

SOCIAL PERCEPTION OF HARD COAL MINING IN PERSPECTIVE OF REGION'S SUSTAINABLE DEVELOPMENT

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Abstract:

This article presents a pilot study on the local community's social perception regarding coal mines in Upper Silesia. The research was performed in connection with the smog, which was persistent and harmful to residents during the winter months of 2016. The researchers put forward to the local community the following two survey questions: 1. Is the image of coal mines in the eyes of the local community positive or negative? 2. Are coal mines socially responsible and is coal a good energy source? The aim of this article is to indicate the relationship of the local community to the presence of hard coal mines in the neighbourhood and their social role. Also, this work looks to identify the nuisances perceived by the inhabitants of the examined region about mining enterprises and whether these burdens should result in abandonment of hard coal mining. Pilot studies were conducted with the use of a diagnostic survey. The study was carried out in January 2017 on a sample of 267 people, comprising Silesian University of Technology students residing in Upper Silesia. An environmental survey technique was used. The researchers hypothesise that the image of mining and coal as a fuel for the local community is negative and the mines are not socially responsible enterprises. This research shows that the operation of mines is essential for society and its stability as it affects economic, social and energy safety. A large proportion of the respondents defined the image of mining as positive (108 people), but 76 people indicated that the image was rather negative. Most respondents pointed to the benefits of the mine's operation. Opinions on social responsibility were divided, and most respondents failed to provide concrete examples of social engagement, so the first hypothesis was partly confirmed. Although the respondents pointed to various nuisances resulting from the mining companies operating in their environment, they also recognised significant social aspects related to employability and access to relatively cheap fuel. However, they do not realise the social involvement of mines, which is one of the conditions of sustainable development. Pilot studies allowed for the initial identification of problems and verification of the research tool utilised in this study.

Key words: *coal mining, CSR, sustainable development*

INTRODUCTION

Upper Silesia along with the eastern part of the Silesian Voivodship's administrative area are highly-urbanized areas with rapid economic growth. This is particularly evident in the Upper Silesian conurbation, a specific type of polycentric agglomeration characterised by highly-developed communication networks and the spatial concentration of the major urban centres with a variety of functionalities without any one dominating the others. In Upper Silesia, most of the hard coal mines are located, administered, and managed by Jastrzębska Spółka Węglowa S.A. (a state-owned company) and the Polish Mining Group Joint Stock Company (PGG – formed as a result of the restructuring of the hard coal mining industry in 2016), which provide high-quality coal to individual consumers and business entities in the country and abroad. Due to ongoing debates on low emission issues and emerging critical analyses concerning the use of hard coal as fuel for water heating and buildings, primarily in low-rise buildings, a team of researchers from the Faculty of

Organization and Management of the Silesian University of Technology decided to investigate the attitude of the local community to the functioning of hard coal mines. The team also looked to define their social role and discover indications of the nuisance identified by the inhabitants of the examined region in relation to mining enterprises and whether they should cease hard coal mining as a source of fuel due to the resulting prolonged winter smog that negatively affects the health and quality of life of residents of the Upper Silesian conurbation.

RESEARCH METHODOLOGY AND CHARACTERISTICS OF THE RESEARCH SAMPLE

The research was undertaken in connection with the smog, which was onerous and detrimental to the inhabitants of the Upper Silesian region during the winter months of 2016. A pilot study using the diagnostic survey method was conducted to pre-examine the research problem and verify the survey questionnaire. The study

was carried out in January 2017 on a sample of 267 people, including students of Silesian University of Technology, residing in Upper Silesia and mainly from large metropolitan cities, such as Katowice, Gliwice, Zabrze, Ruda Slaska, Bytom, Rybnik, and Sosnowiec (see Figure 1).

