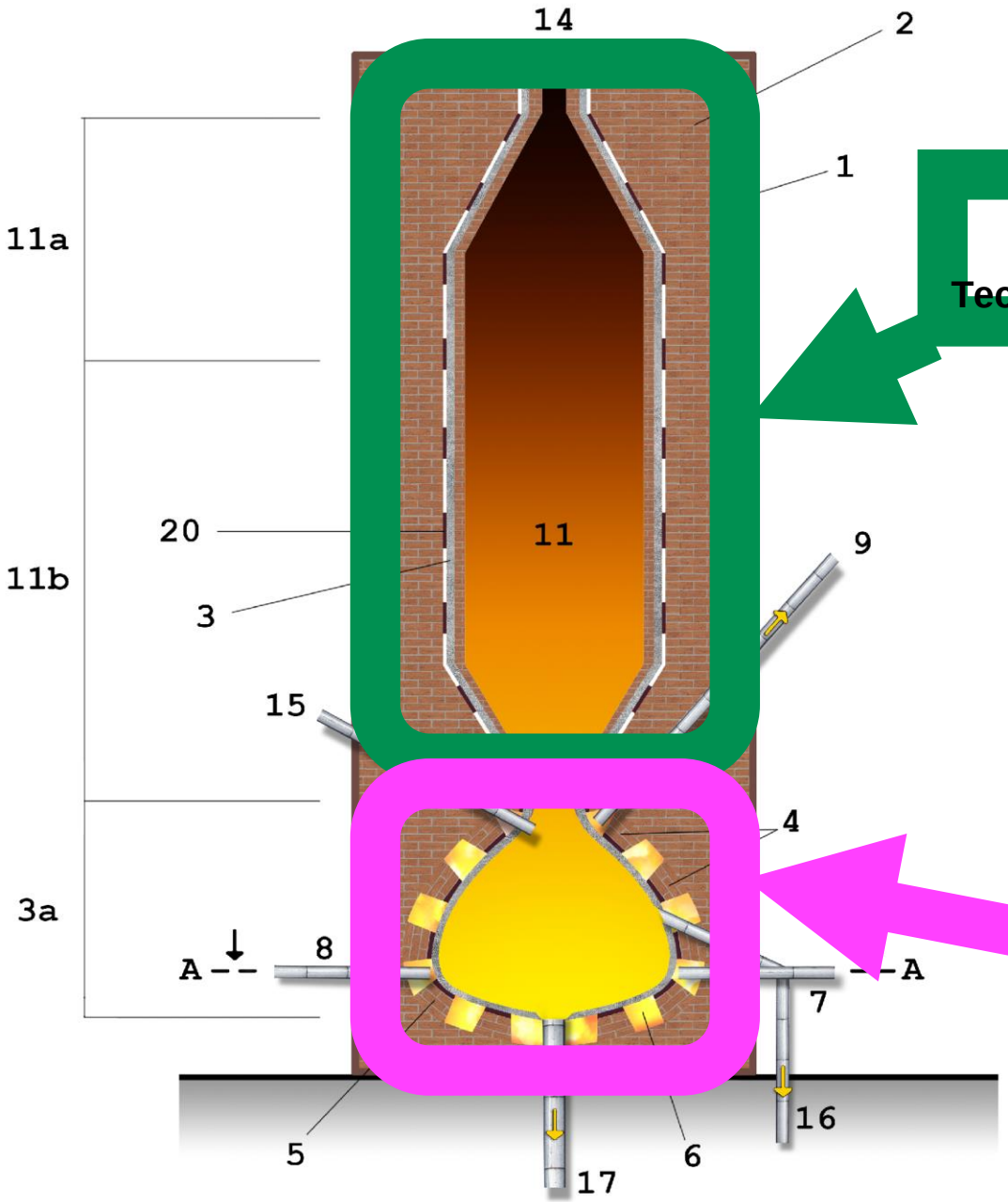
- *"Country Report Italy 2020"* released on February 26, 2020
  - Accompanying the document *"2020 European Semester: Assessment of progress on structural reforms, prevention and correction of macroeconomic imbalances, and results of in-depth reviews under Regulation (EU) No 1176/2011"*
- Annex D: Investment Guidance on Just Transition Fund 2021-2027 for Italy
  - *"Italy is the EU's fourth largest producer of greenhouse gas (GHG) emissions, and its energy sector is the largest contributor to the total GHG emissions with a share of 56% in 2017. Italy's main sources of GHG emissions are coal power plants and iron/steel production (109). Two areas deserve specific attention, Taranto and Sulcis Iglesiente (Carbonia-Iglesias, in the South-West of Sardinia)."*

Just Transition: Taranto

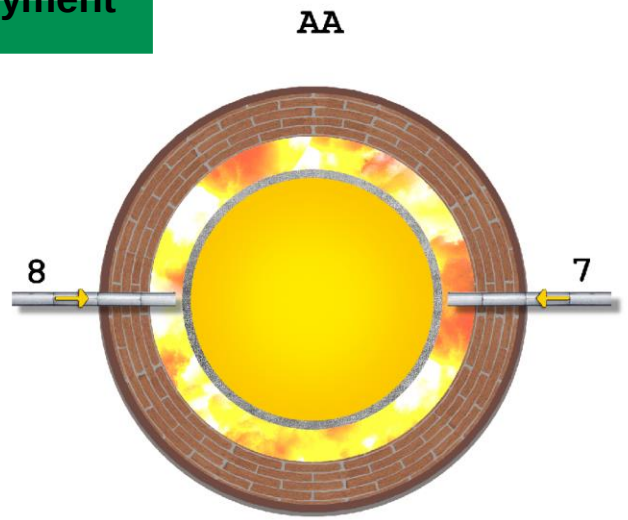
- First and foremost: definition of role of ArcelorMittal
- The cornerstone of the Italian plan: Environment-friendly “green” steel production, fully compatible with public health and ecology. A four-step process for a radical elimination of coal from the steel cycle:
  - Direct Reduced Iron (DRI) with Natural Gas - ready now
  - 2nd step: Natural Gas-Powered Smelting (NGPS) ~2-3 yrs R&D
  - 3rd step: CO_2 recovery, from waste to product ~5 yrs R&D
  - 4th step: turning to hydrogen for DRI production (Hydrofurnance, HF) ~7 yrs R&D

CO_2 Recovery Plan

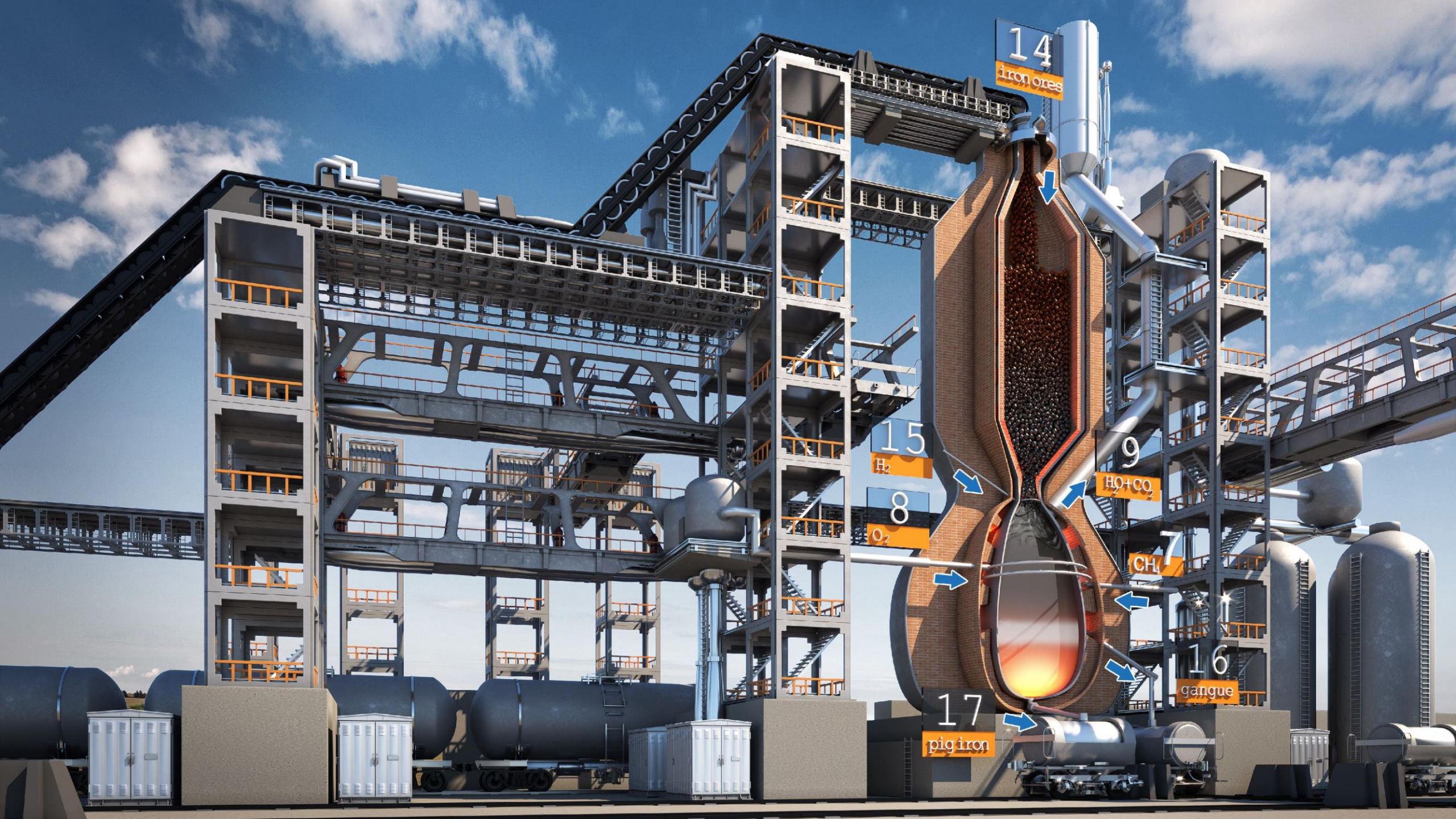
- A fundamental tool to complete the green transition. The breadth of the Just Transition Mechanisms allows to consider a number of advanced technical solutions
- The territorial plan for Taranto could focus on a three-step strategy for advanced CO_2 recovery:
  - Production of carbon for fertilizers
  - Recovery of low-temperature heat
  - Direct recovery and liquefaction of CO_2, shipping to offshore wells



Direct Reduced Iron (Iron)
$Fe_2O_3 + 3H_2 \rightarrow 2Fe+3H_2O$
Technology Ready for Deployment



Natural Gas-Powered Smelting (NGPS)
Melting via oxyfuel burners
R&D Required


14
iron ores
15
H_2
8
O_2
9
H_2O+CO_2
7
CH_4
16
gangue
17
pig iron

Just Transition: Sulcis-Iglesiente

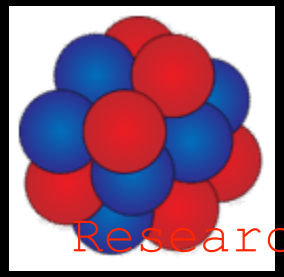
- Path for transformation of the Sulcis-Iglesiente coal basin established in 2015. Guiding principle:
  - After 3,000 years of continuous minerary activity on site, abandon mining but continue active exploitation of historic site with an ambitious transition to a production facility of stable isotopes for advanced medical diagnostics and proteomics, as well as fundamental research in physics
    - The Aria Project: Carbosulcis mine in Sulcis-Iglesiente to become international hub for production of stable isotopes
    - First phase focuses on fundamental research for dark matter, led by Istituto Nazionale di Fisica Nucleare (INFN) and Carbosulcis
  - Transition plan complemented by use of Carbosulcis areas for green energy production (photovoltaic farm), CO_2 capture by growth of blue algae, and transformation of coal residues in fertilizers

~~^{39}Ar~~[E-16]
^{40}Ar

^{136}Xe[8.9%]

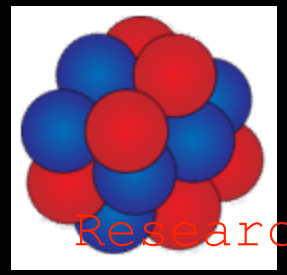
^{13}C[1.1%]
^{15}N[0.4%]
^{17}O[0.04%]

^{18}O[0.2%]



Research in Fundamants of Physics:

- Discovery of Dark Matter

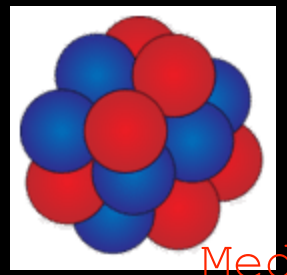


Research in Fundamants of Physics:

- Discovery of Majorana Neutrino

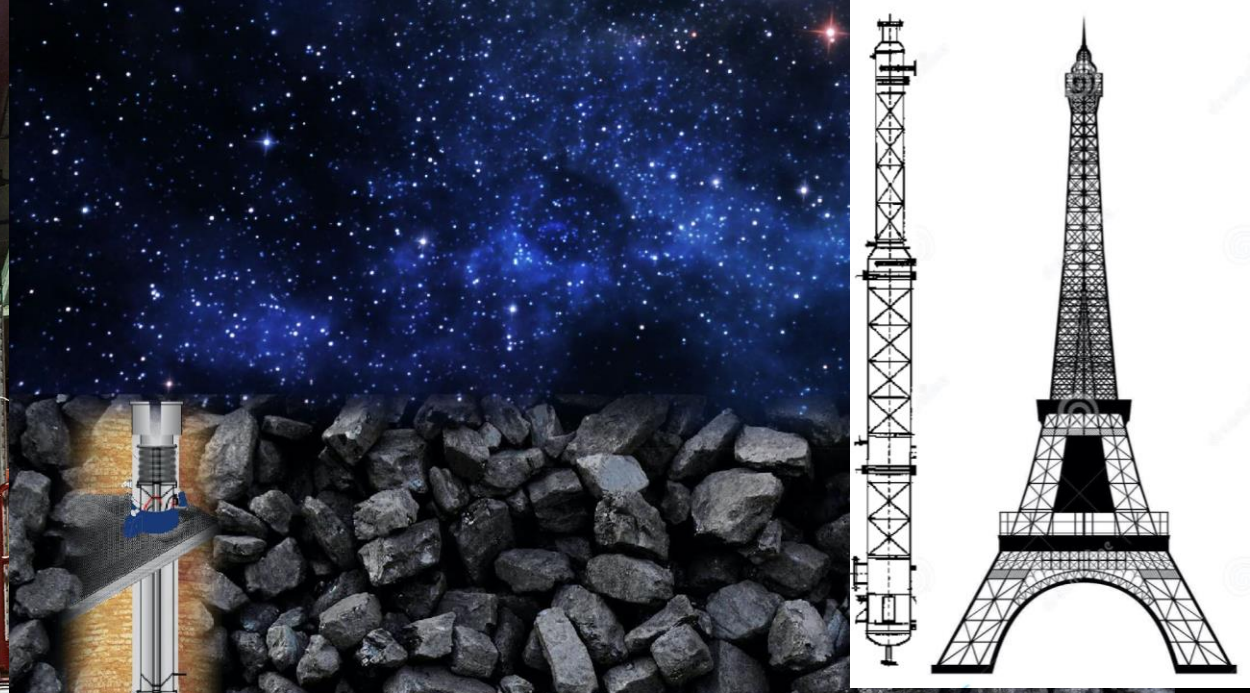
Medical Research and Diagnostics:

- Magnetic Resonance
- Mass Spectrometry
- Proteomi~€1B



Medical Diagnostics:

- Positron Emission Tomography



Conclusion

- Radical plan for elimination coal mining and simultaneous revitalization of coal mines towards new, green economic cycle for advanced medical diagnostics, and;
- Radical plan for elimination of coal from steel making process and introduction of cycle for complete recovery of CO2;

- Justify the use of public funds for completing the research-driven transformation and eliminate at the root any conflict between industrial activity, public health, and environment

Transition of Energy Production to Natural Gas

- TAP and associated infrastructures ready to provide in 1-2 years abundant LNG supply to Taranto area
- Two generations of coal-powered energy plants in Sulcis-Iglesiente responsible for production of 560 MW, accounting of 20% of total energy consumption in Sardinia
  - Energy-intensive production of aluminum from bauxite in Sulcis-Iglesiente dependent upon local energy production
- Transition of production to natural gas and associated recovery of CO_2 a cornerstone of the Italian Just Transition Plan, and may require extension to other areas

Le Fil Rouge

- All transformation processes guided by fundamental research in particle physics and astroparticle physics. Initiatives in Italy led by INFN and associated Universities
  - Aria project initiated because of need of ultra-pure argon for discovery of dark matter research (DarkSide project)
  - Steel transformation project initiated because of need of capturing xenon for discovery of neutrinoless double beta decay (Satyria project)
  - Strong investment in basic research, directed in areas strongly affected by Just Transition transformation, provides viable and visible alternatives to workforce temporarily displaced and represents the best practice for virtuous mitigation of social costs

The End

Alexandre Varela, Technical Director of the Energy Agency of Porto

The case of the region of Porto in Portugal

European Commission

PLANNING THE JUST TRANSITION IN CARBON-INTENSIVE REGIONS: COMMON CHALLENGES AND SOLUTIONS

The case of the region of Porto in Portugal

01 July 2020

#CoalRegionsEU
#JustTransitionPlatform

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AGÊNCIA DE ENERGIA DO PORTO

AdEPorto

AdEPorto - Agência de Energia do Porto, a nonprofit organization, was founded by the Municipality of Porto in 2007. Presently AdEPorto aggregates 10 municipalities of the Porto Metropolitan Area – North of Douro River (AMP-ND).

