

SDG's in mining sector addressing societal and environmental challenges

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Raw Materials Week 2020

Minerals: Enablers of multiple value chains



GLASS

100% minerals

Silica sand, Dolomite, Calcium carbonate, Lime, Feldspar, Borate



CERAMICS

100% minerals

Feldspar, Clay & Kaolin, Lime, Talc, Silica



PAPER

up to 50% minerals

Calcium Carbonate; Talc, Kaolin, Bentonite



Smartphone

up to 60% minerals

Cover - resistant, lightweight, fire-proofed and recyclable Carbonates, Mica, Talc

Battery - Calcium carbonate, Silica sand, Clays

Reinforced Steel - Silica sand, Andalusite, Lime

Glass - 47 g Silica sand

Minerals: Enablers of multiple value chains



HOUSE

up to
150 t of
minerals

Cement (Clay, Lime, Silica sand), Plaster & Plasterboard (Gypsum, Hydrated lime, Calcium carbonate), Insulation (Perlite), Ceramics, Bricks & Tiles, Glass, Paint etc.



CAR

up to
150 kg of
minerals

Rubber (Talc, Calcium carbonate), Plastics (Talc, Calcium carbonate, Kaolin, Silica sand), Glass (Silica sand, Dolomite, Calcium carbonate, Lime, Feldspar, Borate), Casting (Bentonite, Silica sand), Foundry (Silica sand)

Wind Power



Turbine blades

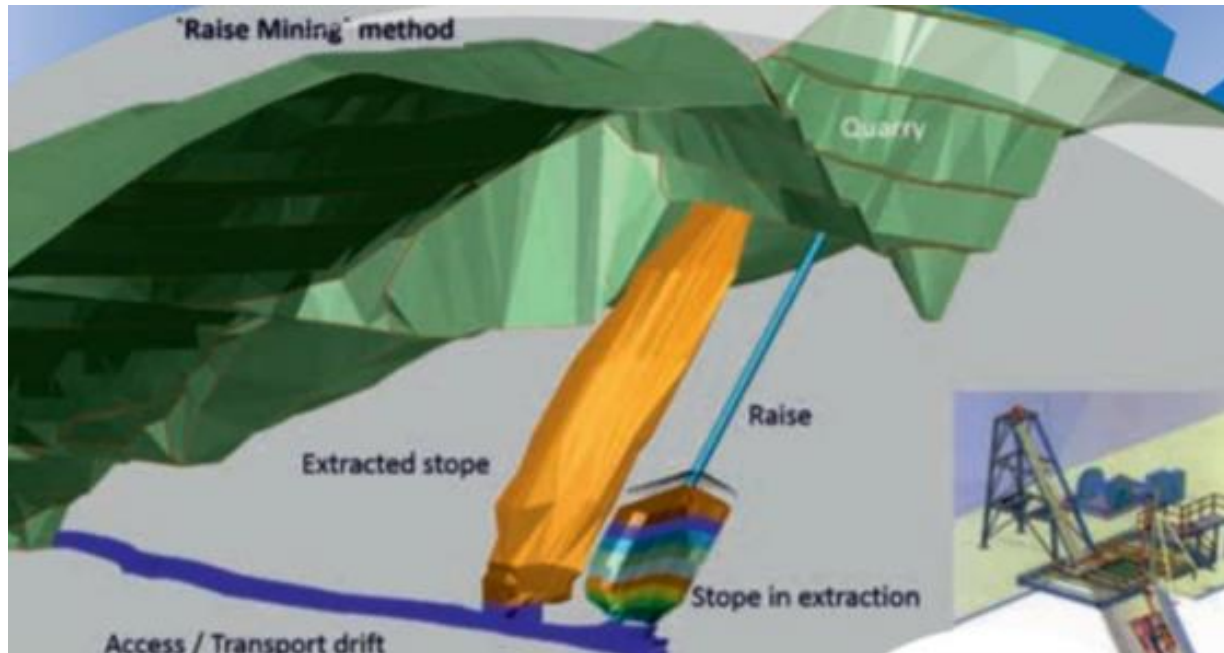
Advanced plastic & Fiberglass, Silica sand, Limestone, Borax, Feldspar, Nepheline Syenite, Magnesite, Kaolin and Clay

