

Justyna Woźniak, Ph.D., Eng.

Wrocław University of Science and Technology

Faculty of Geoengineering, Mining and Geology

SUMMARY OF PROFESSIONAL ACCOMPLISHMENTS
PRESENTING THE DESCRIPTION OF SCIENTIFIC ACHIEVEMENTS AND OUTPUT
IN THE FIELD OF ENGINEERING AND TECHNICAL SCIENCES
DISCIPLINE: MINING AND ENGINEERING GEOLOGY

ANNEX NO. 4

Wrocław, February 2019



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I. Personal data

First and last name: Justyna Woźniak (nee Wiktorowicz)
ORCID 0000000281398529
<http://wggg.pwr.edu.pl/en/employees/justyna-wozniak>

Place of employment: Wrocław University of Science and Technology
Faculty of Geoengineering, Mining and Geology
Department of Industrial Economics and Geoeconomics

Address: ul. Na Grobli 15
50-421 Wrocław
GEOCENTRUM, building L-1
Faculty Administrative Office – room 254
tel. (+48) 71 320 68 35
wggg@pwr.edu.pl

II. Held diplomas and scientific degrees

Name: **Ph.D. in technical sciences**

Discipline: mining and engineering geology

Specialty: opencast mining, economics and management in mining

Place of obtaining: Wrocław University of Science and Technology; Faculty of Geoengineering, Mining and Geology

Date of obtaining: 18.02.2011



- Title of Ph.D. thesis: Risk analysis during evaluation of profitability of energy production from lignite
- Thesis supervisor: Leszek Jurdziak, DSc, Ph.D., Eng.
- Reviewers: Prof. Jan Butra, Ph.D., Eng.
Prof. Zbigniew Kasztelewicz, Ph.D., Eng.
- Name: **diploma of M.Sc. Eng. in mining and engineering geology**
- Specialty: geoinformatics
- Place of obtaining: Wrocław University of Science and Technology; Faculty of Geoengineering, Mining and Geology
- Date of obtaining: 10.07.2006
- Title of master's thesis: Spatial modelling of lithosphere in the zones of active continent edges
- Thesis supervisor: Paweł Zagożdżon, Ph.D.
- Name: **bachelor's degree in finance and banking**
- Specialty: financial markets and banking
- Place of obtaining: WSB University in Wrocław, Faculty of Finance and Management/accreditation certificate of the Accreditation Commission of the Foundation for the Promotion and Accreditation of Economic Majors
- Date of obtaining: 19.03.2009
- Title of diploma thesis: Elements of risk analysis of the financial and economic system of bilateral monopoly in the context of accompanying risks of the "mine and power plant" tandem
- Thesis supervisor: WSB Associate Professor Agnieszka Dejnaka, Ph.D.

III. Information regarding employment

2011 – continuously Wrocław University of Science and Technology; Faculty of Geoengineering, Mining and Geology.

Since **2014** – until now as an assistant professor.

In the years **2011 – 2014** as an assistant lecturer, in the position of academic scientific-didactic teacher.

IV. Indication of the achievement* resulting from article 16, paragraph 2 of the Law on academic degrees and title and degrees and title in the arts of 14 March 2003 (Journal of Laws 2016, item 882, as amended in the Journal of Laws of 2016, item 1311)

Title of scientific/artistic achievement

As a scientific achievement within the meaning of the above-mentioned Law, which I consider to be an important contribution to the development of engineering and technical sciences, as well as new scientific field, I indicate the work - my monograph entitled „**The role and implementation of the concept of social responsibility in the functioning of mining and energy industry**”.

Habilitation monograph

Author: Justyna Woźniak

Title: The role and implementation of the concept of social responsibility in the functioning of mining and energy industry

Year of publication: 2019

Name of the publisher: Faculty of Geoengineering, Mining and Geology

Publishing reviewers: Jan Kudełko, DSc, Ph.D., Eng.
Katarzyna Tobór - Osadnik, DSc, Ph.D., Eng.

Discussion regarding scientific purpose of the thesis, achieved results and conclusions resulting from it

The scientific achievement was implemented with the support of several years of research work, which was conducted exclusively at the Faculty of Geoengineering, Mining and Geology (W6) of the Wrocław University of Science and Technology. The scope of scientific interests focused on the widely understood mining industry and the energy sector. Recently, I focused my attention on the issues of social responsibility of the companies (business), combining them into interdisciplinary new research direction. Corporate Social



Responsibility (CSR) dates back to the turn of the XIX and XX century, when it was perceived as a concern of wealthy people for the poorer ones in the contemporary society. In the light of Andrew Carnegie's¹ original doctrine, the social responsibility was based on two principles: charity and trust, in which rich people manage and are responsible for general social goals. It is worth to mention the history of the pre-war industry of the Second Polish Republic – a sugar factory and refinery in Chodorów. As we can read in the press articles², this sugar factory was a model of "socially responsible business", because it offered its workers and their families a rich offer of contemporary social services. The current way of perception of the CSR was initiated in the United States, and somewhat later it also appeared in the UK, where the publication entitled "Social Responsibilities of the Businessman" by H. Bowen was published in 1953. It describes the need to take into account the problems that occur in the company's environment. According to the definition of the European Commission included in the Green Paper (2001), CSR means the responsibility of enterprises for their impact on society. As a result, the significance of this concept on the market led in effect to the standardization works (Buglewicz, 2017³), which were included in the monograph. In accordance with the overriding assumption, the CSR can be characterized as an area concerning internal regulations of the organization, which take into account international standards, binding legal regulations, ethical principles and standards, as a positive impact on the society (widely defined group of stakeholders) and the natural environment. CSR activities consist of: combination of the entity's strategy (among others, the management of: risk, crisis situations, customer relations or supply chain); human capital (management of human resources and the environment); environmental aspects (among others, minimization of the impact of operational activities), included in the reporting aimed at the integrated form.

In the general context, the mining industry in Poland is perceived mainly through the prism of underground hard coal mines struggling with the problems of profitability, media protests of the representatives of this industry, above-average social conditions and permanent requirements of this group of employees. Unfortunately, the public opinion does not try (ignorance or intentional action) to distinguish the types and typologies of this industry, which can be divided depending on the adopted criterion. The mining industry is clearly divided into: opencast mining, underground mining, borehole mining and sea mining, depending on the type of deposit accumulation and adopted exploitation technology. At the Faculty of Geoengineering, Mining and Geology of the Wrocław University of Science and Technology, also research in the direction of combining mining with astronomy is conducted. In domestic conditions the opencast method is used in the exploitation of energy raw materials (lignite) as well as a wide group of rock raw materials. Underground mining is

¹ Carnegie Andrew, author of the book *Gospel of wealth*, which was published in 1868;

² <https://polskaniepodlegla.pl/magazyn-patriotyczny/item/3339-miasta-utracone-chodorow>;
<https://nto.pl/moje-kresy-chodorow-cukrowe-miasto/ar/4171835> (January, 2019)

³ Buglewicz K., 2017. Corporate social responsibility. New competitive value. Polskie Wydawnictwo Ekonomiczne, Warsaw

mainly conducted in the deeply accumulated hard coal deposits, as well as copper and silver ores. The monograph mainly focuses on the opencast industry (lignite, rock raw materials) but also on the underground industry (hard coal and copper ores). The role of energy resources was particularly emphasized, in the context of their role in the national power balance, and their "opencast exploitation" of lignite is mainly implemented by vertically integrated enterprises.

