

Zbigniew Korzeb

Białystok University of Technology

e-mail: z.korzeb@pb.edu.pl

ORCID : 0000-0001-9690-3842

Paweł Niedziółka

Warsaw School of Economics

e-mail: pniedz@sgh.waw.pl

ORCID: 0000-0002-1659-7310

FINANCING OF FOSSIL FUEL COMPANIES BY POLISH BANKS

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Abstract: The aim of this paper was to verify the hypothesis regarding the positive impact of the changes in credit policies declared by banks in Poland on energy transition by limiting in an absolute sense the exposures to coal-based energy companies. The paper uses a simulation method for the payback period of debt financing, enhanced by scenario analysis. The analysis of the payback period of the interest-bearing liabilities indicates a horizon that will not exceed seven years from the end of 2020. This is consistent with the banks' declarations as to when they will stop financing coal-fired power generation, but this will happen on condition that the energy companies significantly reduce their capital expenditure (actually to the level of replacement expenditure). This scenario, however, rules out a transformation of these concerns to become producers of energy from a broad spectrum of sources, and a systematic increase in the share of renewable energy.

Keywords: bank, fossil fuel sector, climate change, sustainable development.

1. Introduction

On the eve of the pandemic crisis, the banking sector was demonstrating relatively good financial performance, and considered to take over some of the crisis costs (Bernardelli, Korzeb, and Niedziółka, 2021). However, the pandemic crisis as well as solving the problem of foreign currency denominated mortgages are not the only challenges facing the Polish banking sector. Universal banks include sustainability goals in their strategies and declare that ESG risk management is an important component of the risk management system, as well as ESG risk being permanently integrated with other financial and non-financial risks (Zioło, 2020).

Separate ESG reports or policies of various kinds are published along with the financial statements, but the focus on environmental and climate goals and the impact of companies own operations on these spheres most often prevail. Although banks are quite willing to present the assumptions of their lending and investment policies, taking into account the limitations on the availability of financing for entities representing the high-carbon economy, as well as their membership in various organisations and associations for climate protection, they either do not disclose data on the scale of financing for the high-carbon economy nor significantly reduce their exposures to this sector.

The purpose of this paper was to verify the hypothesis on the positive impact of the credit policy changes declared by banks in Poland on energy transition, by limiting in an absolute sense the exposure to coal mining and coal-based energy and heat production sectors. This verification was carried out by confronting publicly announced declarations with the dynamics of changes in credit indebtedness of entities representing the fossil fuel sector, understood as hard coal and lignite mining as well as coal-based energy and heat production. At this point, it is important to point out that the term ‘carbon economy’ is broader than the category of ‘fossil fuel sector’” to which this article is devoted. The fossil fuel sector is identified with the mining of coal and lignite and the production of electricity and heat based on coal. The paper uses a simulation method for the payback period of debt financing, enhanced by scenario analysis.

2. Banks to finance coal-fired power generation – literature review

Tightening regulatory policy towards fossil fuel companies according to Ivanov, Kruttli, and Watugala (2021) will result in a more conservative approach by banks to financing such entities. This can be manifested by shortening the term of the financing and increasing its cost, and will also lead to a change in the structure of funding sources of fossil fuel companies towards an increased share of shadow banking. Banks will also move away from financing coal-based power generation as

a result of the implementation of supervisory regulations encouraging them to reduce their exposure to a high-emissions economy (e.g. the already announced inclusion of climate risk in the calculation of capital requirements). Park and Kim (2020) find that it is risk and capital management as well as the search for new business opportunities that will become the most important reasons for banks to move away from financing fossil fuel companies. At the same time, some empirical studies to date do not confirm the relationship between the energy efficiency of enterprises and their ability to obtain external financing. As Brutscher, Ravillard and Semeniuk (2020) emphasise, this creates a need for regulatory change in the banking industry, along the rule that climate risk is positively correlated with credit risk. The banking sector is one of the most important sources of energy financing, and it should be mentioned that the value of investments in renewable energy is not at all marked by an upward trend (for example, in 2017 a decrease of 3% was recorded compared to the previous year). Fossil fuels continue to be a major area of energy finance globally (Sachs, Woo, Yoshino, and Taghizadeh-Hesary, 2019). Although in developed countries financial capital supports the energy transition, a shift from biomass to fossil sources, mainly coal, has already been observed in lower-income countries (Best, 2017). The banking sector is believed to be relatively slow and reluctant to support the energy transition. However, this largely depends on the extent to which climate policy is embedded in the bank's strategy, lending and investment policies (Eckardt and Mazutis, 2020).