Turbine high tower (140m)

c.120t of steel → **minerals:** Limestone, Bentonite and Silica sand

Turbine tower foundation

c.600 m³ of concrete + c.70 tons of reinforced steel
→ **minerals:** Lime and limestone, Aggregates and Bentonite



The underground mine with the 'Raise Mining' method is a success in terms of economic, environmental and safety criteria after 10 years in operation.

- **European Mineral Days:**

- Not speak about mining, show mining – Open day events in EU & Global
- Engage with community / stakeholders / pupils
 - Safety
 - Biodiversity
 - ...



- **Westerwald clay box didactic tool:**

- From raw materials to end product all in one box



Change **conventional reclamation** practices into
new economic, environment friendly activities

Energy provider

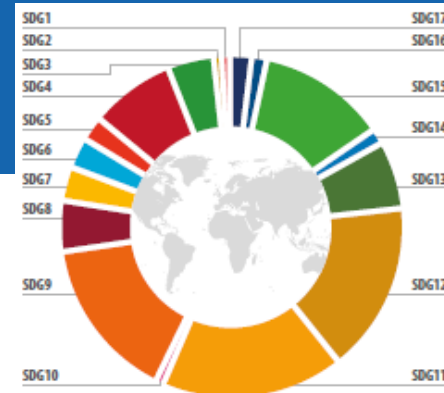


Vineyard



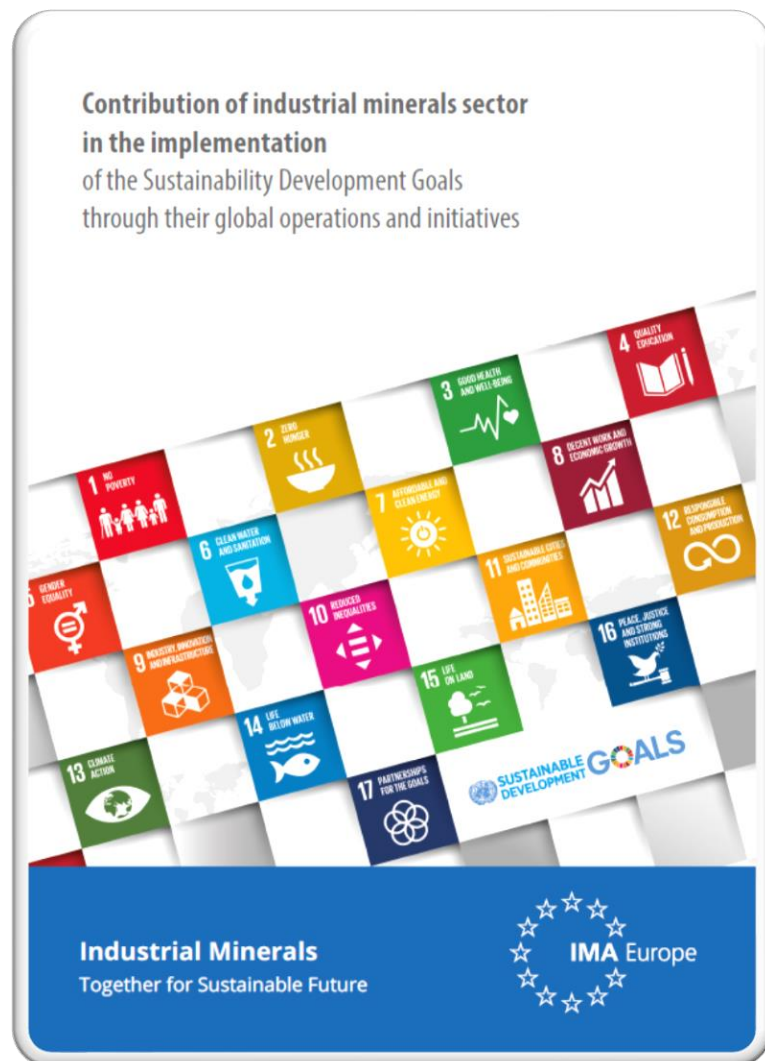
New habitat





Sustainable Development Charter (2006)