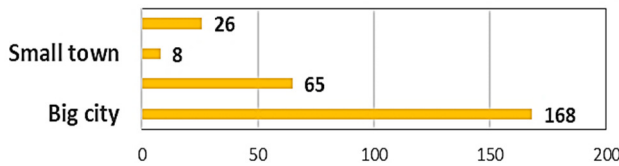


Fig. 1 Residing respondents

The study included both full-time and part-time students, of which 138 people were registered as employees (51.69% of respondents) and the mine employed only six people (0.02%). The significant independent variables include work in the mine of family members of the respondents (114 people, 42.70%), (see Figure 2) and neighbours/friends (198 people, 74.16%), (see Figure 3). These variables likely influenced the positive perception of mining companies and the miners themselves as they were contractors of the relatively dangerous profession.

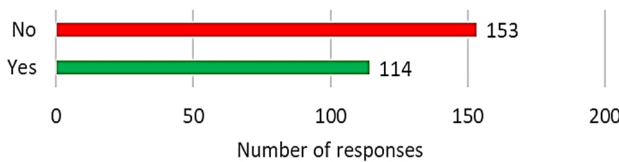


Fig. 2 Work in the mine – family

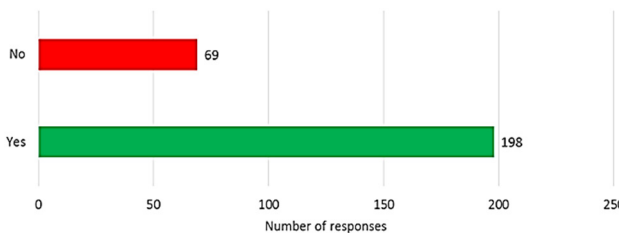


Fig. 3 Work in the mine – neighbours or friends

Most of the respondents in the pilot research trial know or are associated with mines located near their residence (see Figure 4). This is also an important independent variable, which results in a positive reception of both the mining industry and its fundamental influence on the stability of the local community as displayed in respondents' opinions.

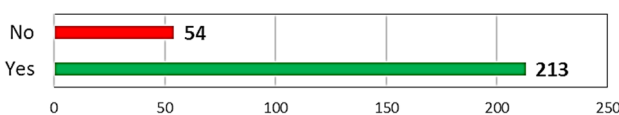


Fig. 4 Knowledge of mines located in the area of respondents' residence

The research involved 78 men (29.21%) and 189 women (70.79%), and the age groupings of the respondents are shown in Figure 5.

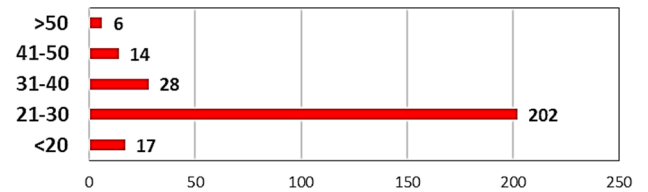


Fig. 5 Age groups of respondents

The research utilised the environmental and auditing questionnaire technique. The survey consisted of 39 questions, including information on the interviewee, of closed and semi-open cafeterias. For a large group of questions, the Likert scale was used to examine the degree of acceptance of a given statement or view.

The researchers put forward two main hypotheses: 1) the image of mining and coal as a fuel for the local community is negative, and 2) mines are not socially responsible enterprises.

RESULTS OF RESEARCH

The first hypothesis was only partially confirmed. Although the respondents perceive (see Figure 6) and indicate the various nuisances arising from the mining companies operating in their environment (see Figures 7 and 8), they also identify important social aspects related to employability and access to relatively cheap fuel.