The policy of commercial banks to finance fossil fuels was changed by the Paris Agreement, when most private commercial banks announced their declaration to withdraw from financing entities responsible for high levels of greenhouse gas emissions. Despite the United States' withdrawal from the Paris Agreement in 2017, European banks have chosen to significantly reduce their funding of polluting entities also in the United States (Marques-Ibanez et al., 2021). However, not all the banks have abandoned coal power financing. In 2019, financial and credit institutions from the United States accounted for 58% of financing in the global coal industry. Commercial banks from the United States, the United Kingdom and Japan provided as much as 52% of the financing for the 934 largest coal companies. Moreover, the commercial banks' total exposure to these entities increased by as much as 11% in 2019 compared to the previous year. The banks' exposure to the largest coal companies at the end of 2019 was USD 543 billion, of which about USD 315 billion was financing provided after 2018 (Kuykendall, 2021). There is also a trend away from coal-fired power financing in Europe, the United States, and Japan, while increasing coal exposure in Asia (mainly Bangladesh and Vietnam) and Africa. Chinese banks are also heavily involved in overseas coal financing (Chen et al., 2021). The above trend is also characteristic of US and European multilateral development banks and export credit banks. These institutions support cleaner and high efficiency low emission (HELE) coal technologies (Baruya, 2017). Owing to this phenomenon, the concept of the so-called 'finance-based emissions' estimation was developed

so that, in addition to information on the geographic location of entities negatively impacting on the environment, data are available on the jurisdictional structure of the institutions financing these projects (Manych, Steckel, and Jakob, 2021). For this reason, among others, some European and American banks announced their withdrawal from financing coal-fired power generation in poorer Asian countries. In turn, due to their governments' positions, commercial banks from Japan, South Korea, and China also announced that they will stop lending to foreign coal projects (Dvorak, Hua, and Yoon, 2021).

The pricing of climate risk in commercial bank lending policies remains an important issue. A study based on a sample of syndicated loans made after 2015 proves that those representing high-carbon industries face a higher cost of financing by about 16 base points (Delis, de Greiff, and Ongena, 2019). This can be justified by the fact that the more time has passed since the announcement of the Paris Agreement, the more the banks factor climate risk into the price of financing. After the Paris Agreement, carbon risks in the syndicated loans are priced consistently both across and within industry sectors. Banks started to internalise the possible risks from the transition to a low-carbon economy, however this takes place only for scope 1 carbon emissions (Ehlers, Packer, and de Greiff, 2021).

A crucial issue is greenwashing, which should be linked to the fact that banks declare a number of initiatives to implement the Paris Agreement, and at the same time do not withdraw from the direct or indirect financing of coal power (Kustra, Pawłowski and Kozieł, 2019). This issue is indirectly addressed in this article. Chan, Merdekawati and Suryadi (2022) selected the world's 56 largest commercial banks and mapped their coal policies. They find that banks finance coal industry entities more through corporate finance than project finance. The aforementioned authors also note that the share of funding in sustainability-focused projects is greater than in fossil fuels-focused projects. Chan, Merdekawati and Suryadi also suggest that the optimal strategy for commercial banks is a combination of exclusion criteria and setting a coal phase-out target. This approach also seems optimal from the point of view of the Polish banking sector.

3. Declarations versus actual involvement of Polish banks in financing coal extraction and production of electricity and heat from coal sources

As of 2019, three of the large and mid-sized commercial banks in Poland have not announced a position on financing the carbon economy, specifically, the coal sector. Perhaps unsurprisingly, these were banks with dominant Treasury shareholdings (Uryniuk, 2019). Table 1 summarises the declarations of all the commercial banks and BGK regarding financing coal-fired power generation. At the same time, most banks allow financing for high-carbon entities as long as it relates to pollution reduction investments.

Table 1. Declarations of Polish commercial banks and BGK regarding financing of the coal-based economy sectors

