The concept of European Technology Platforms and NTPs.

Henryk Karaś; **Senior Officer on Technology Transfer, Polish Geological Instutute – National Research Institute; President of European Technology Platform on Sustainable Raw Materials - ETP SMR (2006-2012)**

Training for technology managers in EaP countries
"Technology Platforms as an STI Policy Tool in the EaP Countries"
Minsk; 11-13 March 2019

Content of the presentation.

1. ETPs – objectives, strategy development, funding, governance, benefits.
2. State of the art – National TPs.
3. ETPs interactions - opportunities for EaP NTPs.
4. History of integration in an ETP.
5. Case of ETP SMR- importance of RM in EU.
6. Conclusions

ETPs in the beginning.

1. **In March 2003, the EC called for a strengthening of the European research and innovation area by *'… creating European technology platforms (ETPs) bringing together science (know-how), industry, regulators and financial institutions to develop a strategic agenda for leading technologies'.***

2. **European technology platforms (ETPs) were set up as industry-led stakeholder forums with the aim of defining research and technological objectives and developing roadmaps to achieve them.**

3. **The European Commission has carried out a facilitation role and was committed to a structured dialogue on research priorities.**

4. **Between 2003-2009 EU ETPs have brought together stakeholders, reached consensus on a common vision and established a strategic research agenda (SRA) and developed an implementation plan detailing the actions required to implement the SRA.**

Development of European Technology Platforms (2003 – 2

1. > Advisory Council for Aeronautics Research in Europe (ACARE)
2. > Advanced Research and Technology for Embedded Intelligence and Systems (ARTEMIS)
3. > European Biofuels Technology Platform (EBTP)
4. > European Construction Technology Platform (ECTP)
5. > Mobile and Wireless Communications Technology Platform (eMobility)
6. > European Nanoelectronics Initiative Advisory Council (ENIAC)
7. > European Platform on Smart Systems Integration (EPoSS)
8. > European Rail Research Advisory Council (ERRAC)
9. > European Road Transport Research Advisory Council (ERTRAC)
10. > European Steel Technology Platform (ESTEP)
11. > European Space Technology Platform (ESTP)
12. > European Technology Platform on Industrial Safety (ETPIS)
13. > Advanced Engineering Materials and Technologies (EuMat)
14. > European Technology Platform on Robotics (EUROP)
15. > Food for Life (Food)
16. > Future Textiles and Clothing (FTC)
17. > Forest-based Sector Technology Platform (FTP)

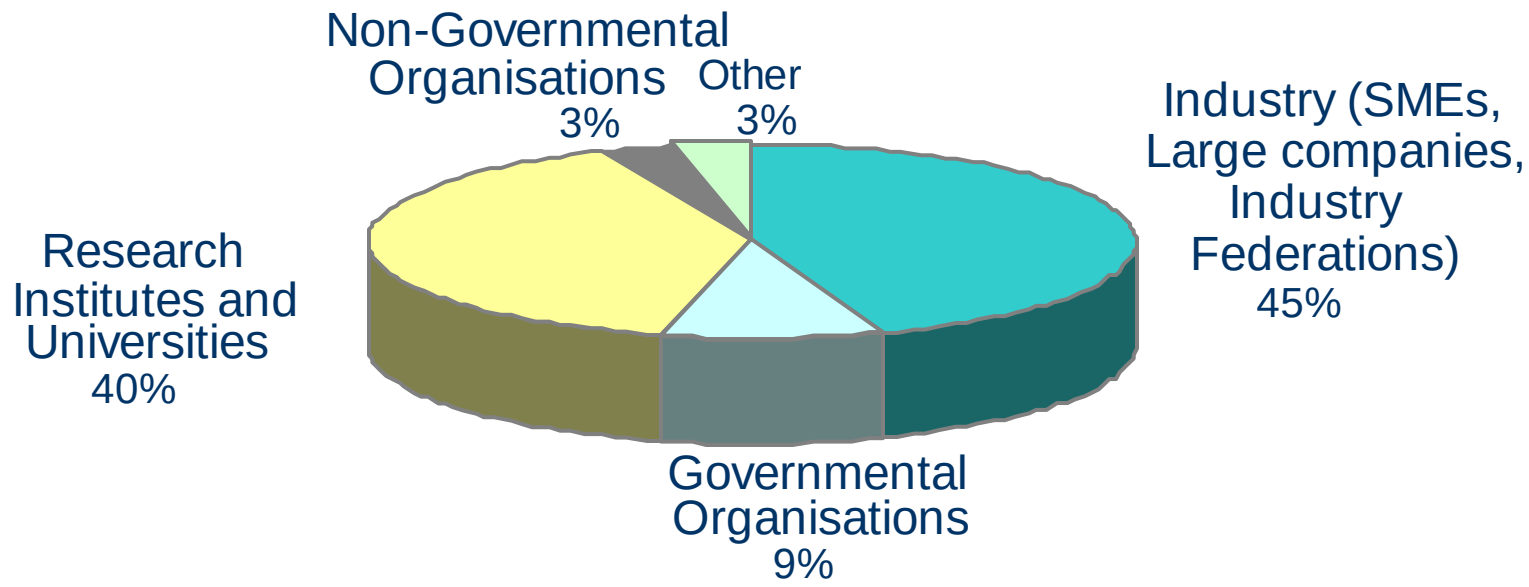
Source; Evaluation of the European Technology Platforms: A study commissioned by DG Research Conclusions and recommendations; Arnold Verbeek, Elisavet Lykogianni, Katrien Rommens, 2008

Development of European Technology Platforms (2003 –

18. > European Technology Platform for Global Animal Health (GAH)
19. > Integral Satcom Initiative Technology Platform (ISI)
20. > Future Manufacturing Technologies (Manufuture)
21. > Nanotechnologies for Medical Applications (Nanomedicine)
22. > Networked and Electronic Media (NEM)
23. > Networked European Software and Services Initiative (NESSI)
24. > Plants for the Future (PLANTS)
25. > European Technology Platform for Photonics (Photonics21)
26. > European Photovoltaic Technology Platform
27. > European Technology Platform for Electricity Networks of the Future (Smart Grids)
28 . > European Platform on Sustainable Mineral Resources (ETP SMR)
29. > Sustainable Nuclear Energy Technology Platform (SNE-TP)
30. > European Technology Platform for Sustainable Chemistry (SusChem)
31. > European Wind Energy Technology Platform (TPWind)
32. > European Technology Platform Waterborne
33. > Water Supply and Sanitation European Technology Platform (WSSTP)
34. > Zero Emission Fossil Fuel Power Plants (ZEP)

Source: Evaluation of the European Technology Platforms „A study commissioned by DG Research Conclusions and recommendations”, Arnold Verbeek, Elissavet Lykogianni, Katrien Rommens, 2009

Who where the 947 stakeholders od EU ETPs ?



There were 38 ETPs in existence (Dec. 2013) which were covering many industrial branches and research areas: Energy, ICT, Bio-based Economy, New ways of Production & Processing, Transport, Advanced Materials, Space;

Source: Evaluation of the European Technology Platforms „A study commissioned by DG Research Conclusions and recommendations" ; Arnold Verbeek, Elissavet Lykogianni, Katrien Rommens; 2009

Main conclusions from the first experience of EU with ETPs – 2009 (opinion of stakeholders).

Stakeholders indicate that ETPs:

- **Have developed a vision for the future** that they support;
- Address their technological needs and challenges **(in its Strategic Research Agenda - SRA);**
- Address broader **socio-economic challenges** in their field;
- Have developed **implementation plans** that are realistic;
- Should speed-up **implementation** of its planned solutions;
- ETPs have shown **large dynamism and evolution** over time;
- Stakeholders seem satisfied and 93% of the stakeholders would **„renew" their membership**.

