

Polish Mining Industry

21 October 2014

Brussels

Mining regions

Main goals:

- Find common fields of cooperation with other mining regions in Europe (build consortium)
- Look for financing plans (future)

The National Smart Specialisation Strategy in Poland

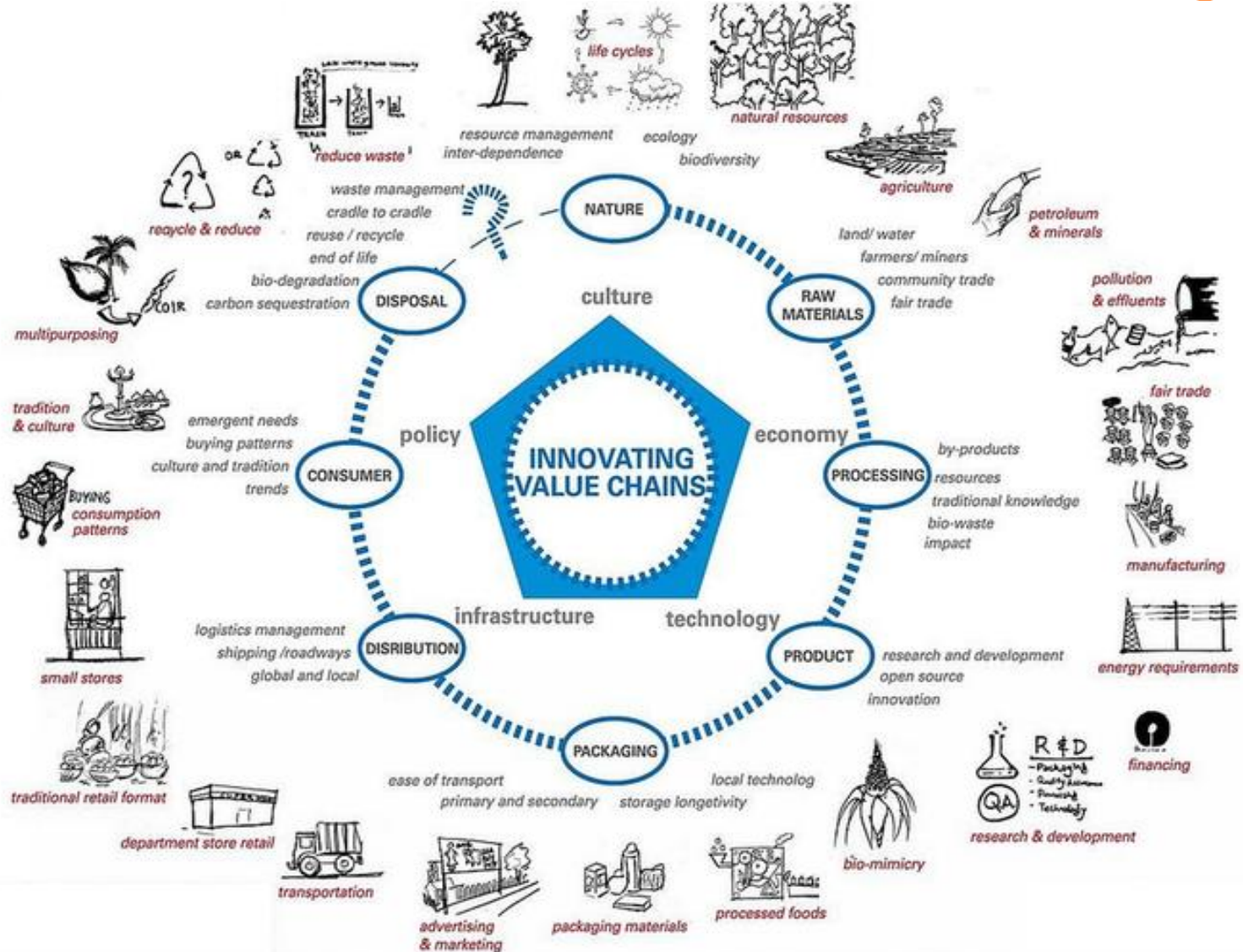
Starting points:

- Previous experience
- Recommendation of the EU Commission

Poland now needs a transition towards a more indigenous innovation-based model. Poland is expected to indicate smart specialisations in each region.

Joining the global value chain will provide strength of the region. In order to reach this goal, local communities are expected to develop their potential and build international cooperation.

Value chain



Priorities in the area of R&I – national level

Natural resources and waste management

- modern technology sourcing, processing and use of natural resources and production of substitutes
- minimizing waste, including unfit for processing and use of materials and energy waste (recycling)
- Innovative technologies and processing water recovery and reducing its consumption

Sustainable energy

- high efficiency, low-emission and integrated circuits manufacturing, storage, transmission and distribution of energy
- smart and energy efficient construction
- Environmentally friendly transport solutions

Healthy society

- medical engineering technologies including biotechnologies
- medical diagnosis and treatment of lifestyle diseases and personalized medicine
- production of medicinal products