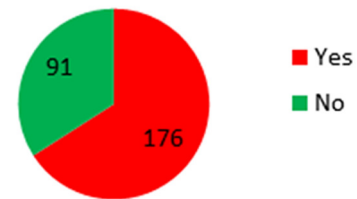


Fig. 6 Perceived nuisance

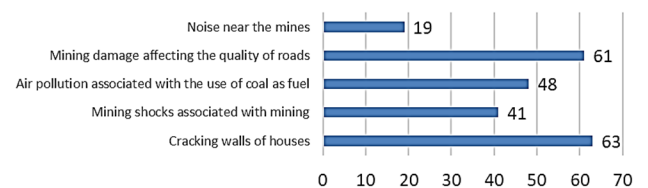


Fig. 7 The nuisance associated with inhabiting in the vicinity of mines

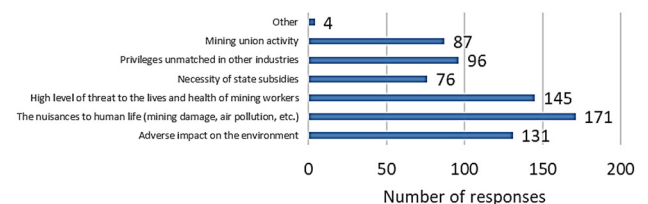


Fig. 8 Factors affecting the image of mines

Among the nuisances associated with the operation of the mines near their place of residence, the respondents mentioned as primary issues the breaking of walls of houses (63 people, 23.60%) and mining damages affecting the quality of roads (61 people, 22.85%). Only 48 people (17.98%) noticed the air pollution associated with the use of coal as fuel, which indicates that most respondents do

not associate smog with the use of hard coal. It is important to note, however, that smog is not just the result of burning solid fuels (e.g., hard coal) in low-rise buildings (up to 40 m in height), but also from transport and industrial emissions. These additional aspects should be taken into account in the development of programs related to the reduction of low emissions.

Respondents also assessed that the most negative impact on shaping the image of Polish hard coal mining is that it is considered a nuisance to human life (mining damage, air pollution, etc.), which was highlighted by 171 respondents (64.04%), a high-level of threat to the lives and health of mining workers (145 people, 54.31%), and a negative impact on the environment (131 people, 49.06%). Among other factors affecting the image of mines, the respondents mentioned European Union propaganda, ignorance, and media image (these responses are, however, insignificant in terms of quantity).

In general, the functioning of mines is important to society and its stability, since 182 people, or 68.16% of respondents, stated this viewpoint and that their operation contributes to the economic, social, and energy security of Upper Silesia (see Figures 9 and 10). These three types of security are vital determinants of personal safety and quality of life as is defined with the concept of sustainable development.

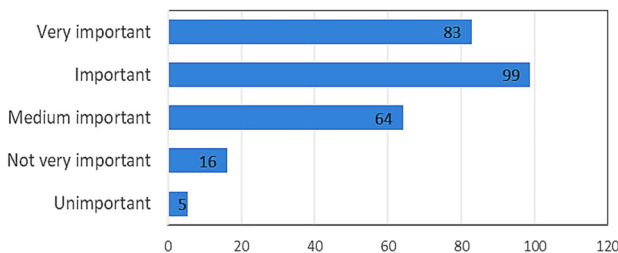


Fig. 9 The significance of mines for society and its stability

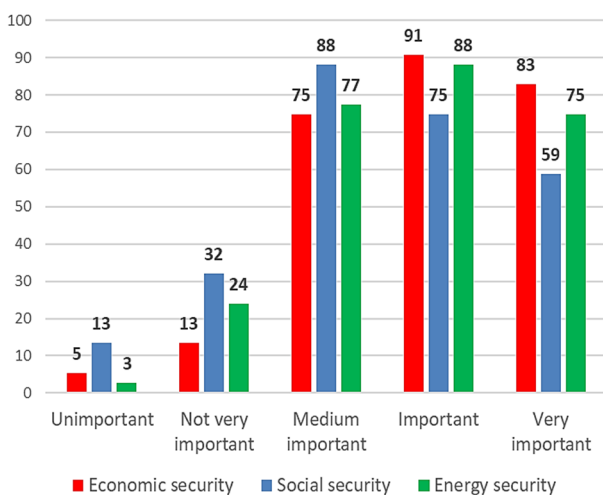


Fig. 10 Social security

A large proportion of the respondents identified the image of mining as positive (108 people) and strongly positive (10 people), which constitute 44.19% of total respondents. However, 76 people indicated that the image is somewhat negative, nine people definitely negative,

and 64 people did not express an opinion. These responses together constitute 55.80% of the total, suggesting that the first hypothesis is only partially confirmed and that the image of Polish hard coal mining is not entirely negative (see Figure 11). Respondents identify more benefits than hazards from the mines near their place of residence, where 72 people (26.97%) indicated benefits and only 23 (8.61%) indicated risks. They also pointed to the aspects that shape the positive image of mining in the Upper Silesia region (see Figure 12), including the creation of jobs (174 people, 65.17%), the impact on local and regional economic development (153 people, 57.30%), and the ethos and mining traditions (141 people, 52.80%).