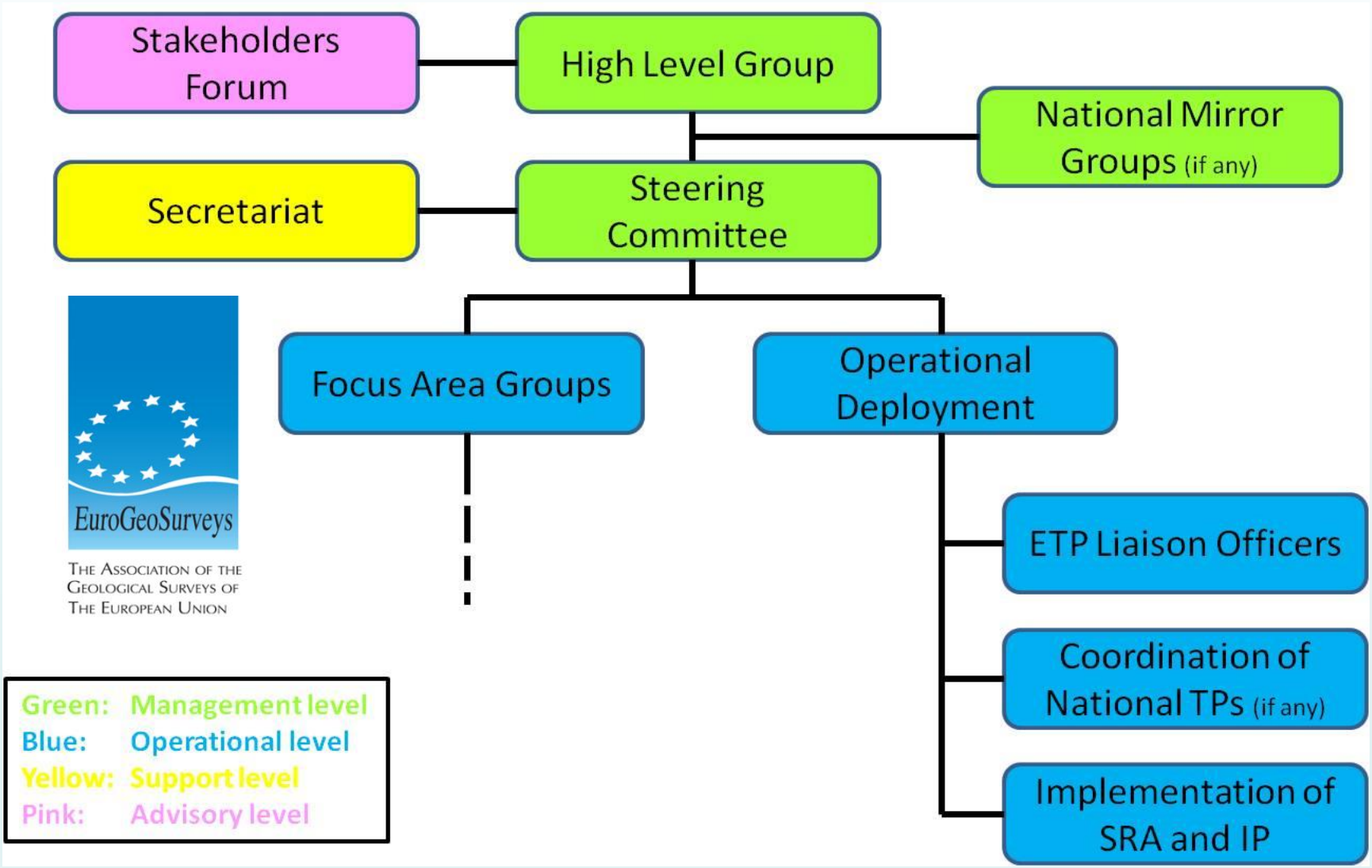
Source: Evaluation of the European Technology Platforms „A study commissioned by DG Research Conclusions and recommendations" ; Arnold Verbeek, Elissavet Lykogianni, Katrien Rommens; 2009

Towards the future of ETPs – important for NTPs in EaP countries.

1. **EU Member States** should facilitate the operations of ETPs (by establishing **mirror groups**).
2. Ensure that the 'ETP label' is a **quality label**;
3. **EU Member States should in**volve ETPs in its **policy preparation** processes;
4. Be aware of **potential fragmentation** between platforms and remedy where needed (**collaboration!**);
5. **ETPs should** move to the next stage: „**implementation"**;
6. **ETPs should** pay more attention to fund-raising and financial engineering;
7. **EU should** support ETPs's activities outside the EU by developing **international cooperation.**

Source: Evaluation of the European Technology Platforms „A study commissioned by DG Research Conclusions and recommendations" ; Arnold Verbeek, Elissavet Lykogianni, Katrien Rommens; 2009

ETP SMR structure - 2005.



The Role of Mirror Groups in different platforms.

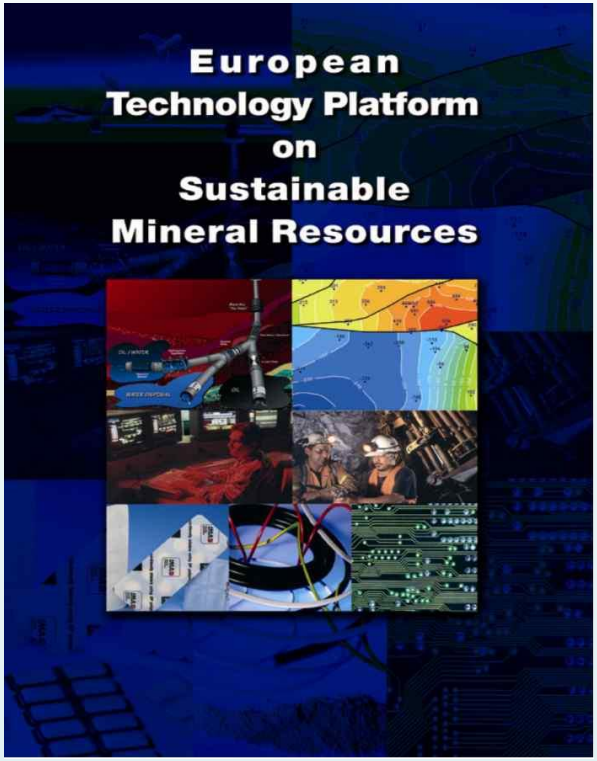
1. There were some interactions between some ETPs and national research actors. Participants, members of ETPs were asked to identify the potential to improve coordination with national research planners.

2. The objective of Mirror Groups was to facilitate national uptake of priorities (**marginal effects**); it was more visible in EU-15 than in EU-13.

3. **Polish Technological Platform on Raw Materials (2011-2016):**

- The entity was linking institutions associated with the raw materials industry (industry academia and research);
- One of the tasks was to help in creation of Polish raw materials policy;
- Represents Polish raw materials industry in the European Technology Platform on Sustainable Mineral Resources.

EPT on Sustainable Mineral Resources



- Established in 2005 and officially recognised in Sept. 2008 by EU as the body representing European extractive industry (mineral raw materials sector).
- Website: www.etpsmr.org information on EPT SMR and its tasks.
- Strategic Research Agenda - 2007, being updated in 2013 and 2017.
- Established as an association in 2016.

At the beginning ETP SMR was covering the following sectors of mineral resources:

- Metallic minerals, industrial minerals
- Aggregates and ornamental stones
- Oil, gas and coal

ETP SMR Members

Full Members
Associate Members

Iceland

Sweden 6

Finland 2

Norway 1

Estonia

Russia

Latvia

Denmank

Lithuania

Belarus

Ireland 1

United Kingdom

Poland 5

Netherlands 1

Belgium 4

Germany 4

Ukraine

Luxembourg

Czech Republic

Slovakia 1

Moldova

France 2

Switzerland 1

Austria 2

Hungary

Romania

Slovenia

Croatia

Bosnia

Serbia

Bulgaria

Italy

Montenegro

Spain 3

Portugal

FYROM

Albania

Turkey

Greece

Cyprus

Malta

Mintek
Republic of South Africa

The ETP SMR stakeholders (03 2019)

Companies:

Aurubis AG, Germany
Boliden AB; Sweden
Cobre-Las-Cruces; Spain
ERAMET; France
ICL-Iberia-Suria-Sallent; Spain
K+S AG; Germany
KGHM PM SA; Poland
MINTEK; Rep. of S. Africa
Outotec; Finland
RHI AG; Austria
Tecnicas Reunidas; Spain
UMICORE; Belgium

Geological Surveys:

SGU; Geological Survey of Sweden;
GTK; Finland;
Polish Geological Survey; Poland

Associations:

EuroGeoSurveys, the Association of the European Geological Surveys; Belgium
Eurometaux the European Association of Metal Processing Industries; Belgium
GKZ Freiberg; Germany
Euromines, the European Association of Mining Industries; Belgium
Bergforsk, the Swedish Mining Research Organisation; Sweden
MINFO, the Swedish Mineral Processing Research Organization; Sweden
National Technology Platform for Research, Development & Innovation of RM; Slovakia
Swerea–MEFOS; Sweden