The conducted extensive analysis of literature which lasted several years demonstrated a gap in the theoretical and practical research, which made me deepen my knowledge in the scope of CSR and prepare a monograph, which is the first monograph devoted to this subject that is available on the market.

The main purpose of my monograph was to recognize and discuss the role of social responsibility mechanism in the industry reporting and communication with stakeholder groups. Reporting in accordance with the CSR principles is one of the steps of improving and changing the image of enterprises with strategic participation in the national economy. In the management sciences, it is described as branding (Golob and Podnar, 2018⁴). Non-financial reporting is conducive to better relations between companies and their employees, local community and state administration at various levels. As part of integrated reporting of CSR data, first of all, the entrepreneurs focus on activities that take into account economic efficiency (financial aspect), treating non-financial data as additional activities, which affect the achieved economic results. One of the research tasks was to assess the implementation of Corporate Social Responsibility issues by domestic entities from the mining sector and entities consolidated in the energy chain. The monograph indicates the directions of necessary changes for the national mining and associated entities, resulting among others from the legislative provisions at the national and European level. The current functioning of mining plants does not exclusively consists of maximizing the financial result. The development of a knowledge-based economy has led to an increase in the significance of non-financial reporting. The traditional accounting model oriented towards the past has started to be perceived as inadequate in the context of new management realities. Therefore, there was a need to change this situation e.g. through disclosing and presenting information about intangible resources or about creating value. Moreover along with the growing significance of CSR and sustainable development a need emerged to prepare reports of narrative nature, which contributed to the development of integrated reporting, based to a large extent on the word description. This will require the adoption of an interdisciplinary approach in order to adapt the currently used methods to the measurement of effects in the scope of CSR. This work includes a list of these tools. While the financial issues are clearly specified in the context of method and guidelines for accounting of the

⁴ Golob U., Podnar K., 2018. Researching CSR and brands in the here and now: an integrative perspective. *Journal of Brand Management*, pp 1 – 8. <https://doi.org/10.1057/s41262-018-0112-6>

financial operations, the inclusion of socio-ecological issues raises controversy in the environment of people associated with accounting (Krasodomska, 2017)⁵.

The role of society requires from the economic entities to take care of a wide range of stakeholders, as well as to engage in social-environmental and sometimes philanthropic activities. Providing non-financial data in the scope of ESG (Environmental, Social and Governance) is described in the literature as presenting Key Performance Indicators (KPI) of operational efficiency. They constitute measures of the company's activities e.g. in the social and environmental area. They are expressed in natural units e.g. pieces, tonnes or developed based on the opinion e.g. customer satisfaction index. Their use allows to reflect the unit's business model in a more complete manner as well as to include factors to the analysis, which affect the company's success. Taking care of this non-operational activity is implemented by units in various reporting of the entities. In my work I used the research method, which is the analysis of the content of documents, representatives of the discussed industries i.e. annual reports (known as analysis of the content of documents⁶), in terms of the most recognizable international standard of GRI reporting guidelines (Global Reporting Initiative)⁷. In the content of my work I have included numerous premises indicating GRI as the appropriate implementation tool in non-financial reporting. For this purpose I introduced a non-financial information disclosure indicator for the analyzed group of entities in regard to the GRI and GRI Mining and Metals⁸ (industry guidelines). I presented the scope of a new version of the social guidelines of the GRI Standards which is not yet available in the Polish language version and which will be applicable from 2020. Only a few research works have been dedicated to these issues so far.

The need for reporting and universal access to non-financial data reaches more and more stakeholders. Moreover the increasing social awareness of activities in the scope of CSR can mitigate the negative attitude of public opinion to the mining industry. This is important in the era of debates about defining new scientific/artistic disciplines or the future of energy policy and planned investments in the mining and energy industry in Poland. In the context of the development of industries the monograph deals with this topic and indicates that the current reporting of analysed domestic entities is incomplete, while sometimes even chaotic. These entities learn how to be responsible in the socio-environmental aspect. Currently only large units are obliged to carry out non-financial reporting, which have a significant share of

⁵ Krasodomska J., 2017. Reporting of non-financial information in the light of consultation processes. Research Papers Of Wrocław University Of Economics No. 479, 99 – 107

⁶ **Linsley P.M., Shrives P.J., 2006.** Risk reporting: A study of risk disclosures in the annual reports of UK companies. *British Accounting Review*, 38 (4), pp. 387-404 <https://doi.org/10.1016/j.bar.2006.05.002>; and **Abraham S., Cox P., 2007.** Analysing the determinants of narrative risk information in UK FTSE 100 annual reports. *The British Accounting Review* Volume 39, Issue 3, September 2007, Pages 227-248 <https://doi.org/10.1016/j.bar.2007.06.002>

⁷ Global Reporting Initiative GRI <https://www.globalreporting.org>

⁸ GRI Sector Disclosures Mining and Metals, 2013 www.globalreporting.org/information/sector-guidance/sector-guidance/mining-and-metals

market capital, human factor or financial result⁹. The sector of small, medium and micro enterprises should use these experiences and good practices. In order to implement this task in a comprehensive manner (social approach) I encourage the interested entities in my thesis to read the full content of the monograph. During conducted research I demonstrated that the implementation of good "social practices" and the use of international universal guidelines are the main directions of activities that are necessary, in order to change the negative image of the industry in the scope of public opinion. In my work I demonstrated challenges of the mining industry (and entities with "mining strategy in the business line") in the scope of socio-ecological issue as a key element of social acceptance. Also, I indicated in my work that while continuing the current exploitation activities, having in mind development of the industry, it is necessary to undertake activities aimed at minimizing the negative impact on the natural environment. Entrepreneurs that conduct operational activity in the mining industry, should take into account CSR in their strategy and policy of company management, already at the planning stage of mining activity. It is recommended to formulate clear principles in order to create and shape social awareness in regard to the impact of mining activities on the life of local population. For this purpose I defined a "social licence for mining" under national conditions and the conducted surveys indicated that it would be possible to implement it in the region adjacent to the exploitation site. To provide a wider look at social issues, I conducted a supplementary survey aimed at 3 groups of stakeholders i.e. employees of mining companies and students of part-time and full-time studies of mining and engineering geology major. The results of this survey indicate limited knowledge regarding corporate social responsibility. The main conclusion resulting from this research is the low level of knowledge in the scope of CSR, which translates into the need to include these issues in university study programs, regardless of their type and degree.