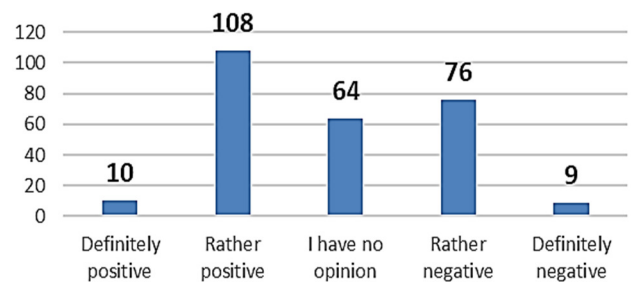


Fig. 11 The image of coal mining

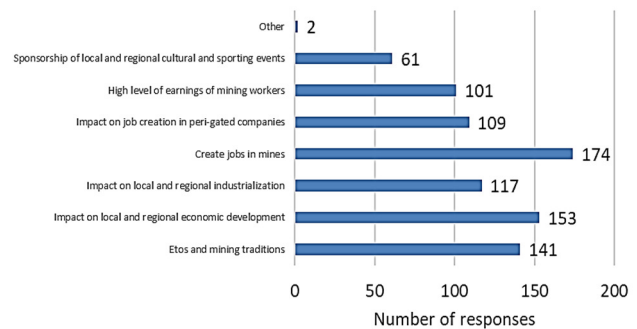


Fig. 12 Factors positively influencing the image of mines

Respondents also highly valued the role of mines in the local community as a significant employer (123 people, 46.07%) and the main pillar of employment, although they require a rapid restructuring (117 people, 43.82%). As a result, the mines should not be liquidated, which was confirmed by a majority 166 respondents (62.17%). Also, carbon was positively evaluated as fuel with 150 respondents (56.18%) agreeing that it was a good raw material (see Figure 13) and provided the local community with more benefits than threats (see Figure 14).

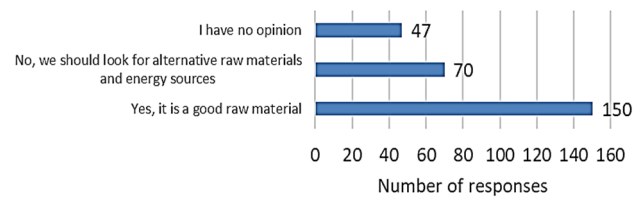


Fig. 13 Coal as fuel

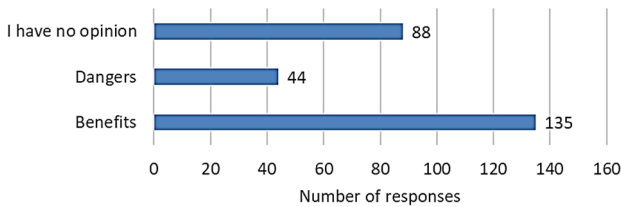


Fig. 14 Effects for the local community

With the second hypothesis, the results are also not clear. Although respondents declare that mines are socially responsible (99 people, 37.07%, for answers include “somewhat yes” and “definitely yes”), most did not have opinions and only 73 people (27.34%) pointing to the lack of social involvement of mines (see Figure 15).