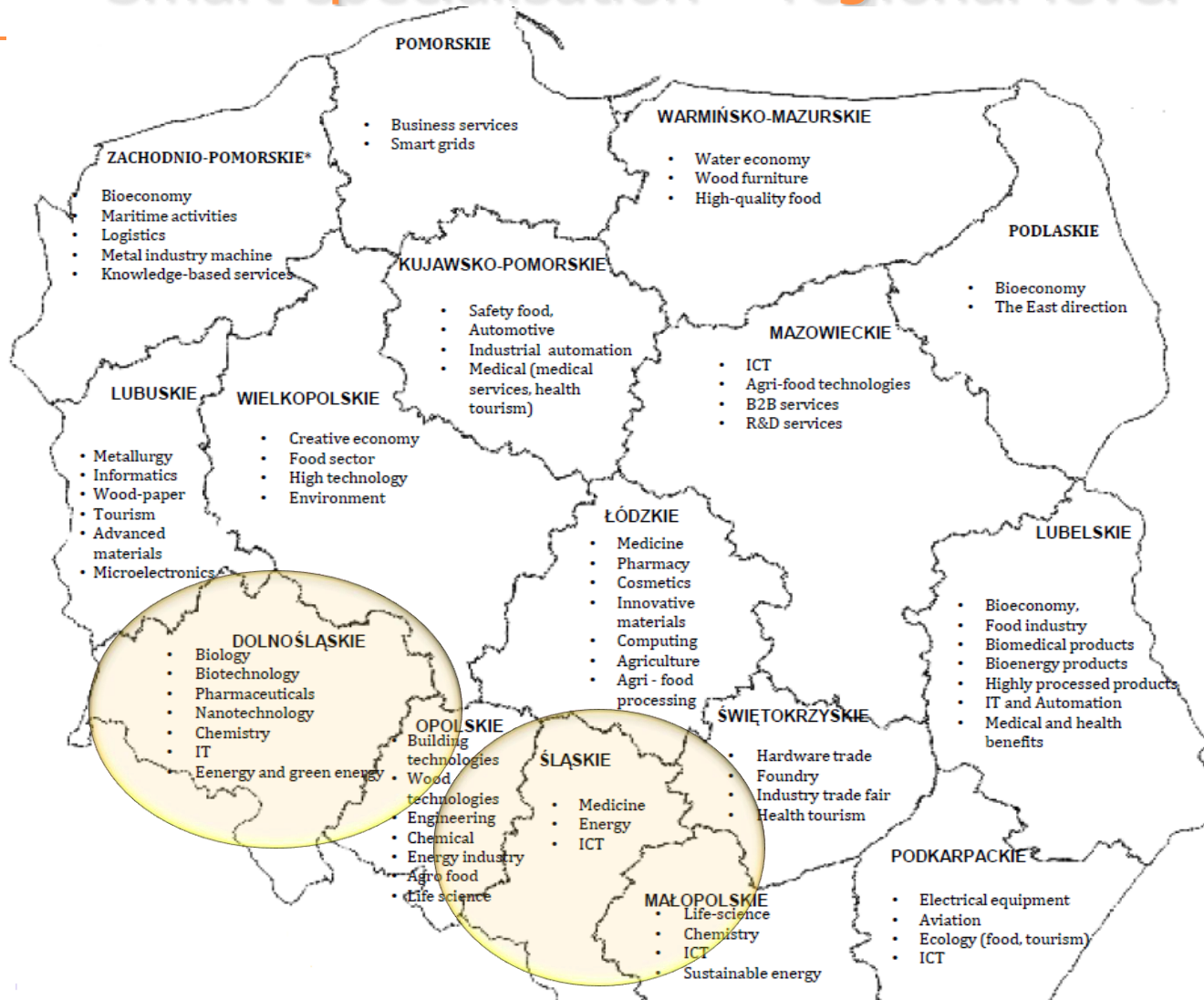
Bioeconomy and environment

- innovative technologies, processes and products of the agrifood and forestry-wood
- healthy food (high quality and performance of production)
- biotechnological processes and products

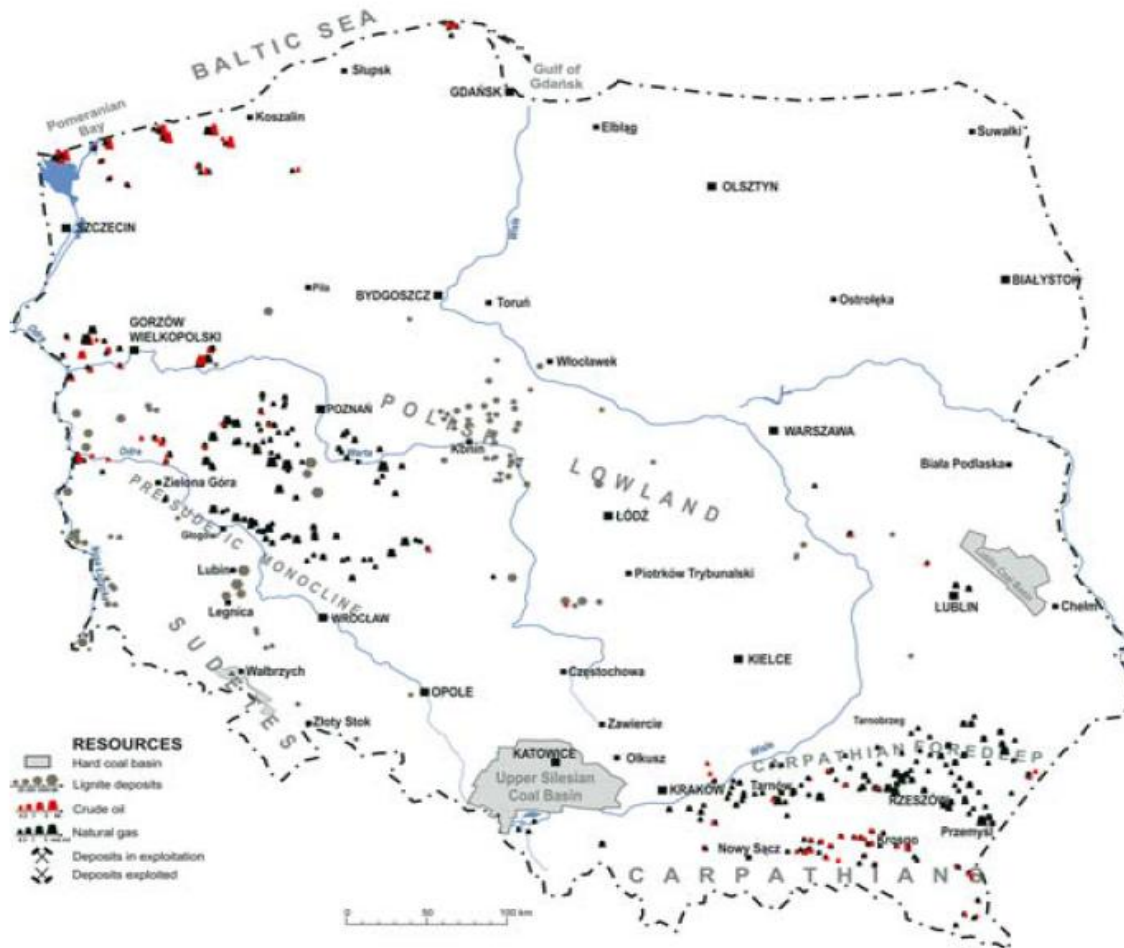
Innovative technologies and industrial processes

- multifunctional materials and composites with advance properties
- sensors (including biosensors) and smart sensors network
- smart grids and geo-information technologies
- electronic conducting polymers
- automation and robotics processes
- optoelectronic systems and materials