In the monograph and in the series of papers, I indicated the directions of changes in the light of data and socio-ecological information management, in the context of mining plants' operation. For this purpose, I formulate an original proposal for "socially responsible mining municipalities". It seems reasonable to emphasize their significance in the scope of promoting and creating a socially (and environmentally) responsible image. The importance of exploitation fee in the budget of selected local government units was emphasised, as well as statements of municipalities with an indication of those deriving financial benefits from the functioning of a mining plant in the given area. Moreover, I assessed the opportunity of development of a new region rich in lignite deposits, taking into account social and environmental aspects. I demonstrated how the financing of municipality budgets with revenues from i.a. the exploitation fee, taxes and fees of mining (and energy) entities, supports pro-social and pro-environmental activities. Also, the work demonstrates the role of mining enterprises in creating the budget of selected mining municipalities over several years. I popularized the above-mentioned concept of mining municipalities as socially

⁹ Directive of the European Parliament and of the Council 2014/95/EU <http://eur-lex.europa.eu/legal-content/PL/TXT/PDF/?uri=CELEX:32014L0095&from=PL>



responsible (due to the discussed extended social policy), as well as the implementation possibilities of social reporting by these units.

The monograph also includes a presentation of the social initiatives of mining entities and vertically integrated in the context of CSR, supplementing them with selected environmental issues, associated with the dust-gas emissivity and waste management. The issues of emissions were presented in the context of low emission and seasonal phenomenon - smog. As I have demonstrated in the work, the air pollution and repeated exceeding of standards concerning its quality during the heating season cannot be attributed only to conventional power plants, which monitor the level of pollution and the quality of burned fuel. Power plants operate all year round, while the problem of air pollution is revealed only during the period, when heating of rooms and buildings is required. I clearly emphasized in my thesis that one more essential issue is important: distinction between the use of coal as fuel in conventional power plants and conventional CHP plants and coal burned in the municipal sector, responsible for low emission. As it was justified in the work, the role of coal as a strategic fuel in systemic energy generation (power plants and combined heat and power plants) is important due to ensuring Poland's energy security. The issue for possible immediate changes is the municipal market, with an extended support system, in relation to the currently implemented one-off subsidies for the replacement of the heating method. Proposals for systemic support are included in the work, however this requires a detailed analysis.

I referred in the monograph to the popular concept of circular economy (CE), making a reference to national and global solutions for waste management. I indicated a series of practical and laboratory solutions aimed at waste management, mainly originating from the mining industry. In my work, I pointed out that due to legislative changes, there is a need to abandon storage of recyclable waste. I also indicated mining waste as a potential source of raw materials, which requires further research and seeking solutions in the scope of sustainable re-use of mining waste as raw material (product). I have demonstrated, which types of waste can be recycled according to the circular economy (in Polish GOZ). Rational management of mineral resources and thus, maintaining the level of extraction of domestic natural resources, will contribute to maintaining not only energy independence, but also the leading position of the Polish mining on the international level, in the scope of extraction of energy, metals and rock raw materials. Mining waste can be and in part it already is re-used in accordance with the idea of a closed loop, in industry enterprises, as well as included in business models and strategies. Within the research works in the scope of CE, I introduced in my work an additional measure of the so-called double benefit¹⁰ – resulting from the combination of non-financial and financial indicators. Moreover, I proposed an original indicator of triple benefit, taking into account the image context of the given entity. In the

¹⁰ Michalak J., 2017. Financial and non-financial indicators in strategic reports of UK companies - analysis from the perspective of companies' assessment by socially responsible investors. *Folia Oeconomica Acta Universitas Lodzensis* 1(327), 59- 73

context of waste management, the work refers to rare earth elements, the state of their natural resources in the country, as well as the possibility of their recovery from waste streams, among others the urban mining¹¹. The reader can also familiarize itself with the term "second life of mines" in the context of possibilities of using geothermal energy from inactive underground mines (in accordance with the global solutions). It is worth to note the Dutch program in Heerlen, because it shows how the city struggling with the social and economic crisis, after closing of its mine, successfully succeeded in transforming it. With the use of heating and cooling system of the mine and with the support of public and private investors, a sustainable energy hub was created¹². The provided examples of good practices of implementing a socially responsible mining policy are associated with closing of the mines on one hand, however with giving them a second life, with the involvement and acceptance of the local community, on the other hand. Implementation of this topic and legitimacy of conducting this type of research in domestic conditions become necessary. Moreover, the monograph includes a proposal for new classification of renewable energy sources and introduces the concept of thermal energy cluster.

The monograph is both of scientific and application nature. Synthesis of the presented scientific achievement, which is demonstrated in individual stages, allows to highlight my significant contribution to the development of science:

- initiating a **new research direction** that combines technical, economic and social sciences,
- implementation of the **original concept of socially responsible mining municipalities** along with the **proposal for reporting non-financial data** for these units,
- introduction and determination of the importance of a **social licence for mining** in the context of planning and designing new mining investments (in the vicinity of currently conducted mining activities); proposal for its implementation e.g. into a statutory provision as an element of the Deposit Management Project. The work indicated that obtaining such a concession should be preceded by information meetings with the decision-makers,
- demonstrating on the basis of used research methods, preceded by extensive literature review, the **essence and role of social responsibility in the mining and energy industry**; assessment of the current state of CSR reporting of the selected industry leaders and **outlining the necessary directions of changes** in accordance with international standards,

¹¹ Jarosiński A., Kulczycka J., 2018. Assessment of the possibility to obtain certain critical raw materials in Poland in connection with the implementation of the circular economy concept. Journal of the Polish Mineral Engineering Society 2018, R. 19, no. 1, 315-324

¹² Verhoeven R, E. Willems, V. Harcouët-Menou, E. De Boever, L. Hiddes, P. Op't Veld, E. Demollin, 2014. Minewater 2.0 project in Heerlen the Netherlands: transformation of a geothermal mine water pilot project into a full scale hybrid sustainable energy infrastructure for heating and cooling Energy Proc, 46 (2014), pp. 58-67 doi.org/10.1016/j.egypro.2014.01.158



- demonstrating the **need to report and identify mining (socio-environmental) activities** in national vertically integrated energy companies,
- presentation of non-financial reporting (ESG) as a **concept of economic and social value** of the units,
- introduction of **original disclosure indicator** in order to efficiently assess the reporting of non-financial data and information,
- emphasizing the role of **circular economy** as an **ecosocial** activity in the context of industry waste management, as well as the **proposal to change classification of waste into a product**, in accordance with other global solutions,
- **creating an assessment of the development opportunities of a region** rich in energy resources deposits, based on sustainable socio-environmental goals in the context of **dust-gas emission problem**,
- emphasizing the role of domestic energy resources in the conditions of **systemic generation of electricity**; the **issue of smog and import of uncontrolled quality fuel** was presented,
- **proposing a project of CSR issues implementation** in higher education institutions - universities, where the future stakeholders of social responsibility are educated - employers and employees (new teaching courses) and development of **reporting** in these units,
- development of a proposal to create a **thermal energy cluster** on the basis of mine waters through providing a **second life of mines**, and a new **division of renewable energy sources**,
- preparation of the **first Polish language version** of social guidelines of the international universal standard - **GRI Standards**,
- preparation of a special **list of concepts and acronyms** rich in international borrowings,
- implementation of the **original "triple benefit"** of entities resulting from the so-called "double benefit" of non-financial reporting, enriched by the image aspect.