	Bank	Does the bank declare a move away from financing coal-based sectors of the economy?	Policy document for coal-based economic sectors
1	Bank Millennium SA	YES	Climate policy
2	Bank Ochrony Środowiska SA	YES	Climate Policy
3	PKO BP SA	YES	High Carbon Energy Sector Financing Policy Environmental responsibility
4	Bank Pekao SA	NO (general statement to reduce funding for coal mining and fossil fuel energy production)	–
5	Santander Bank Polska SA	YES (no new financing for the mining sector, no financing for new coal-fired power plants, and a declaration of no coal mining exposure until 2030)	Sustainable Development Policy Policies towards the mining sector and the metallurgical industry (described in the „Management Report on the Activities of the Capital Group of Santander Bank Polska SA in 2020”)
6	BNP Paribas Bank Polska SA	YES	Integrated Annual Report 2020 (Environmental Responsibility section)
7	ING Bank Śląski SA	YES (no funding for new coal-fired power plants and, after 2025, entities that depend on thermal coal for more than 5% of their operations)	Environmental declaration
8	Bank Handlowy w Warszawie SA	YES	Report on non-financial information
9	mBank SA	YES	Report of the Management Board Credit policy for industries relevant to the EU climate policy (described in the „Standards of mBank in terms of sustainable development”)
10	Getin Noble Bank SA	NO	–
11	Alior	NO	–
12	Credit Agricole Bank Polska SA	YES	Responsible Business Report
13	Bank Gospodarstwa Krajowego	NO	–

Source: own compilation based on banks' annual reports for 2020 (consolidated results; if not available – individual results) and non-financial reporting for that year (all documents available on banks' websites, listed in the References).

It should be also noted that these declarations, although they all contain assurances of moving away from financing the high-carbon economy, differ significantly. In fact, the said statements refer to withdrawing from:

- financing new coal mines and new investments in coal-based power generation (e.g. Bank Millennium SA). This formula allows for financing of existing coal mines and other entities that rely on coal sources (e.g. power plants), while the bank has committed to completely extinguish its current involvement in the coal sector by the end of 2023 (Rogala, 2020),
- concluding new transactions regarding the extraction of coal intended for use as fuel in the power and heat industry, as well as finance agreements for the construction of new units or capacity increases or general overhauls of existing coal-fired power or heat units (e.g. Bank Ochrony Środowiska SA; Rudke, 2021) – such a declaration does not limit the ability of coal-fired power plants to obtain short-term financing (e.g. overdrafts), or financing the purpose of which is not specified.

Bank PKO BP SA has committed itself to eliminate its exposure to the coal mining sector by 2030, without declaring that it will not make new loans to high-carbon entities. Adopted in 2019 by the aforementioned bank, the “High Carbon Energy Sector Financing Policy” coincides with European climate policy and the drive towards zero carbon emissions in 2050. Its objective remains to gradually change the structure of the loan portfolio by reducing exposure to customers representing high-carbon sectors. The aforementioned policy was tightened in 2020 as a result of the expansion of the spectrum of entities covered by it, the definition of a timetable for the reduction of exposure in the hard coal and lignite mining industry, the manufacture of furnaces, hearths and furnace burners, and the non-financing of new sources of power and heat generation based on hard coal and lignite, as well as the gradual reduction of existing exposure to this sector. The bank also declared to reduce the scale of financing for coal-related industries, including mining machinery manufacturing and coal trading. This approach also implies the implementation of the principle of no new exposures to the coal and lignite mining sectors and the lack of the possibility to increase exposure to coal-fired power generation. Yet, in relation to high-carbon industries, the policy of PKO BP SA is to reduce their share in the portfolio without specifying a reduction in the absolute values of financing. However, the bank did not specify the rate of scale reduction of the high-carbon portfolio, or the date at which it would be zeroed out (Rudke, 2020).

Bank Pekao SA pledges to support a gradual and orderly transition to a low-carbon economy by simultaneously reducing financing for coal mining and fossil energy production and supporting renewable energy projects. However, the bank did not provide a clear path for reducing its exposure to the coal sector, nor did it stipulate that it would waive financing for new projects or make new loans in these sectors of the economy. There is also no indication of a timeframe for a complete shift away from carbon-intensive (particularly coal-fired) energy financing.

Santander Bank Polska SA declared slightly different financing rules for the mining sector and coal-fired power plants. In the former case, the bank will not provide new financing, while in the latter, the restriction applies only to new projects. It is therefore theoretical, since it is difficult to expect the construction of new coal-fired power units at present. By the end of 2030, the bank does not rule out working with currently operating coal-fired power plants.

ING Bank Śląski SA already in 2015 adopted a relatively short horizon for withdrawal from coal financing, pointing to 2025 (Oczyp, 2020). In the above perspective, cooperation with entities whose operations depend on coal to a greater extent than 5% is to be terminated. The bank also declares its willingness to cooperate with entities whose business is dependent on coal to a degree greater than 10%, as long as they implement a plan to reduce this ratio to a level close to zero by 2025. Like Santander Bank Polska SA, ING Bank Śląski SA does not provide new financing to the mining sector and does not finance new coal-fired power units.