Smart specialisation – regional level



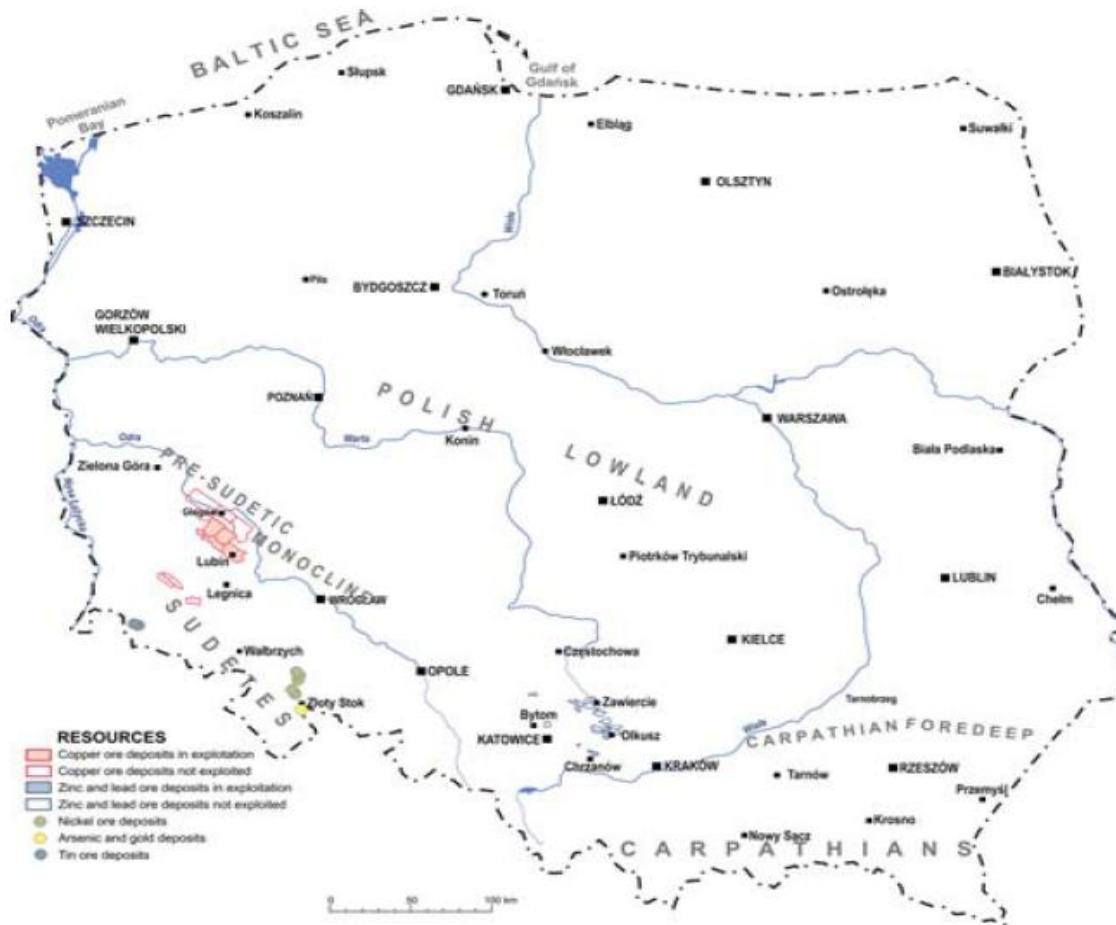
Energy resources in Poland



Map of energy resources in Poland

Source: own study based on the <http://geoportal.pgi.gov.pl/surowce/mapy>

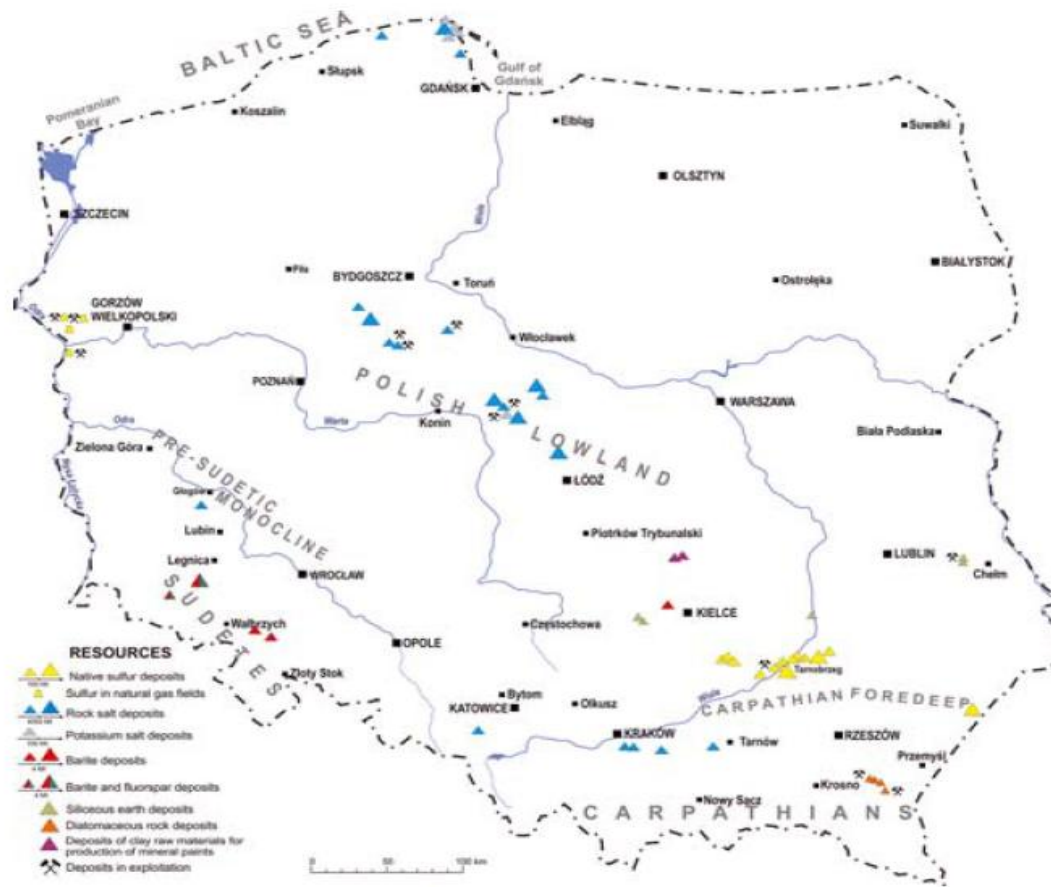
Metallic raw materials in Poland



Map of metallic raw materials in Poland

Source: own study based on the <http://geoportal.pgi.gov.pl/surowce/mapy>

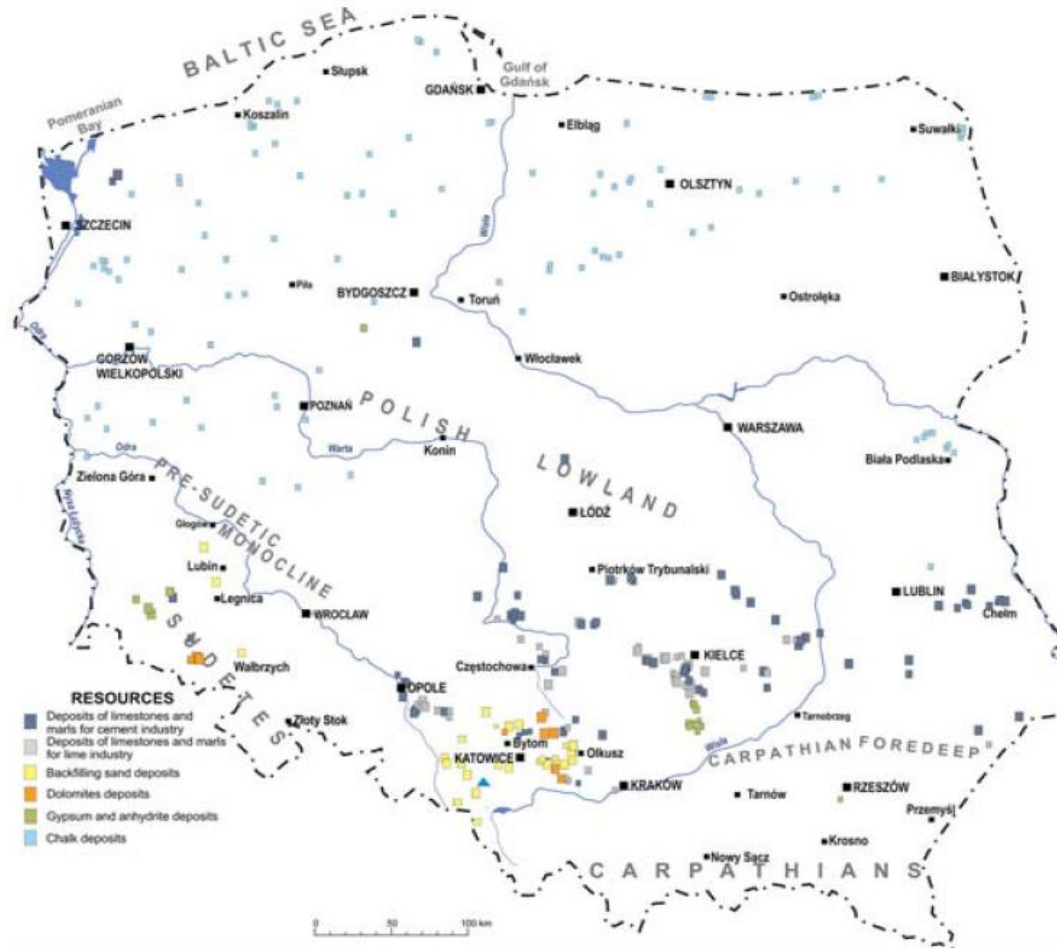
Chemical raw materials in Poland



Map of chemical raw materials in Poland

Source: own study based on the <http://geoportal.pgi.gov.pl/surowce/mapy>

Construction minerals in Poland



Map of industrial and construction minerals in Poland (selected)
Source: own study based on the <http://geoportal.pgi.gov.pl/surowce/mapy>

Smart specialisation for Upper Silesia

Smart specialisation is based on 8 areas. These are:

- Medical and communication technologies
- Mining and energy
- Environmental protection (waste management, recycling)
- Production and materials processing
- Transport
- Engineering
- Nanotechnologies and nanomaterials
- Aviation

Smart specialisation for Lower Silesia

- Chemical, pharmaceutical, automotive, electric, mining industry and information and communication technologies
- Scientific specialisation of the region: medical and biological science, chemistry, IT, mathematics and physics

