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The impact of EU Taxonomy regulations on the reporting of Sustainable Development Goals (SDGs) in polish mining

Introduction

Due to its specificity, the mining industry can yield a range of benefits to societies and may contribute to an increase in anthropopression. The mining of minerals using opencast, underground or deep-sea methods contribute to various negative impacts on the natural environment (Woźniak and Jurczyk 2020). Therefore, the process of permissions to open a new mine is long-lasting as many geological (geological documentation, exploitation concession, urban planning, deposit development plan), and environmental (decision on environmental conditions) documents are required. Most of them must be performed with public consultations before the final decision given by competent authorities of different levels (central, regional, local) and can take several years. This is important, especially when hazardous materials are mined or produced during mining, as it can pose a threat to the health of both local communities and its direct employees, i.e. small-scale gold mining (Wongsasuluk et al. 2021), mining water management or tailing dumps failures. In 1999, a group of the

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world's largest mining and metals companies initiated the Global Mining Initiative (GMI) in response to a groundswell of public distrust in the mining industry. After twenty years, despite these international agreements, mining governance still largely relies on national and local institutions and legal frameworks. The biggest challenges are the implementation of regulations where they exist and either a lack of strong penalties or a lack of political will to enforce penalties. Fortunately, regulation with specific targets for environmental performance and economic instruments have become more widespread and transparent. The level of reporting on sustainable development has significantly increased all over the world, based on corporate social rules (CSR) and Environment Social Governance (ESG) activities. Due to strengthening climate policy, about two-thirds of the largest reporting companies worldwide have set carbon reduction targets. At the same time, more and more companies are now linking their activities to the United Nations (UN) Sustainable Development Goals (SDGs) in their corporate reporting ([Agenda 2030 2015](#)).

In Poland, we observe a significant increase in reporting on sustainable development, which is a direct consequence of the introduction of the EU directive on the disclosure of non-financial data – DIRECTIVE OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL 2014/95/EU of October 22, 2014, amending Directive 2013/34/EU about the disclosure of non-financial and diversity information by certain large entities and groups ([EU Directive 2014](#); [EC 2017](#); [EC 2019](#)). It should be added that there are growing trends related to the obligation to disclose non-financial information, such as risks related to a changing climate or strategies to shape resilience to global threats, which are likely to lead to an even higher level of reporting in the coming years, as well as the greening of financial systems in some countries. Additionally in March 2020, the European Commission published the EU Taxonomy, a classification system of economic activities that can be considered environmentally sustainable ([Regulation \(EU\) 2020/852](#)). The new regulations are expected to increase the level of environmental protection by redirecting capital from environmentally harmful investments to greener alternatives.

Poland is one of a few EU countries with an active mining industry. What should be highlighted is that Poland is going through an energy transformation, which will have a great impact on the mining industry. Transition to a low carbon economy calls for the use of key resources from primary and secondary resources ([Galos et al. 2020](#)). The mining sector at this point can contribute to the energy transformation, although it needs to focus its activity on sustainability and a circular economy measurement of the transformation of the Polish mining industry reporting is highly important. In this paper, we are focusing on issues related to the impact of the EU taxonomy on SDGs reporting in Polish mining.

1. Methods and methodology

To begin, the review was performed using both the standard method of web-based literature research and a study of academic multidisciplinary databases such as Scopus and Google