Content of this monograph is the result of extensive literature review. I proposed a series of new concepts and solutions which so far have been unknown to a wider group of stakeholders of the domestic mining and energy industry. The monograph is aimed not only at the industry environment, but it can also be a valuable source of comprehensive information and guidelines for other companies (a wide range of recipients). The discussed GRI tools are of universal nature, independent of the industry and the type of unit and this widens the potential group of readers. Also, the monograph can be a good academic textbook, in the context of the included content and proposals to include CSR courses in the study programs. International scientific papers that originate from the indexed journals (JCR database) are cited. In addition, it includes references to national works, databases, international reports of industry institutions, references to legislative provisions in the journals of laws, or EU directives. This allows the readers to familiarize with the current state



of research in this scope, presented in an accessible form. The publishing reviewers of this monographs assessed the purposefulness of its publishing as a **necessary position**, with transparent, precisely executed and logically planned research process.

V. Discussion regarding other scientific and research achievements (artistic)

5.1. Scientific and research activity before and after the Ph.D. defence

The scope of research and development activity after obtaining the Ph.D. degree in technical sciences mainly concerned the issues described in detail in section IV. Moreover, the topic in reference to the Ph.D. thesis was continued, in the scope of widely understood mining and energy engineering (mainly conventional on the basis of domestic fuels - lignite). Due to the papers available in the open access system, this topic was noticed by the "Energy - Safety - Development" Foundation (pl. „Energetyka – Bezpieczeństwo – Rozwój”). The result of this measurable cooperation was the monograph, contained in 175 pages, which was issued in 2014 - *The impact of the cost of the purchase of CO² emission allowances on electricity prices in Poland. The consequences for the economy and society.* (Jurdziak L., Kawalec W., Woźniak J., 2014).

Substantive value of the recent works has been positively assessed by the scientific community and as a result, 5 works appeared in renowned journals with the highest scientific rank, which are included in the Journal Citation Reports (JCR) list. These include 2 papers, which I co-authored and which appeared in Resources Policy (IF **2.695**, MNiSW score 2013-2016: **35**).

1. Pactwa K., **Woźniak J.**, 2017. Environmental reporting policy of the mining industry leaders in Poland. Resources Policy. 2017, no. 53, p. 201-207 DOI:10.1016/j.resourpol.2017.06.008 (my share **50%**)
2. Pactwa K., **Woźniak J.**, Strempek A., 2018. Sustainable mining – Challenge of Polish mines. Resources Policy. Available online 25 September 2018 (In Press, Corrected Proof) doi.org/10.1016/j.resourpol.2018.09.009 (I estimate my share at **45%**)

My significant contribution in the implementation of this works consisted of including CSR (Corporate Social Responsibilities) issues and the role of RI (RESPECT Index) into the operation of entities from the mining sector (mainly energy raw materials) and vertically integrated entities (comparison of national practices with the international environment). I contributed to the creation of individual chapters of papers and I was responsible for the selection, as well as preparation of data associated with the activity of the above-mentioned entities. Moreover, I analysed the income of municipal budgets from the mining fee, in the

area, where the individual mining operations are located. I co-created the introduction, bibliography review, formulation of summaries and editing of these compilations, before and after the review (double-blind review system).

Subsequent 3 papers associated with the topic of social and environmental responsibility of industry enterprises, as well as implementation of the idea of circular economy, were issued by the MDPI publisher in the Sustainability journal **IF 2.075**, MNiSW score 2013-2016: **20**).

1. **Woźniak J.**, Pactwa K., 2017. Environmental activity of mining industry leaders in Poland in line with the principles of sustainable development. Sustainability [Electronic document]. 2017, vol. 9, no. 11, art. 1903, p. 1-13 DOI:10.3390/su9111903
2. **Woźniak J.**, Pactwa K., 2018. Responsible mining — the impact of the mining industry in Poland on the quality of atmospheric air. Sustainability [Electronic document] vol. 10, no. 4, art. 1184, p. 1-16, DOI:10.3390/su10041184
3. **Woźniak J.**, Pactwa K., 2018. Overview of Polish mining wastes with circular economy model and its comparison with other wastes. Sustainability [Electronic document]. 2018, vol. 10, no. 11, art. 3994, p. 1-15 DOI:10.3390/su10113994

All three above-mentioned works had two authors, thus my percentage share in their preparation constituted **50%**. Similarly as in the previous compilations, I participated in every stage of the creation of these manuscripts. From the moment of determining the topic, writing abstracts, defining the scope of works, collecting data, selecting materials, implementing research methods, as well as analysing the results along with the summary. I also conducted the formatting of the finished content of these works, in accordance with the editorial guidelines, before and after the reviews. I have developed a clear scheme of responses to comments of the reviewers.

Subsequent 2 papers with the IF impact factor, after positive reviews and corrections, are awaiting publication. One of them is supposed to appear in the Polish industry journal entitled "Gospodarka Surowcami Mineralnymi - Mineral Resources Management" (no. 1/2019), **IF 0.481**, MNiSW score 2013-2016: **15**, my share 50%)

The second document, corrected in accordance with the reviewers' comments, has been approved - Sowała M., Strempsiński A., **Woźniak J.**, Pactwa K., 2019. Impact of the length of maneuvering roads of a bucket wheel excavator for working times in the shortwall - is planned in the Journal of Mining Science **IF 0.435**, MNiSW score 2013-2016: **15**). I estimate my percentage share at **25%**.