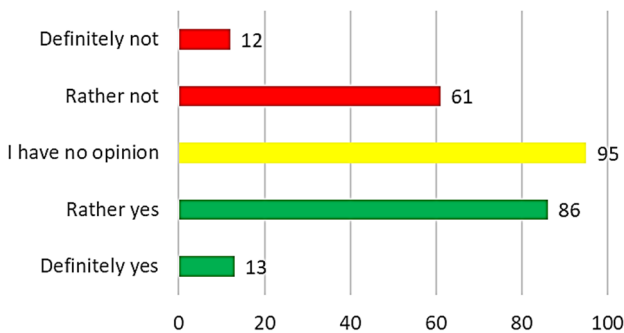


Fig. 15 Mines as socially responsible organisations

Also, respondents failed to provide concrete examples of the social involvement of the mine (see Figure 16).



Fig. 16 Examples of the social involvement of the mine

When asked about specific types of socially responsible activities, respondents stated that most of these activities do not occur, or they do not have an opinion (see Figures 17, 18, and 19).

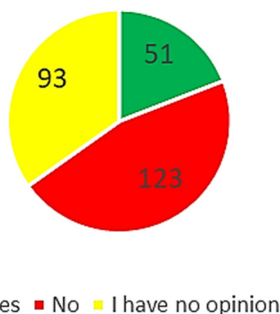


Fig. 17 Air protection

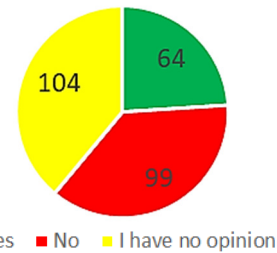


Fig. 18 Reclamation of green areas

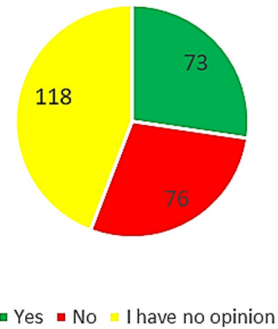


Fig. 19 Waste management

In principle, however, they agreed that hard coal mining has a negative impact on nature (171 respondents, 64.04% – see Figure 20), and as is shown in Figure 21, the mines do not care about nature, as indicated by most respondents (152 people, 56.92%).

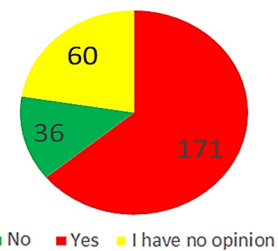


Fig. 20 Negative impact of coal mining on nature

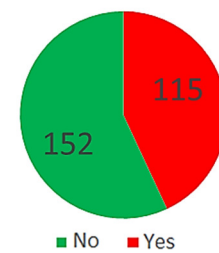


Fig. 21 Remedial action taken by mines

CONCLUSIONS

The first hypothesis was partly confirmed. Although the respondents pointed to various nuisances resulting from the mining companies operating in their environment, they also perceived important social aspects related to employability and access to relatively cheap fuel. It should be noted that the Polish Mining Group, formed as a result of the restructuring of the hard coal mining industry in 2016, currently employs more than 43,000 employees and the Jastrzębska Coal Company employee over 21,000.

The situation in the Silesian labour market is relatively stable, with a current trend of a declining unemployment rate. At the end of February 2017, there were slightly more than 125,000 registered people in the Silesian labour offices. The unemployment rate for January 2017 was 6.8%, which was 1.8% lower than in the whole of Poland [6]. Collective redundancies in hard coal mines could significantly increase the unemployment rate in the Voivodship and lead to negative social consequences, such as pauperization of society and pathology. So, the respondents noted that mines are contributors to the stabilisation of the local community and to some extent affect economic security as one of the components of personal safety that determines the quality of life, which is a basic category of sustainability.

However, it cannot be stated that mines function as "sustainable enterprises" defined as business organisations which are "guided by their principles of responsibility, precaution, prevention, prevention and optimisation in three dimensions: economic, social and ecological" [5]. Undoubtedly, deficits are emerging about environmental protection and social responsibility, as respondents noticed. Although, they also did not recognise social activity from mine operations as being in line with corporate social responsibility (CSR) as a voluntary engagement in social activities and environmental protection extending beyond the law and arising from moral motives [1]. Directive 2014/95/EU imposes on certain large business entities employing more than 500 employees in the financial year additional reporting obligations as part of CSR and sustainability, including environmental, social, and labour issues such as respect for human rights and counteracting corruption and bribery.