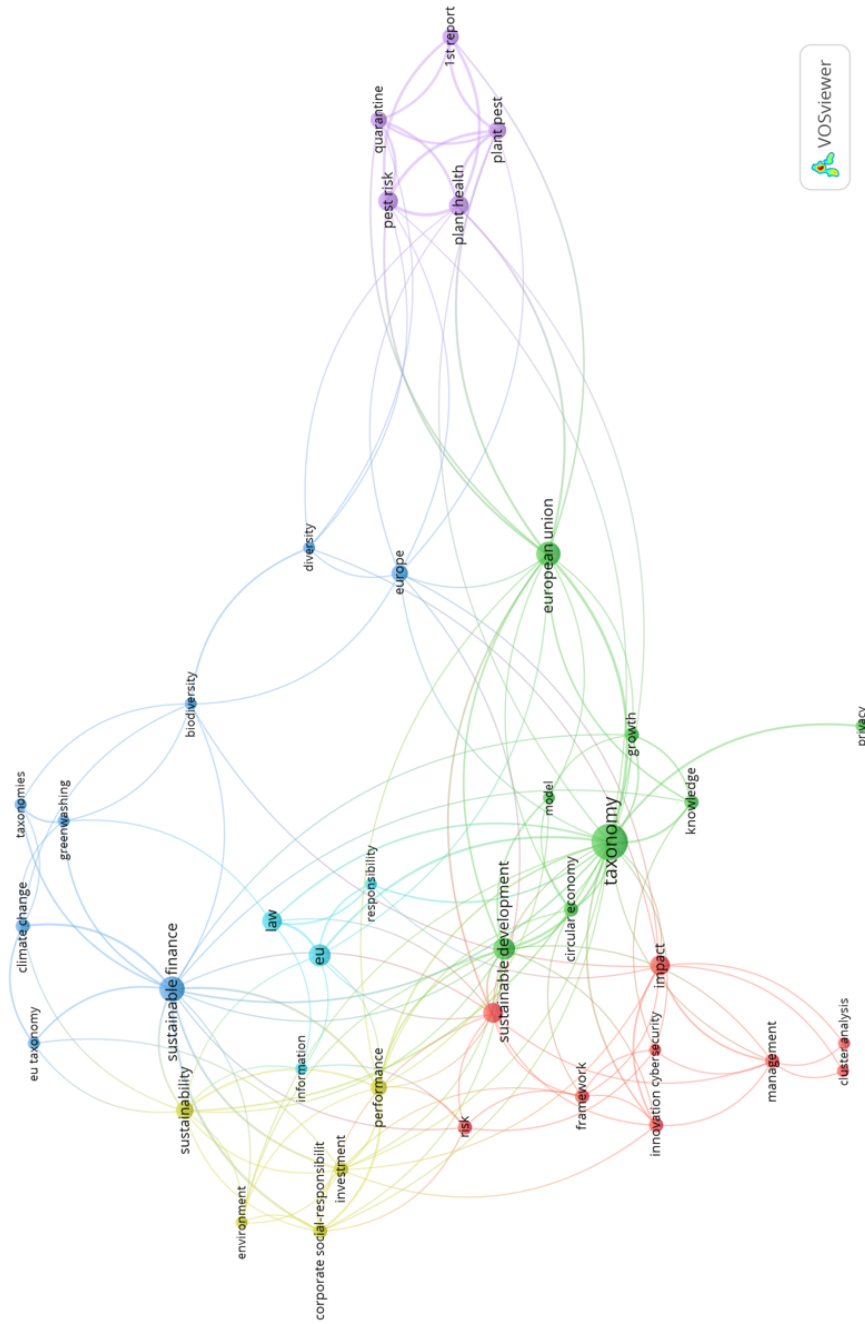


Fig. 1. Mapping of the literature flow in the area of EU Taxonomy Regulations

Source: VOSviewer

Rys. 1. Mapowanie przepływu literatury w zakresie Taksonomii UE

Scholar. The search terms were “EU Taxonomy,” “SDGs in mining,” “SDGs reporting,” and “Social corporate responsibility (CSR)”. Primary research was conducted on the review of the influence of the mining industry on SDGs as the pilot research indicated that in the literature, there is a knowledge gap regarding these issues. The critical review of literature indicated that though raw materials are essential to economic growth, the United Nations framework does not directly include raw materials in SDGs (EC 2008; EC 2011; EC 2019; Endl et al. 2019; Euromines 2019; Fraser 2019; Mancini and Sala 2018; Monteiro et al. 2019; De Sa 2019). In the paper, leading reports on SDGs in the mining industry were analyzed, in order to designate the leading approach to the prioritization of SDGs in the mining industry. The next step of research was the mapping of the literature flow in the area of EU Taxonomy Regulations, for this, the Visualizing Scientific Landscape (VOS-viewer) has been used. This mapping has shown that EU Taxonomy Regulations in the literature has a strong correlation with sustainable development, the circular economy, the EU, corporate social responsibility, and many others. The last part of the research was empirical in nature, the main goal was to analyse SDGs reporting in the chosen Polish mining companies in the context of the impact of the EU Taxonomy Regulations on SDGs reporting in Polish mining. Based on the research, the most frequently reported SDGs by mining companies were identified. The last part of the research was focused on the identification of a correlation between EU Taxonomy Regulations and the reporting of SDGs in Polish mining companies.

2. Sustainable development goals in the mining industry – review

The concept of sustainable development assumes that it is necessary to change the implemented model of satisfying our needs. This means that both individuals and the whole of humanity should choose paths of development that are different from those they already have. A theory assumes that it is core to sustain development on many levels in which ecological, social, and economic processes take place. Development, therefore, is understood as a process of conscious shaping and delineating changes. This shaping should be a political and strategic direction of human activity, creating an integrated order. We treat it as a one-dimensional mental abstract that requires embedding in a holistic order, in the entire reality that surrounds us, both material and cultural (UN 1987). Holistic cognition and the changing of reality that surrounds us requires performing observations in several perspectives, inter- and transdisciplinary view (Janikowski 2006). Until now, three mutually influencing trends of activity have been distinguished through:

- ◆ society,
- ◆ economy,
- ◆ environment.

These not only creates cause-and-effect relationships but should be in balance with each other. The concept of sustainable development assumes that it is not only possible but also necessary to eliminate the field of contradiction between social (S), economic (Ec) and

environmental (Ev) goals. The essence of the change process is defined in the context of quantitative-qualitative and evaluative criteria. The concept of sustainable development includes basic conceptual categories such as intra and intergenerational justice. Intergenerational justice is one of the most important categories within the spectrum of the concept of sustainable development. It means that each generation is entitled to inherit the planet in a condition at least as good as that which the previous generation lived in. The principle of intergenerational justice is therefore the principle of responsibility for the consequences of our actions. Intra-generational justice means that each member of a given generation has the right to benefit from our globe's heritage and cultural heritage as much as others. In this context, the essence of sustainable treatment, maintenance and effective use must be both the global ecosystem with its abiotic and biotic resources, including their non-diminishing diversity, regional and local ecosystems with life-function support systems, as well as individual people and their communities with their diverse cultures, social systems, and various economic activities (Janikowski 2006). In 2015, all Member States of United Nations has adopted The 2030 Agenda for Sustainable Development, upon which the fundament is based, was adopted by 193 heads of state and governments at a special UN Sustainable Development Summit. The agenda expresses a commitment to eradicating poverty and achieving sustainable development around the world. The SDGs strike a balance between the three dimensions of sustainable development: economic, social, and environmental. The new vision of development outlined in the agenda focuses on five great transformational changes defined as the 5P principle (people, planet, prosperity, peace, partnership). According to the United Nations, SDGs *address the global challenges we face, including those related to poverty, inequality, climate change, environmental degradation, peace and justice* (Agenda 2030 2015). Seventeen SDGs and 169 separate targets should be perceived as an imperative to action for all countries working together on the base of global partnership, at the sometime member states are expected to use these goals to frame their development agendas for the coming years. Renewed SDGs recognized that the main tasks for the incoming years are: to end poverty, to eliminate hunger, to ensure healthy lives and wellbeing, to improve quality of education, to promote equality, to provide clean water and sanitation, to provide affordable and clean energy, to provide decent work and economic growth, to promote industry innovation and infrastructure, to reduce inequality, to ensure sustainable cities and communities, to promote responsible consumption and production, to undertake climate actions, to maintain sustainable life below water and life on land, to ensure peace, justice and strong institutions and at the end partnership for the goals. SDGs covers all three layers of sustainable development concept; at the same time, they remain in tune with sustainable triangle. Ecological, economic and social dimension of SDGs calls as well governments as private sector to become crucial players in the SDG implementation process, which means that enterprises are encouraged to introduce/maintain/improve their production processes to make them more sustainable. Local, national, supranational policy makers should align their strategies to sustainable development principles (Agenda 2030 2015). Raw materials (RM) are in general essential to economic growth and at the wellbeing of humanity.