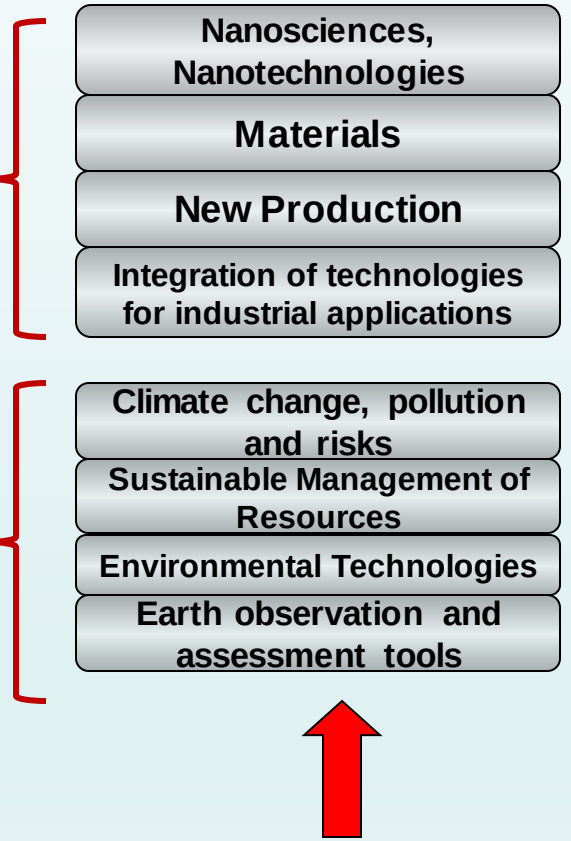
Academia:

Institute of Mechanized Construction and Rock Mining, Poland
INERIS Institute; France
Mineral and Energy Economy Research Institute of Polish Academy of Sciences,
TNO Institute, Netherlands
University of Leoben, Austria
University of Technology Lulea, Sweden
Non-Ferrous Metals Institute, Poland
NTNU University; Norway
Trinity College Dublin; Ireland
University-of-Applied-Sciences-and-arts - FHNW; Switzerland

Each ETP should find its place in the Framework Program 2007-2013 (FP7) - Cooperation area.

Cooperation themes:

1. Health
2. Food, agriculture and biotechnology
3. Information and communication technologies
4. Nanosciences, nanotechnologies, materials and new production technologies
5. Energy (2.3 B€)
6. Environment (including climate change)
7. Transport (including aeronautics)
8. Socio-economic sciences and the humanities
9. Security
10. Space



themes: 4,5,6,8 – place for ETP SMR activity and cooperation

ETP SMR – Cross cutting initiatives,

cooperation with other partners in FP7 nad H2020 innovation programs.

- Hydrogen and Fuel Cell Technology Platform (HFP);
- Sustainable Chemistry ;
- The Mobile and Wireless Communications Technology Platform (eMobility);
- Space Technology Platform (ESTP) ;
- European Steel Technology Platform ;
- MANUFUTURE - Platform on Future Manufacturing Technologies ;
- The European Construction Technology Platform (ECTP) ;
- EuMaT - European Technology Platform for Advanced Engineering; Materials and Technologies ;
- The European Technology Platform on Industrial Safety;
- Zero Emission Platform (ZEP);
- Water Supply and Sanitation Platform;
- Advanced Research and Technology for Embedded Intelligence and Systems (ARTEMIS);

Metal and mineral resources issue: SPIRE programme- ETP SusChem initiative.

SPIRE

Sustainable **P**rocess **I**ndustry

European Industrial Competitiveness through Resource and Energy Efficiency

Alliance for Materials - A4M

ETP EUMAT (advanced materials) initiative.

NMP.2012.2.3-1 Networking of ETPs and main materials collective stakeholders in materials science and engineering technical content/scope: Several European Technology Platforms (ETPs) as well as other

Aims:

1.development of strategies for boosting research in materials science and engineering, e.g. proposing measures concerning education, continuous training, synergies to be reached, reinforced infrastructures etc;

2. development of strategies for boosting innovation in materials science and engineering.

EUMAT

SusChem European Technology Platform For SUSTAINABLE CHEMISTRY

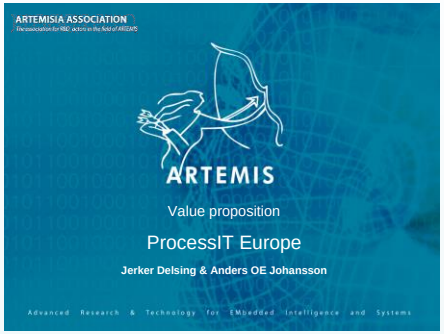
EUROPEAN TECHNOLOGY PLATFORM ON SUSTAINABLE MINERAL RESOURCES

MANUFUTURE-EU

European Technology Platform for the future of textiles and clothing

ESTEP

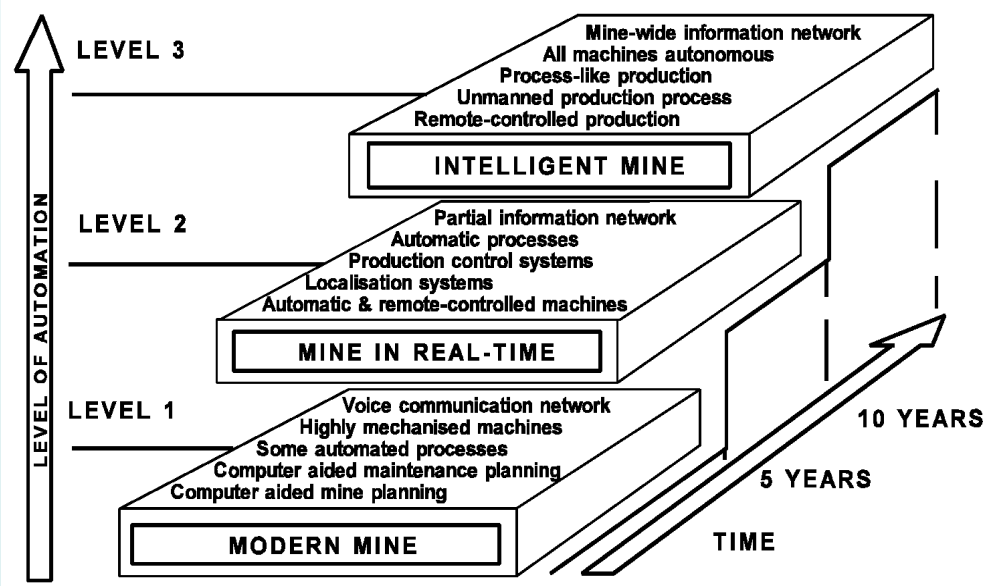
processit.europe Platform - a valuable proposition for mining industry



ARTEMIS Industry Association: Call 2012: **„Arrowhead"**

Area of interest: production and energy systems automation.

Robotics and automation (IT, ES) will strongly influence the future development of deep mining operations that lead to the implementation of **Intelligent Mining** idea - involving increased safety and efficiency in underground and open pit operations.



Steps to the Intelligent MineTM

based on presentation of Prof. Pekka Särkkä, Helsinki Technical University

ETPs in EU Horizon2020 innovation programme: 2013 ETPs - The Vision.

Building on the strategies for Europe 2020 and for an Innovation Union, the EC recognises the role of European Technology Platforms (ETPs) as part of the external advice and societal engagement to implement Horizon 2020 innovation programme.

1.European Technology Platforms will be a key player in the European innovation ecosystem, helping turn Europe into an Innovation Union.

2.This will require ETPs to take a holistic view including the pathway to commercial deployment of research, strategic insights into market opportunities, mobilise and network innovation actors across the EU.

3. EC requested the **ALL ETPs** to change its status into legal entity.

Source: EUROPEAN COMMISSION, DIRECTORATE GENERAL FOR RESEARCH & INNOVATION, Directorate C - Research and Innovation , **C.1 - Innovation policy, European Technology Platforms 2020– DRAFT STRATEGY**

EU - Key enabling technologies (KETs)

KETs have been a priority for EU industrial policy since 2009. KETs were defined in 2009 as being 'knowledge intensive and associated with high R&D intensity, rapid innovation cycles, high capital expenditure and high-skilled employment. The six KETs identified in 2009:

1. advanced manufacturing technologies,
2. advanced materials,
3. nanotechnology,
4. micro- and nano-electronics,
5. industrial biotechnology,
6. photonics

The key enabling technologies for the future– "KETs 4.0"

Three additional KETs have been added to the list:

1. life sciences technologies (incl. industrial biotechnology)
2. artificial intelligence (AI),
3. digital security and connectivity

Source: EC; **RE-FINDING INDUSTRY;** Report from the High-Level Strategy Group on Industrial Technologies; February 2018

Horizon 2020 - three priorities.