Upper Silesia – potential consortium members

- Upper Silesian Agency for Entrepreneurship and Promotion Ltd. in Gliwice (GAPR)

GAPR is a company with the City of Gliwice as the main shareholder, whose task is especially to support micro, small and medium-sized enterprises.

Some of work performing:

- initiating cluster activities and providing consultancy on internationalization and optimization of clusters
- converting degraded post-industrial areas into areas of economic activity
- assistance in establishing cooperation and combination of economic partners at national and international levels
- development of objectives in international system of pro-innovative services, provided by business - environment institutions in different countries for small and medium-sized enterprises located in the Central European region

Upper Silesia – potential consortium members

■ AGH University of Science and Technology (AGH UST)

It is one of the best and most renowned modern Polish universities. For many years it has been ranked in the top of the list of institutions of higher education. AGH UST is a leading Polish university in modern technologies, and belongs to a group of prestigious international educational centres.

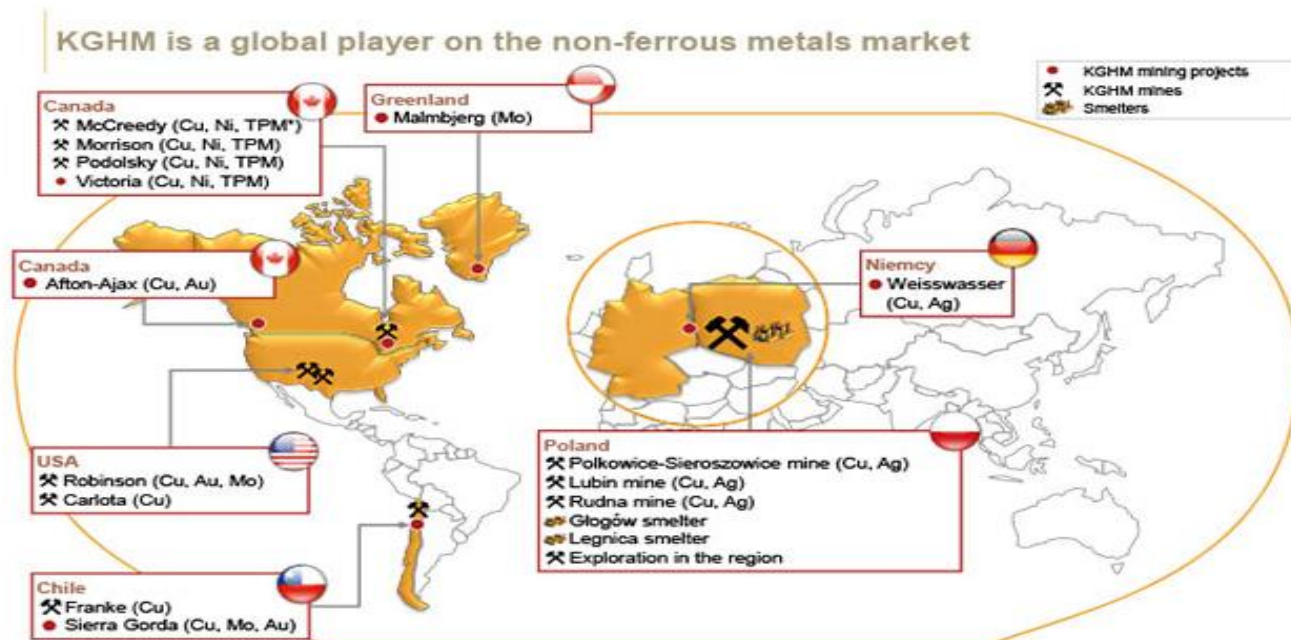
Research subject areas:

- Information Technologies
- New Materials and Technologies
- Environment and Climate Changes
- Energy and its Resources
- Mining
- Electrical and Mechanical Engineering
- Exact and Earth Sciences
- Social-Economic Sciences and Humanities

Lower Silesia – potential consortium members

■ KGHM Polish Copper

Global producer of copper and silver with over 50 years of experience. The company owns one of the largest copper deposits in the world and have guaranteed continued production in Poland for the next 40 years. All its assets are located in three continents:



Lower Silesia – potential consortium members

- KGHM Cuprum Ltd Research and Development Centre

The company provides solutions which represent a response to the challenges encountered by Polish Copper, however activity of the company is not limited solely to the copper deposit region on the Foresudetic Monocline. Specialists of the company have participated in projects involving hard coal mines in Upper Silesia and the salt mine at Wieliczka. Among our clients are also firms from beyond the mining industry, along with local governments at all levels and foreign partners within European Union framework programmes – I2Mine, IRIS, LAGUNA, BIOshale

Lower Silesia – potential consortium members

■ Lower Silesian Mineral Resources Cluster

The main task for the Lower Silesian Mineral Resources Cluster is identification of the potential cooperation between research and industry in the field of mineral resources. Lower Silesian Cluster aims at creating a better understanding for the needs, existing strategies, barriers referring to R&D cooperation. The Cluster was founded in 2007

■ **Transactors**

- KGHM ECOREN S.A.
- PCC „Rokita” S.A. (chemical company)
- Stone producers of Strzegom area

■ **Local Authority - Urząd Marszałkowski Województwa Dolnośląskiego**

■ **Research units**

- Technical University of Wroc
- University of Wrocław
- Lower Silesian Centre of Advanced Technologies - Wrocław
- Poltegor Institute

■ **Others**

- Lower Silesian Chamber of Commerce

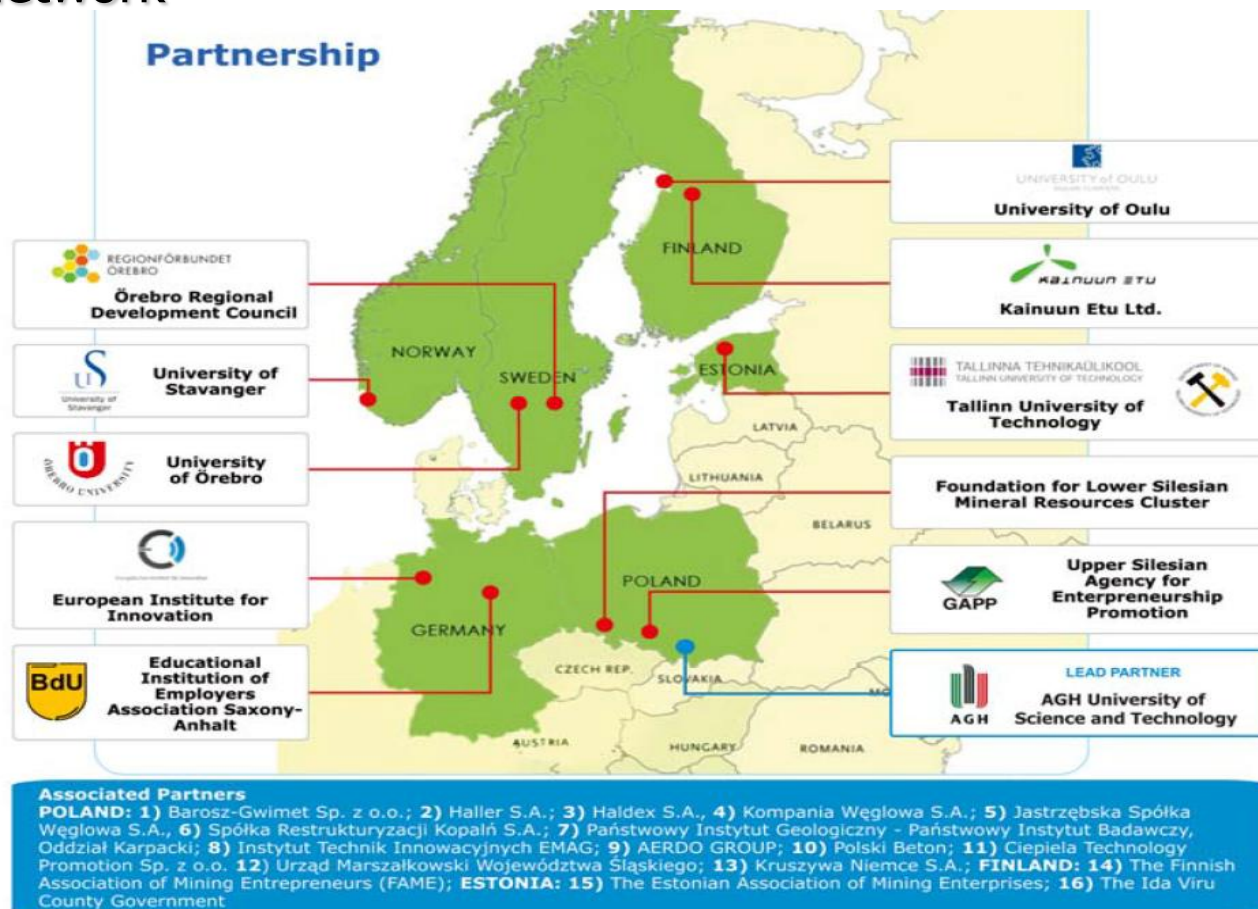
Technology Cluster „Wałbrzych Raw Materials”

- 60 companies of Wałbrzych Agglomeration
- Collaboration with World Bank in identifying of industry needs and collaboration with research institutions
- Establishment of „Knowledge Library” – technologies, patents, papers, conferences in the field „minerals as advanced materials”