They can contribute to SDGs in many different ways. According to the European Commission, the production of materials can generate severe environmental and social impacts, especially in developing countries and those with weak governance (Tajvidi et al. 2019). However, their use, for example, in high-tech application, transport and energy infrastructures, the construction sector and medical devices demonstrates their crucial role for economic development and human wellbeing. The United Nations framework does not directly include raw materials in SDGs; however, what should strongly underline natural resources and raw materials are important source of income and jobs, essential enablers for carbon – neutral solutions in all sectors of the economy. So, in general, they support the provision of ecosystem services necessary to develop human and social capital. At the same time, these are crucial for the accomplishment of SDGs. Definitely raw materials affect SDGs in many ways in various phases of the supply chain. They would have a different impact in extraction phase, different in the phase of the manufacturing of biotic and abiotic raw materials, different during the use of the final product and different again in the end-of-life phase. (Janikowska and Kulczycka 2021).

In the report *European Mineral Raw Materials Enabling SDGs*, the European Association of Mining Industries, Metal Ores & Industrial Minerals (EUROMINES 2019) claims that the European mineral raw materials industry contributes to economic, social, and environmental sustainability (Table 1).

Table 1. The contribution of the mineral raw materials industry contributes to achieving SDGs

Tabela 1. Wkład przemysłu surowców mineralnych w realizację Celów Zrównoważonego Rozwoju

European Association of Mining Industries, Metal Ores & Industrial Minerals (EUROMINES)	Raw materials industry contributes to economic sustainability by	Raw materials industry contributes to social sustainability by	Raw materials industry contributes to environmental sustainability by
	<ul style="list-style-type: none"> ◆ staying financially strong in order to be an innovative and responsible sector and contributing to prosperity ◆ maintaining high return on equity ◆ having a healthy net debt/equity ratio ◆ consistently seeing results ◆ maintaining high ordinary dividends. 	<ul style="list-style-type: none"> ◆ maintaining secure and attractive workplaces and exerting positive influences on our business partners and our immediate environment ◆ reducing accidents ◆ working to improve gender equality ◆ working to increase diversity 	<ul style="list-style-type: none"> ◆ reducing carbon emissions ◆ reducing energy intensity ◆ reducing discharges to water ◆ reducing emissions to air

Source: European Mineral Raw Materials Enabling SDGs, European Association of Mining Industries, Metal Ores & Industrial Minerals (EUROMINES 2019).

According to the “Mapping Mining to the Sustainable Development Goals: An Atlas,” which is a joint effort of the United Nations Development Programme (UNDP), the World Economic Forum (WEF), the Columbia Centre on Sustainable Investment (CCSI) and the Sustainable Development Solutions Network (SDSN), the mining industry has the opportunity and potential to both positively and negatively impact on all seventeen SDGs (UNDP 2016, Table 2).

Table 2. The impact of the mining industry on the seventeen SDGs

Tabela 2. Wpływ przemysłu wydobywczego na 17 Celów Zrównoważonego Rozwoju

	Very direct	Moderately direct	Indirect
Enhancement of positive impact	<ul style="list-style-type: none"> ◆ G8 – Good Jobs and Economic Growth ◆ G7 – Renewable Energy ◆ G9 – Innovation and Infrastructure 	<ul style="list-style-type: none"> ◆ G17 – Partnership for the Goals ◆ G4 – Quality Education 	<ul style="list-style-type: none"> ◆ G1 – End Poverty ◆ G11 – Sustainable Cities and Communities
Minimization of negative impact	<ul style="list-style-type: none"> ◆ G15 – Life on Land ◆ G6 – Clean Waters and Sanitations 	<ul style="list-style-type: none"> ◆ G16 – Peace and Justice ◆ G3 – Good Health ◆ G12 – Responsible Consumption ◆ G10 – Reduce Inequalities 	<ul style="list-style-type: none"> ◆ G14 – Life Below Water ◆ G2 – No Hunger ◆ G5 – Gender Equality ◆ G13 – Gender Actions

Source: “Mapping Mining to the Sustainable Development Goals: An Atlas” (UNDP 2016).

According to the International Council for Metals and Mining (ICMM), the mining and metals industry can make a positive contribution to achieving the UN’s SDGs. ICMM has mapped ten principles that underpin sustainable development in the mining industry intersect the SDGs (ICMM 2022). ICMMs principles include pledges to protect biodiversity, respect human rights and contribute to sustainable development (Table 3).

According to the European Commission – the UN SDGs framework does not include an explicit goal on raw materials, as raw materials can have and can influence all goals directly or indirectly. Potential contribution of raw materials to different SDGs alone value chain, from extraction to manufacturing, use and end of life (EC-EU 2020, Tables 4 and 5).

According to United Nations Environmental Programme (UNEP); Mineral resource governance in the twenty-first Century. Gearing extractive industries towards sustainable development. Summary for policymakers and business leaders. The extraction sector can have an influence on all seventeen SDGs (UNEP 2020a, Table 6).