Bank Handlowy w Warszawie SA does not finance new coal-based assets and does not finance coal mining.

In turn, Credit Agricole Bank Polska SA declares that it has never financed and does not finance coal mining and processing. The bank does not engage with customers whose coal operations generate more than 25% of their revenue. Relations with customers who are building new coal-based capacity are still to be finalised. By 2030, the bank intends to cease financing peri-carbon industries.

Bank BNP Paribas SA already started the process of reducing exposures related to coal-fired power generation in 2015. The bank says it is not providing new financing to entities representing coal-dependent industries. By the end of 2030, it is expected to reduce its coal-fired power-related loan portfolio to zero.

mBank SA says it cannot finance new coal mines and will limit financing for coal-fired power plants.

4. Interest-bearing debt structure of Polish energy companies

Due to the nature of the Polish financial system, whose characteristics are similar to the German model (the dominant role of bank credit among external sources of financing for non-financial entities), and the actual marginal level of equity instruments, exposure to the coal sector is de facto reduced to credit only. The analysis of the Polish banking sector's exposure to coal-fired power generation can be carried out in two ways. On the one hand, by verifying the structures of banks' loan portfolios by borrower's PKD (NACE). On the other hand, by aggregating data on the on-balance sheet credit usage of entities representing the coal-fired power sector. The first solution would probably yield a more accurate result, but not all the surveyed banks present their portfolio structures with the required accuracy. Therefore, what remains is an aggregate analysis based on the consolidated balance sheets of four state-controlled energy companies (Tauron Polska Energia SA, Enea SA, Energa SA and PGE SA).

Table 2. Credit commitments of the coal-fired power sector in Poland (consolidated results, in PLN million from 2018 to 2020)

Capital group	2018	2019	2020
PGE SA	10 708	12 308	11 409
Energa SA	7 165	6 985	5 993
Enea SA	8 247	9 837	7 773
Tauron – Polska Energia SA	10 815	13 252	13 466
TOTAL	36 935	42 382	38 641

Source: own elaboration on the basis of the consolidated financial statements of Energa SA, Enea SA, PGE SA and Tauron Polska Energia SA capital groups.

When analysing the data presented in Table 2, it should be added that only balance sheet data were considered. The actual exposure of the banking sector is higher and additionally includes unused credit limits, issued guarantees and letters of credit, trading limits for debt securities and Treasury limits for spot and forward transactions. However, these off-balance sheet items are relatively low in relation to on-balance sheet exposure (10-20%), so the conclusions drawn from the analysis of balance sheet data seem to be representative. The debt structure of energy companies in Poland is shown in Figure 1.

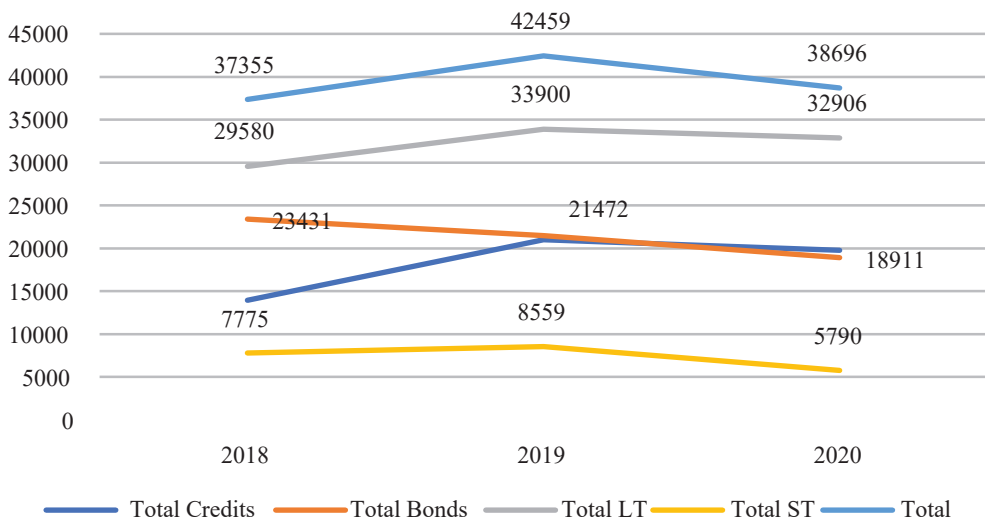


Fig. 1. Decomposition of interest-bearing debt of energy companies in Poland in 2018-2020 (in PLN million)

Source: own study based on the consolidated financial statements of the capital groups Energa SA, Enea SA, PGE SA and Tauron Polska Energia SA.