The **Associate Entities** are the 10 AMP-ND Municipalities and 21 other associate member institutions, both private and public, ranging from different activities: energy, water, R&D, professional associations, and academia.

AMP-ND is the Northern part of a NUT3 region, accounting for over 60% of the population in less than 50% of the area and around 70% of Gross Added Value (GAV).

Population > 1,1 milhão | **Area** > 990 km^2

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Associate Entities

MUNICIPALITIES

COMPANIES

ASSOCIATIONS, ACADEMIA, R&D

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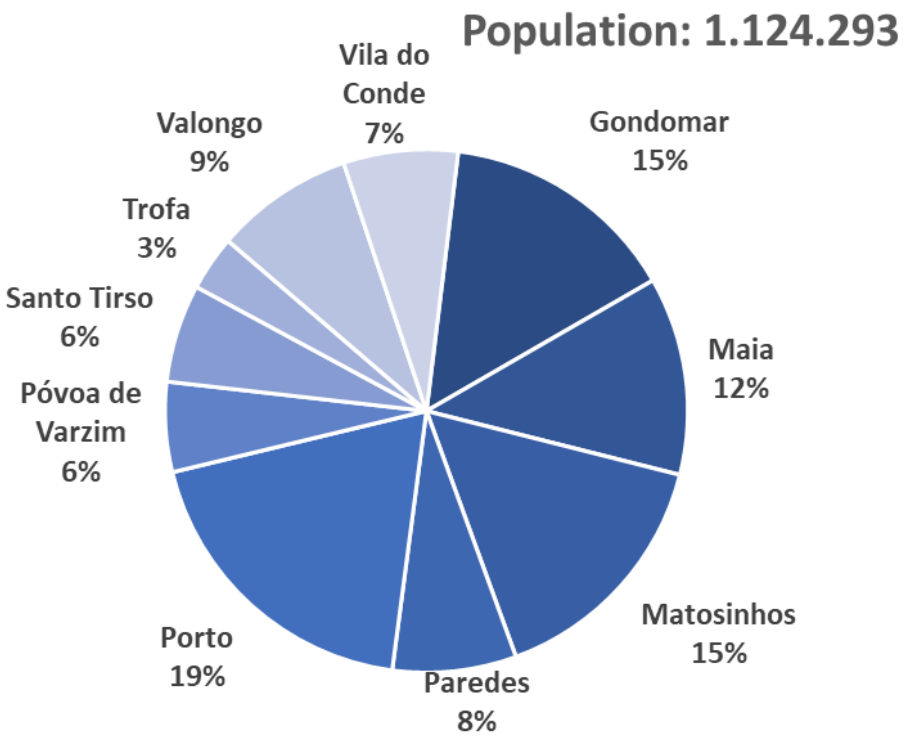
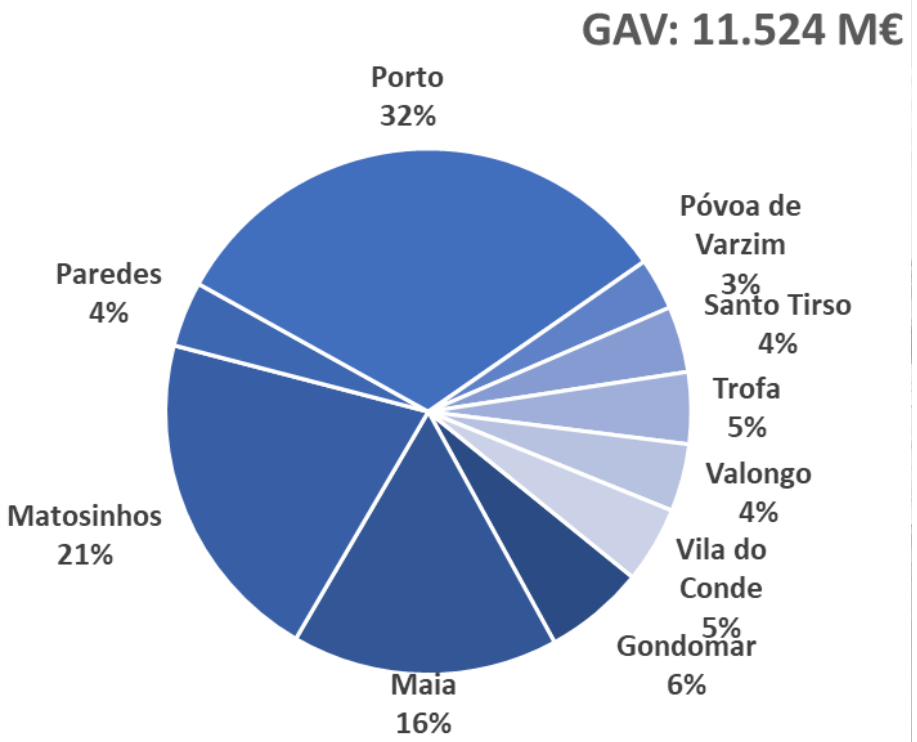
Territory “fly-by” (2018)





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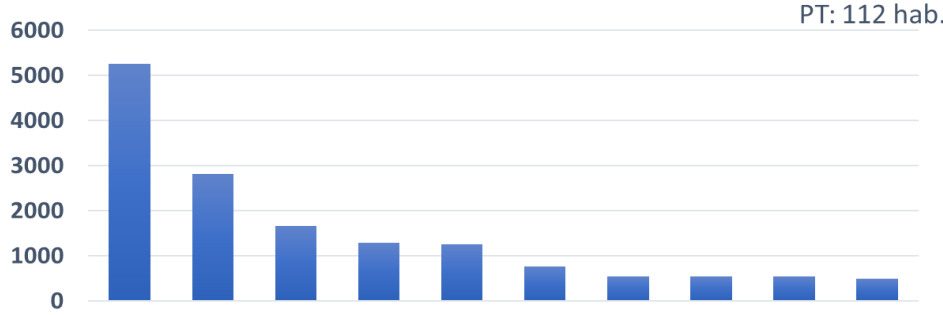
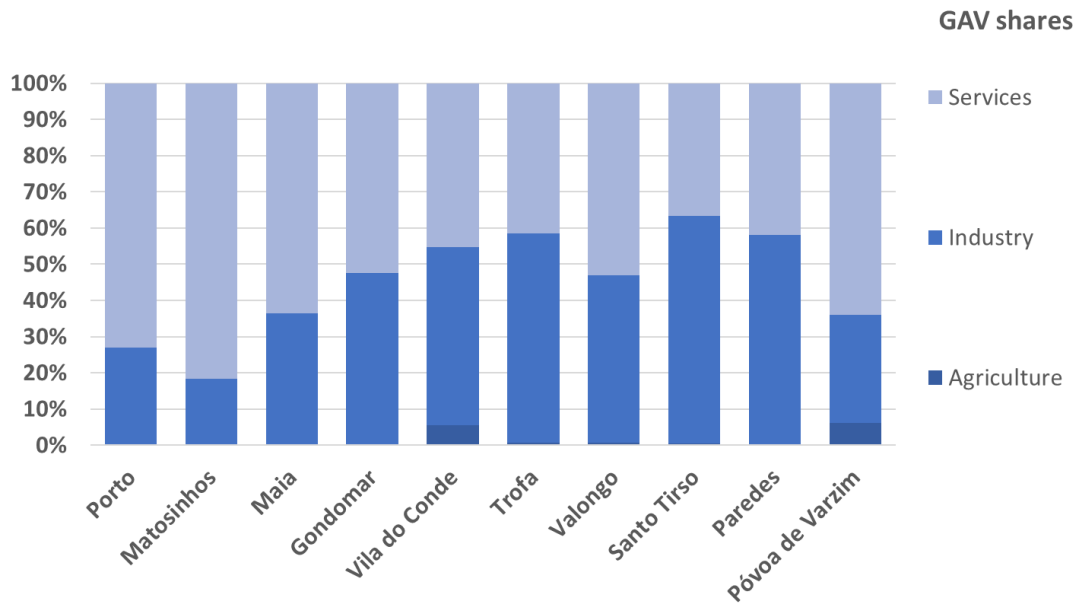
Territory “fly-by” (2018)

AMP-ND: 1.136 hab./km²
PT: 112 hab./km²





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Energy Use

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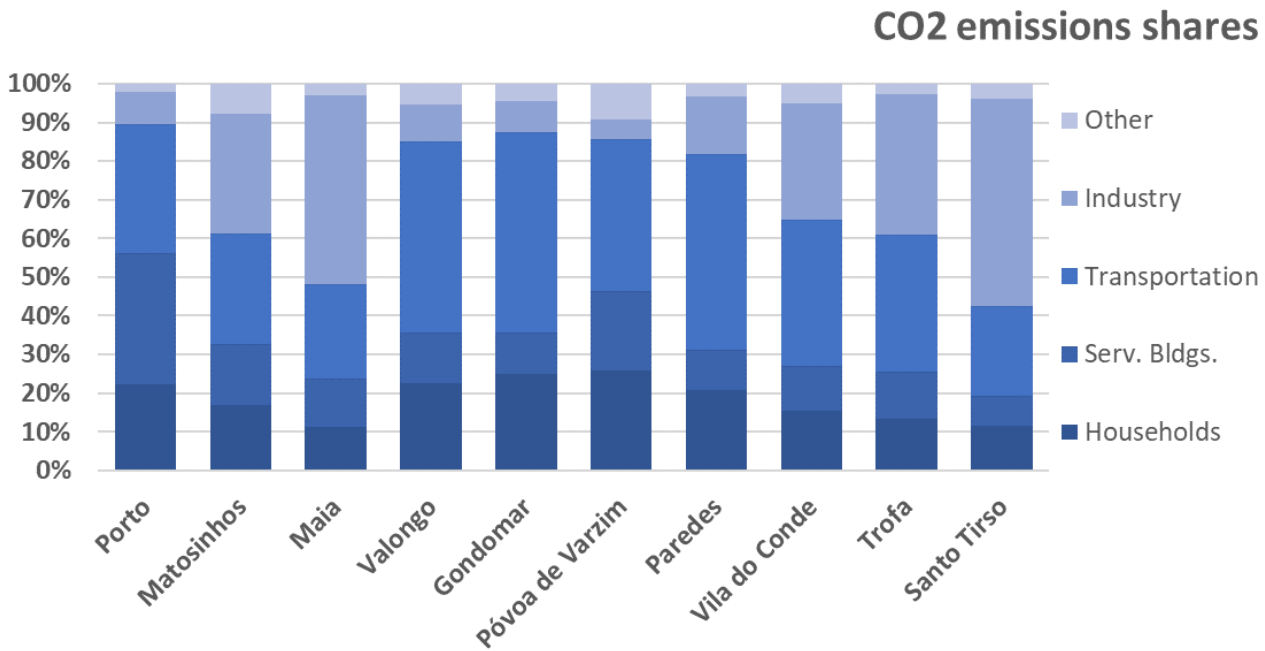
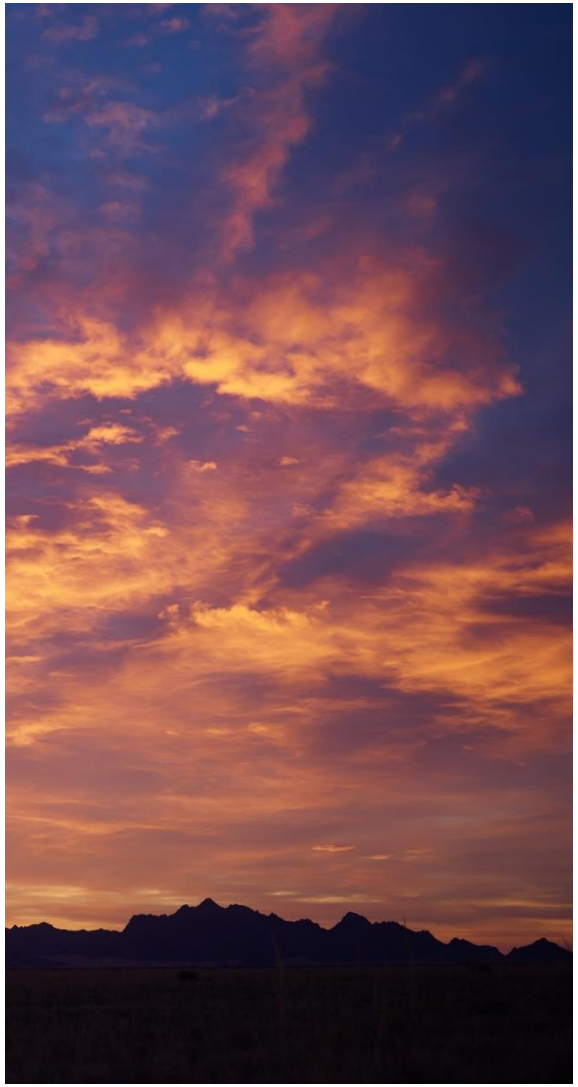
Supply and Demand (CO_2 Emission, 2018)





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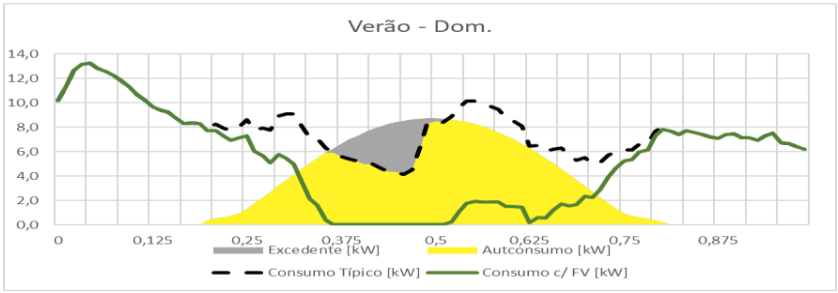
Local Authority Examples: Porto Solar

Porto Municipality – Buildings Bundle – 1 MWp – Phase 1

Buildings	29
(Schools)	25
PV Power [kWp]	962
Annual Generation [kWh/year]	1.403.508
Grid Electricity Reduction [kWh/year]	869.306
Avoided CO2/year [ton]	505
Investment Cost	945.000 €
Annual Income	149.003 €
Payback [years]	6,3