Table 3. The positive contribution of the mining and metal industry to achieving the UN's Sustainable Goals

Tabela 3. Wkład przemysłu górnictwa i metalurgicznego w realizację Celów Zrównoważonego Rozwoju ONZ

International Council for Metals and Mining (ICMM)	ICCM principles that underpin sustainable development in the mining industry intersect the SDGs
	◆ Ethical business and sound governance
	◆ Sustainable development in decision making
	◆ Respect for human rights
	◆ Effective risk management
	◆ Health and safety performance
	◆ Environmental performance
	◆ Conservation of biodiversity and land-use planning
	◆ Responsible use and supply of material
	◆ Social contribution
	◆ Engagement and transparent reporting

Source: [Mining Principles: Performance Expectations, International Council for Metals and Mining 2022](#).

Table 4. The potential positive contribution of raw materials to different SDGs alone vale chain, from extraction to manufacturing, use and end of life

Tabela 4. Potencjalny pozytywny udział surowców w realizację różnych Celów Zrównoważonego Rozwoju

	Extraction – positive contribution	Manufacturing – positive contribution	Final use – positive contribution	End of life – positive contribution
Indirect	G17	G17	G17	G17
	G4	G7	G13	
	G7	G4		
	G1	G1		
	G2	G2		
	G3	G3		
Direct	G13	G12	G6	G13
	G15	G8	G11	G14
	G6	G9	G12	G15
	G8	G11	G2	G8
	G9		G3	G11
			G9	G12

Source: [Raw Materials Information System \(RMIS\), European Commission – EU science hub \(EC-EU 2020\)](#).

Table 5. The potential positive contribution of raw materials to different SDGs alone vale chain, form extraction to manufacturing, use and end of life

Tabela 5. Potencjalny pozytywny udział surowców w realizacji różnych Celów Zrównoważonego Rozwoju

	Extraction – adverse impact	Manufacturing – adverse impact	Final use – adverse impact	End of life – adverse impact
Direct	G3	G3	G3	G3
	G6	G6		G8
	G8	G8		G12
	G14	G13		G6
	G13	G7		G14
	G15	G15		G15
	G5 G11			
Indirect	G1 G16	G16 G11		
	G2			
	G7			
	G10			

Source: [Raw Materials Information System \(RMIS\)](#), European Commission – EU science hub (EC-EU 2020).

According to the *Managing mining for sustainable development. A scorebook (UNEP 2020b)*, the extraction of minerals from the earth presents opportunities, challenges, and risks to sustainable development. Minerals are essential for human wellbeing and are fundamental for practically all sectors of the economy. However, mining also presents critical challenges and risks for sustainability. Mining activities can contribute to sustainable development, particularly to its economic dimension. It can bring fiscal revenues to a country, drive economic growth, create jobs, and contribute to building infrastructure. Thus, mining has both positive and negative implications for SDGs, with particularly strong impacts on eleven of the seventeen SDGs (Table 7).

3. Corporate Social Responsibility and EU Taxonomy Regulations

Corporate Social Responsibility (CSR) is the practical implementation of sustainable development at the level of enterprise. CSR can be described as a management strategy in which the company voluntarily consider in their activities not only financial aspects, but social interests, environmental aspects, or relationships with different groups of stakeholders, especially employees ([Kolk and van Tulder 2010](#)). Being a responsible company means

Table 6. Sustainable development principles for the extraction sector

Tabela 6. Zasady zrównoważonego rozwoju dla sektora wydobywczego

Sustainable Development Goals (SDGs)	Eight detailed sustainable development principles for mining	Core sustainable development principles for mining
End poverty – G1 Zero hunger – G2	Better infrastructure – decisions about mining should leverage opportunities to build social and physical infrastructure for sustainable development	Health, wealth and wellbeing for all decisions about mining should contribute to social and economic infrastructure, wealth creation, well-being, and poverty alleviation, so that no-one is left behind: in particular women, children, indigenous people, and other marginalized groups
Good health and wellbeing – G3 Quality education – G4 Gender equality – G5	Health and wellbeing – decisions about mining should maximize and not compromise the health and well-being benefits for people, recognizing the special circumstances of marginalized groups	
Clean water and sanitation – G6 Affordable and clean energy G7 Decent work and economic growth G8	Growth and innovation – mining should be managed in a manner that delivers long term, equitable and inclusive economic growth, leveraging innovation and value added opportunities	
Industry, innovation, and infrastructure G9 Reduce inequalities G10	Impacts of other resources -decisions about mining should minimize or avoid adverse impact of other valuable resources (e.g., water, food, energy, infrastructure)	
Sustainable cities and communities G11 Responsible production and consumption G12	Ecosystem and biodiversity – decisions about mining should maintain and enhance ecosystem and biodiversity, including flows of ecosystem service	Maintain the environment and other resources-decisions about mining must recognize that the environment is a foundation on which human health, wealth and wellbeing are built. They must account for and maintain the full range of values and benefits provided by the environment and other natural resources
Climate actions G13 Life below water G14	Engagement and collaboration – All stakeholders should include and be involved in decision-making	Good Governance – decisions about the mining should be based on the best available evidence, and should operate in an inclusive and accountable manner open to all stakeholders at multiple levels of scale
Life of land G15 Peace, justice, and strong institutions G16	Transparency and accountability – transparent decisions based on best evidence, for which decision makers are accountable	
Partnership for the goals G17	Policy coherence – decisions about mining should not be made in isolation from decisions on other development issues	

Source: Mineral resource governance in the 21st Century Gearing extractive industries towards sustainable development Summary for policymakers and business leaders, United Nations Environmental Programme (UNEP).