Moreover, another already finished paper - **Woźniak J.**, Pactwa K. Possibilities for Using Mine Waters in the Context of the Construction of Heat Energy Clusters in Poland, was submitted (on 16.10.2018) in the Energy, Sustainability and Society **IF 1.625 (50%)**, it was

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reviewed by two Reviewers, corrected and sent back to the editorial office on 01.02.2019.
Current status: under review.

it is awaiting a review

Also, my scientific and research activity was associated with the implementation of research in the scope of topic of the Ph.D. thesis entitled "Risk analysis during evaluation of profitability of energy production from lignite". In the course of its implementation and after the defence of my Ph.D., I wrote 13 scientific papers, which appeared in the international or national journals that are not included in the JCR database. They concerned the risk analysis during evaluation of profitability of energy production from lignite (Woźniak and Jurdziak, 2012), defining the risk areas for functioning of the mine - power plant tandem (Jurdziak and Woźniak, 2008, Woźniak, 2010.). Moreover, I was engaged in the topic of the impact of emission costs (Woźniak and Jurdziak, 2012; Jurdziak and Woźniak, 2010) and the essence of functioning of the European Emissions Trading System - EU ETS (Krysa and Woźniak, 2011), and the price of electricity (Woźniak and Krysa, 2012). I got acquainted with the essence of stochastic simulations and handling of tools (Jurdziak and Woźniak, 2008; 2009), as well as geostatistical methods (Pactwa and Woźniak, 2015), in the risk assessment of failure of the mining undertakings (Jurdziak and Woźniak, 2009; 2010). In one of the papers, I recognized the instrument of real options and implemented it in the profitability analysis of the system of lignite mine and power plant (Woźniak, 2010). Recently, my attention was also drawn to the issues of estimating the performance of operation of the basic machines in opencast lignite mines. In one of the papers (Strempski and Woźniak, 2017), I proposed the implementation of the OEE (Overall Equipment Effectiveness) indicator, in order to assess technical efficiency of the machines' operation, in relation to the existing metres¹³. The latest research trend concerned non-financial reporting of the industry entities, as well as the CSR issue. The result of this research consists of two single-author scientific papers (Woźniak, 2017, Woźniak, 2018). In my works, I have repeatedly emphasized the role and significance of domestic energy resources in the Polish power balance, in the scope of international context (Woźniak 2009; 2010).

The research problematic aspects considered in my previous works present a wide spectrum of scientific issues.

5.2 Records of the previous published achievements, Impact Factor, points of the Ministry of Science and Higher Education, citations

¹³ Kasztelewicz, Z., Koziół, K., 2007. Efficiency and working time of multi-bucket excavators in lignite mines, *Mining and Geoengineering*, Year 31, Volume 2; Koziół, K., Ciepliński, A., Machniak, Ł., 2010. Comparative analysis of the efficiency of basic machines' operation in lignite mines - problems with unification of indicators, *Mining and Geoengineering*, Year 34, Volume 4



In reference to the previous chapter and the detailed list of achievements included in the annex no. 3 *List of the habilitation achievements*, I present below the qualitative and quantitative records of my achievements (Table 1 and 2). The quality is expressed via the bibliometric Impact Factor (IF) and via the score of scientific journals of the Ministry of Science and Higher Education (MNiSW).

Table 1. Value of scientific achievements expressed by the IF index and the MNiSW score (before and after obtaining the Ph.D. degree)

CATEGORY	BEFORE OBTAINING THE Ph.D. DEGREE	AFTER OBTAINING THE Ph.D. DEGREE	SCORE ACHIEVEMENTS	IF
Single-author monograph	0	25	25	
Co-authorship of monograph (no more than 3 authors)	0	25	25	
ΣIF – list A			ΣIF 11.615 (+2.541*)	ΣIF 11.615 (+2.541*)
Σ MNiSW score – list A		130 (+min 45*)		
Scientific papers list B Σ MNiSW score	43	51	94	
Chapters in books/monograph. Conference papers/abstract	32	66	98	
Total	75	297 (+min 45*)	372 (+min 45*)	ΣIF 11.615 (+2.541*)

* papers in the evaluation process

As of 12.02.2019, the value of my total **IF** ratio amounts to **11.615**, I accumulated **372 MNiSW points** on my account.

Table 2. Summary juxtaposition of the quantity of scientific achievements - before and after the Ph.D., by category

CATEGORY	BEFORE OBTAINING THE Ph.D. DEGREE	AFTER OBTAINING THE Ph.D. DEGREE	TOTAL ACHIEVEMENTS
Single-author monograph	0	1	1
Co-authorship of monograph (no more than 3 authors)	0	1	1
Scientific papers list A	0	5 (+3*)	5 (+3*)
Scientific papers list B	7	7	14
Chapters in books/monograph Conference papers/abstract	9	9	18

Total	16	23 (+3*)	39 (+3*)
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* papers in the evaluation process

In order to sum up my remaining scientific and research activity (without taking into account the single-author monograph), I distinguish the following activity¹⁴:

- co-authorship of a monograph - three authors (**30%** share, 2014),
- co-authorship of 5 publications from the IF (list of journals, part A), additional 2 publications are already after reviews, while another submitted paper awaits a review, current **ΣIF 11.615**,
- co-authorship of 7 papers in the so-called ISI Master Journal List (including 5 from IF),
- authorship and co-authorship of 18 papers in the journals included in the list of the Ministry of Science and Higher Education, including 5 with an international range,
- total number of approved scientific papers (list of journals, part B) - 14,
- number of my single-author scientific works 6, including 2 independent scientific papers, 4 chapters in a book and conference papers (part B),
- number of two-author works 23, including 11 scientific papers, 4 chapters in a book and 8 conference papers (part B),
- co-authorship of 5 chapters in a book/monograph,
- co-authorship of 2 conference papers, which had 4 authors, published in English,
- co-authorship of 10 collective studies, documentation of research works,
- Ph.D. thesis (2011).

A detailed list of other achievements can be found in the annex entitled **List of the habilitation achievements** (Annex No. 3), confirmed with the attached summary from the Centre of Knowledge and Science and Technology Information of the Wrocław University of Science and Technology (DONA system).

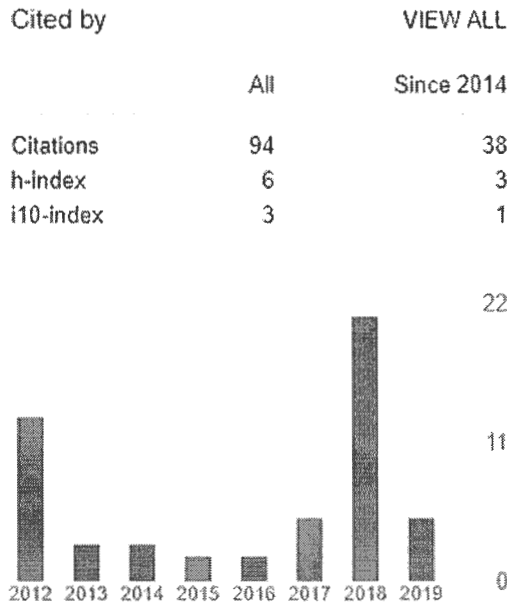
Citations

I have compiled a list of the number of citations of my works based on selected databases, i.e. Google Scholar, Web of Science Core Collection, Scopus and ResearchGate. Significant publications in the scope of the topic of my main scientific achievement (monograph) were issued in the years 2017/2019. They constitute new positions, therefore the process of their citing has just begun.