Previous experience

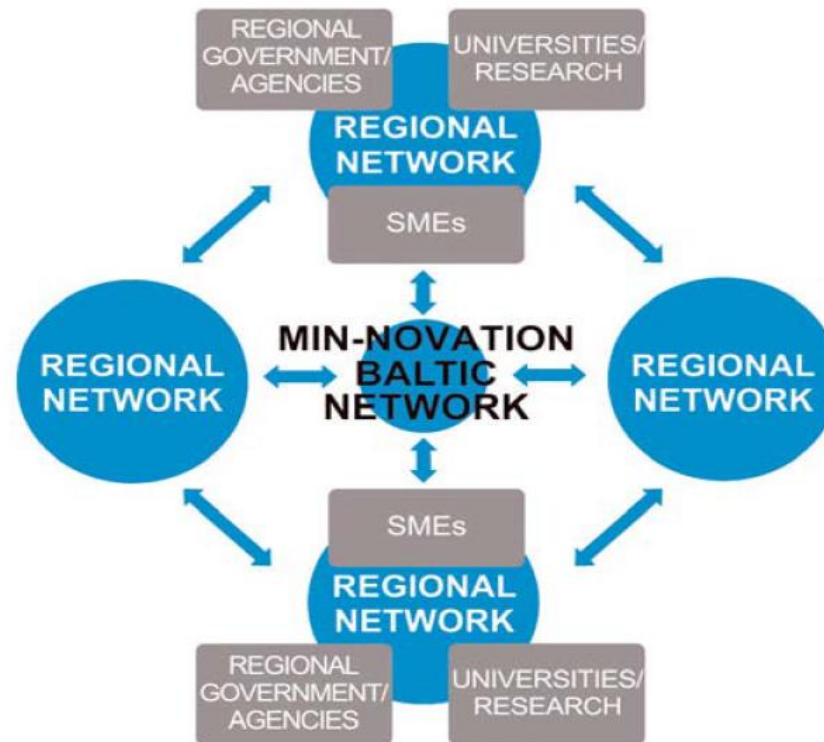
■ MinNovation project

Mining and mineral processing waste management innovation network



MinNovation project main aim

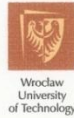
To empower stakeholders to get involved in topics of relevance to mining and mineral processing waste management, including the legal framework of mining waste management, the policy incentives (or disincentives) for waste management operations and the technological and scientific knowledge, which advances greater reuse/recycling/recovery



MinNovation project

Each region represented in Min-Novation has a long history of mining, including present-day operating sites. Each region also faces key development questions when it comes to the future of mining and the role of sustainability in this context. The spectrum of issues addressed in the project covers rare earth metals through coal and oil shale all the way to oil.

Cooperation in RTD in extractive industry Poland-Sweden



LETTER OF INTENT ON COOPERATION

The aim of this Letter of Intent is to declare the will of research & innovative cooperation.

Parties of the agreement:

MITU Swedish Mining Research Foundation, represented by:

- Lars – Eric Aaro – Chairman of the Board of Director

Luleå University of Technology, represented by:

- Björn Öhlander – Dean of Faculty of Engineering

AGH University of Science and Technology, represented by:

- Prof. Antoni Tajduś - Rector

Wrocław University of Technology, represented by:

- Prof. Tadeusz Więckowski - Vice-Rector for Research and Cooperation with Industry

KGHM CUPRUM sp. z o.o. CBR Wrocław, represented by:

- Henryk Karaś - President

1. Parties signing this Letter of Intent hereby declare the will of cooperation in:

- exploration,
- technology for fast drifting and tunneling, rock mechanics
- extracting of low metal content concentrates with the use of hydrometallurgy,
- bio-technology in mining (bio-mining),
- material engineering in trace metals metallurgy and related technologies,
- power energy production and optimization of energy consumption in industrial processes used in mining industry,
- technology of industrial utilization of wastes, especially the industrial ones,
- supporting the sustainable development of mining regions,

1/2

2. The Parties shall appoint coordinators of the Letter's provisions.

3. Detailed scope of cooperation, defining the duties of Parties during the accomplishment of particular projects will be specified in the separate agreements.

4. This Letter of intent on the cooperation is not a binding agreement under the Civil Code and signing it does not imply any legal effects resulting from such agreements and is not a base for any legal or financial claims.

5. The Parties hereby undertake to keep confidential all information gained in the course of carrying out the provisions of this Letter of intent.

6. This Letter of intent was made in four identical copies, one for each Party.

Wrocław 14.05.2007

MITU Swedish Mining Research Foundation

Lars – Eric Aaro – Chairman of the Board of Director

Luleå University of Technology

Björn Öhlander – Dean of Faculty of Engineering

AGH University of Science and Technology

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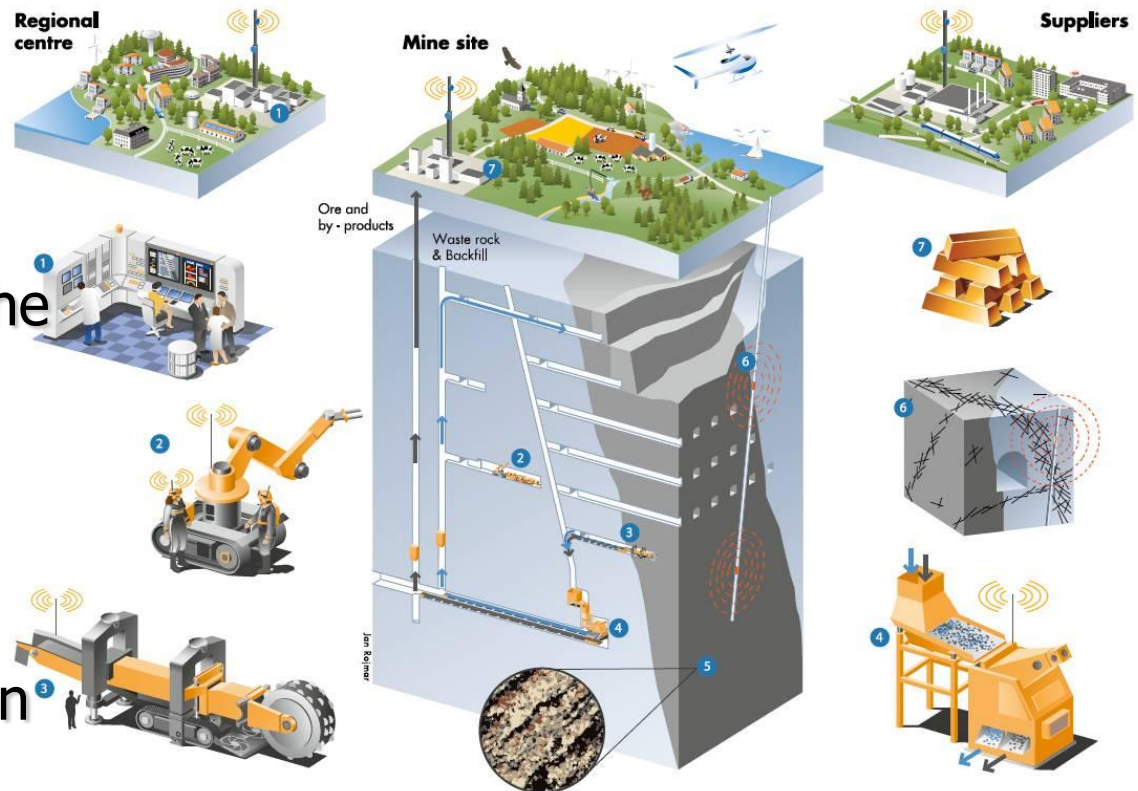
KGHM CUPRUM sp. z o.o. CBR Wrocław

Henryk Karaś - President



SMIFU - Sustainable Mining and Innovations of the Future (2009-2012)

Vision – An inspiration for the future of mining



- One control room
- No human presence in the production areas
- Attractive work places
- Continuous mechanical excavation
- Pre-concentration
- Resource characterisation
- Final products

The SMIFU final report published by Rock Tech Center in October 2012 forms the backbone of this Strategic Research and Innovation Agenda for the Mining and Metal Producing Industry (STRIM).