Table 7. The positive and negative impact of mining activities for SDGs

Tabela 7. Pozytywny i negatywny wpływ działalności górniczej na SDGs

Particularly strong impacts	Lesser impacts
End poverty G1	
	Zero hunger G2
	Good health and wellbeing G3
Quality education G4	
Gender equality G5	
Clean water and sanitation G6	
Affordable and clean energy G7	
Decent work and economic growth G8	
Industry, innovation, and infrastructure G9	
Reduce inequalities G10	
	Sustainable cities and communities G11
Responsible production and consumption G12	
Climate actions G13	
	Life below water G14
Life of land G15	
	Peace, justice, and strong institutions G16
	Partnership for the goals G17

Source: [United Nations Environmental Programme \(UNEP\)](#).

protecting the environment, investing in human resources, building relationships with the company's environment and information about these activities, which contributes to increasing the competitiveness of the company and creating the conditions for sustainable social and economic development ([Kulczycka and Wirth 2010](#)). As mentioned earlier, the mining industry is characterized by specific sectoral conditions that are associated with an exceptionally negative impact on the environment and the effects of mining operations are not only difficult to remove but their impact also extends well beyond the end of mining ([Pactwa 2021](#)). The activities of this industry have a lasting impact on all of their stakeholders, and the exploration of natural resources is accompanied by a number of risks not found in other industries. To date, sustainability reporting for mining companies has primarily relied on CSR reports; since the implementation of the SDGs,

more and more companies are beginning to report their impact on these goals (Szamałek et al. 2022).

The obligation to report non-financial reporting was imposed in December 2014 by European Parliament and the Council Directive 2014/95/EU. Some companies have started non-financial reporting in accordance with the directive as of 2018, while others joined the process for the first time in 2019 (EC 2019). The idea of non-financial reporting is to create a greater transparency of companies and encourage them to improve the reported indicators. Non-financial reporting is based on the three main areas: corporate governance, social issues and environmental protection. The rationale for preparing non-financial reports includes mitigating the asymmetry of information that exists between stakeholders and it is assumed that it should be particularly developed in industries that pose a high environmental risk. Ultimately, it should make it possible to fulfil the function of fulfilling public interests, including the protection of health, life, and the environment. In Poland, eight out of the ten largest companies report such issues. At the same time, more and more companies are now linking their activities to the UN SDGs in their corporate reporting (Pactwa 2019). It is important, however, to pay special attention to those reports that reveal both positive and negative impacts on the global SDGs. It should be added that there are growing trends related to the obligation to disclose non-financial information, such as risks related to a changing climate or strategies to shape the resilience to global threats, are likely to lead to an even higher level of reporting in the coming years, as well as the greening of financial systems in some countries (Woźniak and Pactwa 2019). About two-thirds of the largest reporting companies worldwide have set carbon reduction targets. At the same time, more and more companies are now linking their activities to the UN SDGs in their corporate reporting. However,

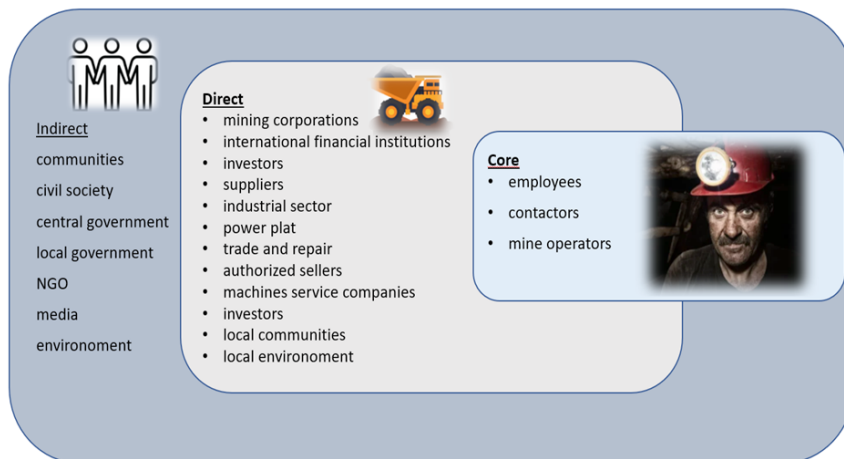


Fig. 2. Composition of mining stakeholders
Source: own study

Rys. 2. Skład interesariuszy przemysłu górnictwa

in order to meet the interests of society as a whole, it should not only focus on marketing aspects, emphasizing achievements and, for example, charitable activities, but should also disclose irregularities. This is particularly important in the mining industry which can have both a positive and negative influence on the practical realization of SDGs and has a wide impact on their stakeholders (Marcisz and Probiez 2019).

According to the EU Taxonomy Regulations, public listed companies will not only have to publish non-financial information and will indicate the percentage of their business that complies with the taxonomy but will also need to go through the classification process. According to the taxonomy, it should go as follows (Regulation (EU) 2020/852):

1. Determining whether an economic activity (classified using the European Nomenclature of Economic Activities (NACE) classification system) is subject to a taxonomy, if taxonomy is eligible, NACE codes provide a framework for the collection and presentation, based on economic activity, of a wide range of statistics in economic fields such as production, employment and national accounts.
2. If the activity falls under the taxonomy, assess whether the activity performed by the business qualifies as environmentally sustainable (is taxonomy aligned).

At the same time, the impact of EU Taxonomy Regulations on SDGs reporting can be regarded as well as an opportunity and as a challenge. If the company does not fulfil the basic requirements introduced by the EU Taxonomy Regulations, it will not have an opportunity to become a beneficiary of the taxonomy regulations. On the other hand, taxonomy is encouraged to support SDGs and at the same time to report the performance of SDGs.

4. Results

With regard to the current geopolitical situation, some European Union members, such as Germany, France and the Netherlands made a decision to open or re-open of their coal power plants. Admittedly, the countries that do so stipulate that the inclusion of coal in their power industry is only temporary and limited to a well-defined period of time (<https://energia.rp.pl/wegiel/art36540111-europa-zapowiada-czasowy-powrot-do-wegla>). According to the study, the implementation of the SDGs takes on particular importance in the case of mining industry as mining activities involve the extraction of various types of mineral resources, especially non-renewable resources. Mining activities, in a dynamic way not only cause changes in the environment but also have an impact on social and economic aspects.