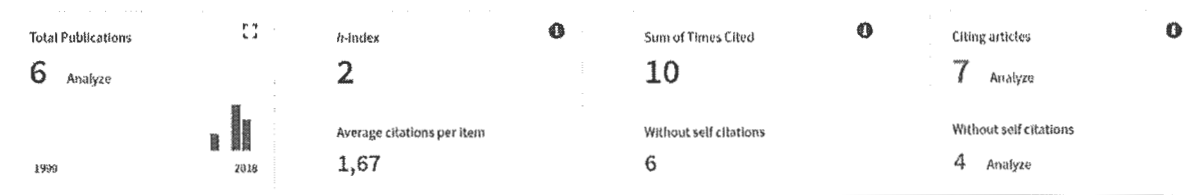
According to the Google Scholar database (as of 12.02.2019)

¹⁴ Scientific achievements based on (among others) DONA / PWR database

Summary of professional accomplishments in habilitation procedure



According to the Web of Science Core Collection database (as of 12.02.2019)



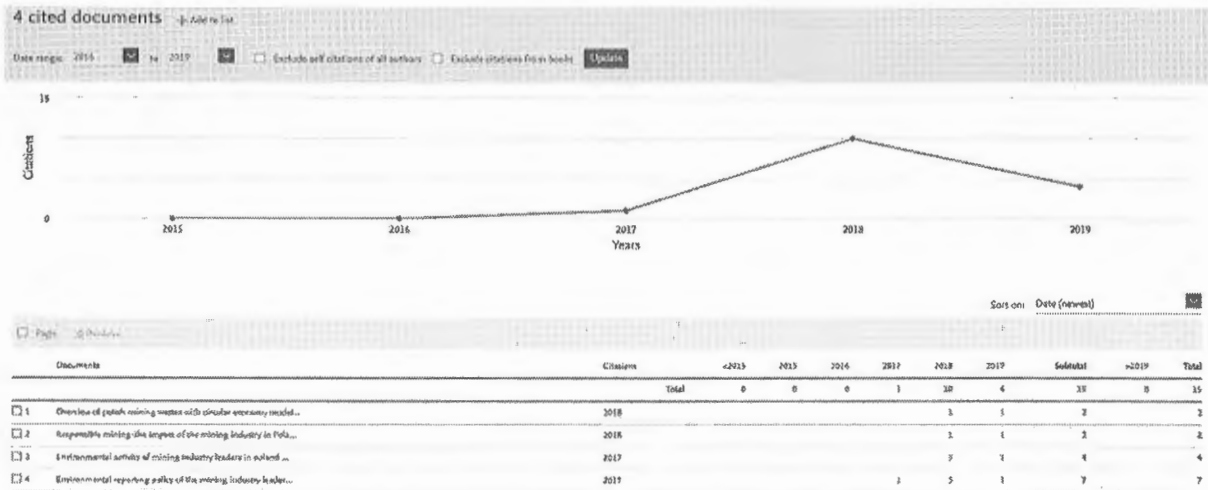
According to the Scopus database (as of 02.02.2019)

Document title	Authors	Year	Source	Cited by
<input type="checkbox"/> 1 Environmental reporting policy of the mining industry leaders in Poland View at Publisher Related documents	Pactwa, K., Woźniak, J.	2017	Resources Policy 53, pp. 201-207	7
<input type="checkbox"/> 2 Environmental activity of mining industry leaders in poland in line with the principles of sustainable development Open Access View abstract View at Publisher Related documents	Woźniak, J., Pactwa, K.	2017	Sustainability (Switzerland) 9(11),1903	4
<input type="checkbox"/> 3 Overview of polish mining wastes with circular economy model and its comparison with other wastes Open Access View abstract View at Publisher Related documents	Woźniak, J., Pactwa, K.	2018	Sustainability (Switzerland) 10(11),3994	2
<input type="checkbox"/> 4 Responsible mining-the impact of the mining industry in Poland on the quality of atmospheric air Open Access View abstract View at Publisher Related documents	Woźniak, J., Pactwa, K.	2018	Sustainability (Switzerland) 10(4),1184	2

Display: 20 results per page 1 ^ Top of page

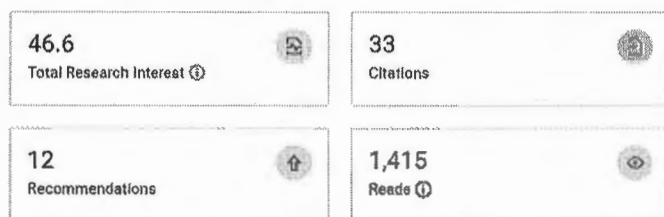
Justyna

Summary of professional accomplishments in habilitation procedure

Summary according to the ResearchGate (as of 12.02.2019)

Stats overview

View all



My articles are quoted by employees of the following research centers:

- Missouri University of Science and Technology (USA),
- King Juan Carlos University (Spain),
- Universidad de Sevilla (Spain),
- Chongqing University (China),
- Mendel University in Brno (Czech Republic),
- International University of La Rioja (Spain)
- Public Power Corporation of Greece S.A.-Technical University of Crete (Greece),
- Natsional'nyi Hirnychiy Universytet Dnipropetrovsk (Ukraine),

and national institutions:

- Mineral and Energy Economy Research Institute of the Polish Academy of Sciences,
- AGH University of Science and Technology,
- Silesian University of Technology,
- Wrocław University of Economics,
- University of Zielona Góra,
- University of Warsaw Faculty of Geology,
- Institute for Chemical Processing of Coal,
- Czestochowa University of Technology.

5.3 List of research works, projects with international and national range

Participation in the projects and research works with European range (as researcher)

1. Targeted project within the European **Foresight Funds - Scenarios for the technological development of the lignite mining and processing industry (2006 - 2008)**. This project was entirely implemented by a consortium consisting of: "Poltegor - Instytut" Institute of Opencast Mining, **Wrocław University of Science and Technology**, AGH University of Science and Technology, Polish Geological Institute, Central Mining Institute, KGHM CUPRUM Sp. z o.o. Research and Development Centre, Institute of Energy Systems Automation, the following economic entities: KGHM Polska Miedź S.A., BOT KWB Turów S.A., KWB Konin S.A., KWB Adamów S.A., ZE PAK S.A. and "Związek Pracodawców Porozumienie Producentów Węgla Brunatnego" Association. The role and function in the project - **independent economic analyst in mining**, implementing the tasks assigned to the Wrocław University of Science and Technology (02.2007 - 31.05.2008).
2. Project entitled **European Institute of Innovation and Technology – Knowledge and Innovation Communities (EIT-KIC)**, KIC Raw Material Days, co-organized by the EIT and the Faculty of Geoengineering, Mining and Geology. Preparation and presentation of the original lecture entitled Working technology of machines "giants in surface mining" (25.09.2017).
3. Project co-financed by the European Union under the European Social Fund, Operational Programme Knowledge Education Development "**ZPR PWr – Integrated Programme of Development of the Wrocław University of Science and Technology**" (no. WND-POWR.03.05.00-00-Z301/17). Measure 3.5 Comprehensive programmes of universities, in the period from 01.10.2018 to 30.09.2022. Preparation of didactic materials for the teaching of original subject - Excavation Design in Open Pit Mining.