I. Excellent science – strengthen EU's position as a world leader in science

II. Industrial leadership – will make Europe a more attractive place to invest in research and innovation

III. Societal challenges – focus on issues affecting the lives of European citizens:

1. Health, demographic changes, well-being
2. Food security, sustainable agriculture, marine and maritime research and the bio-based economy
3. Secure, clean and efficient energy
4. Smart, green and integrated transport
5. Climate action, ***resource efficiency and raw materials*** ***(EIP on RM initiatives)***
6. Inclusive, innovative and secure societes

treated as an Innovation Engine in Europe.

EU COUNCIL DECISION publ. in July 2012 establishing the Specific Programme Implementing Horizon 2020 - the Framework Programme for Research and Innovation (2014-2020).

Industrial leadership pilar in EU H2020.

Industry 4.0 initiative should make Europe a more attractive place to invest in research and innovation. It covers:

1. **Photonics:**
2. **High Performance Computing**
3. **Robotics;**
4. **Future internet**
5. **5G technology**
6. **Factories of the Future**
7. **Internet of Things (IoT), cloud computing, big data and data analytics and 3D printing.**

source:Digitising European Industry Reaping the full benefits of a Digital Single Market Brussels, 19.4.2016 COM(2016) 180 final

Raw Materials (RM)

became a matter of survival in a globalised world

Official annoucement of **European Innovation Partnership on Raw Materials (EIP on RM - 2013).** It was stakeholders forum launched by the EU, bringing together representatives from industry (ETPs, industry representations), public services, academia and NGOs .

EIP on RM – objectives:

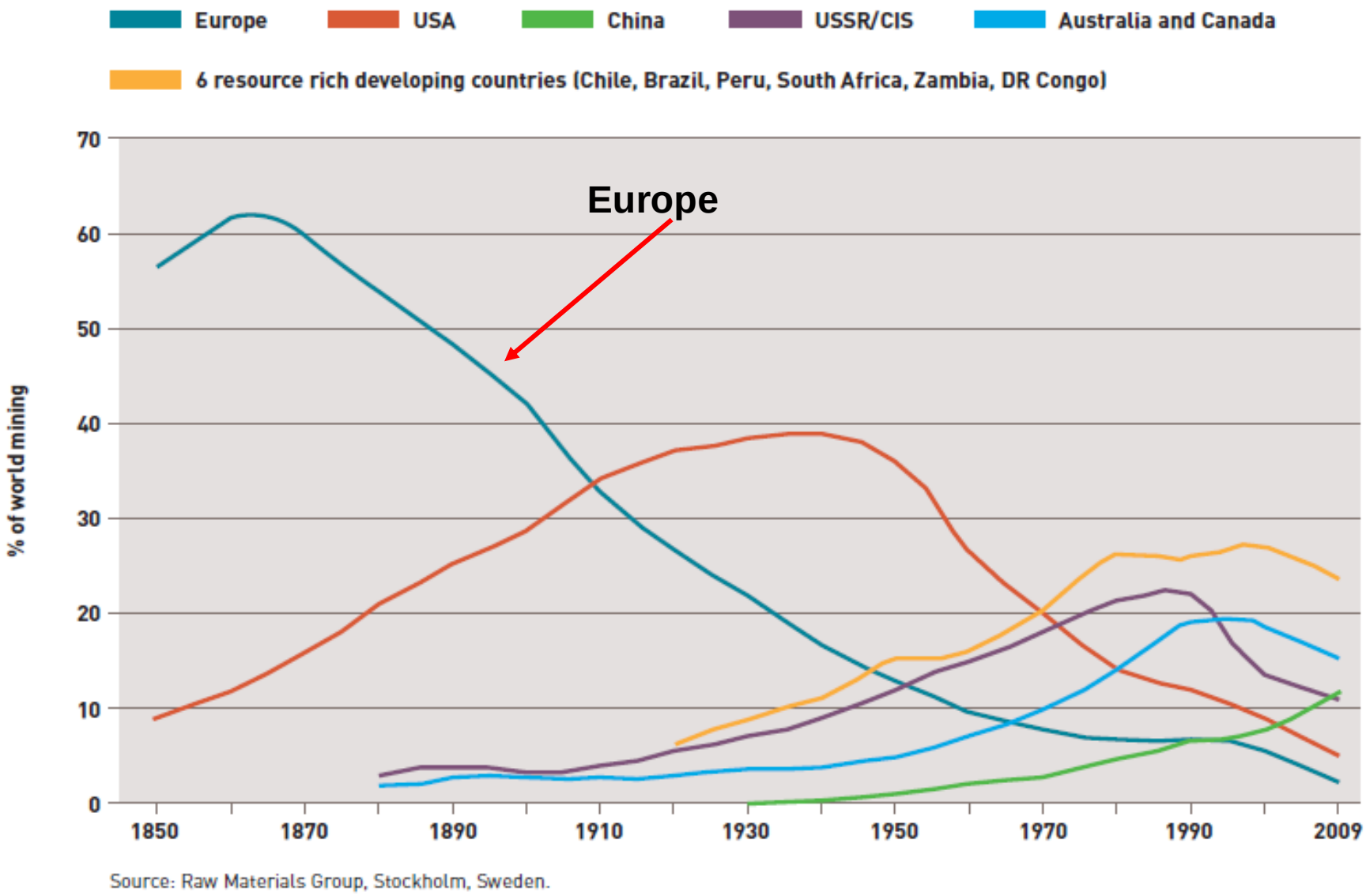
- Reduce **import dependency in RM;**
- Push Europe **to the forefront** in **RM** sectors;
- Provide **alternatives in supply of RM;**
- Mitigate negative **environmental impacts of RM industry**

ETP SMR contributed to the European Innovation Partnership (EIP) on Raw Materials and was involved in numerous pan-European projects and initiatives at both partner level and in an advisory capacity.

ETP SMR members often collaborate amongst themselves to form consortia

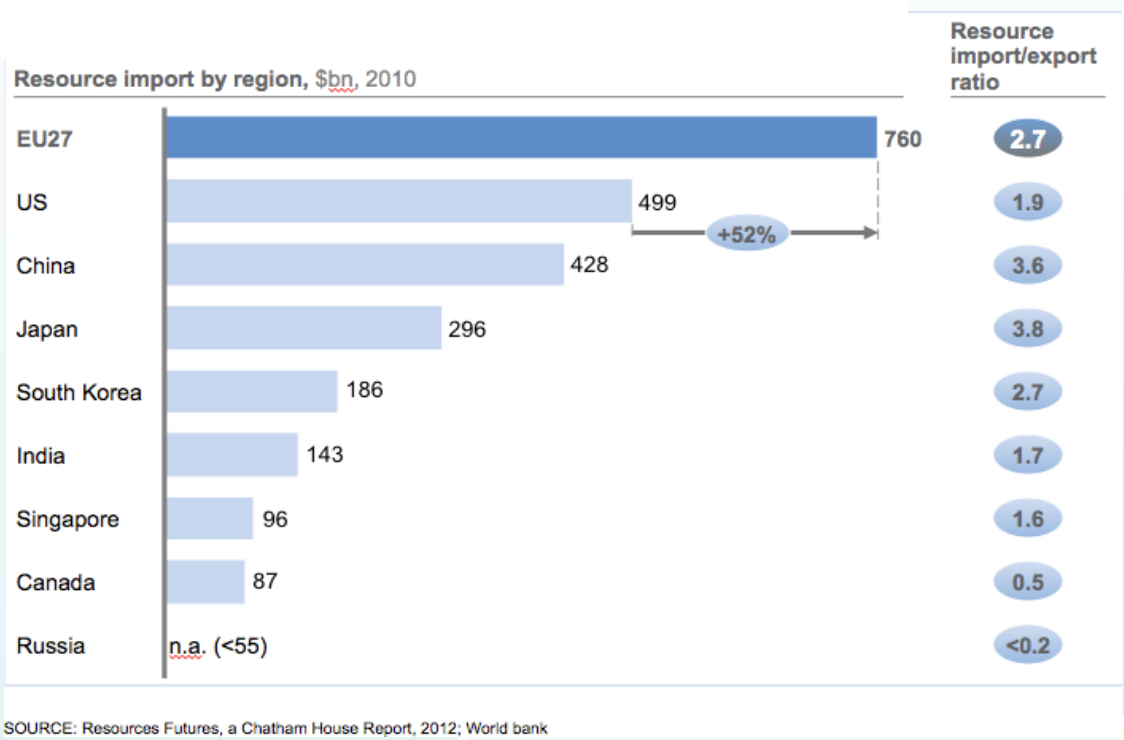
World metal mining activity in regions since 1850.