SDG's in Minerals sector (2018)



- Around 200 case studies from member companies
- SDG report shows the biggest impacts are in:
 - SDG11:** Sustainable Cities & Communities
 - SDG12:** Responsible Consumption & Production
 - SDG9:** Industry, Innovation & Infrastructure
 - SDG15:** Life on Land
 - SDG4:** Quality Education
 - SDG13:** Climate Action
- Case studies can be replicated in another regional context
 - 60% of the case studies are from EU
 - 40% are replicated somewhere outside EU

SDG's in mining sector addressing societal and environmental challenges

Raw Materials Week 2020

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Department of Strategic Research, MEERI, Polish Academy of Science

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Belgium, Brussels



Mineral and Energy
Economy Research
Institute
Polish Academy of Sciences



SDG in European mining and metal companies

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Mining and the 17 SDGs: Indicative Priorities

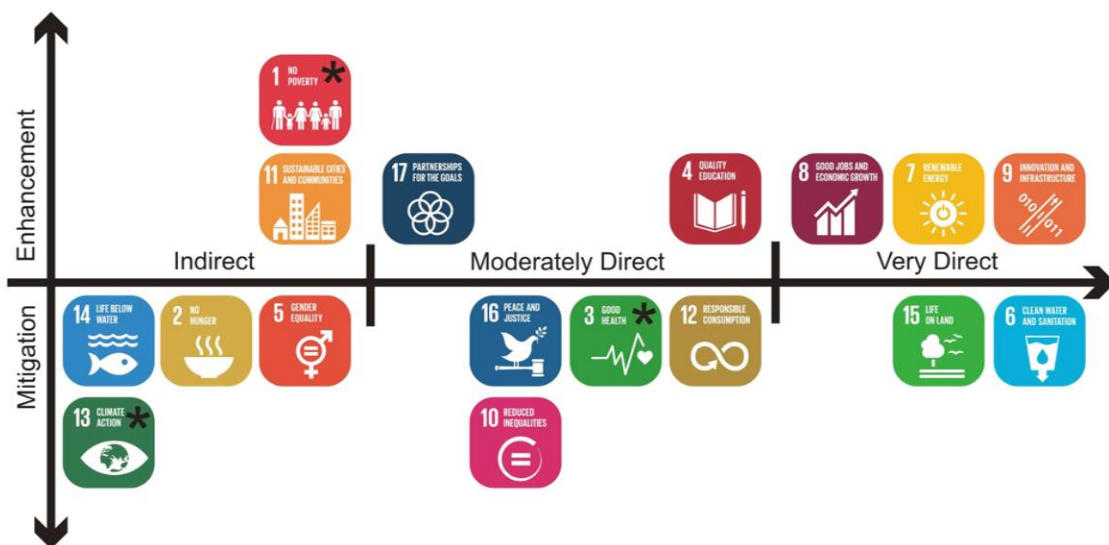


Figure 2: Indicative prioritization of SDGs for mining companies globally based on aggregating, for each goal, the relevance of each of its targets to mining. Individual cases may deviate from this categorization. Three horizontal categories = degree of impact mining has on goal: very direct, moderately direct, and indirect. Within each category, the farther right a goal is, the greater the impact mining has on its accomplishment. Two vertical categories = predominant focus for making positive impact (enhancement of positive impacts; mitigation of negative impacts). * Asterisked icons in practice have greater relevance for mining than the scoring suggests. Icons modified from <http://www.globalgoals.org/>.