International cooperation

International activity was associated with active participation in the **preparation, running and assisting in the didactic classes**, which were implemented within inter-university courses, resulting from cooperation with leading universities in Europe. The individual programmes associated with this type of activity are listed below.

1. Implementation of individual course of study for a student from Greece (2017), within the lecture "Excavation Design in Open Pit", who participated in the international programme "European Geotechnical and Environmental Programme (EGEC)".

2. Preparation and annual implementation of original didactic course "Project in Surface Excavation Design" since the 2012/13 academic year.
3. Inter-university cooperation under the **Erasmus Mundus Minerals and Environmental Programme (EMMEP)** – master's degree programmes.
4. Cooperation with European technical universities as part of co-running didactic classes, in the scope of international **European Minerals Engineering Course (EMEC)**. This programme was implemented by the following universities: University of Exeter, Wroclaw University of Science and Technology, RWTH Aachen, Helsinki University of Technology. Assistance in the Mineral Economics classes.
5. Cooperation with European technical universities as part of co-running didactic classes, in the scope of international **European Geotechnical and Environmental Programme (EGEC)**. The annual educational programme was offered by the Slovak TU Kosice, the Hungarian University of Miskolc, the German TU Bergakademie Freiberg and TU Berlin, as well as the Wroclaw University of Science and Technology. Assistance in the Computer Aided Geological Modelling & Land Reclamation classes (in the 2007/2008 academic year).
6. **Technische Universität Bergakademie Freiberg TUBAF (01.2007)** - a stay in Germany as part of the student cooperation.

Research works and national programs (as an independent main researcher, manager and researcher)

1. Winner of the "Young Staff 2015 plus. Enriching the didactic offer of the Wroclaw University of Science and Technology in the scope of general selected subjects and implementation of new interdisciplinary Ph.D. studies", Project PO KL 04.01.01-00-011/10-00. Implementation of research tasks within the following subject: "Methodology of risk analysis of the profitability of mining and energy investment in the conditions of uncertainty". Duration of the project 01.10.2011 – 30.09.2012 (**independent main researcher**).
2. Winner of the Human Capital Operational Programme, Sub-measure 4.1.1: Strengthening and development of didactic potential of universities - Development of Didactic and Scientific Potential of Young Academic Staff of the Wroclaw University of Science and Technology 2010. Implementation of scientific research included in the research objective "Risk analysis during evaluation of profitability of energy production from lignite". Duration of the project 01.04.2010 – 30.09.2010 (**independent main researcher**).
3. Participation in the following projects: GRANT/II/9/2009 DGG/822/09 and GRANT/II/9/2009P DG-G/2370/09 (in II and III edition) - support of the research works through scientific scholarships for Ph.D. students of the Human Capital Operational Programme, priority VIII, measure 8.2, transfer of knowledge, sub-measure 8.2.2 regional

- innovation strategies. Duration of the project 01.04.2009 – 30.09.2009 (I edition); 01.10.2009 – 31.03.2010 (II edition) (**independent main researcher**).
4. Research work entitled "Risk and uncertainty in the coal mining and energy sector", within the works dedicated to young scholars, 2014 (**manager**).
 5. Research work of young scholars entitled "Risk of investment in the lignite mining and energy engineering in the conditions of uncertainty", 2012 (**manager**).
 6. Implementation of own research tasks within the subject subsidy at the Faculty of Geoengineering, Mining and Geology entitled "New measuring, analytical, simulation techniques and experimental research methods in mining and geology, as well as geodesy and cartography" no. 0401/0048/18, 2018 (**researcher**).
 7. Participation in the framework of research works entitled "Operational forecast and quality control of the spoil stream, together with the current averaging of its parameters in terms of requirements and increasing the efficiency of processing processes. Part 2 Simulation of the spoil stream in cyclic and continuous mining and transport systems, with the use of deposit model and economic optimization", implemented on the basis of project no. 0401/0124/17 (**researcher**).
 8. Participation in the framework of research works "Application of non-linear correlations in mining for modelling economic and technical issues", implemented on the basis of project no. 0402/0010/17 (**researcher**).
 9. Participation in the framework of research works "Operational forecast and quality control of the spoil stream, together with the current averaging of its parameters in terms of requirements and increasing the efficiency of processing processes (including flotation, geometallurgy, geoburning, etc.). Part 1 Identification, modelling and economic optimization in the short and long term no. 0401/0201/16 (**researcher**).
 10. Scientific work - "Strategic planning, simulations and optimization in mining", 2013 (**researcher**).
 11. Research and development work (MNiSW) "Risk analysis and profitability of geoengineering undertakings with the use of simulation, Stage II", 2011 (**researcher**).
 12. Research and development work (MNiSW) "Risk analysis and profitability of geoengineering undertakings with the use of simulation" (2010/2011) (**researcher**).
 13. Research project (MNiSW) "Economic analysis of the operation of lignite mines and power plants, in the conditions of uncertainty, with the use of bilateral monopoly model, opencast mine optimization methods, game theory and real options" (2007/2010) (**researcher**).
 14. Research and development work (MNiSW) "Analysis, modelling and forecasts of lignite mining from prospective deposits" (2007/2008) (**researcher**).

Summary: in total, I undertook active participation in 14 research works, as well as research and development works. I actively participated in 3 international projects (one of which is still going on) in the framework of international cooperation. I implemented research works

and national programs as the independent main researcher (3 projects), manager (2) and researcher (9).

In the framework of other research works, I participated in the formulation of applications and submitting projects within international programmes - EIT Raw Materials (2018 QUTE. Sustainable management of abandoned quarries: Tourism, Education and Community), as well as national programmes subject to the National Centre for Research and Development (LEADER 2013) and the National Science Centre (MINIATURE II, 2018). I applied for grants of the Lower Silesia Marshal's Office and intra-university grants (2009 – 2012).

5.4. Conference activity, courses and trainings

I took part in scientific conferences before my Ph.D. defence and it was associated with my active participation (presented paper, poster session) in both national (7) and international symposia (3). In the years 2007-2010, also other international conferences took place, where papers were presented that I co-authored.

The conference activity after the Ph.D. defence has narrowed down to 2 international and 5 national-range symposia.

The visible decline in conference activity was associated to my two maternity leaves, which occurred in the following periods:

1. 26.07.2013 – 23.01.2014

2. 08.06.2015 – 28.02.2016

In order to improve my professional qualifications, I participated in courses and trainings, including in the didactic university scope, commercial trainings and language course.