It is important to recognise that CSR is a tool for implementing the principles of sustainable development. It should also be emphasised that Kompania Węglowa SA and Katowicki Holding Węglowy SA, operating until 2016, informed about CSR policy, sustainable development, and pro-ecological initiatives through their websites. The fact that the local community was not well-versed in these initiatives was probably related to the lack of appropriate communication of these initiatives by coal companies. CSR should be considered as one of the strategic value carriers of mining companies [4] and appropriately communicated to the public. This does not mean, of course, that it is just a public relations tool because there are entirely separate tasks that are assigned to a social responsibility.

The external stakeholders of mining companies, to which the mines should be particularly responsible, include local communities and the environment. Mines continue to face unresolved environmental challenges, relating to all elements of the environment including land, water, and air [3]. In practice, every mining activity disturbs in some destructive way the state of the natural environment. Undergoing changes mainly concern different types of soil deformations, seismic movements caused by mining activity, changes in water relations, soil depletion, gas and dust emissions, and noise. It is, therefore, necessary to develop eco-friendly technologies to minimise the negative

impact of mining on the natural environment [2]. In addition to environmental challenges, the safety and health of the work of internal stakeholders is an essential challenge as well as the quality of life of those affected. Health care for the workers and the conditions of their work fall not only within the framework of law enforcement, but are also understood as a commitment to corporate social responsibility and support for career development, workplace stability, and fair pay [2].

The problem of low emissions also indirectly refers to mines whose product suppliers use inadequate combustion contributing to the degradation of the environment. Innovative environmental solutions and legal instruments are needed in this area to tackle environmental threats and problems effectively. For example, one legal tool is the prepared anti-smog resolution adopted by the Sejmik of the Silesian Voivodship in 2017, which becomes effective as of 1 September 2017, and prohibits the use of lignite, slurry and flotoconcentrates, and solid biomass with moisture content of over 20% as well as obliging users to exchange boilers to those with a minimum of class 5. This is necessary because "the report of World Health Organization's Ambient Air Pollution Database 2016 shows that 33 of the 50 most polluted European cities are located in Poland, of which ten are in the Silesian Voivodship. On the other hand, the report of the World Health Organization in 2015 *Economic cost of the health impact of air pollution in Europe* shows that in 2010 air pollution in Poland contributed to over 48,500 deaths of Poles, which in turn generated \$ 101.826 billion in costs" [7].

De facto environmental problems are also social problems. A degraded environment negatively affects the health of living organisms, including humans, and generates various types of social problems with health care failures, sick leave, and staff turnover. These social issues affect business performance and generate economic problems that in turn cause additional social problems. Therefore, sustainable development must be approached in a holistic manner taking all aspects into account. Environmental education and education of sustainable development should be considered important in a community. In the opinions of the respondents of this research, coal as a solid fuel and an energy raw material was not negatively evaluated. On the other hand, it follows from the observation that people who burn plastic, rubber, and other municipal waste are responsible for low emissions and pollutants exceeding the permitted standards of suspended dust and toxic substances, including dangerous dioxins and furans. So, it is not the coal that is the main culprit. Also, there is a need for systematic improvement of environmental awareness.

Pilot studies allowed for the initial identification of problems and verification of the research tool. They also opened new potential areas for future exploration. The positive image of mining enterprises perceived by the local community is important as it allows the building of lasting relationships. Companies do not work in a social vacuum, so it is worth getting to know the opinions of the local community and checking these expectations against the businesses. This knowledge will allow companies to

better prepare themselves for the social mission that the concept of sustainable development imposes on them. Companies exist not only to generate economic profit but primarily to build social well-being. This task emerges from the assumptions of the concept of sustainable development and corporate social responsibility. Therefore, after the preliminary pilot studies, further representative research will be carried out for the population of Silesian Voivodship, which is planned for the fourth quarter of 2018.

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