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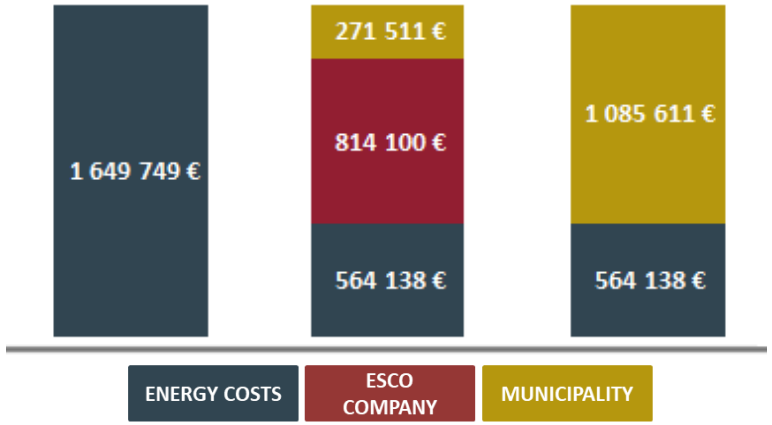
Local Authority Examples: Sample EPC in Public Lighting

Contract Parameters

- **18 972** Lighting fixtures
- **66%** Total Savings
- **25%** Total Municipality Savings
- **12 years** Contract duration
- **4 months** Implementation time

Contract finantial results

- **1 649 749 €** Total anual energy cost (prior)
- **1 378 238 €** Total anual cost during contract (Energy + Rent)
- **271 511 €** Anual Municipal benefit (during contract)
- **1 085 611 €** Anual Municipal benefit (after contract)



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Energy Transitioning: Local Authority and the Territory

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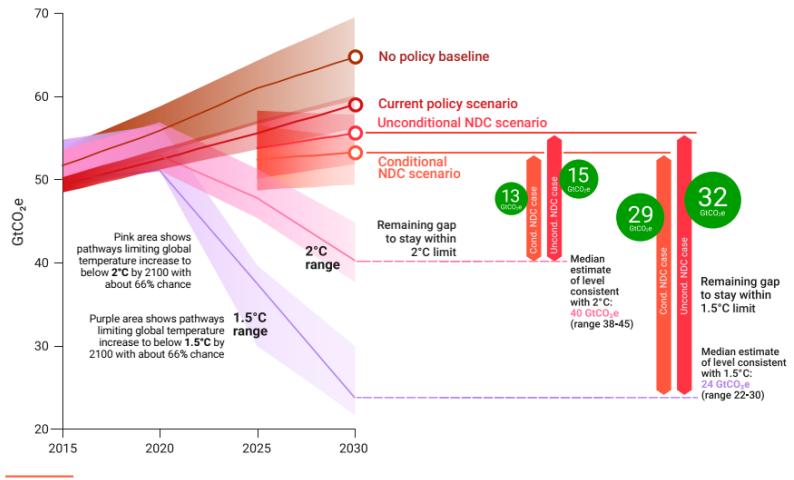
Challenges and Solutions

- Matosinhos has a **refinery working from 1969** (around 500 direct jobs)
- Other **affected sectors**:
  - Fuel logistics
  - Gas stations
  - Auto repair shops
  - …
- Emerging **opportunities**:
  - The need for energy efficiency in buildings and industry
  - Locally sourced renewable energy projects
  - Grid technologies and storage systems
  - Renewable Energy Communities (also in industrial parks)
  - …
- **“Energy efficiency first”** needs financing and will leverage the local just transition
- Sustainable Energy and Climate Action Plans (**SECAP**) as essential strategic territorial tools for an holistic approach
- The need of policies and actions for **swift and effective stakeholder engagement**



Source: UNEP (2018), Figure 3.1.

Covenant of Mayors for Climate & Energy

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PLANNING THE JUST TRANSITION IN CARBON-INTENSIVE REGIONS: COMMON CHALLENGES AND SOLUTIONS

The case of the region of Porto in Portugal

THANK YOU!

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Liana Gouta, Group Director, Energy Policy and International Affairs, HELLENIC PETROLEUM SA

A perspective from the Refineries and Fuels sector

European Commission

The Role of the Refining Sector in the Energy Transition of Greece

EC Carbon Intensive Regions Seminar,
July 1 2020

Liana Gouta
Director on Energy Policy &
International Affairs

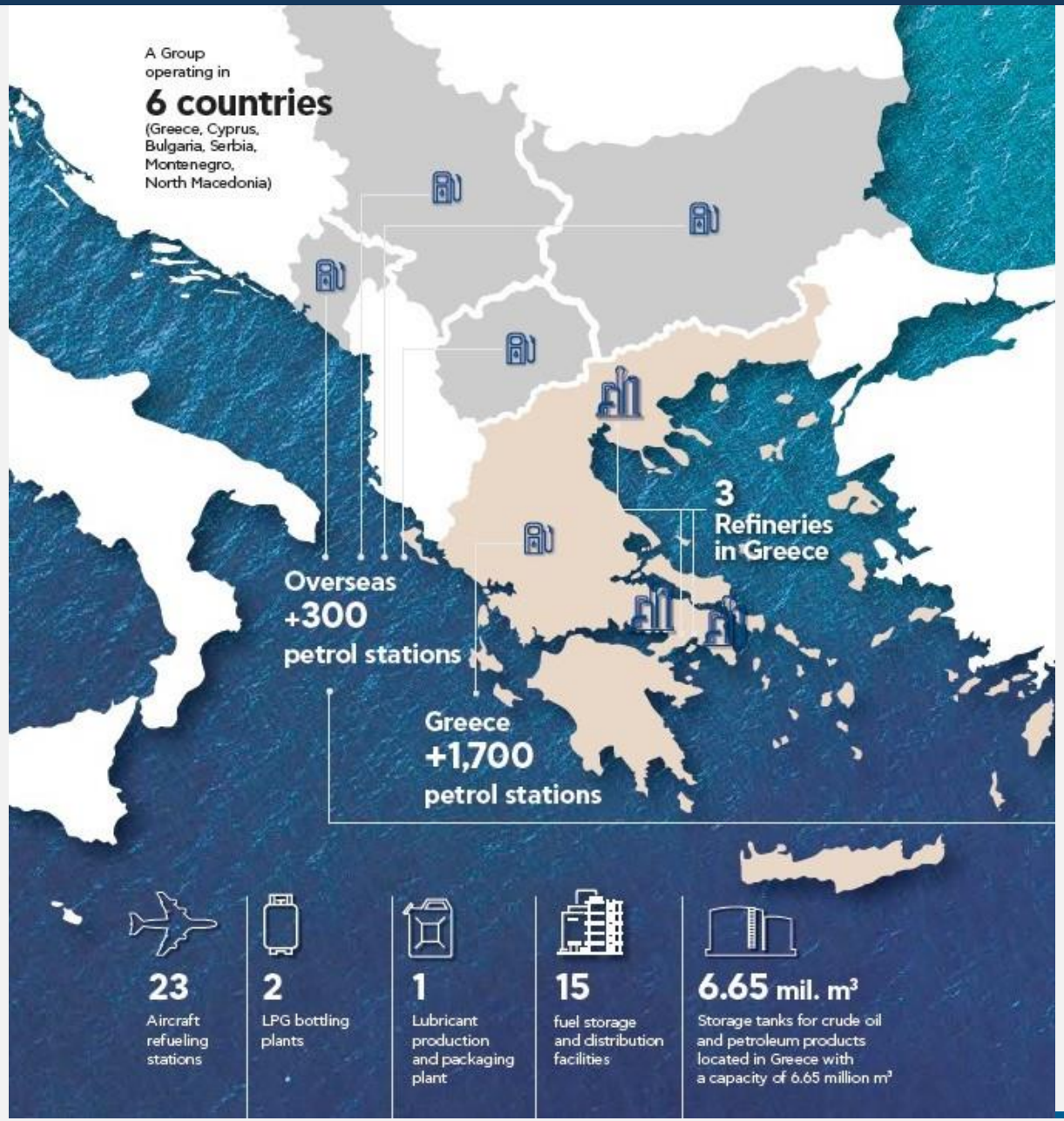
HELLENIC
PETROLEUM

1. **Overview of HELPE**
2. **Greek Energy sector**
3. **The COVID exit: recovery in the EU Green Deal**
4. **An EU industrial strategy supporting the EU Refining Energy Intensive Industry (HLG EIIs Masterplan)**
5. **Clean Fuels For All**

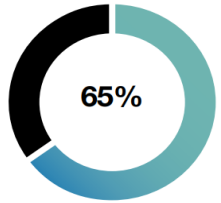
1.

Overview of HELPE

HELPE: The Group at a glance



REFINING



of Greece's refining capacity

PETROCHEMICALS

RETAIL

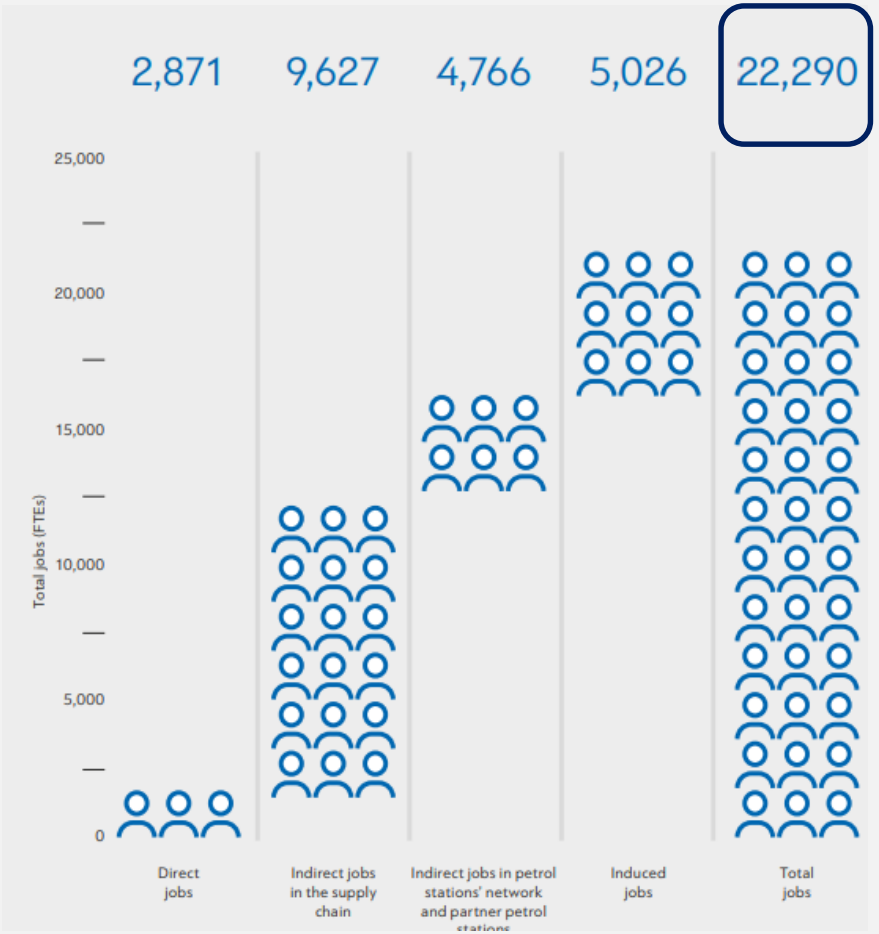
NEW ACTIVITIES

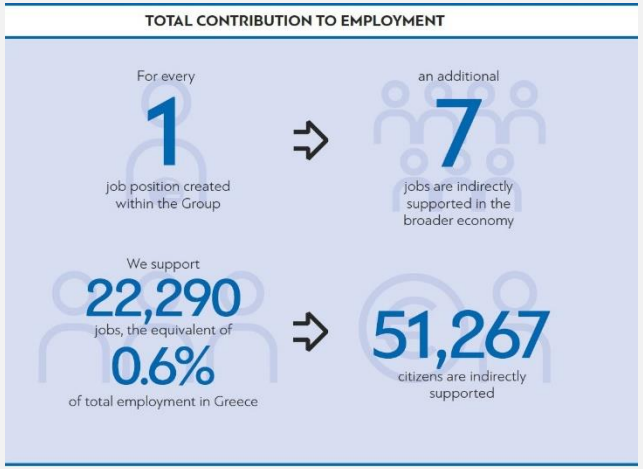
- ✓ **POWER**
- ✓ **GAS**
- ✓ **RENEWABLES**

Value Creation for the Greek economy and society

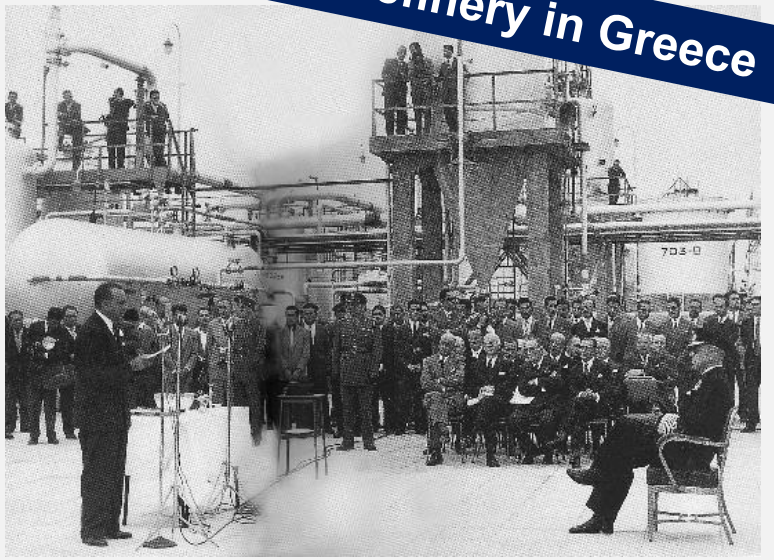
Financials

Jobs





1958, the first refinery in Greece



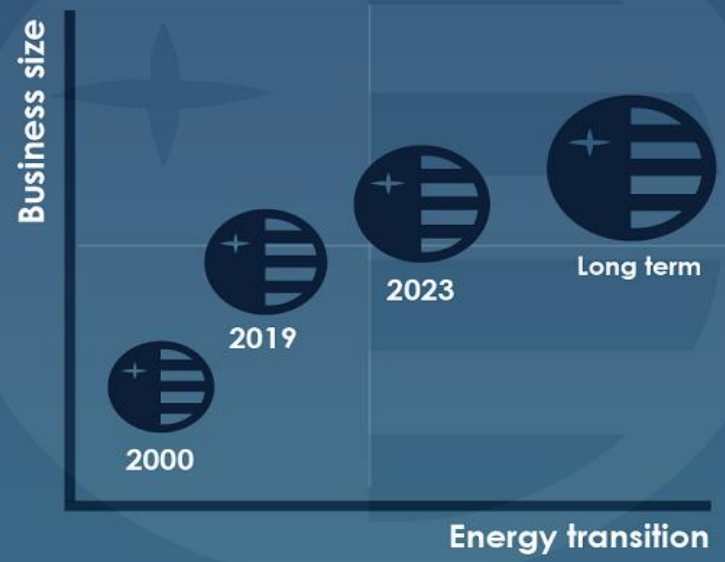
Strong support of the economic development and strong relations with the local communities through the decades…

The Thessaloniki example / Northern Greece:

Economic Development & Critical Infrastructure of the region connected to the refinery

- ✓ electricity grid
- ✓ water supply system
- ✓ the port
- ✓ the railway and the transport
- ✓ the banking system
- ✓ the technical companies
- ✓ the university of the city

HELPE's Vision



Facilitate the energy transition by maximizing returns in our core business & developing a diversified energy portfolio

Improve Core business
Operational excellence, digital transformation and energy efficiency

Grow Core business
Selected investments in upgrades, development of trading capabilities

Develop New Businesses
Grow in Renewables, expand Power & Gas

204 MW

Acquisition of P/V project in Kozani area

The largest Renewables project in Greece & among the 5 biggest in Europe

Health, Safety & Environment
Lies at the foundation of our strategy

Our 2030 Goal:

50% CO_2 emissions' reduction

Our 2025 RES Goal:

600 MW

2.