I implemented my deepening of the industry knowledge from the practical side within apprenticeships in the following mining plants: KGHM "Polska Miedź S.A." (02.08 – 13.08.2004) and KWB Konin (05.07 - 17.07.2004).

A detailed list of my conference activity, courses and trainings is included in annex no. 3 **List of the habilitation achievements.**

5.5. Awards, distinctions, mining degrees

1. Bronze Medal for Long-Term Service, which is a distinction awarded by the President of the Republic of Poland by the decision of 2018. Faculty of Geoengineering, Mining and Geology.
2. Honorary Badge "Merit for RP Mining" / ID no. 75/2018/7, 31.10.2018, which is a distinction awarded by the Minister competent for the management of mineral deposits.
3. 1st Degree Mining Director, 13.11.2018 - awarded by the Minister of Energy in accordance with the Journal of Laws 2003, no. 52, item 449, the Act of 14 February 2003 on mining grades, honorary mining swords and mining uniforms.
4. Badge of Meritorious Activist SITG, 2017 - awarded by the Association of Mining Engineers and Technicians.
5. 3rd Degree Mining Director 09.10.2015 - awarded by the Minister of Economy.
6. Rector's Award of the Wrocław University of Science and Technology in recognition of a distinctive contribution to the university's activity, 2011.
7. Distinction of the best graduate of 2006, sword - honorary distinction of the Graduates' Association of the Faculty of Mining the Wrocław University of Science and Technology (SAWG); during the course of my studies, I received 2 prizes of the Dean of W6 faculty for my academic performance.
8. Award for outstanding master's thesis, 2006, Faculty of Geoengineering, Mining and Geology (III place).

Other awards, distinctions and conference scholarships are included in the **List of the habilitation achievements** (*Annex no. 3*).

5.6. Didactic, popularizing and organizational activity

I carry out educational activity in my native language in the form of original lectures (Opencast exploration, Economics in mining, Basics of economics), project classes (Opencast exploration), as well as seminar classes (Basics of economics). The didactic achievement in the scope of popularizing science is the independent education of students in English. I have been conducting it regularly since 2013 in the form of project classes (Surface excavation design), as well as individual lecture classes (2017). Also, I assisted in the laboratory classes in English - Computer Aided Geological Modelling & Land Reclamation (2007/8) and Mineral Economics (2009/10). The analysis of survey opinions of persons participating in my didactic courses indicates that I am a highly-rated and liked academic teacher.

I am a member of the faculty commission - Commission of the Faculty of Geoengineering, Mining and Geology of the Wrocław University of Science and Technology - Programme Commission of the Underground and Opencast Exploitation of Deposits specialty. In 2015, as part of the implementation of commission tasks, I prepared thorough changes in the subject sheets of didactic courses (lectures, projects, classes, laboratories, seminars for full-time and



part-time master's degree studies). The result of these works consisted of updating and separation of ECTS and CNPS points, as well as revision of issues for the diploma exam.

I have been a member of the Working Group on Social Responsibility of the University since 2019.

I cooperate with the publishers of scientific journals as a reviewer. Also, I actively participate in the discussion of research problems of other authors. I reviewed papers in journals, which are indexed in the list of Journal Citation Reports (2017/2018) and appear in the list of scientific journals - part B. In the framework of IF journals, I reviewed papers in the Sustainability journal - IF 2.075 by MDPI publisher. Moreover, I cooperated with the editors of national journals: "Zeszyty Naukowe Instytutu Gospodarki Materiałów Mineralnych i Energią PAN", "Górnictwo Odkrywkowe" and "Zeszyty Naukowe PWSZ". In addition, I reviewed selected papers in the set of printed conference materials of: Opencast Mining School (AGH), Scientific Conference of Ph.D. Students and Young Scientists (Faculty of Geoengineering, Mining and Geology of the Wrocław University of Science and Technology).

I was a supervisor and reviewer of diploma theses (master's and engineer's theses) in the scope of broadly understood mining, energy engineering and implementation of CSR issues. As a member of the management board of the SITG Employee Association, Wrocław Branch - Wrocław University of Science and Technology, I evaluate selected diploma theses for the SITG award, which is awarded annually.

In the years 2003/2004, I was a member of the students scientific association of GIS systems at my faculty W6/PWR.

I have been a member of the Association of Engineers and Technicians of Mining since 2007, which operates at the Wrocław University of Science Technology. Since 2011, I have been fulfilling a function of a member of the management board of SITG Employee Association/Wrocław Branch - Wrocław University of Science and Technology (treasurer). Currently, I am during my second term of office in the scope of this function 2015-2019, while the previous one took place in the years 2011-2015.

In 2008/2009, I was a member of the International Association for Energy Economics (IAEE). During this membership, I received two conference scholarships (in 2008 and 2009).

Moreover, I am involved in the organizational activity within the Faculty of Geoengineering, Mining and Geology (WGGG) as well as the university itself. In the years 2007-2011, I co-organized scientific conferences of Ph.D. Students (and Young Scholars) at the WGGG Faculty. I represented my faculty, among other faculties of the Wrocław University of Science and Technology, at the job fair in Wrocław, Wrocław Index (2011). Also, I was involved in the organization of GIS global day (Wrocław 18.11.2006), where I presented a lecture for school youth. For a few years, I organized and conducted a female part of the St. Barbara's Day (the so-called 'Comber Babski') at the faculty - in the years 2006 - 2011 (the

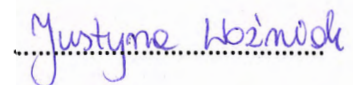
day of St. Barbara, who is a patron of miners). In 2018, I substantively supported the representatives of the student government in its organization.

My distinctive contribution to the organization and running educational activities for youth was recognized in the framework of XIX Lower Silesian Science Festival at the Wrocław University of Science and Technology, which took place on 16 – 21.09.2016. One year later, I included my lecture offer into the classes within the KIC Raw Material Days (promoting the mining knowledge). It was an event organized by the EIT and the Faculty of Geoengineering, Mining and Geology 25.09.2017. In December 2017, I conducted original one-day workshops for high school youth with a technical profile, in the scope of opencast mining.

I fulfilled the role of a guardian of a group of international students, who were the participants of the international EGEC programme - integration trip to the KWB Bełchatów mine (2007).

Also, I actively participated in sports events organized by the university. In 2018, I took part in the Wrocław University of Science and Technology's Championships in the table tennis tournament of the employees (organized by the School of Sports and Physical Education PWr), as well as running events. I participated in the Rector's run of the Wrocław University of Science and Technology (2010), as well as the run organized on the occasion of the faculty's anniversary "Piątka na 50-lecie" of the Faculty of Geoengineering, Mining and Geology, in which I triumphed in the category of female employees. Both runs were professionally organized, in cooperation with student communities.

To summarize my didactic, popularizing and organizational activity, I represent an extensive range of initiatives, in which I was and currently am involved.



Signature