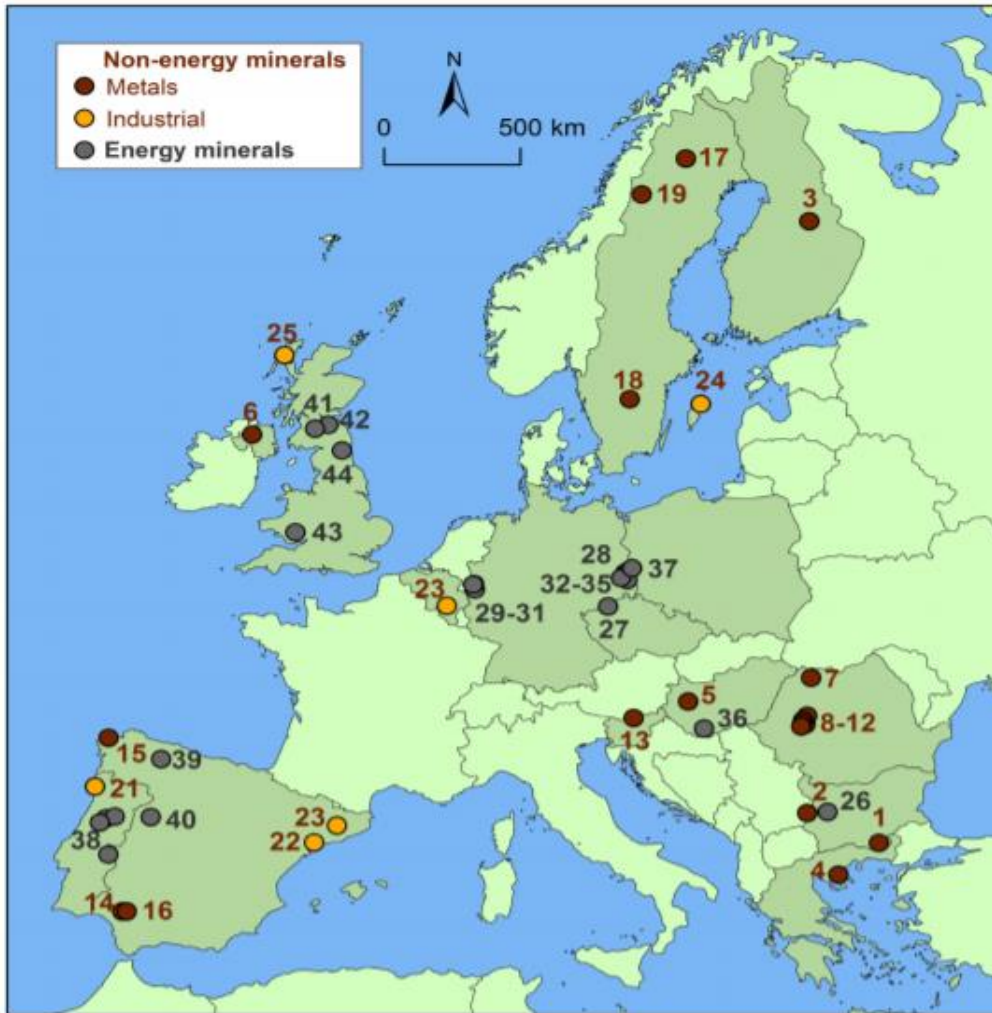


Source: <https://www.undp.org/content/undp/en/home/librarypage/poverty-reduction/mapping-mining-to-the-sdgs--an-atlas.html>,
<https://kghm.com/pl/zrownowazony-rozwoj/zrownowazony-rozwoj-w-strategii/cele-zrownowazonego-rozwoju>
<https://www.boliden.com/sustainability>



According to **Environmental Justice Atlas** socio-environmental conflicts are defined as “mobilizations by local communities or social movements against particular economic activities, infrastructure construction or waste disposal/pollution, whereby environmental impacts are a key element of their grievances”.