World mining is measured as the total value at the mine stage of all metals produced in all countries.



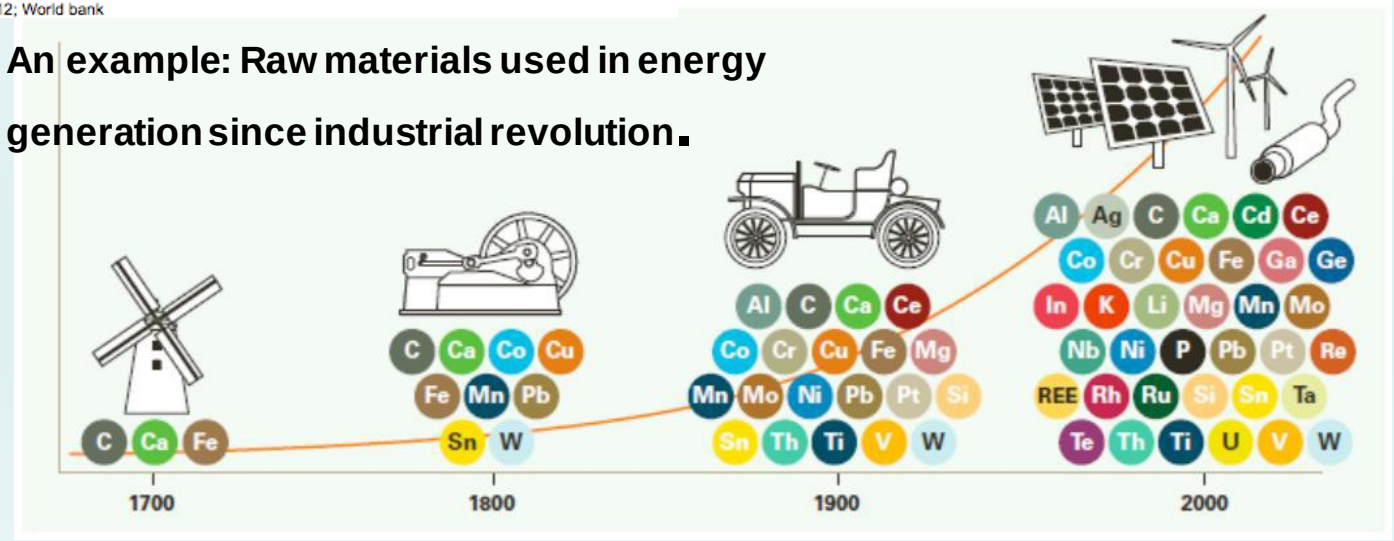
Source: Raw Materials Group, Stockholm, Sweden.

Europe is the world's largest net importer of RM resources.



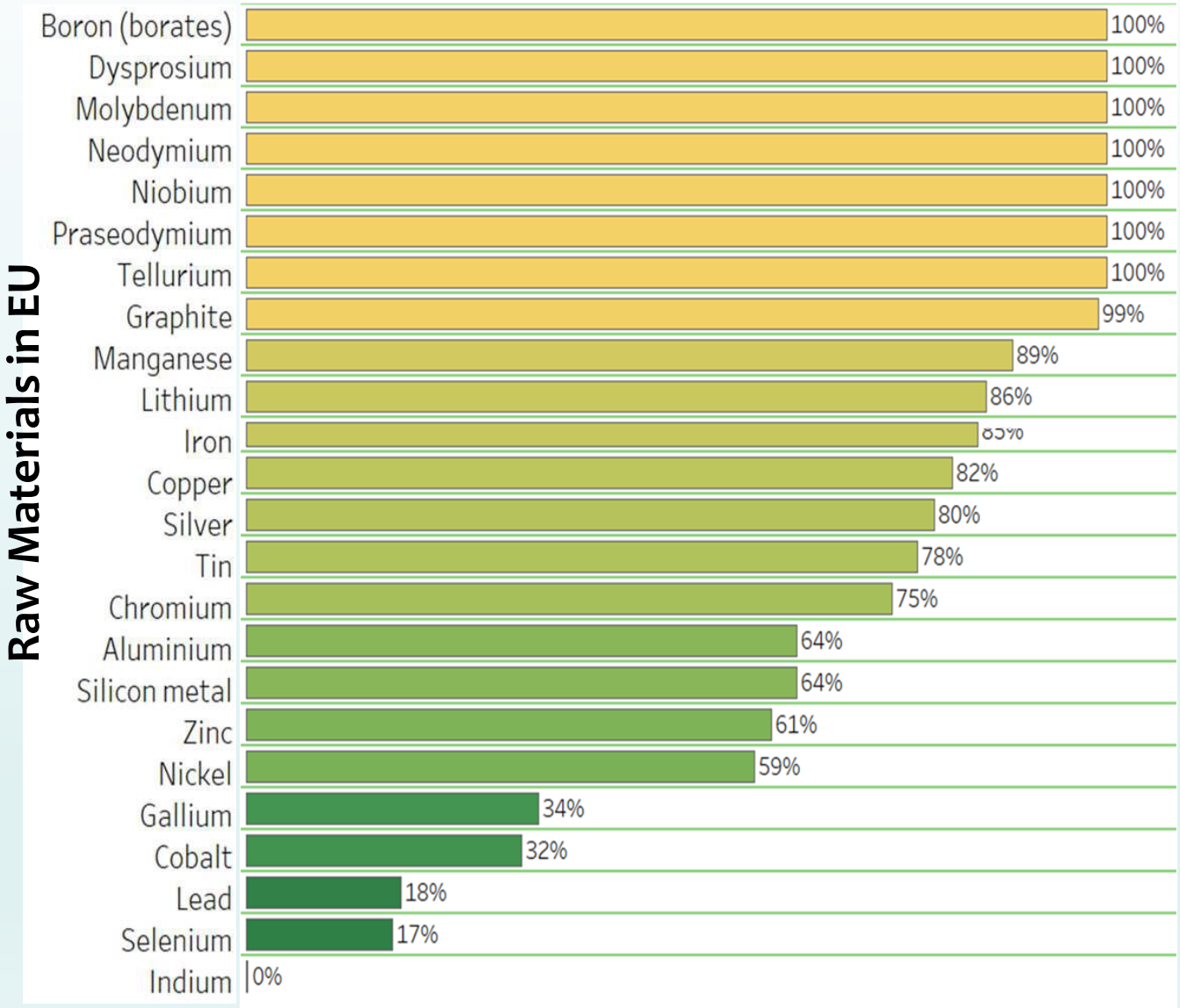
source: Jocelyn Blériot@jossbleriot; EIP conference on RM; 9 December 2015 – EIT Raw Materials, Brussels.

An example: Raw materials used in energy generation since industrial revolution.



After: Achzet et al., Materials critical to the energy industry, Augsburg, 2011

European economy is stil highly dependent on import of Raw Materials - 2017.



75% of raw materials are needed for implementation of low carbon economy (solar energy, wind energy, e-mobility, defence)