Greek Energy Sector

Greek Energy Sector overview

- **Power generation** heavily dependent on Greek **local lignite**
- Western Macedonia (Kozani) providing around 50% of the total electric power in the country
- **A competitive, export-driven refining sector**
- **Renewables** (wind, solar) growing
- **Older vehicle fleet**, very few EVs
- Significant **global shipping** industry with **need for fuels**
- Economy heavily dependent on **tourism** – **need for aviation fuel**

NECP, 2030 targets

- **Coal phase out by 2028** | lignite power plants shut down
- Reduction of **GHG emissions by 42%**
- **RES** share in **final energy consumption** to reach at least **35%**
- **RES** share in the **electricity production** to reach at least **60%**
- **RES** share in the **transport sector** to exceed **14%**, driven mainly by electrification and biofuel technologies
- **Electrification of 30% of new vehicle** registrations
- **Hydrogen,** a role to play for **lignite regions**

Liquid fuels will remain a key player in the country's energy mix in 2030, for Road transport, Aviation and Shipping

Investments by refineries in low carbon technologies will be crucial for the achievement of the national targets

3.

The COVID exit: recovery in the EU green deal

Our response to the European Union Recovery Plan : a call for a climate-neutral, resilient and socially just economy

The unprecedented Covid-19 crisis

THE DISRUPTION

- **Product demand** down by **50-75%** but very uneven
- Worse for **gasoline** and catastrophic for **Jet fuel**
- Many companies experienced a “Double storm”: **worldwide high supply VS low demand**
- Upstream **crude prices below production costs** and very low demand from refineries: companies **cash** positions heavily damaged
- Extremely difficult **investment capability** for the near/mid-term
- **Postponement of turnaround** activities in refineries
- Many **SMEs in supply chain** (maintenance and turnaround) and rural fuel suppliers are struggling

Our response to the European Union recovery plan : a call for a climate-neutral, resilient and socially just economy

The unprecedented Covid-19 crisis

OUR RESILIENCE

Refineries **kept working**, **adapting** to new supply needs, **ensuring**:

- **Reliable transport** (critical personnel transport and essential goods delivery without disruptions)
- Supply to the EU **industrial value chain** (petrochemical feedstocks)
- **Security of supply** of critical goods (strategic reserves of 90 days refinery products)

Despite the crisis and the unexpected and challenging conditions,
the EU refining industry showed **FLEXIBILITY** and **ASSISTED the EU governments** to overcome the Covid-19 crisis,
even whilst experiencing a very difficult financial situation.

Our response to the European Union recovery plan :
a call for a climate-neutral, resilient and socially just economy

Exceptional and temporary measures are needed to keep the EU refining sector **competitive and resilient**

The exit strategy should give adequate consideration to the following interdependent objectives :

1. **Facilitating the economic recovery** of the EU refinery industry so that it can keep being resilient to future challenges and shocks.

2. **Enabling its low-carbon transition** in line with the EU ambition of a climate neutral economy by 2050.

In order to remain **resilient**
we must be kept **competitive**

Our response to the European Union recovery plan : a call for a climate-neutral, resilient and socially just economy

Our Requests from the EU Recovery Plan:

- ***Strategic sector:*** Recognise Refining's key role in ensuring the **resilience of the EU economy**
- ***Transition to low C:*** Enable the **repurposing of conventional refining plants** into low-carbon products ena energy hubs, in line with the EU's 2050 climate-neutrality ambition
- ***Employees support:*** Encourage Member States to make **support programs available for employees** displaced
- ***Create the markets* for low carbon fuels,** i.e. by promoting them through public procurement
- ***Competitiveness:* Ensure protection from carbon leakage** risk and unfair competition from outside of the EU until consistency on carbon pricing and ambition is achieved.
- ***Competitiveness:*** Mitigate the **risk of future under-allocation** in the second sub-trading period of **ETS phase 4** by taking into account that 2020 is not a representative year to establish the reference historical activity level.

4.

An EU industrial strategy that supports the industry throughout the transition to climate neutrality (HLG EIIs master plan)

EUROPEAN
COMMISSION

Brussels, 10.3.2020
COM(2020) 102 final

COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE EUROPEAN COUNCIL, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS

A New Industrial Strategy for Europe

An EU industrial strategy underpinning the EU Green Deal

Policy recommendations from the HLG EIIs Industrial Transformation Master Plan (Nov.2019):

- ***Regulatory Support*: Adopt **holistic regulatory measures** for the uptake of low-carbon fuels that are instrumental to the climate neutrality.
- ***Investor security*: Secure **investors' access** to economic stimulus and policy incentives for transformative projects in refining assets and distribution systems **to create a stable, predictable market** for refinery products with progressively **lower carbon footprint.** We have to place it in EU not outside.
- ***Access to funds***: Ensure that **sustainable finance policies recognise the role of technologies** that are instrumental to the energy transition (including CCS, CCU, hydrogen and others) and **grant access to the funds** dedicated to climate-related investments.
- ***Access to raw materials*: Ensure refineries' **access to affordable and sustainable** energy and feedstocks.

We support the Green Deal's ambition for climate neutrality by 2050
and recommend to seize the opportunities to transform the EU refining industry
to achieve both climate neutrality and its resilience

An EU industrial strategy underpinning the EU Green Deal

As pointed out in the EU Industrial Strategy (March 2020), the next years will be decisive to set the right enabling conditions for this transition.

WHY work with the Refining Sector to this end?

- ✓ **Innovation** is in our DNA
- ✓ We have the **expertise**
- ✓ We have the **high skilled personnel**
- ✓ We have the **means to invest** in these technologies
- ✓ We can produce these technologies in Europe, and then export them to third countries
- ✓ We create **added value** for other industries, the economy and the society.

WHAT do we suggest?

- ➢ Refineries should be fully **recognised as part of the transition** in all respects of policy and sustainable finance
- ➢ Major **R&D&I programmes** across all technological readiness levels, should be supported
- ➢ Collaborate with the Commission **to create the markets** for low carbon products and technologies.
- ➢ Keep the "**Industrial Master Plan**" as the key document for setting out the transition of EIIs

5.

Clean Fuels For All

Clean fuels for all

Clean Fuels For All : a key contribution to the climate neutrality by 2050

On 15 June 2020, the EU refining industry set out an ambitious pathway for enabling **transport to contribute to EU's climate neutrality** ambition by 2050, based on **scale up of low-carbon-liquid fuels** supply and use, across several transport sectors:

- ✓ every drop of **liquid fuel for road transport** could be **climate neutral by 2050**
- ✓ emissions from fuels in the **aviation and shipping** sectors could be **reduced by 50%**
- ✓ an **ambitious**, but **feasible** proposal
- ✓ significant **investment needs** (around 450-600 billion euros by 2050)

Low-carbon liquid fuels have **a strategic role to play in** the transition to a climate-neutral economy by 2050, in particular in sectors such as **aviation, maritime and heavy-duty transport** where no equivalent technological alternatives currently exist….

…but we need the **right policy framework**

To conclude….

- **There will be no return to business as usual** for the fuels industry
- **Dual challenge for the sector** (**cost of transition & lower demand** for our products)
- **Many implications** for us and for those who work around us (employees, customers, services, communities)

A socially "just transition" for the EU refining and marketing industry means

FOR US

- ✓ Keep our business growing and transforming
- ✓ Secure the high skilled and well paid jobs, direct and indirect
- ✓ Remain a major contributor for national economies and employment

FOR OTHERS

- ✓ Survival of a long chain of retail suppliers, industrial and commercial customers, as well as SMEs
- ✓ Prosperous communities and regions around our refineries
- ✓ Industrial clusters that underpin a strong and sustainable economy & society

NO ONE LEFT BEHIND


EKO


Thank you!


HELLENIC
PETROLEUM

Radosław Żydok, Director of the Department of Regulatory and Strategic Analysis, KGHM

Insights from the Polish Copper and Silver industry

European Commission

Layers of possibilities

KGHM
POLSKA MIEDŹ

KGHM Polska Miedź - copper muscle of the Polish Just Transition

Brussels, July 2020

KGHM
POLSKA MIEDŹ

Key information about the KGHM Group

KGHM Group in brief

One of the world's largest producers of copper and silver with nearly 60 years of experience in mining and metallurgy

702.000 tonnes
of copper production and 1417 tonnes of silver production in 2019

Fully integrated company with complete chain of extraction and processing of valuable natural resources

Member of the prestigious indices Respect Index & FTSE4Good published by the WSE and LSE*

A stable and competitive position in a key sector for
the global economy
- copper mining and processing

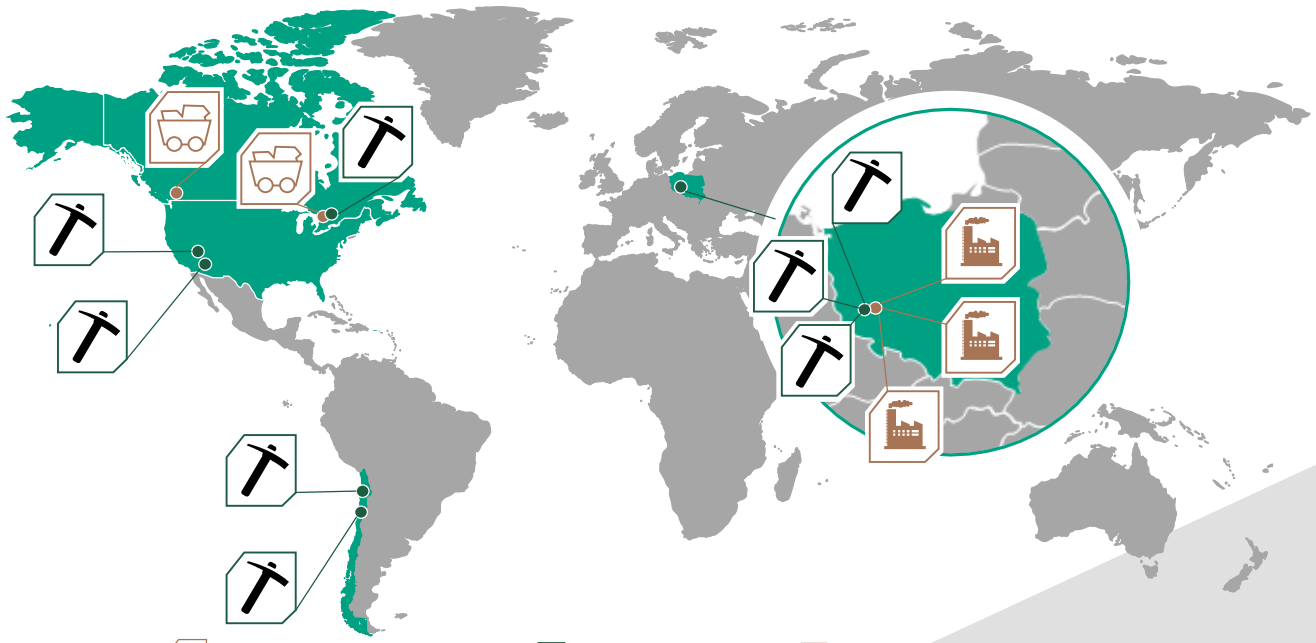
An organization with strong values-based roots, focused on corporate social responsibility

*In 2018 KGHM joined the **FTSE4Good** index. Being a member of the FTSE4Good index series confirms KGHM's efforts in the field of environmental protection, social responsibility and corporate governance. KGHM perceives joining the FTSE4Good index as an award for its solid performance in complying with demanding ESG standards.

LSE - *London Stock Exchange;* WSE - *Warsaw Stock Exchange*

KGHM POLSKA MIEDŹ

Important player on the global copper and silver markets



Legend: Mining projects of KGHM | Mines of KGHM | Metallurgical facilities of KGHM

8th largest copper producer

Cu

2nd largest silver producer

Ag

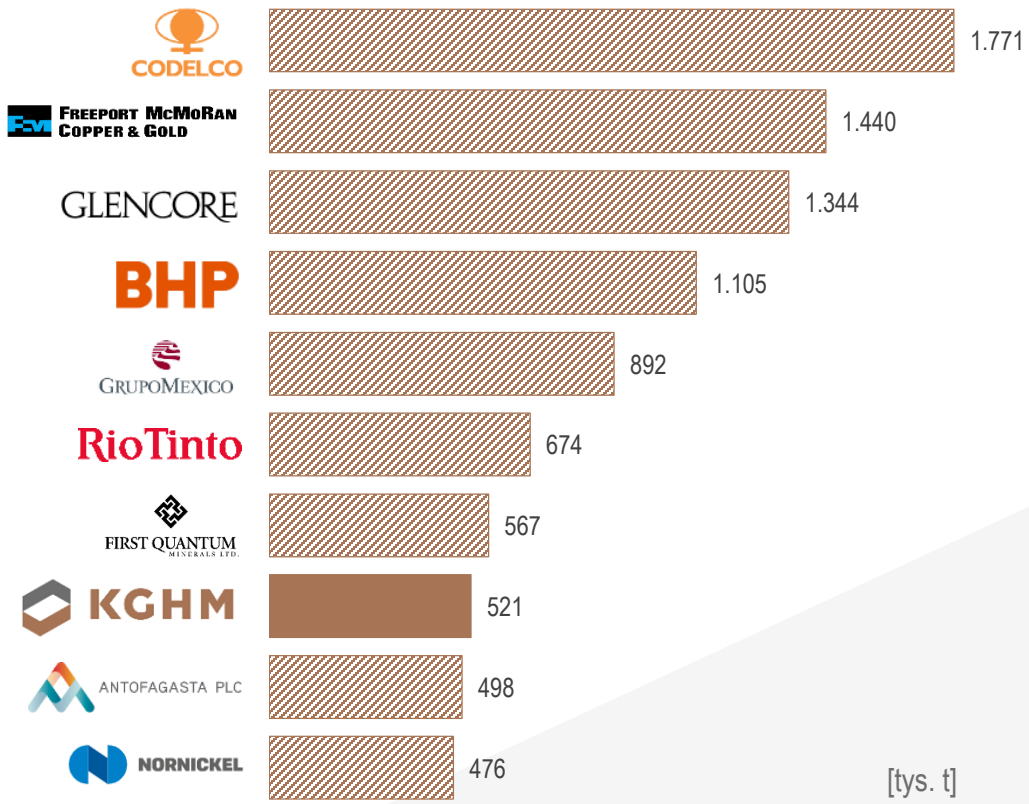
Other KGHM Group products:

- Molybdenum
- Lead
- Nickel
- Gold
- Palladium
- Platinum
- Rhenium
- Sulphuric acid
- Selenium
- Copper sulphate
- Nickel sulphate