The SMIFU consortium Sustainable Mining and Innovations of the Future

LKAB **BOLIDEN** **KGHM**
POLSKA MIEDŹ S.A.

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ABB

 **SANDVIK**



Outotec

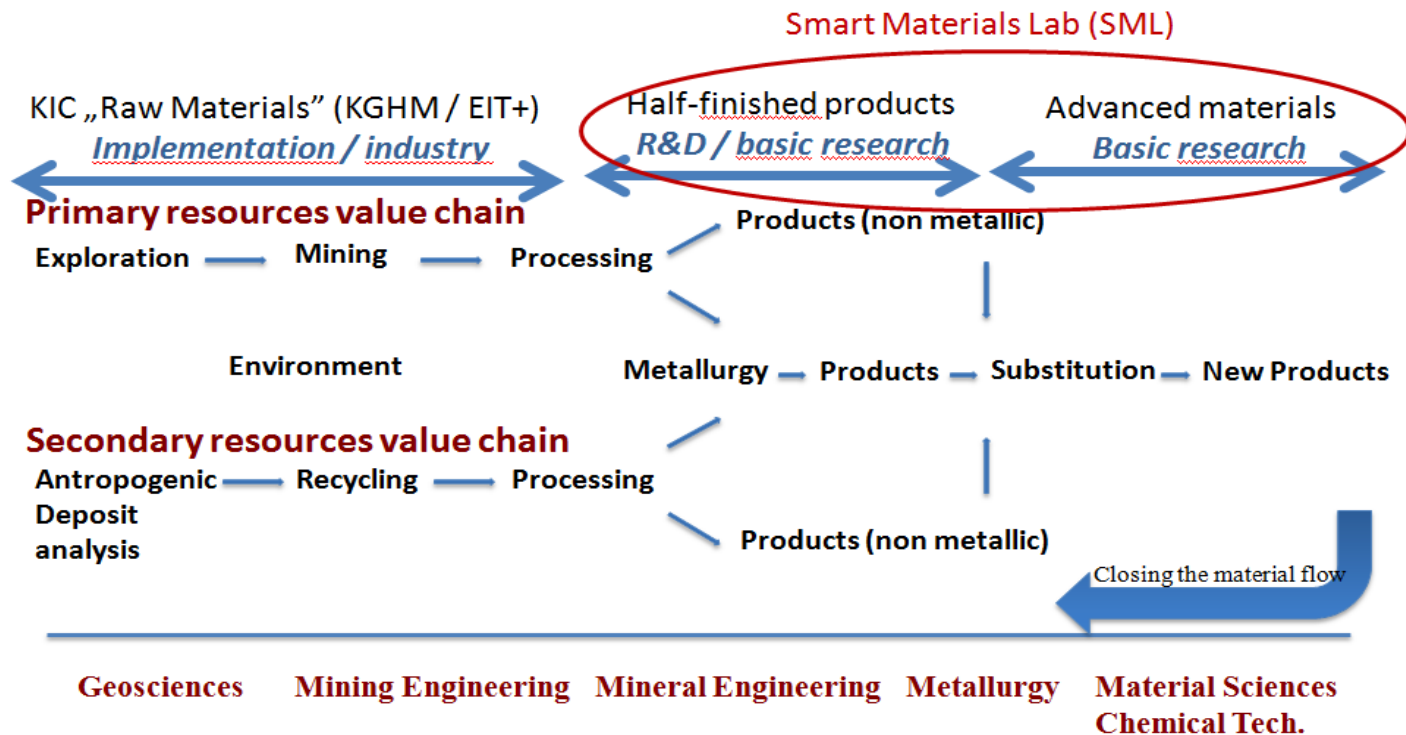
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LULEÅ
UNIVERSITY
OF TECHNOLOGY

 **AGH**
AGH UNIVERSITY OF SCIENCE
AND TECHNOLOGY

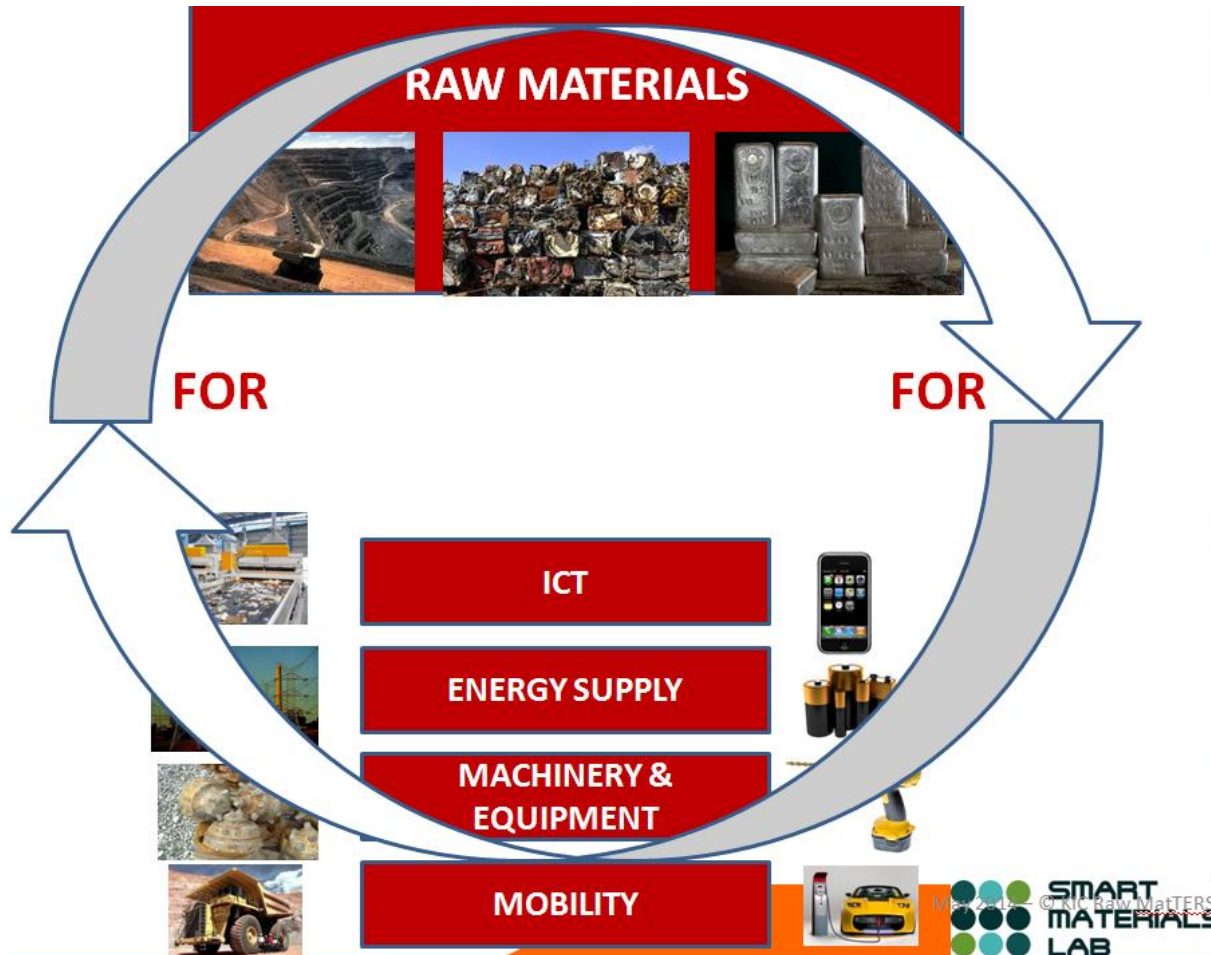
 **Cuprum** | **KGHM**
Centrum
Badawczo-Rozwojowe