European Commission

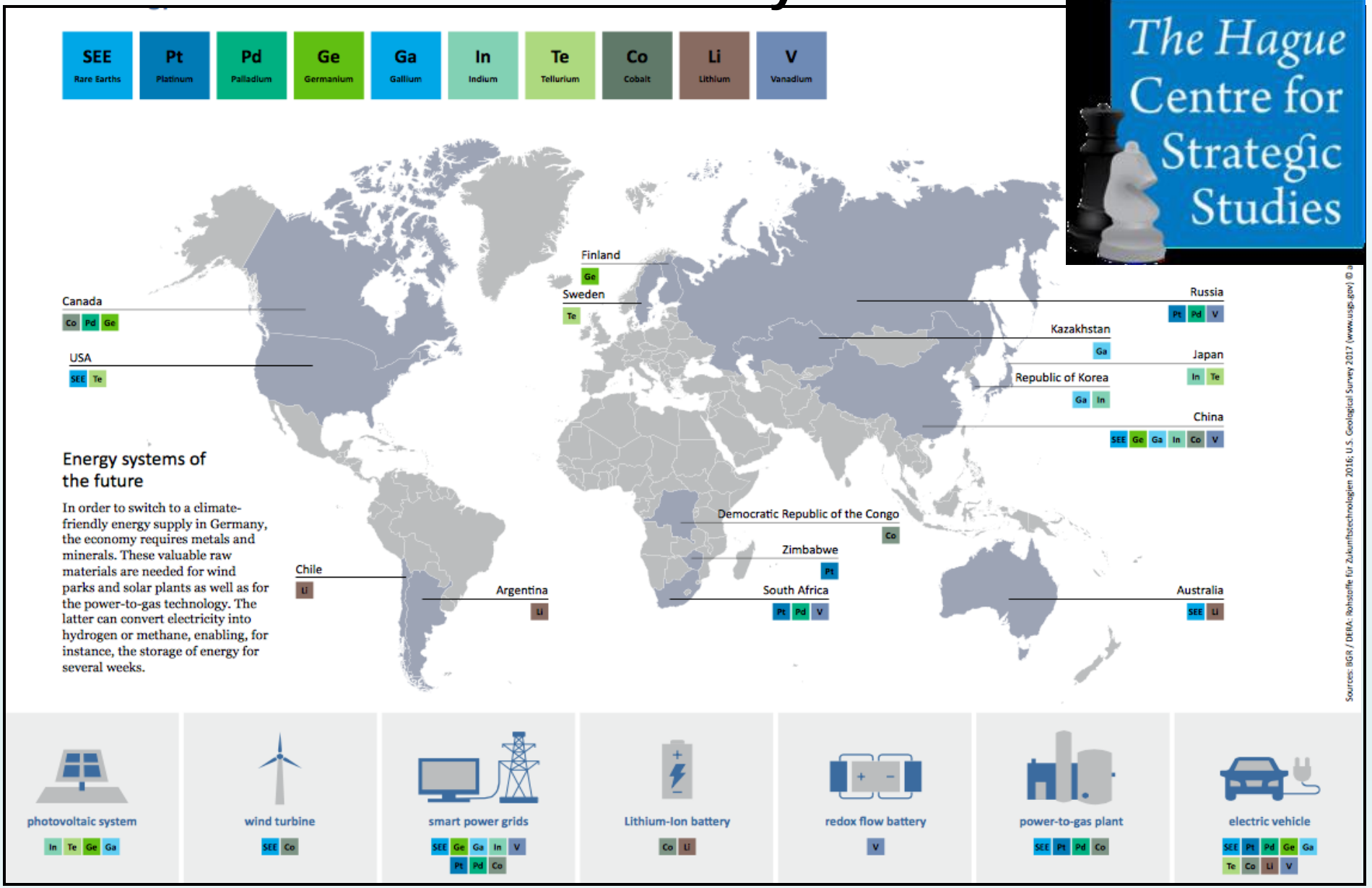
source: Darina Blagoeva & Contributors: Materials: a potential bottleneck for the deployment of low-carbon technologies in the EU? 5th HL Conference of the EIP on Raw Materials Brussels, 8 November 2017

Metals in low-emission technologies.

Technology	Metals Requirement	Lifespan
Wind	Dysprosium, Manganese, Neodymium, Molybdenum, Nickel, Chromium, Copper, Concrete	25 years with normal maintenance and inspection.[11]
Solar PV	Tellurium, Indium, Tin, Silver, Gallium, Selenium, Cadmium, Copper, Lead, Silicon	Standard solar panel warranty is 25 years and the average life of a solar system is 30 years. The average lifespan of PV batteries is between 6 and 12 years.[12]
Electricity Grid	Copper, Lead	N/A
Biofuel	Ruthenium, Cobalt	N/A
Plug-in hybrids (PHEV) & electric vehicles (BEV)	Lithium and Cobalt (Batteries), Neodymium, Terbium, Dysprosium and Lanthanum (Permanent Magnets)	From 5 to 20 years. Tesla's vehicles come with an 8 years battery warranty.[13]

The Hague Centre for Strategic Studies

World suppliers of metals used in low - emission economy.



Source: "Energy Systems of the Future" (ESYS) initiative, 2017.

The biggest producers of Critical Raw Materials important for EU economy, data for 2017.

Lists of EU CRMs – published in:

- **2011 list of CRMs**
- **2014 list of CRMs**
- **2017 list of CRMs**
- **2020 list of CRMs to be published**

Źródło: UE Study on the review of the list of critical raw materials 2017

Strategic Implementation Plan (SIP) of European Innovation Partnership on Raw Materials (2014-2020)

I. Technology Pillar

- I.A Raw materials research and innovation coordination
- I.B Novel technologies for primary and secondary raw materials' production
- I.C Substitution of raw materials

II. Non-Technology Policy Pillar

- II.A Improving Europe's raw materials framework conditions
- II.B Improving Europe's waste management framework conditions and excellence
- II.C Knowledge, skills (establishing KIC on RM) and raw materials flows

III. International Cooperation Pillar

- III.1 Technology
- III.2 Global Raw Materials Governance and Dialogues
- III.3 Health, Safety and Environment
- III.4 Skills, Education and Knowledge
- III.5 Investment activities

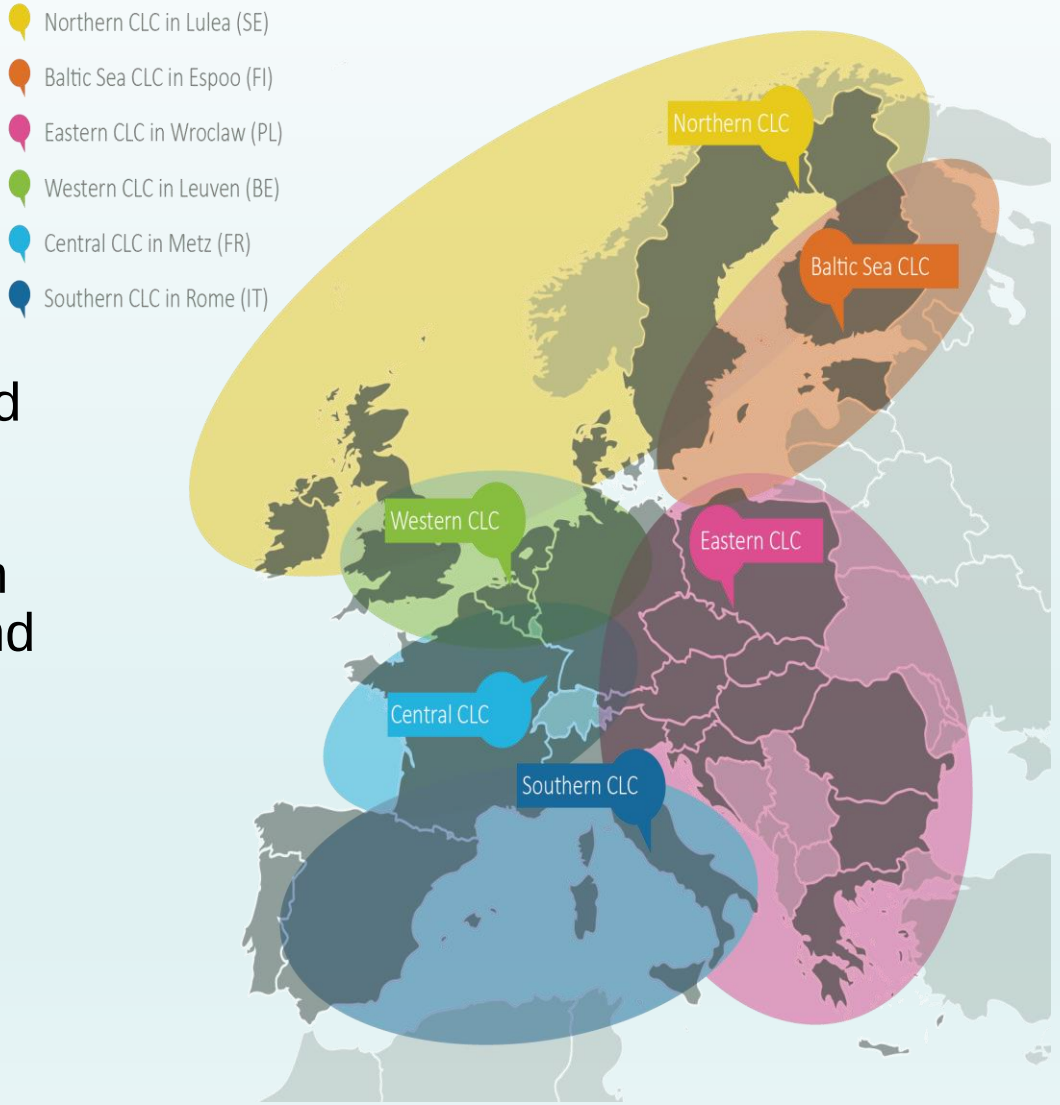
EIT Raw Materials

Knowledge and Innovation Community (KIC)

>120 partners, 23 countries
€400 million budget (2015-2021)

- HQ: Berlin, Germany
- Northern CLC: Luleå, Sweden
- Eastern CLC: Wroclaw, Poland
- Southern CLC: Rome, Italy
- Western CLC: Metz, France
- Central CLC: Leuven, Belgium
- Baltic Sea CLC: Espoo, Finland

Regular calls every year



KIC Raw Materials CLC Eastern

ul. Stabłowicka 147

54-066 Wrocław

www.eitrawmaterials.eu

About European Mining Regions.