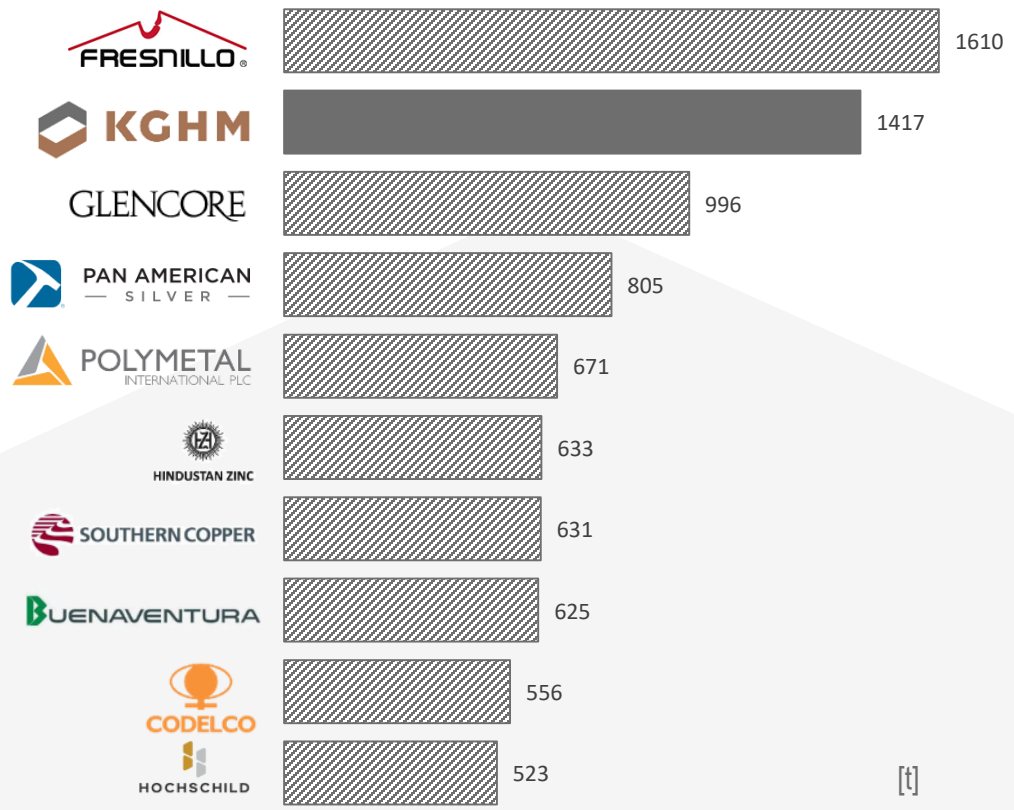
Geology	Mining		Metallurgy	
Exploration and evaluation	Ore extraction	Ore enrichment	Smelting and refining	Casting

Among world's biggest copper and silver producers

Mined copper production 2018 [1]



Silver production 2019 [2]



1) Copper Market Outlook, CRU, April 2019
2) World Silver Survey 2020

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KGHM
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Energy transformation in KGHM

Energy consumer and producer

KGHM - no. 1 electricity consumer in Poland, 2,8 TWh.
20-25% comes from own sources, rest from the market

Two gas-steam CHP plants in Polkowice and Głogów, each with a capacity of **42 MWe** (electric), **40 MWt** (thermal). Built 2011-2016, cost: **EUR 170 million**

KGHM's CHP plants **operate for 11 months during the year**, reaching an **efficiency level** of **80%**

The **electricity** produced is **100% used for** KGHM's **own needs** on-site

100% of the produced **heat energy** is transferred **to the heating systems** of Polkowice, Lubin and Głogów (**165,000 inhabitants** in total)

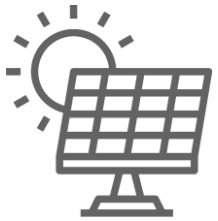
KGHM
POLSKA MIEDŹ

Trail towards green copper

- **Ecology** as one of four **strategic directions** for KGHM's development
- Our objective is to ensure a supply of **green energy** for safety and climate neutrality reasons
- By the end of 2030, **up to 50%** of KGHM's annual demand (1,6 TWh) will be covered by **own energy sources**
- There will be a considerable share of **renewable energy** (300 MW) from **solar and wind projects**

KGHM POLSKA MIEDŹ

Energetics development program



Renewable energy investments

- Photovoltaic
  - 200 ha of own lands for development, out of which 160 ha in close vicinity of energy consumption sites
- On-shore wind farms
  - Virtual PPAs[1)]
  - Acquisitions

Optimisation of gas-steam units

- Increasing power production in existing gas-steam blocks and decreasing the amount of coal-based energy from the market

Research & Development

- Waste heat utilisation from metallurgy and mining processes
- Energy storage for optimisation and stabilisation
- Waste fuels utilisation

Competence building

- Adjusting company structure for changing environment
- Building competencies to secure energy deliveries
- Supporting the development of an energy-friendly legislative environment

1) PPA – Power Purchase Agreement

First photovoltaic projects

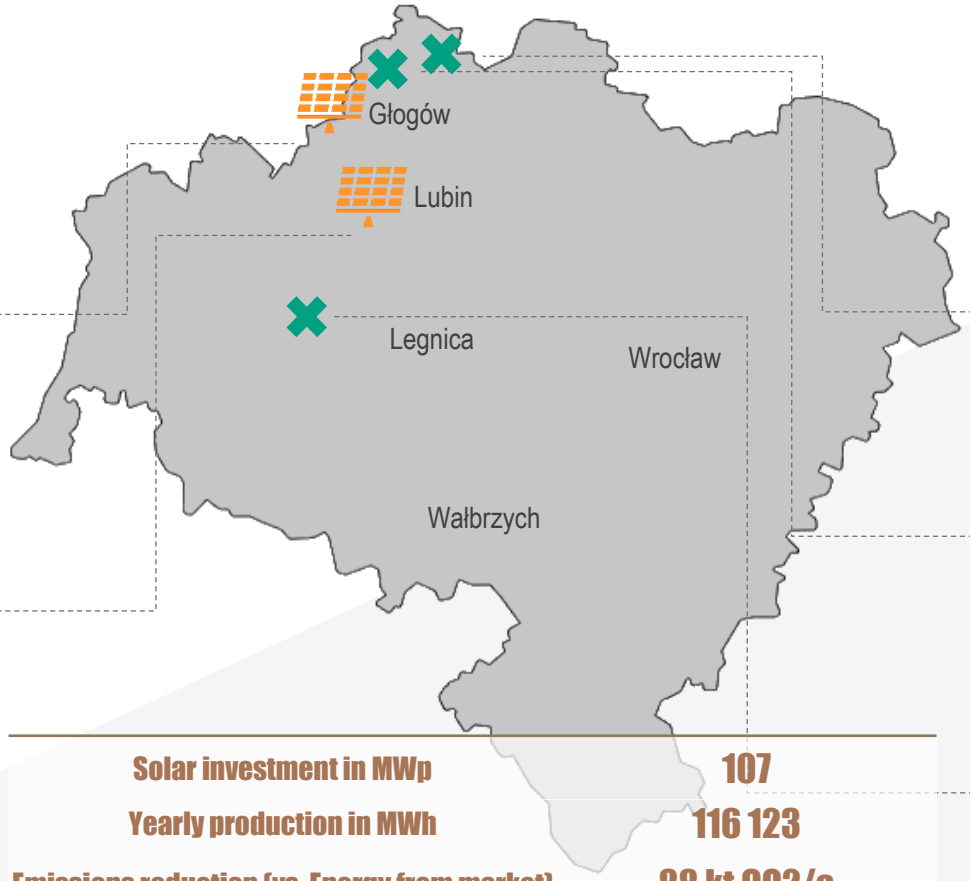
Design phase

PV[1] 1. HMG

4 MW Głogów Copper Smelter and Refinery
Start of production
Q3 2021

PV 2. Piaskownia Obora

5 MW in the reclamation area of the Obora sandpit
Start of production
Q2 2022



Solar investment in MWp	107
Yearly production in MWh	116 123
Emissions reduction (vs. Energy from market)	88 kt CO2/a
Approx. CAPEX (mln EUR)	75

Pre-design phase

3. Wierzba I

16 MWp[2]

4. Wierzba II

50 MWp

5. Konrad

30 MWp at the former Konrad Mine

1) PV – photovoltaic
2) MWp – peak megawatt

What can the money change?

- The method and cost of financing will significantly affect the **economical feasibility** (NPV) of new investments
- To achieve the strategic goal, **different approaches are being considered** – from increased gas usage, through gas/PV/wind mix to RES only with existing gas-steam blocks gradual withdrawal
- **Estimated CAPEX** differs from **100 m€** (low reduction of CO2 emissions) up to **670 m€** (approx. 1 Mt CO2 annually reduction)
- As the energy produced in Poland emits approx. 0,8 t CO2/MWh, the support for such investments will **firmly contribute to decarbonisation**

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Why cash and not debt?

- Copper price **volatility** and the constant need to **sustain production through investments** leads to a significant increase in the KGHM's debt during economic slowdown
- Struggle with **increasing costs** (environmental standards & investments) and **strong competition** from outside Europe
- Credit agreements with banks set **upper debt limits** (so-called **covenants**)
- In this situation **we reduce our dependence** on loans and try **not to increase** current **debt**
- We would also welcome other ways of financing our investments without **burdening the balance sheet**

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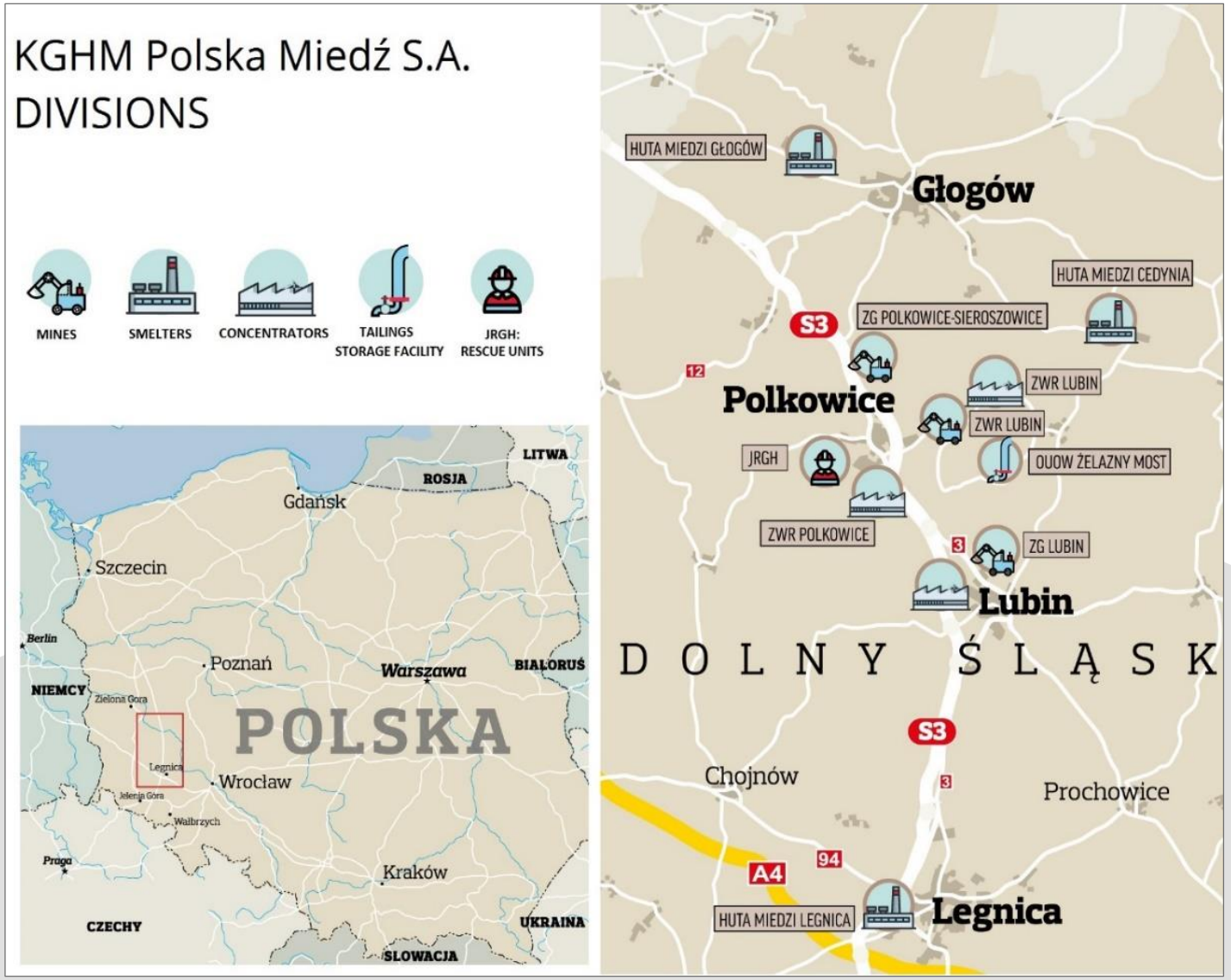
Polish potential for coal-to-copper mining transformation

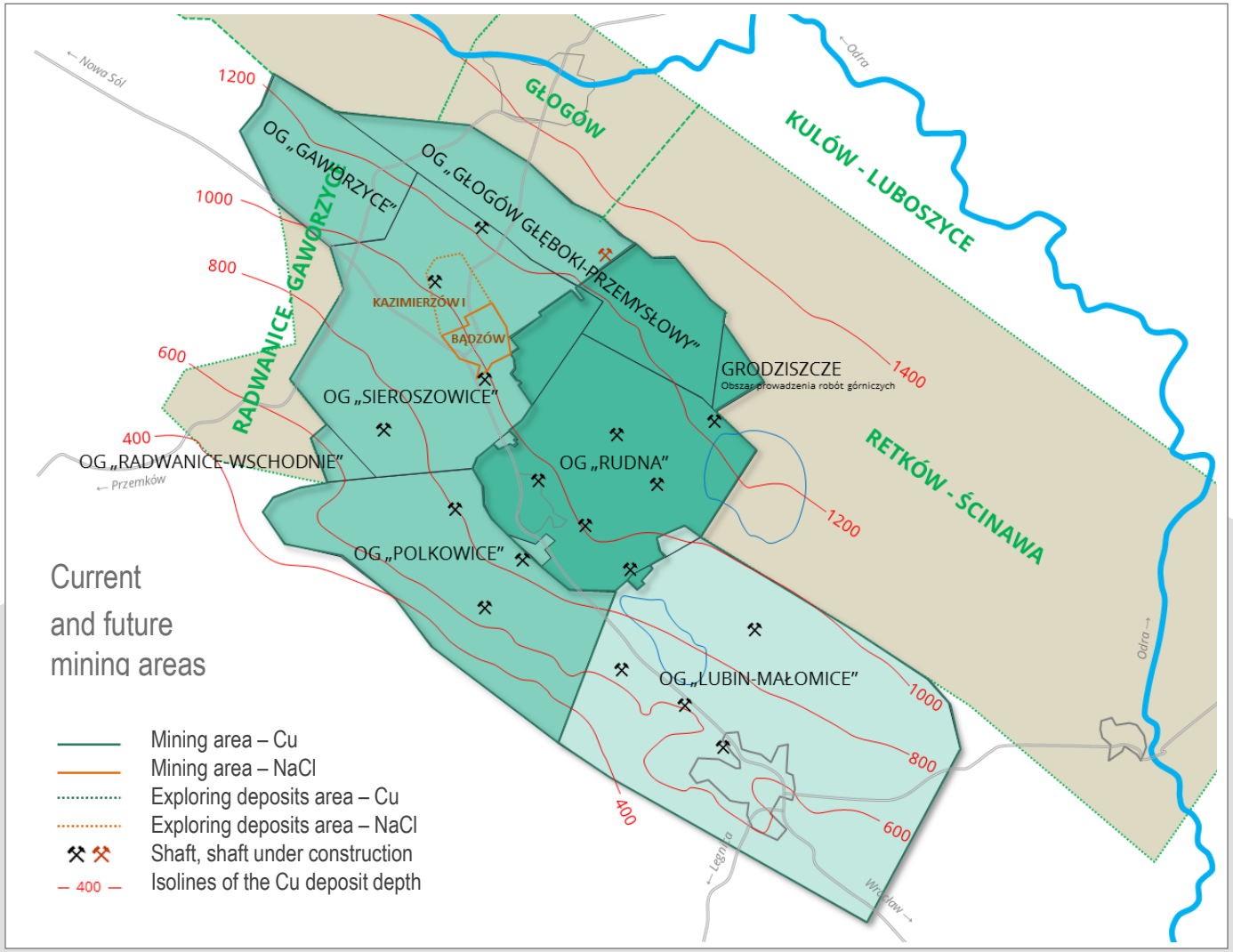
Lower Silesia Copper Basin

- Our copper ore deposits are located in **Lower Silesia, southwestern Poland**
- The area is **approx. 550 km2**, situated 80 km west of **Wrocław** and 70 km north of Wałbrzych (one of the traditional coal centres)
- The main cities of the district are **Lubin** (73,000), **Głogów** (69,000), **Polkowice** (23,000) and **Legnica** (100,000)
- More than **34,000 people employed** in the KGHM Group, the vast majority of them (about 31 500) in Poland
- Basing on Polish deposits (**one of the largest in the world**), we can **continue production** for at least **30-40 years**