Global Atlas of Environmental Justice catalogues social conflicts around environmental issues in very transparent and can be useful tool in the conflict solving processes.



Mining conflicts related to non-energy and energy minerals reported in the EJAtlas within the European Union. Countries with reported mining conflicts in the EJAtlas are marked with dark green shade.

Source: https://www.researchgate.net/publication/343818442_Mining_conflicts_in_the_European_Union_environmental_and_political_perspectives



Basic principles are:

- difficult choices,
- social judgment,
- democratic governance,
- inclusion and equality.

Fundament values are:

- fairness,
- impartiality,
- reasonableness,
- consensus without exclusion,
- discourse ethics.





Demonstrations against zinc and lead investment in Poland

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<https://www.rmfm24.pl/fakty/polska/news-protest-przeciw-budowie-kopalni-na-terenie-jury-krakowsko-cz,nld,3270970>

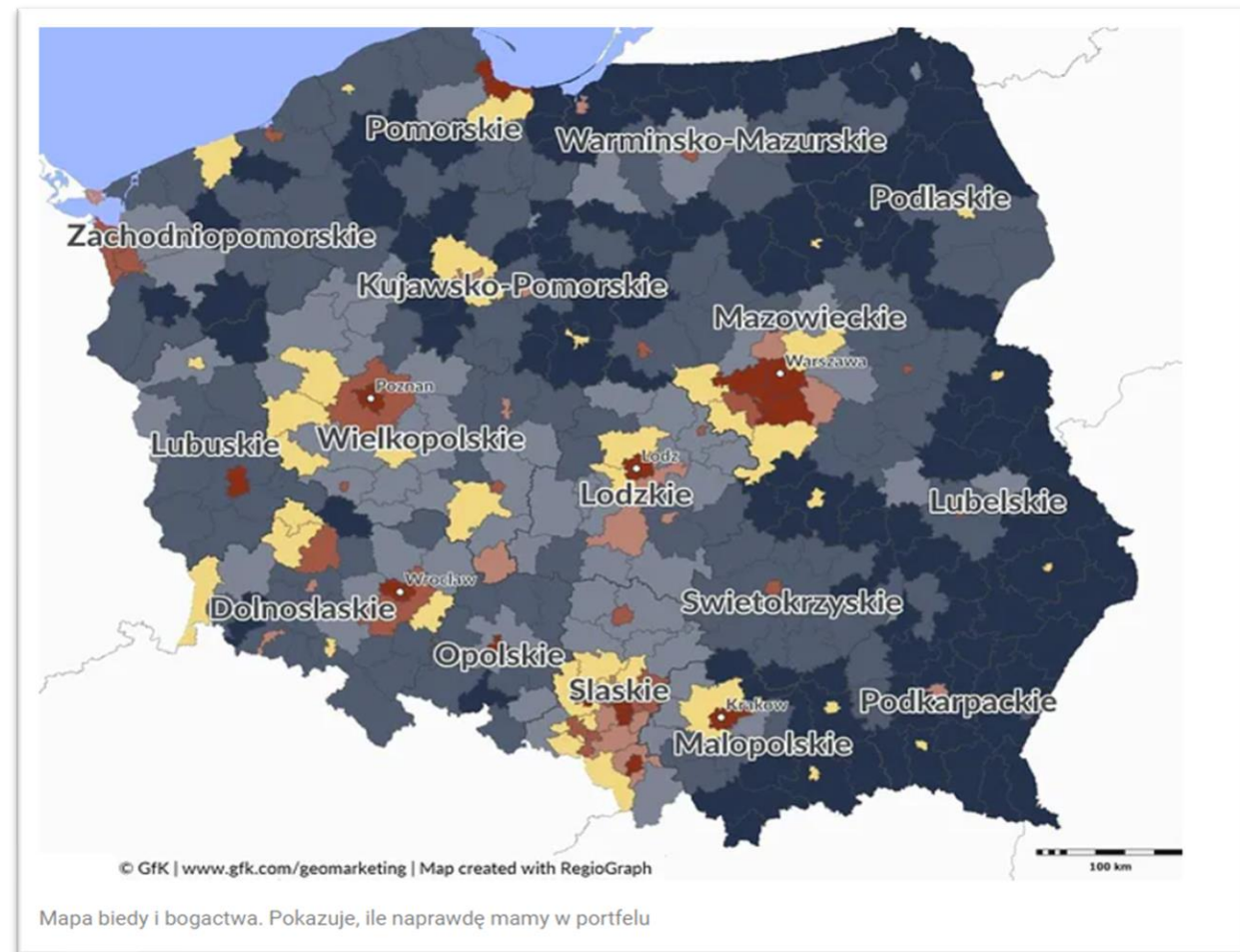
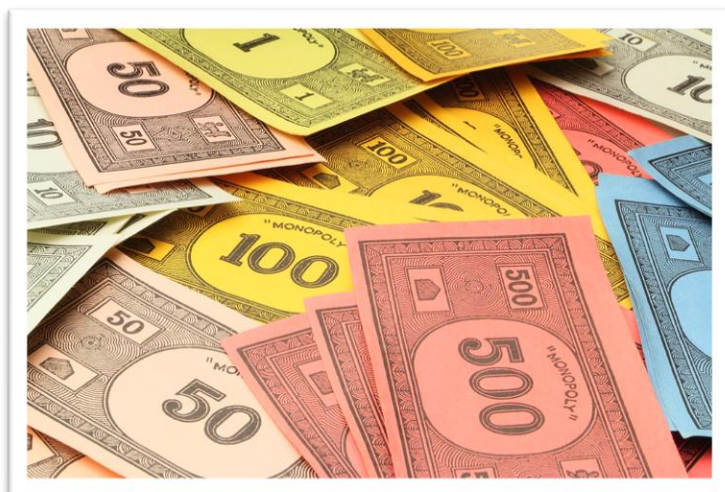
<https://www.rmfm24.pl/fakty/polska/news-sukces-mieszkancow-w-batalii-o-budowe-kopalni-na-jurze,nld,3297645>