1.Regional significance in local economy. In European mining regions, small and large mining has played and continues to play an important part in shaping regional development, industrial production, the landscape, development of culture and raw materials supply.

2.There are social and environmental impacts associated with mining, so it is imperative to promote “responsible” mining practices at the local, regional, national and European Union levels.

3. In mining regions throughout Europe, societies are working to remediate post-mining legacies from by-gone eras, and are also working toward preservation of important mining heritage elements for generations to come.

4. The socio-economic and environmental management best practices and best available technologies found in some European mining regions can be used by other mining regions in Europe and around the world that are faced with similar challenges.

Source: H. Karaś; Sherpa Group in EIP on Raw Materials programme; Annual conference of EIP on RM; 9-10 December 2015; Brussels

Partners of the European Network of Mining Regions (ENMR/2005-2006)

North East South West INTERREG IIIC

1. **Georange - leader**, http://www.georange.se/pages.aspx?r_id=36090
2. Zaw-Wachau (Waste-management-association in state of Saxony) http://www.zaw-wachau.de
3. Government of Andalusia http://www.juntadeandalucia.es
4. University of Girona http://www.udg.edu
5. University of Oulu http://www.oulo.fi
6. Regional council of North Karelia http://www.pohjois-karjala.fi
7. Regional council of Lapland http://www.lapinliitto.fi
8. Council of Oulu Region http://www.pohjois-pohjanmaa.fi
9. Regional council of Kainuu http://www.kainuu.fi/kainuunliitto
10. GTK – Geological Survey of Finland http://www.gtk.fi
11. Region of Western Greece http://www.westerngreece.gr
12. Industrial Systems Institute http://www.isi.gr
13. CS Aosta (The Regional development agency of the Aosta Valley) http://www.centrosviluppo.it
14. Local Action Group Appennino Genovese http://www.appenninogenovese.it
15. **AGH University of Science and Technology** http://www.agh.edu.pl
16. INETI - the National Institute of Science and Technology http://www.ineti.pt
17. Technical University of Kosice http://www.tuke.sk
18. Eden Project Ltd. http://www.edenproject.com

Associated members of ENMR; Sweden:

1. **Bergskraft Project** http://www.bergskraft.se
2. **Norrbotten County Council** http://www.nll.se
3. **Man-Technology-Environment** Research Centre, Örebro University http://www.oru.se/templates/oruExtNormal.aspx?id=29759

The European Network of MINING REGIONS

Source: Final Report; Nov. 2006: „Towards a Roadmap for European Mining Regions - a Cornerstone for European Competitiveness, balancing Socio-Economics, Environment, Industry."

MIREU - EU network of mining and metallurgy regions (2017-2020)

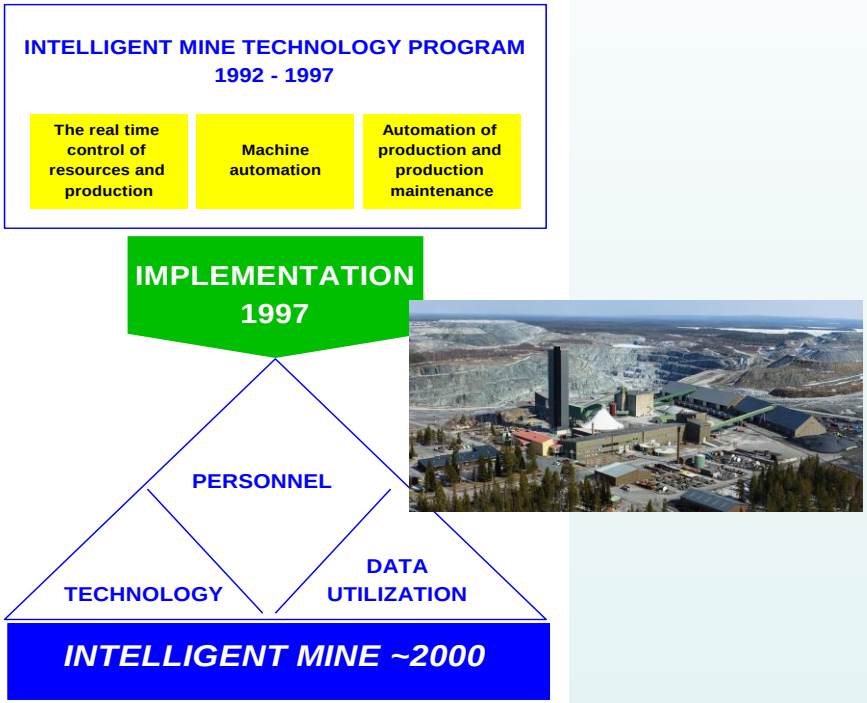
The purpose: EU network of regions dedicated to mining, processing and metallurgy aiming at improving related framework conditions, social aspects and industry competitiveness. https://mireu.eu/

This MMR network should establish (*main points*):

1. **Coherent co-ordination and support mechanisms among a representative number of EU regions;**
2. **Implementing good practices in the addressed regions, including administration, land use planning, investment conditions, training and attracting skilled workforce;**
3. **Social Licence to Operate (SLO) 38 guidelines, develop, improve communication and transparency during the permitting and licensing procedures;**
4. **Involvement of relevant competent authorities, private sector, research and academic organisations, civil society.**

Participation of regional authorities from all the regions addressed in the proposal is compulsory. EU contribution up to EUR 3 million.

Past „Intelligent Mine" activities in Europe.



source: Intelligent Mine Implementation HUT, Prof. Pekka Särkkä; 2006

SMIFU project: future vision as an inspiration for new solutions in future technological operations in mining (2009-2012).

- One control room;
- Zero entry mine;
- Mine – attractive and safe place to work;
- Continuous mining;
- Pre-concentration;
- On line monitoring of mining and mineral processing operations.

I2Mine – FP7 UE funded project (2011-2015).

Innovative solutions for safe extraction of deep laying mineral deposits in Europe

I²Mine was the biggest EU RTD project in extractive sector which was funded by FP7 grant.
I²Mine project was to develop some innovative projects to execute the vision of Intelligent Mine.

H2020- European Sustainable Intelligent Mining Systems for the Global Mining Industry (SIMS)

SIMS SUSTAINABLE INTELLIGENT MINING SYSTEMS

A HORIZON 2020 FUNDED PROJECT

Project Total Budget: 16.2 Million Euros

Project Start: May 2nd, 2017

Project Length: 3 Years

Demonstration Locations

Successful demonstrations of each technology are key points in the SIMS project.

Atlas Copco

AGNICO EAGLE FINLAND

NEW BOLIDEN

KGHM Cuprum

K+S

LKAB

ABB

ERICSSON

IGW

mobilaris

LULEÅ UNIVERSITY OF TECHNOLOGY

RWTH AACHEN UNIVERSITY

www.SIMSmining.eu

Horizon 2020 Work Programme 2018-2020

5.ii. Nanotechnologies, Advanced Materials, Biotechnology and Advanced Manufacturing and Processing

SDGs (UN Sustainable Development Goals) as a compass for EU economy transformation.

Contribution to Sustainable Development Goals ;

This H2020 Work Programme part will contribute to Sustainable Development Goals (SDGs):
7 (affordable and clean energy); 8 (decent work and economic growth); 9 (industry, innovation and infrastructure); 11 (sustainable cities and communities); 12 (responsible consumption and production); and 13 (climate action).

Contribution to focus area(s)

1.Focus Area 'Digitising and transforming European industry and services' (DT):
2.Focus Area 'Connecting economic and environmental gains - the Circular Economy' (CE):
3.Focus Area 'Building a low-carbon, climate resilient future' (LC):

The 2030 Agenda for Sustainable Development with its 17 SDGs was adopted at the UN Sustainable Development Summit in New York - September 2015. The SDGs came into effect in January 2016, and they will continue to guide UNDP policy and funding until 2030.

UNDP is uniquely placed to help implement the Goals through our work in some 170 countries and territories.

Source: https://www.un.org/sustainabledevelopment/news/communications-material

The list of EU initiatives and actions in raw materials framework in H2020 SC5 (2017-2020).