Sustainable & Responsible Raw Materials - role of Polish deposits

- Climate-neutral Europe **only** possible with sufficient amount of **non-ferrous metals**
- The **growing deficit of European extraction** makes EU dependent on **uncertain and high carbon footprint** imports
- Meanwhile the **current crisis** presents an **historic opportunity** to improve Europe's **strategic autonomy** in raw materials
- The situation could be resolved by the **resources of KGHM** located **in Poland**



No-one left behind

- Support for KGHM will also **help the region**, which is still partly **affected by the end of coal exploration**
- For several decades, coal mining has been **the most important industry** of Wałbrzych and its surroundings (**Lower Silesian Coal Basin**). Lower Silesia is close to Upper Silesia, the most coal-dependent region in Poland
- This means better than in other regions **availability of qualified personnel** who could now take up employment in **copper mining**
- It's much easier to train coal miner to work in copper mine than in other sectors. Such employment would be **the best fulfillment of the Just Transition idea**

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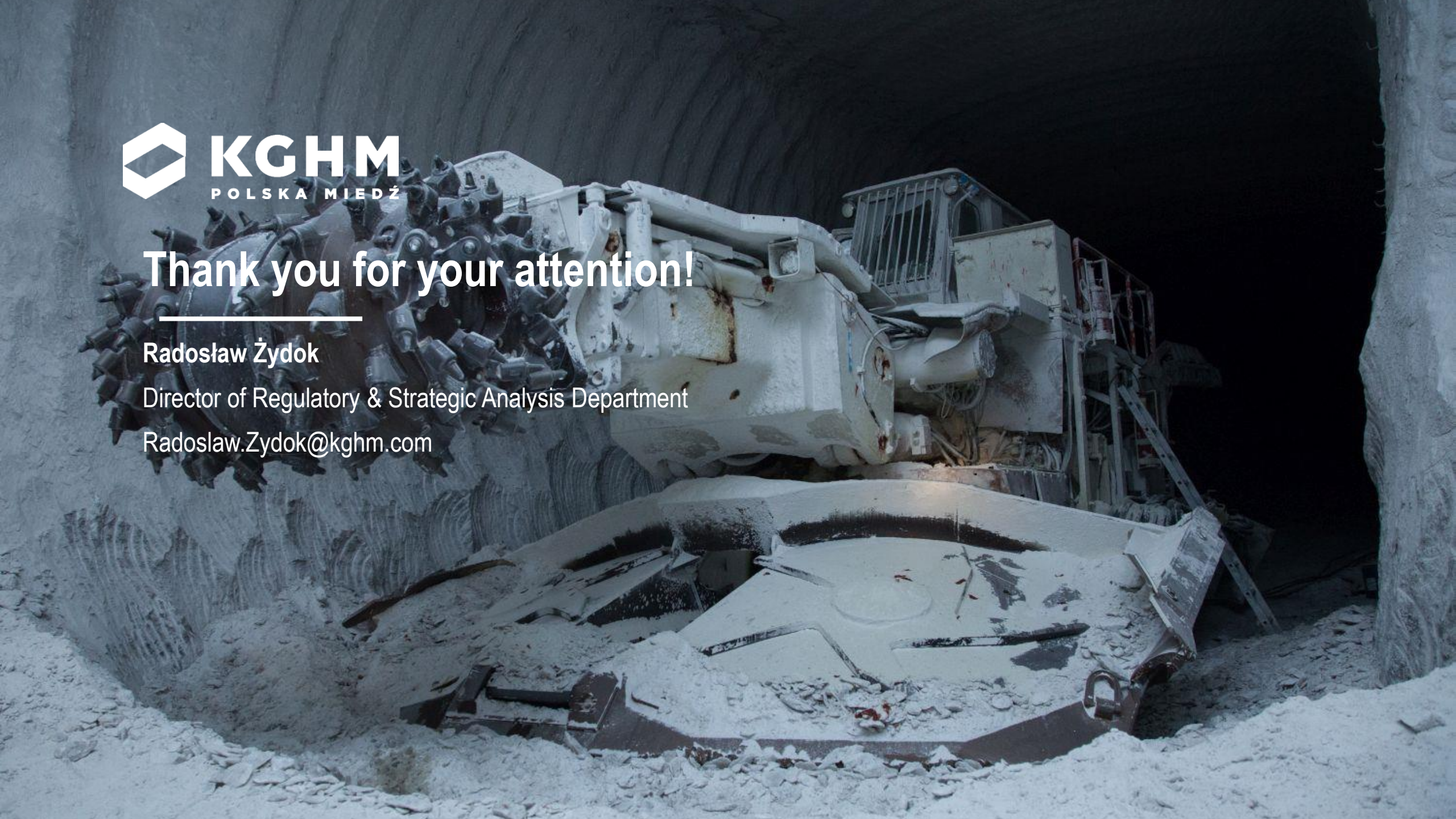
What do we need?

Regulatory support: all **EU policies** affecting raw material companies should be **subjected to the main objective of decarbonisation** with **sustainable & responsible European raw materials**

Financial support for **creating new jobs** in the non-ferrous metals sector in Europe – **investments in mining infrastructure**, shafts and conveyor belts, underground machines

Faster and less complicated administrative proceedings: mining license, environmental and water permits, spatial development plans

KGHM POLSKA MIEDŹ



Thank you for your attention!

Radosław Żydok

Director of Regulatory & Strategic Analysis Department

Radoslaw.Zydok@kghm.com

Anders Wijkman, Honorary President of the Club of Rome, Chairman of the Swedish Association of Recycling Industries and Chairman of the Governing Board of EIT Climate-KIC

The role of circular economy and low-carbon innovations in the just transition

European Commission

Judith Kirton-Darling, Deputy General Secretary of industriAll

A just transition for workers in carbon-intensive sectors

European Commission

Planning the just transition in carbon-intensive regions: identifying the challenges and finding solutions

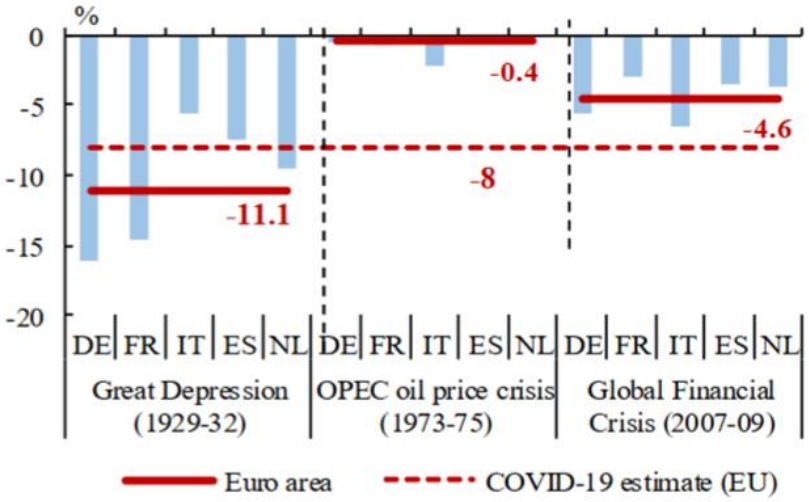
1 July 2020

industriAll
EUROPEAN TRADE UNION

Just Transition is an existential demand

COVID 19 Crisis (Spring 2020 economic forecast)

Graph I.1.16: **GDP declines during Great Depression, first oil crisis, and Global Financial Crisis, euro area**

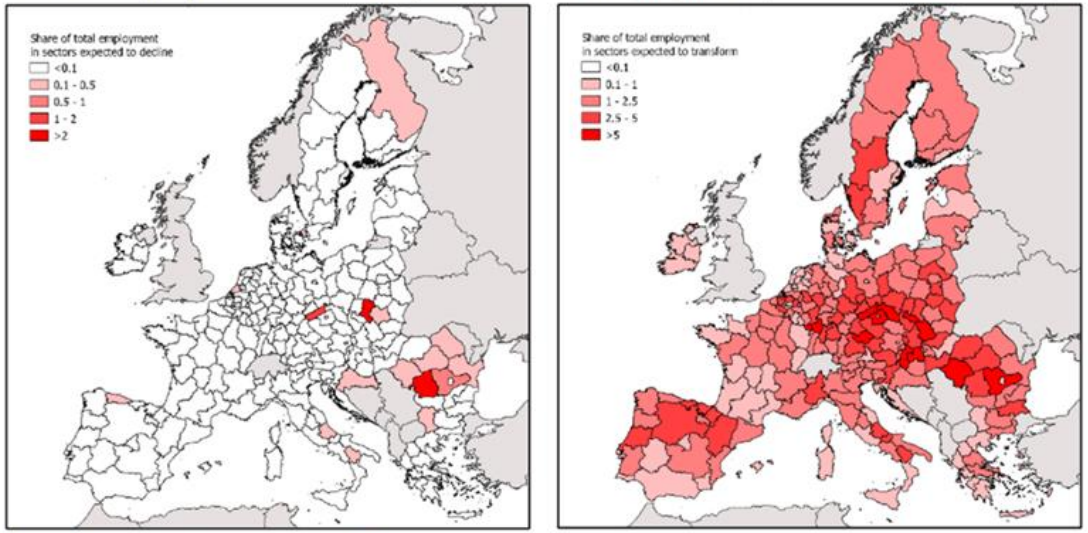


Note: Largest peak-to-trough GDP declines since 1921 (peacetime years only), based on annual data, 1921-51 EA12 excl. LU, 1952-84 EA19 excl. EE, LT, LV, and SK, and since 1985 EA19.
Source: Maddison Project Database, 2018, www.ggdc.net/maddison

Decarbonisation challenge

Map 1: Location of 'at-risk' jobs in the EU

Share of employment in sectors expected to decline (lhs) and expected to transform (rhs)



Source: Bruegel based on EC (2018) and Eurostat SBS.
Note: As defined by the European Commission (2018), the sectors expected to decline are 1) mining of coal and lignite, 2) extraction of crude petroleum and 3) natural gas, and the sectors expected to transform are 1) the manufacture of chemicals and chemical products, 2) the manufacture of other non-metallic mineral products, 3) the manufacture of basic metals and 4) the manufacture of motor vehicles, trailers and semi-trailers.

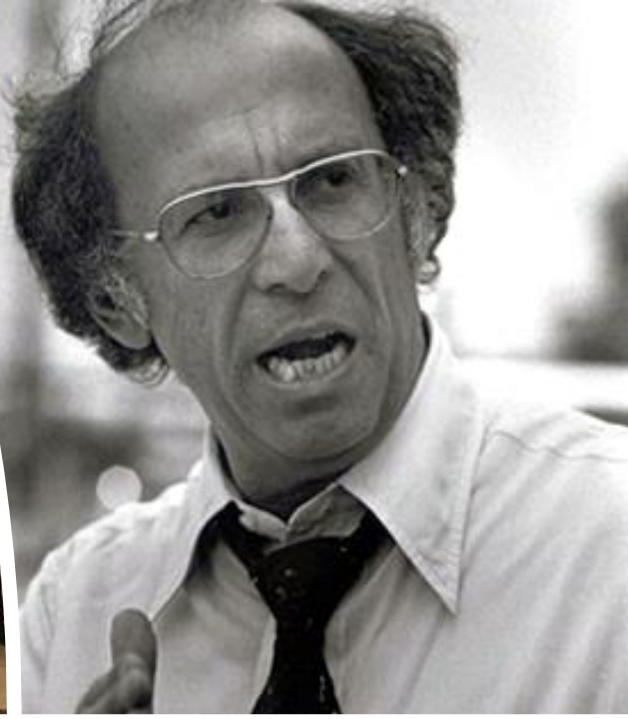
industriAll EUROPEAN TRADE UNION

The Just Transiton has gained momentum

- ✓EU Green Deal - *EU actions and policies should pull together to help the EU achieve a successful and just transition towards a sustainable future.*
- ✓Just Transition Mechanism and Just Transition Fund
- ✓Industrial Strategy
- ✓Launch of the Just Transition Platform

Just Transition – a trade union concept

1. Rights and participation
2. Sustainable industrial policies
3. Proactive well-funded labour market policies
4. Social protection



Just Transition Platform

Specific attention must be put on:

- Synergies between the EU Industrial Strategy (incl. industrial ecosystems, IPCEI) and the Platform
- Transformation of transport and the automotive sector
- Employment dimension - Stronger role of DG EMPL in the Just Transition Platform
- Positive engagement of workforce is not an optional extra but will determine the success of the strategy

16:15 – 17:00

Support from Commission to the transformation of carbon intensive industries and regions

Peter Berkowitz, Head of Unit, Smart and sustainable growth, DG REGIO - Support through the Just Transition Fund and Cohesion Policy, European Commission

Roman Doubrava, Deputy Head of Unit, Land Use and Finance for Innovation, DG CLIMA, European Commission - Support from the Modernisation and Innovation Fund

Peter Handley, Head of Unit, Energy intensive industries and raw materials, DG GROW, European Commission -Strategy for Energy Intensive Industries

European Commission

Peter Berkowitz, Head of Unit, Smart and sustainable growth, DG REGIO, European Commission

Support through the Just Transition Fund and Cohesion Policy

Support for Just Transition

Peter Berkowitz, Directorate General For Regional and Urban Policy
EUROPEAN COMMISSION

#EUbudget, #EUSolidarity, #StrongerTogether

Just Transition Mechanism

at least EUR 160 billion investments

to support and finance regions most exposed to transition challenges in all Member States

Just Transition Fund
to generate financing of
€89-107 billion

- **Just Transition Fund** of € 40 billion
- **Transfers:** for each €1 from 10 bn JTF €1.5-3 from ERDF/ESF+
- **No transfer**: 30 bn additional resources
- **National co-financing**

Provides primarily grants

InvestEU Dedicated Just Transition Scheme
to mobilise up to
€45 billion investments

Crowds in private investment

Public sector loan facility with the EIB
to mobilise
€25-30 billion investments

Leverages public financing

- Adoption of a territorial just transition plan enables access to all three pillars of JTM
- Investments under pillars two and three of JTM need to benefit territories identified in the territorial just transition plans adopted by COM – without the obligation for projects to be located in these territories
- Pillars two and three of JTM have a wider thematic scope than JTF

Scope of the Just Transition Fund

Stronger focus in scope of intervention than other cohesion policy programmes

- Economic diversification and reconversion
- Re-skilling and job seeking assistance for workers
- Support to climate transition and environmental sustainability incl. circular economy