SDGs with a direct impact on the mining industry have been selected. Goals that affect strengthening include goals 7, 8 and 9, while those that contribute to weakening include goals 13, 15 and 6. The author assumes that the guiding principle of sustainable development aspects of mining activities should be both the rational and economical acquisition and use of mineral resources. It should be noted that the problem of increasing demand for mineral

resources is also related to the issue of raw material security (Dubiński 2013). Achieving sustainable mining development is the key to raw material and energy security, at the some point, the implementation of SDGs is an inalienable part of mining activities (Aureli et al. 2019) So far, the practical implementation of sustainability principles in the mining industry has been reported in the form of Corporate Social Responsibility Reports. Recently the source of information on the implementation of SDGs is non-financial disclosures, which can be either mandatory or voluntary. The scope of mandatory non-financial disclosures is regulated by accounting law. Pursuant to Article 49 (Article 55(2a) in the scope of the group), the report on the entity's activities should include, insofar as it is relevant to the assessment of the entity's development, performance, and position, and among other things, information on labor and environmental issues. At the same time, more and more companies publish they reports concerning their realization of SDGs. During the research, leading polish mining companies reporting the implementation of SDGs were identified.

Analysis of the goals declared by the polish mining companies indicated that the activity of the mining industry is corelated with almost all SDGs. The goals most often declared by the analyzed mining companies were goals 3 – good health and well-being, 4 – quality education, 7 – responsible and clean energy, 12 – responsible consumption and production. Sequentially goals were 5 – gender equality, 6 – clean water and sanitation, 8 – decent work and economic growth, 9 – industry, innovation and infrastructure, 11 – sustainable cities, and communities. By contrast, the least frequently stated goals were 2 – zero hanger, 10 – recused inequalities, 15 – life in land, 17 – partnership for the goals.

Table 8. Selected identified Polish mining companies reporting the implementation of Sustainable Development Goals

Tabela 8. Wybrane zidentyfikowane polskie spółki górnictwa raportujące realizację Celów Zrównoważonego Rozwoju

Name of the company	Reporting of SDGs	Where	SDGs indicated by the company
KGHM Polska Miedź SA	Yes	https://kghm.com/sites/kghm2014/files/document-attachments/8_sprawozdanie_nt_informacji_niefinansowych_kghm_i_gk_kghm_2020.xhtml	G3, G4, G5, G7, G8, G9, G10, G11, G12, G13, G15
Jastrzębska Spółka Węglowa SA	Yes	https://www.jsw.pl/fileadmin/user_files/odpowiedzialny-biznes/raport-csr-2020/raport-csr-2020.pdf	G1, G2, G3, G4, G5, G6, G7
Bogdanka SA	Yes	https://www.lw.com.pl/pl,2,s450,cele_zrownowazonego_rozwoju_onz_sdgs.html	G1, G3, G4, G8, G12, G17
Tauron Wytwarzanie	Yes	https://raport.tauron.pl/	G7, G9, G11, G12, G13

Source: own study.



Fig. 5. Goals of EU Taxonomy

Source: own study based on the [Regulation \(EU\) 2020/852](#)

Rys. 5. Cele taksonomii UE

The goals of the EU Taxonomy focus on six main areas: mitigations of the change, climate change adoptions, the sustainable use and protection of water and marine resources, transition to a circular economy, pollution prevention and control, and the protection of biodiversity and ecosystems, and as such are correlated with the SDGs, which are declared by the Polish mining companies ([Regulation \(EU\) 2020/852](#)).

It seems that EU Taxonomy Regulations and SDGs Reporting in Polish Mining are in a mutual relationship, and as such, EU Taxonomy will increase SDGs reporting in the mining sector; however, these regulations are relatively new and the realistic assessment of their impact will be seen in the long term. In the author's opinion, EU Taxonomy Regulations will definitely increase SDGs reporting in mining sector.

Conclusions

Nowadays, companies carrying out their activities are increasingly obliged to take responsibility not only for the economic but also for the environmental and social consequences of their actions. The Polish experience shows that companies increasingly understand the direction in which business is advancing. In the concept of sustainable development, ethical, social and environmental goals are added to economic priorities, assuming that only their co-implementation can ensure the long-term benefits for societies and humanity. There are two leading trends regarding mining in the EU, on the one hand, the EU is going through an energy transformation, which will impact the mining industry. On the other hand, with regard to the current geopolitical situation, some of the EU countries have made the decision of temporarily reopening their coal power plants. The research questions of the paper were:

1. What is the actual level of SDG reporting in Polish mining?
2. Will the EU Taxonomy Regulations increase SDG reporting in Polish mining?

The review of the literature indicated that the mining industry has the opportunity and potential to both positively and negatively impact all seventeen SDGs. Analysis of the goals declared by Polish mining companies indicated that the activity of the mining industry is correlated with almost all SDGs. In the course of the analysis conducted in the paper, it was noted that mining companies correlate their activities mainly with the following goals (in order of importance): 3, 4, 7, 12, 5, 6, 9, 11, 2, 10, 15, 17. EU Taxonomy Regulations cover all layers of SDGs, and as such, EU Taxonomy will increase the reporting of SDGs in the mining sector. However, these regulations are relatively new, and realistic assessment of their impact will be seen in the long term.