- **MIN-GUIDE** (2016-2018) developing a "Minerals Policy Guide"
- **MINLEX** study (2017) - Legal framework and permitting procedures in the NEEI in EU28
- Report "Evaluation and **Exchange of Good Practice for the Sustainable Supply of Raw Materials**" (2014)
- **MIREU -** EU network of mining and metallurgy regions (2017-2020)
- **REMIX -** Smart and Green Mining Regions of EU (2017+)

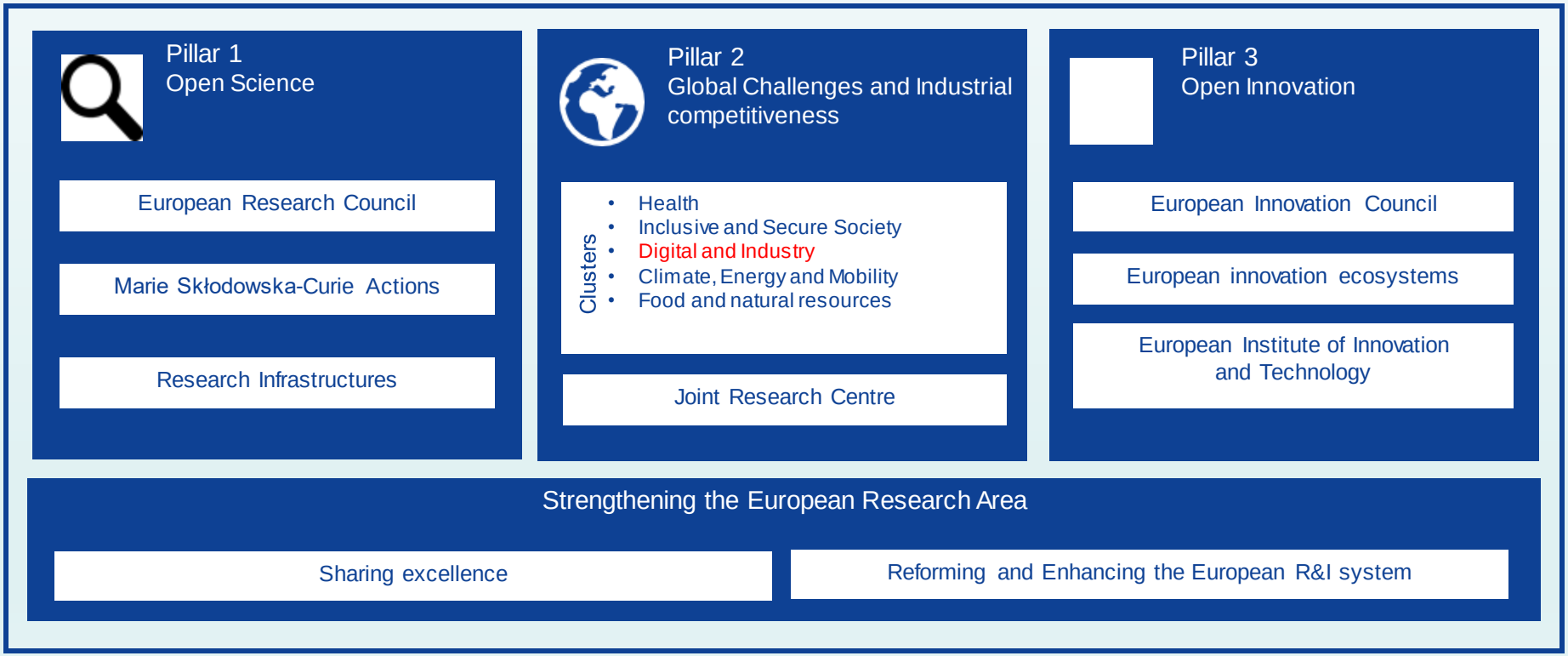
Access to mineral potential in the EU

- **MINLAND** (2017-2019) Mineral resources in sustainable land-use planning
- **MINATURA2020** (2015-2017) - “mineral deposits of public importance”.

source: **M.Grohol. EC Developments:** Horizon 2020 WP 2018-2020 & beyond; General Meeting of ETP SMR 10 December 2018, Brussels

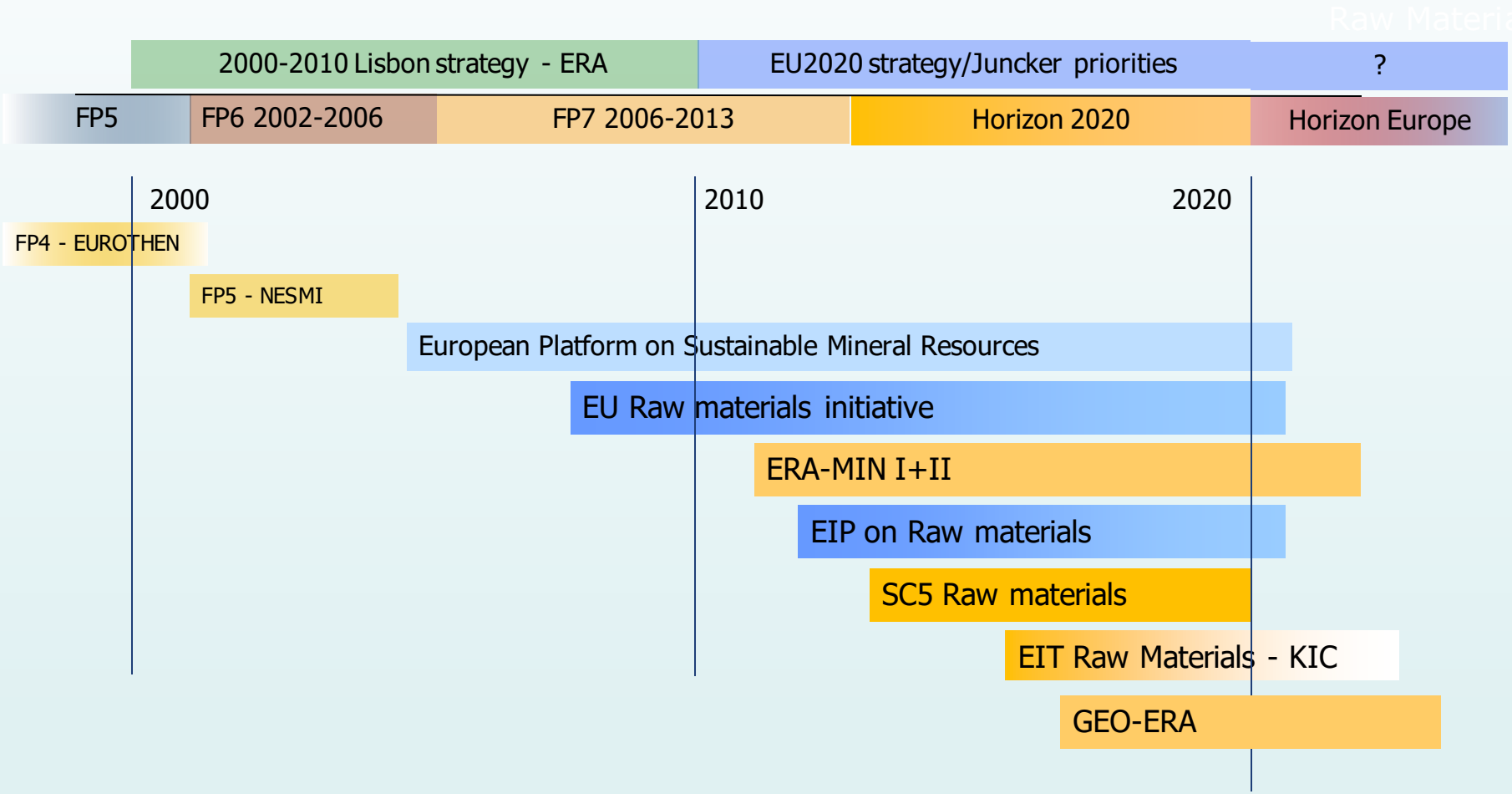
Horizon Europe (2021-2027)

Commission proposal for a € 100 billion R&I funding programme: €15 billion (Circular Industries (incl. “Raw Materials”), Low-Carbon and Clean Industries.



source: **M.Grohol. EC Developments:** Horizon 2020 WP 2018-2020 & beyond; General Meeting of ETP SMR 10 December 2018, Brussels

Raw Materials - EU R&I coordination (2000- 2027)



source: **M.Grohol. EC Developments:** Horizon 2020 WP 2018-2020 & beyond; General Meeting of ETP SMR 10 December 2018, Brussels

Thank you

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