Eligibility scope - consistent with ERDF and Cohesion Fund proposal

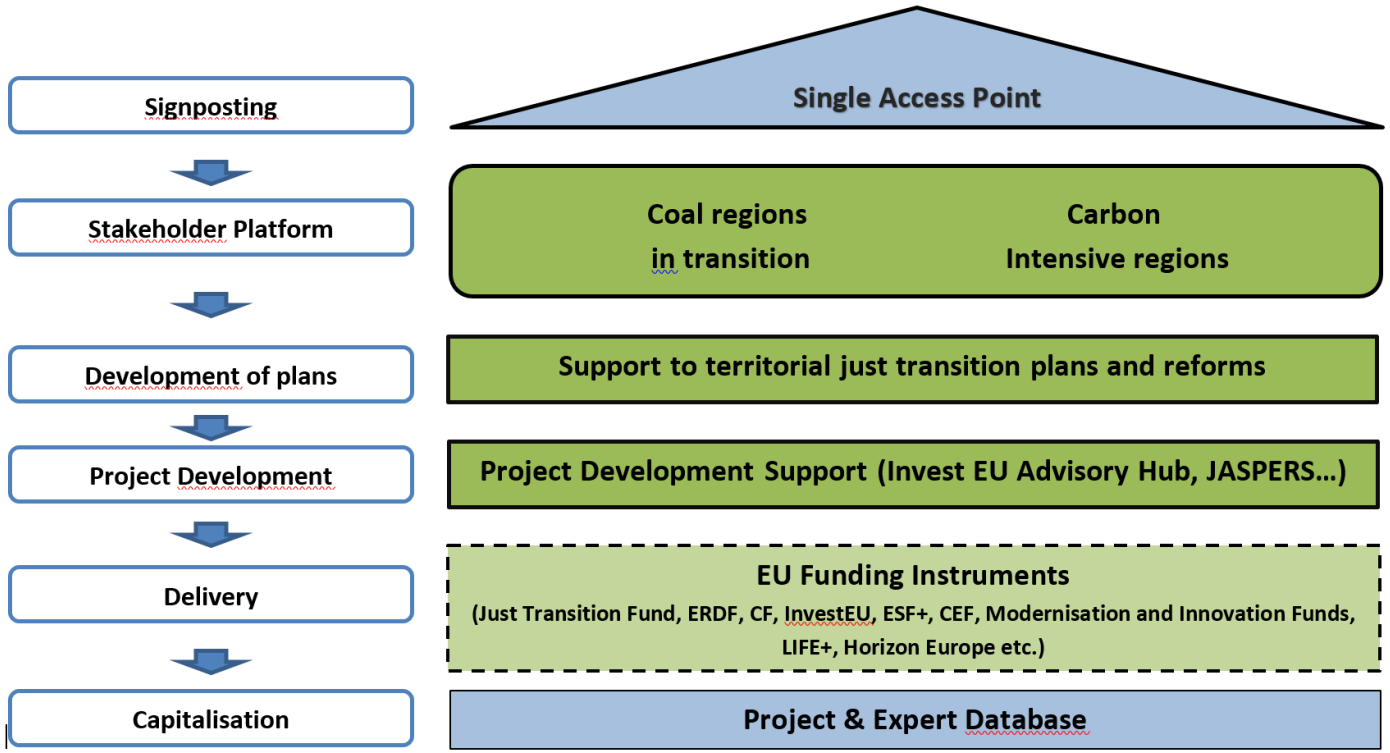
- Production, processing, distribution, storage or combustion of fossil fuels excluded from support

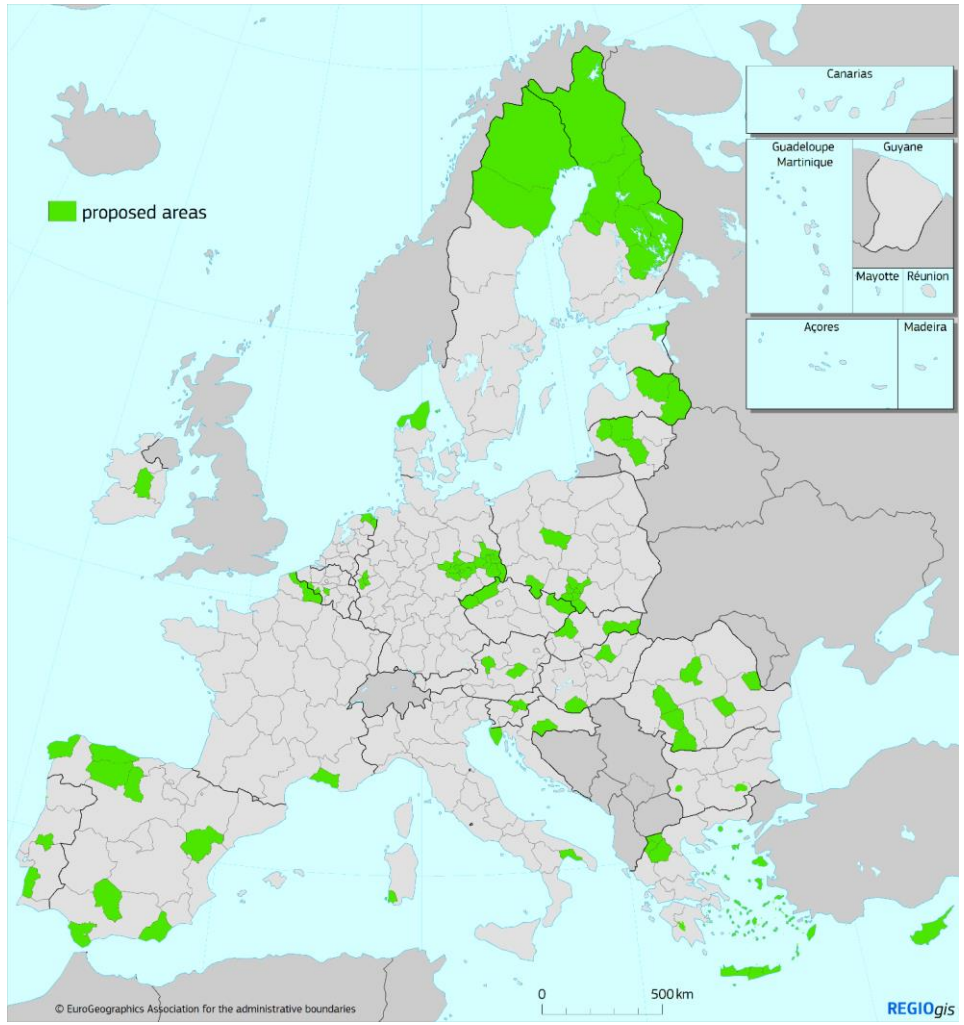
Limited additional eligibility – to be justified in territorial just transition plans

- Productive investments in large enterprises: if needed to offset job losses
- Investments reducing GHG emissions from ETS activities: if needed to preserve jobs

! Each operation must contribute to the implementation of the territorial just transition plans

The Just Transition Platform





European Commission

Roman Doubrava, Deputy Head of Unit, Land Use and Finance for Innovation, DG CLIMA, European Commission

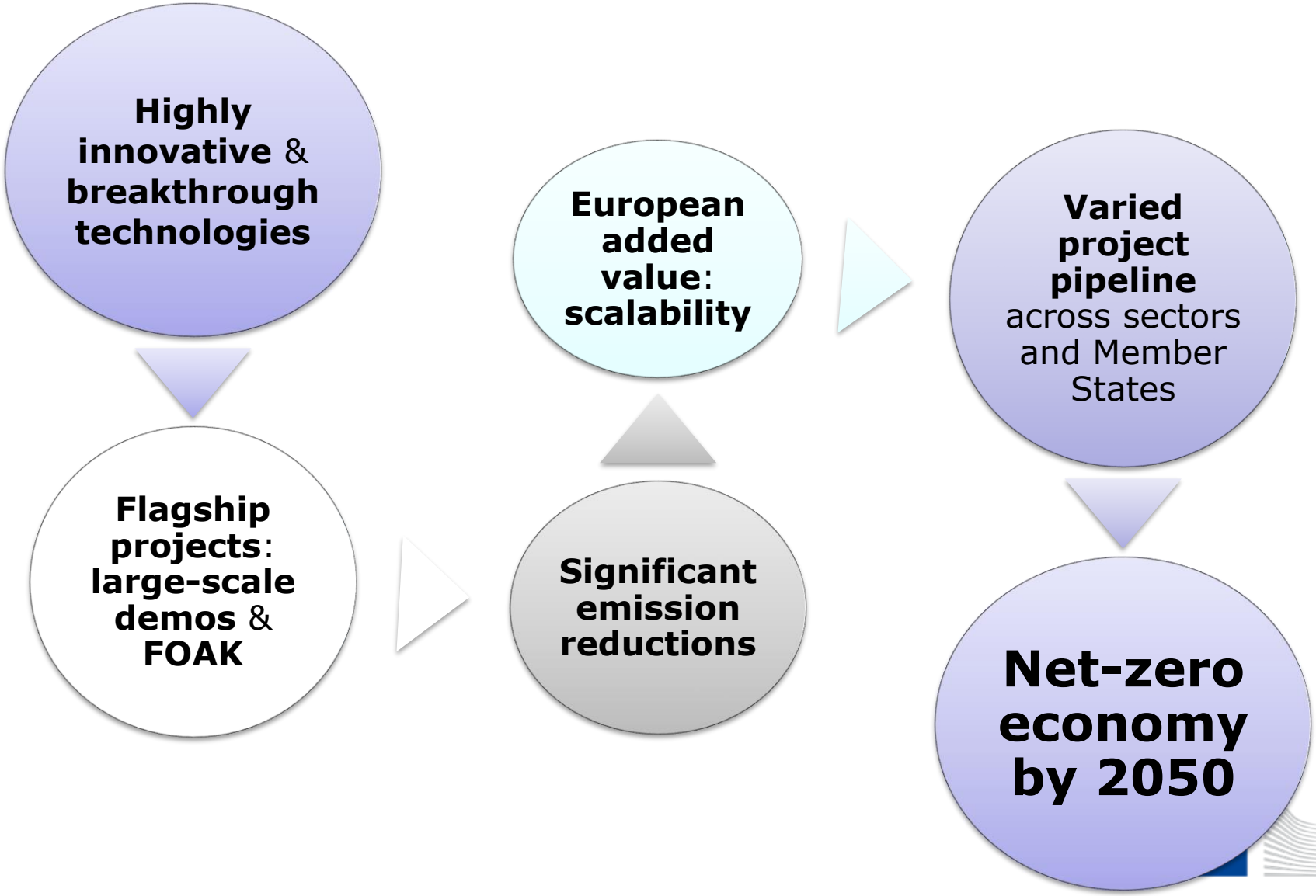
Support from the Modernisation and Innovation Fund

European Commission

Innovation Fund
Modernisation Fund

Roman Doubrava
DG CLIMA
01/07/2020

Innovation Fund Objectives



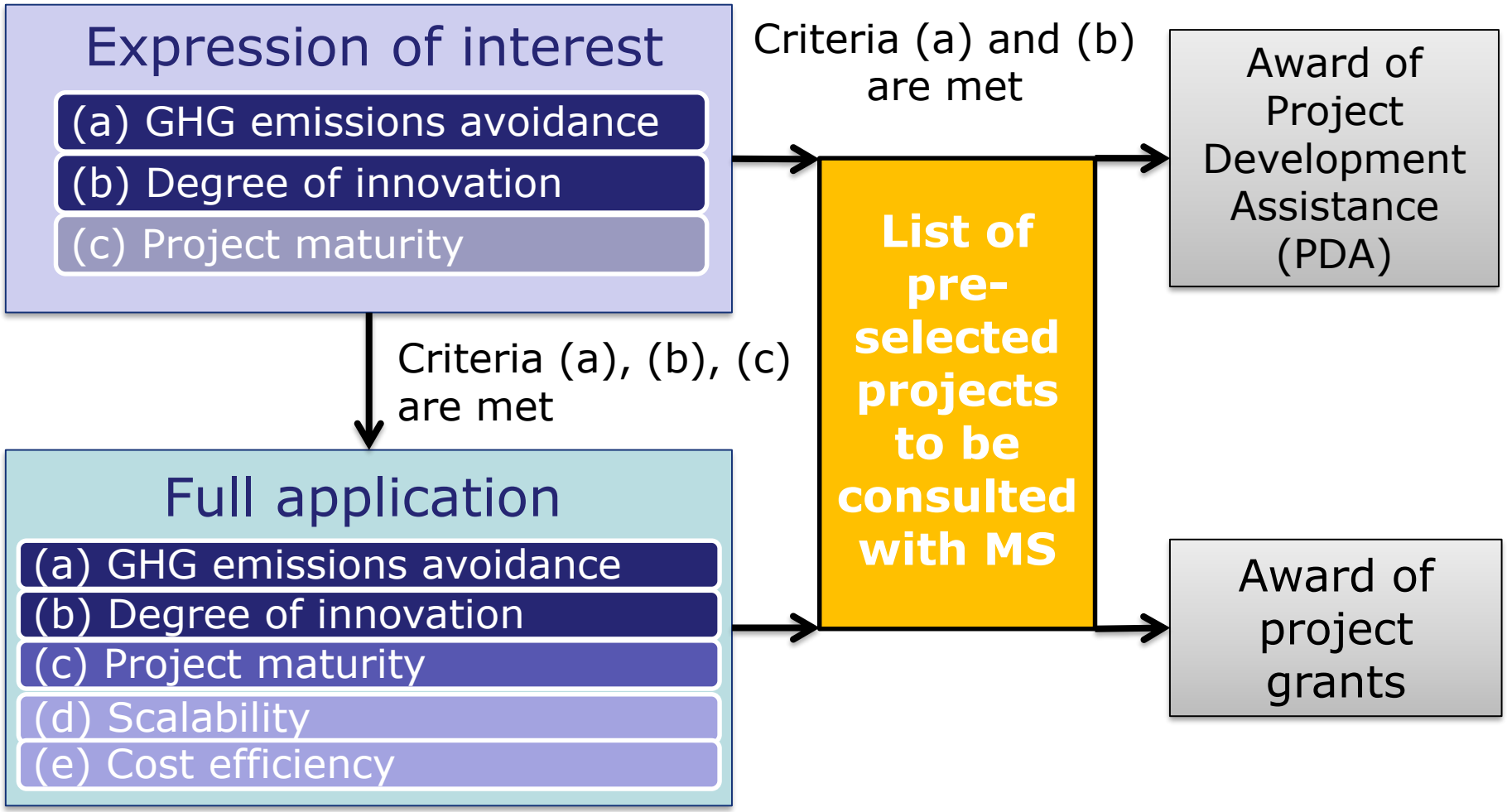
Key features

Basics

Volume of at least EUR 10 billion until 2030 (at EUR 20 carbon price)	Support of up to 60% of additional costs related to innovative technology	Renewable energy CCS and CCU Industry Storage
Financed from the revenues of the EU Emissions Trading System	Support of additional capital and operating costs (up to 10 years)	First call for large-scale projects (>€7.5M CAPEX) in mid-2020 with a volume of EUR 1 billion
Single applicant or consortium	Project start possible after application for first stage	Project has to be implemented in EU-27, Norway or Iceland