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REFERENCES

- Agenda 2030, 2015. *Transforming our world: the 2030 Agenda for Sustainable Development; A/RES/70/1*. [Online] sustainabledevelopment.un.org [Accessed: 2019-05-02].
- Aureli et al. 2019 – Aureli, S., Magnaghi, E. and Salvatori, F. 2019. The role of existing regulation and discretion in harmonising non-financial disclosure. *Accounting in Europe* 16(3), pp. 290–312, DOI: 10.1080/17449480.2019.1637529.
- De Sa, P. 2019. Mining and sustainable development: territorializing the mining industry. *Mineral Economics* 32(2), pp. 131–143, DOI: 10.1007/s13563-018-0149-8.
- Dubiński, J. 2013. Sustainable Development of Mining Mineral Resources. *Journal of Sustainable Mining* 12(1), pp. 1–6, DOI: 10.7424/jsm130102.
- EC 2008. *Communication from the Commission to the European Parliament and the Council – The raw materials initiative: meeting our critical needs for growth and jobs in Europe* (COM 699).
- EC 2011. *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Roadmap to a Resource Efficient Europe* (COM 571).
- EC 2017. [Online] <https://ec.europa.eu/growth/se...> [Accessed: 2018-09-02].
- EC 2019. *Communication from the Commission – Guidelines on non-financial reporting: Supplement on reporting climate-related information. 2019/C 209/01*. [Online] <https://eur-lex.europa.eu/lega...> [Accessed: 2020-12-31].
- EC 2019. *Towards a Sustainable Europe by 2030*. [Online] https://ec.europa.eu/commission/sites/beta-political/files/rp_sustainable_europe_30-01_en_web.pdf.
- EC-EU. *Raw Materials Information System (RMIS), European Commission- EU science hub*. [Online] <https://rmis.jrc.ec.europa.eu/?page=sdg-18f0ad> [Accessed: 2020-10-03].
- Endl et al. 2021 – Endl, A., Tost M., Hitch M., Moser P., Feiel, S. 2021. Europe's mining innovation trends and their contribution to the sustainable development goals: Blind spots and strong points. *Resources Policy* 74, DOI: 10.1016/j.resourpol.2019.101440.
- EU Directive 2014. *Directive 2014/95/EU of the European Parliament and of the Council of October 22, 2014, amending Directive 2013/34/EU as regards disclosure of non-financial and diversity information by certain large undertakings and groups*. [Online] <https://eur-lex.europa.eu/lega...> [Accessed: 2020-12-13].
- EUROMINES. *European Mineral Raw Materials Enabling SDGs, European Association of Mining Industries, Metal Ores & Industrial Minerals*. [Online] http://euromines.org/files/euromines_sdgs_leaflfet_99x210mm_final_for_web.pdf [Accessed: 2020-12-31].

- Euromines 2019. European Mineral Raw Materials enabling SDGs. [Online] <http://www.euromines.org/news/the-european-mineral-raw-materials-industry-enabling-sdgs> [Accessed: 2020-10-15]
- Fraser, J. 2019. Creating shared value as a business strategy for mining to advance the United Nations Sustainable Development Goals. *The Extractive Industries and Society* 6(3), pp. 788–791, DOI: 10.1016/j.exis.2019.05.011.
- Galos et al. 2020 – Galos, K., Lewicka, E., Burkowicz, A., Guzik, K., Kot-Niewiadomska, A., Kamyk, J. and Szulgaj, J. 2020. Approach to identification and classification of the key, strategic and critical minerals important for the mineral security of Poland. *Resources Policy* 70(5). DOI: 10.1016/j.resourpol.2020.101900.
- International Council on Mining and Metals, ICMM 10 principles. [Online] <https://www.icmm.com/en-gb/our-principles/mining-principles/mining-principles> [Accessed: 2022-06-06].
- Janikowska, O.L. and Kulczycka, J. 2021. Impact of minerals policy on sustainable development of mining sector – a comparative assessment of selected EU countries. *Mineral Economics* 34(3), pp. 1–10, DOI: 10.1007/s13563-021-00248-5.
- Janikowski, R. 2006. *Zrównoważony rozwój lokalny. Teoria i praktyka*. Katowice: GSWH (in Polish).
- Kolk, A. and Tulder, R. 2010. International business, corporate social responsibility and sustainable development. *International Business Review* 19(2), pp. 119–125.
- Kulczycka, J. and Wirth, H. 2010. Corporate social responsibility in strategy of mining companies in Poland (*Spoleczna odpowiedzialność w strategiach firm górniczych w Polsce*). *Zeszyty Naukowe Instytutu Gospodarki Surowcami Mineralnymi i Energi PAN* 79, pp. 147–157 (in Polish).
- Mancini, L. and Sala, S. 2018 Social impact assessment in the mining sector: Review and comparison of indicators frameworks. *Resources Policy* 57, p. 98–111, DOI: 10.1016/j.resourpol.2018.02.002.
- Marcisz, M. and Probiez, K. 2019. The relationship between CRI and CSR indices and other quality parameters of coking coal from the “Pniówek” deposit (SW part of the USCB, Poland). *Gospodarka Surowcami Mineralnymi – Mineral Resources Management* 35(3), pp. 163–184, DOI: 10.24425/gsm.2019.128534.
- Monteiro et al. 2019 – Monteiro, N., Silva, E. and Neto, J. 2019. Sustainable Development Goals in Mining. *Journal of Cleaner Production* 228, pp. 509–520, DOI: 10.1016/j.jclepro.2019.04.332.
- Pactwa, K. 2019. *Scope of implementation of sustainable development goals by the mining sector in Poland (Zakres realizacji celów zrównoważonego rozwoju przez sektor górniczy)*. Wrocław: University of Science and Technology (in Polish).
- Pactwa, K. 2021. Achieving United Nations sustainable development goals by the mining sector – a Polish example. *Gospodarka Surowcami Mineralnymi – Mineral Resources Management* 37(1), pp. 57–80, DOI: 10.24425/gsm.2021.136289.
- Regulation (EU) 2020/852 of the European Parliament and of the Council on the Establishment of a Framework to Facilitate Sustainable Investment and Amending Regulation (EU) 2019/2088 (Taxonomy Regulation). Off. J. 2020, L198, 13–43.
- Szamałek et al. 2022 – Szamałek, K., Zglinicki, K. and Mazurek, S. 2022. On the criticality of minerals otherwise. New approach taking into account cultural, social and historical factors. *Gospodarka Surowcami Mineralnymi – Mineral Resources Management* 38(1), pp. 5–16, DOI: 10.24425/gsm.2022.140608.
- Tajvidi et al. 2019 – Tajvidi, A.E., Kakaie, R., Ataei, M. and Mohammadi, M.R.T. 2019. A review of studies on sustainable development in mining life cycle. *Journal of Cleaner Production* 229, pp. 213–231, DOI: 10.1016/j.jclepro.2019.05.029.
- UN 1987. Report of the World Commission on Environment and Development: Our Common Future, World Commission on Environment and Development A/42/427, Geneva, Switzerland, June 1987.
- UNDP 2016. *Mapping Mining to the SDGs: An Atlas*. [Online] <https://www.wundp.org/content/undp/en/home/library-page/poverty-reduction/mapping-mining-to-the-sdgs%2D%2Dan-atlas.html> [Accessed: 2020-09-03].
- United Nations Environmental Programme (UNEP). *Mineral resource governance in the 21st Century Gearing extractive industries towards sustainable development Summary for policymakers and business leaders*. [Online] https://www.resourcepanel.org/sites/default/files/documents/document/media/report_summary_mining_governance_feb18_web_004.pdf [Accessed: 2020-09-03].
- United Nations Environmental Programme (UNEP). *Managing mining for sustainable development. A scorebook. UNDP Bangkok Regional Hub and Poverty-Environment Initiative Asia-Pacific of UNDP and UN Environ-*