Suggested areas of cooperation

■ Minerals for Advanced Materials Technologies



Smart Materials LABS



Key proposal

To initiate bottom-up initiative for establishment the regional program

„Minerals for advanced materials technologies”

Initiators: Institute of Low Temperature and Structure Research (PAN), EIT+ (Research Centre), Wrocław University

Suggested areas of cooperation

■ Mining Heritage (Lower Silesia)

Underground sites for tourists



Source: Lower Silesian Tourist Organisation

Mining Heritage

In the Lower Silesian voivodeship, as many as 3800 different objects are recorded as the elements of industrial heritage (250 of them have been entered in the register of monuments). The largest number of objects associated with hard coal mining occurs in the Wałbrzych district (60 mines in the record, with 14 of them in the register of monuments), and also in the Kłodzko district (the mine in Nowa Ruda). Many historic objects, including those associated with former mining works, is known only to a small number of researchers and passionate people

Potential Partners – Mining Heritage

Poland

- KGHM CUPRUM Ltd, Research & Development Centre, Wrocław
- Silesian University of Technology, Gliwice
- Wrocław University of Environmental and Life Sciences, Wrocław
- Wrocław University of Technology, Wrocław

Slovakia

- Technical University of Košice, Košice
- State Geological Institute of Dionýz Štúr, Bratislava

Czech Republic

- **VŠB - Technical University of Ostrava, Ostrava**

Hungary

- University of Miskolc, Miskolc
- Eötvös Lóránd University, Budapest

Spain

- Colectivo Proyecto Arrayanes, Linares
- Polytechnic School of Linares, University of Jaén, Linares

Italy

- Institute of Biometeorology-CNR, Firenze

TOPICS:

- Mine closure
- Valorization of post-mining dumping grounds
- Protection of mining heritage and mining landscape
- Reclamation of territories degraded by mining activities
- Revitalization of post-mining objects
- Geotourist and postindustrial attractions
- Archaeological artefacts regarding to exploitation and metallurgy

Suggested areas of cooperation

- Recycling, waste management

Over the centuries, intensive exploitation of mineral deposits has altered the landscape of mining regions. Apart from elements of the mining infrastructure, the area under exploitation becomes dotted with waste dumps. Hard-coal mining waste dumps are to be found mainly in the area of Upper and Lower Silesia.

With regard to the recovery of useful materials, the dumps with hard-coal extraction waste and processing operations are of particular interest.

Żelazny Most tailings storage facility

The Żelazny Most Tailings Storage Facility is currently the sole site for the deposition of tailings generated during the flotation process of copper ore, extracted by KGHM Polska Miedź.



The location of the Żelazny Most Tailings Storage Facility

Financing

Waste: A resource to recycle, reuse and recover raw materials

H2020-WASTE-2015-one-stage

Sub call of: H2020-WASTE-2014-2015

Planned Opening Date	10-12-2014	Deadline Date	21-04-2015 17:00:00 (Brussels local time)
Publication date	11-12-2013	Main Pillar	Societal Challenges
Total Call Budget	€4,000,000	OJ reference	OJ C 361 of 11.12.2013
Status	Forthcoming		

Topic: Raw materials partnerships

WASTE-4d-2015

[Topic Description](#)

[Topic Conditions & Documents](#)

[Submission Service](#)

Specific Challenge: The complexity and heterogeneity of waste streams require coordination and networking between researchers, entrepreneurs and public authorities to harmonise technologies, processes and services, to profit from benchmarking, sharing best practices, and gender mainstreaming, and to use or develop standards. Insufficient cooperation between different value chain players in several raw materials sectors results in lower recycling rates or suboptimal use of raw materials from an environmental and socio-economic point of view. Improved cooperation within or along different value chains and among stakeholders, including a participatory role of citizens, representing the wider society, and civil society organisations, can lead to more efficient use of raw materials and to waste reduction.

The global nature of the waste management challenge requires coordination, pooling of resources and support to the definition of global objectives and strategies, and holds a potential for export of eco-innovative solutions and seizing new markets. Dissemination at international level of knowledge on waste management, including environmental regulations and standards, can contribute to turning waste into a resource at global level and to setting up resource efficient waste management systems and technologies and services, particularly in developing countries and emerging economies. To this end, enhanced forms of participatory processes for all stakeholders are needed.

Scope: Proposals shall address the following issue:

Raw materials partnerships: Creation of a common multi-stakeholder platform focused on a limited number of key raw materials across their whole value chain. This should involve partners from across the value chain, including mining, processing, recycling, application, public sectors (national/regional/local) and civil society, while respecting the conditions of each value chain. The action shall support implementation of the European Innovation Partnership (EIP) on Raw Materials.

The Commission considers that proposals requesting a contribution from the EU of up to EUR 1.5 million would allow this specific challenge to be addressed appropriately. Nonetheless, this does not preclude submission and selection of proposals requesting other amounts.



Thank you for your attention

Wiktór Kowalczyk

wkowalczyk@cuprum.wroc.pl

Tel.: + 48 71 78 12 331