Map of wealth and poverty in Poland

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The map of poverty/wealth in Poland indicates that mining industry regions are, in general, among the richest in the country.



<https://www.money.pl/gospodarka/mapa-biedy-i-bogactwa-pokazuje-ile-polacy-naprawde-maja-w-portfelu-6574122730253216a.html>



Conclusions

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Some of good practises for improving mining acceptance in local communities are:

- rules of deliberative democracy,
- creation of industrial symbiosis with local stakeholders – InSysHub project,
- focusing on more socio-economic assessment.



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Connecting matters

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Industrial Symbiosis Hub InSysHub

Industrial Symbiosis describes how a network of diverse organizations can foster eco-innovation and long-term culture change, create and share mutually profitable transactions and improve business and technical processes.



The hub organizes seminars to introduce industrial symbiosis with students, industries and university staff. The hub also organizes feedback sessions to discuss the work of students as well to discuss the challenges on industrial symbiosis in general.

Project description:
To introduce industrial symbiosis at a wide range of studies in universities the **Industrial Symbiosis Hub** is set up. This hub stimulates industries to bring their questions and challenges on closing the material loops to universities as course or graduate assignments for a broad range of studies (business, engineering, management). The hub directs the assignments to students, offering placements for students at industries with mentors from industries on the theme of industrial symbiosis.

Benefits of the hub:

- assignments that lead to PhD's
- assignments that lead to post doc
- assignments that lead to industries funded research.
- input to research.
- arranging assignments for teachers.
- students attracted.



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