- ment. [Online] <https://www.undp.org/content/dam/undp/library/Sustainable%20Development/Extractives/UNDP-MMFSD-HighResolution.pdf> [Accessed: 2020-09-03].
- Wongsasuluk et al. 2021 – Wongsasuluk, P., Tun, A.Z., Chotpantarat, S. and Siriwong, W. 2021. Related health risk assessment of exposure to arsenic and some heavy metals in gold mines in Banmauk Township, Myanmar. *Scientific Reports* 11(1), DOI: 10.1038/s41598-021-02171-9.
- Woźniak, J. and Pactwa, K. 2019. Analysis of the socio-environmental policy of selected mining companies on the basis of non-financial reporting. *Gospodarka Surowcami Mineralnymi – Mineral Resources Management* 35(1), pp. 177–194, DOI: 10.24425/gsm.2019.128206.
- Woźniak, J. and Jurczyk, W. 2020. Social and environmental activities in the Polish mining region in the context of CSR. *Resources Policy* 65(C), DOI: 10.1016/j.resourpol.2019.101554.

THE IMPACT OF EU TAXONOMY REGULATIONS ON THE REPORTING OF SUSTAINABLE DEVELOPMENT GOALS (SDGS) IN POLISH MINING

Key words

sustainable Development Goals, UE taxonomy, mining

Abstract

The 2030 Agenda for Sustainable Development was adopted in 2015. The United Nations framework does not directly include raw materials in Sustainable Development Goals (SDGs). The mining industry has a great impact not only for the environment but also for its stakeholders, both from the nearest and the most remote surrounding. As such, the mining industry has the opportunity and potential to both positively and negatively impact on all seventeen SDGs. The introduction of the EU directive on the disclosure of non-financial data has a great impact on the reporting of sustainable development reporting. Additionally, in March 2020, the European Commission published the EU Taxonomy. With regard to the current geopolitical situation, some European Union members, such as Germany, France and the Netherlands, have taken the decision to open or re-open of their coal-fired plants. Admittedly, these countries underline that the inclusion of coal in their power industry is only temporary and limited to a well-defined period of time. The implementation of the SDGs should be partially important in the case of mining, the activities of which involve the extraction of various types of mineral resources, especially non-renewable resources. This raises two fundamental research questions; what is the actual level of the reporting of SDGs in the polish mining industry, and if the EU Taxonomy Regulations will increase the reporting of SDGs in Polish mining?

**WPLYW UNIJNEJ TAKSONOMII NA RAPORTOWANIE CELÓW
ZRÓWNOWAŻONEGO ROZWOJU (SDGs) W POLSKIM GÓRNICTWIE****Słowa kluczowe**

cele Zrównoważonego Rozwoju, taksonomia UE, górnictwo

Streszczenie

Agenda 2030 na rzecz zrównoważonego rozwoju została przyjęta w 2015 roku. Ramy ONZ nie uwzględniają bezpośrednio surowców mineralnych w Celach Zrównoważonego Rozwoju (SDGs). Jednak przemysł wydobywczy ma znamienity wpływ zarówno na środowisko, jak i na swoich interesariuszy, zarówno z bliskiego, jak i dalszego otoczenia. Tym samym przemysł wydobywczy może wpływać pozytywnie, jak i negatywnie na wszystkie siedemnaście SDGs. Wprowadzenie przez UE dyrektywy w sprawie ujawniania danych niefinansowych przyczyniło się do wzrostu raportowania zrównoważonego rozwoju, co więcej, w marcu 2020 roku Komisja Europejska opublikowała tzw. Taksonomię. Realizacja SDGs powinna być szczególnie istotna w przypadku górnictwa, którego działalność polega na wydobywaniu różnego rodzaju surowców mineralnych, zwłaszcza tych nieodnawialnych. W związku z tym pojawiają się dwa podstawowe pytania badawcze: jaki jest rzeczywisty poziom raportowania SDGs w polskim górnictwie i czy unijna Taksonomia wpłynie znacząco na zwiększenie raportowania SDGs w polskim górnictwie.