Selection process

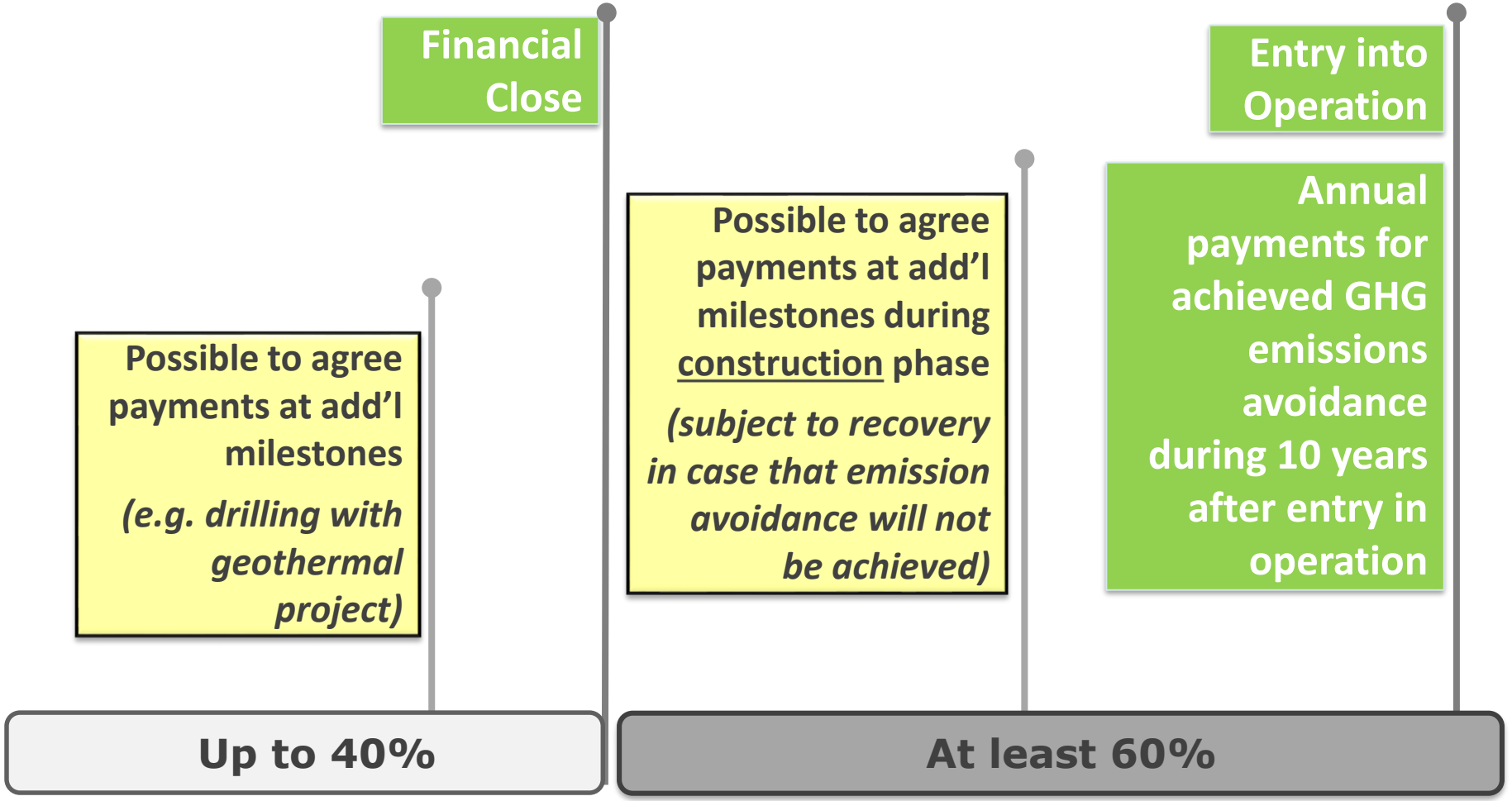
Basics



European Commission

Payments upon milestones

Basics



European Commission

First-stage award criteria

GHG emissions avoidance

- Absolute and relative avoidance
- Below ETS benchmark(s)

Quantitative assessment

Degree of innovation

- Beyond state-of-the-art
- Beyond incremental innovation

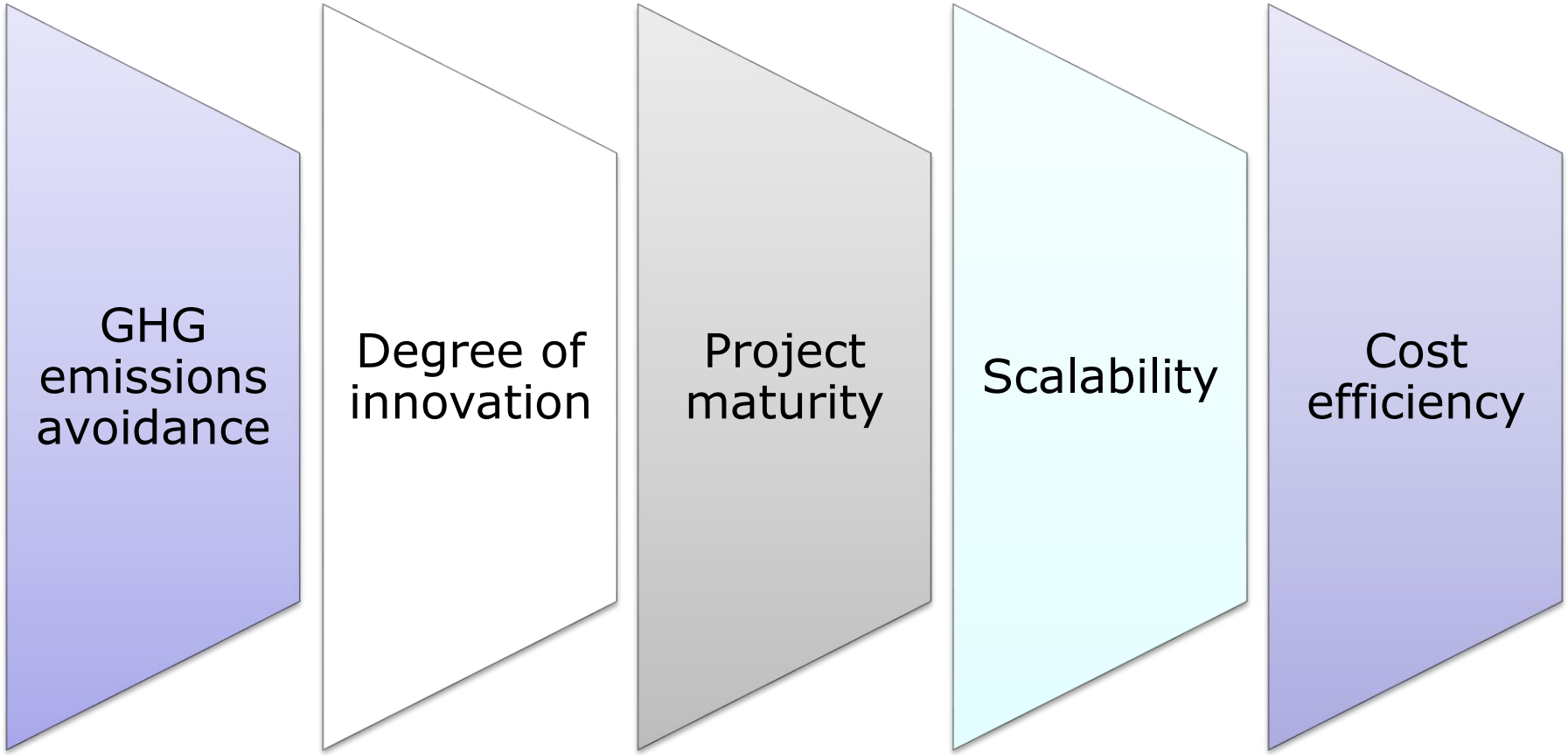
Qualitative assessment

Project maturity

- Ready to reach financial close within 4 years
- Ready to improve maturity with PDA

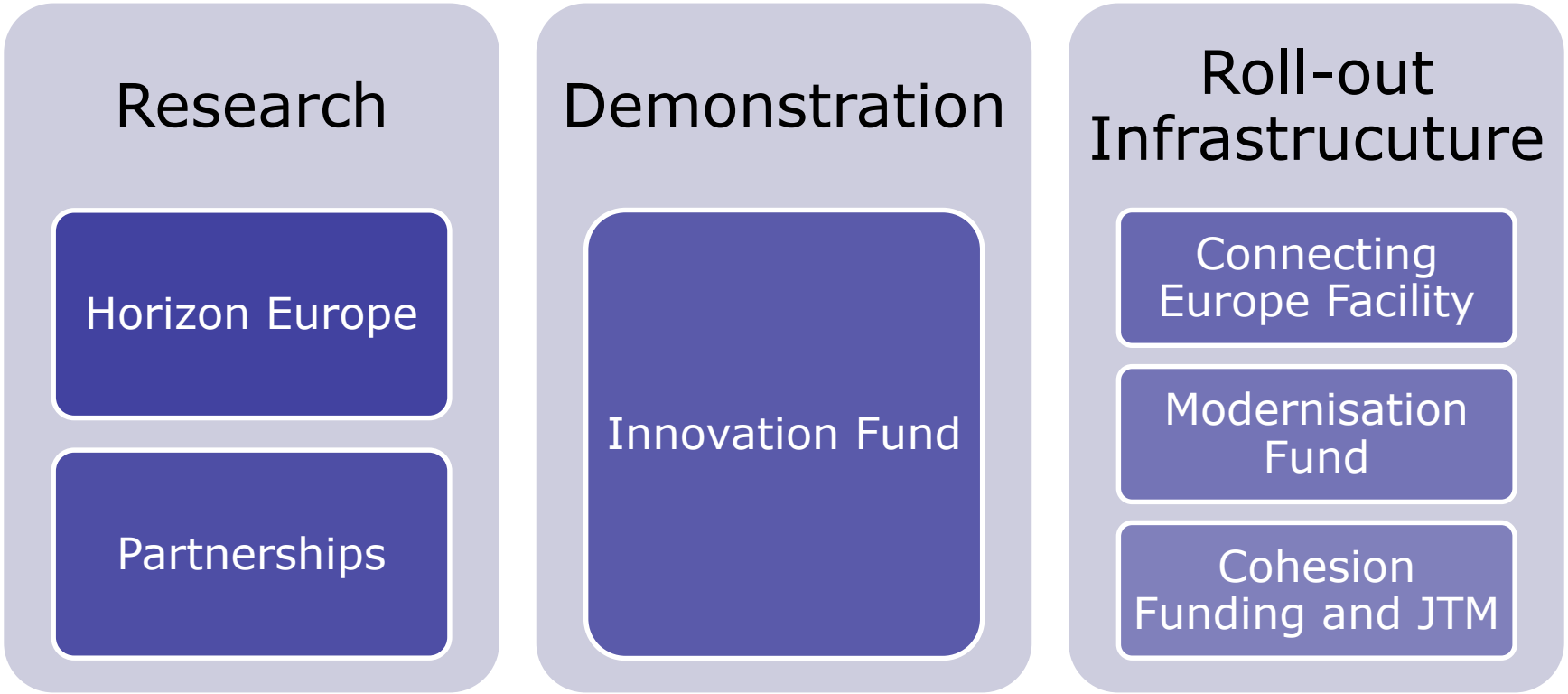
Quantitative and qualitative

Second-stage award criteria



European Commission

Synergies with other Funds



European Commission

Calendar

Webinar
Application and FAQs

Webinar
GHG calculations and FAQs

Innovation Fund Day
Clean Tech Finance Conference
Final workshop for 1st stage

W4 June/ W2 July — **Launch First Call**

H2 July

H1 Sep

H2 Sep

End Oct — **Submission 1st stage**

Q1 21 — **Invitation 2nd stage**

Q2 21 — **Submission 2nd stage**

H2 21 — **Grant Award**

Modernisation Fund - basics

- Support for modernisation of energy systems and just transition in 10 beneficiary Member States
- Consistent with the aims of the ETS Directive, the objectives of the Energy Union framework and of the long-term objectives in the Paris Agreement
- Size: 2% of total quantity of allowances
- Additional allowances can be transferred to the MF: *Article 10c and Article 10(2)(b) of the ETS Directive.*
- Auctioning of allowances on common auction platform and in equal shares for each year (2021 to 2030)

Priority investments – min 70% of the resources of the Fund

Modernisation of energy systems

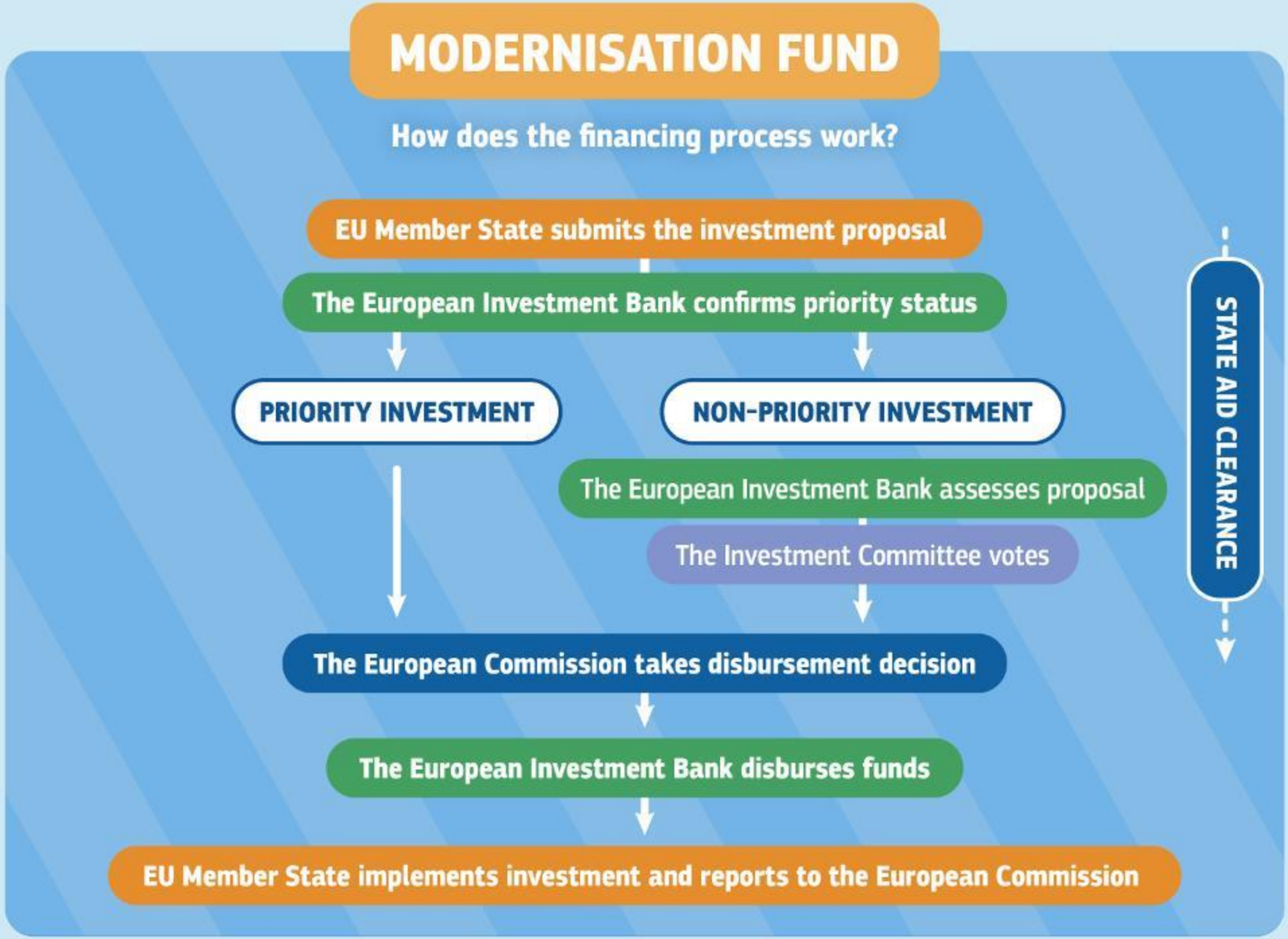
- Renewables
- Networks (including district heating pipelines)
- Electricity Interconnectors
- Energy storage

Improvements in energy efficiency

- Energy generation (except solid fossil fuels)
- Transport, buildings, agriculture and waste

Just transition in carbon-dependent regions

- Re-deployment / up-skilling of workers
- Education and job-seeking
- Support to start-ups


MODERNISATION FUND
How does the financing process work?
EU Member State submits the investment proposal
The European Investment Bank confirms priority status
PRIORITY INVESTMENT
NON-PRIORITY INVESTMENT
The European Investment Bank assesses proposal
The Investment Committee votes
STATE AID CLEARANCE
The European Commission takes disbursement decision
The European Investment Bank disburses funds
EU Member State implements investment and reports to the European Commission

Next steps

June	Member States vote on the Implementing Act in the Climate Change Committee
July	Implementing Act Adopted by the Commission
Q3 2020	Establishment of the Investment Committee
Q4 2020	Investment Committee first meeting
Q1 2021	Start of operations

THANK YOU!

Check DG CLIMA Website
https://ec.europa.eu/clima/policies/innovation-fund_en

https://ec.europa.eu/clima/policies/budget/modernisation-fund_en

Peter Handley, Head of Unit, Energy intensive industries and raw materials, DG GROW, European Commission

Strategy for Energy Intensive Industries

Thank you

European Commission