An analysis of the indebtedness of four coal-fired power generation concerns allows the following conclusions to be drawn:

- despite the entry into force of the Paris Agreement, there was no clear trend in the reduction of interest-bearing debt (loans and bonds) – the total debt as of the end of 2019 was higher than the balance at the end of 2018, only to decrease in 2020 compared to the previous year, but still being above the amount reported at the end of 2018,
- the trend in total debt presented above is the same as the trend in long-term debt, which represents between 80% and 85% of total exposure,
- the share of bonds declined steadily over 2018-2020.

It should also be added that due to the fact that financing is obtained at the holding company level, it is difficult to unequivocally confirm the share of debt financing, which should be attributed to the coal power industry (as the analysed corporations also invest in renewable energy).

5. Polish power companies' ability to repay loans vs. banks' declarations regarding dates of removing coal sector exposures from loan portfolios

Based on the consolidated financial results of the energy corporations and three variants of the total interest rate (6%, 7% and 8%), the payback period for the interest-bearing liabilities was estimated. Originally, four methods were considered for calculating the amount that could be spent on debt servicing:

- EBITDA – Depreciation,
- EBITDA – CAPEX,
- Operating Cash Flow (OCF) – Depreciation,
- Operating Cash Flow (OCF) – CAPEX.

The 2020 values were assumed. EBITDA (calculated as earnings from operations plus depreciation and amortisation) is the amount that, along with previously accumulated cash, can be used for debt servicing and capital expenditure. As a rule of thumb, EBITDA should be close to the amount of cash flow from operations (Cash Conversion close to 1.0). In practice, due to changes in working capital levels, these amounts may vary. The analysis of financial data of energy companies indicates the high variability of operating cash flows (only in the case of Enea SA results, the standard deviation of operating cash flows from 2018 to 2020 was close to the variability of EBITDA in this period), hence EBITDA was adopted for further analysis. This limited the spectrum of consideration to two scenarios:

- maintaining capital expenditures (CAPEX) at 2020 levels,
- making only replacement investment expenditures (i.e. at the depreciation level).

The calculation of the payback period in the first variant only for Enea SA Capital Group resulted in over the 10-year period of total repayment of the interest-bearing

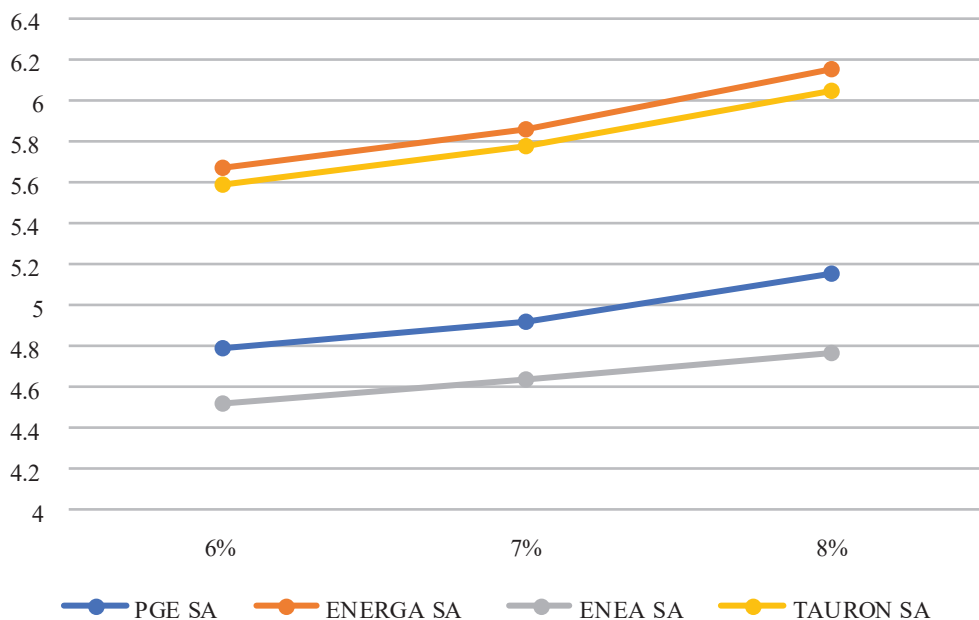


Fig. 2. Payback period (in years) of interest-bearing liabilities as a function of the total interest rate

Source: own study.

liabilities (liabilities from bank loans and issued bonds). In other cases, the surplus is insufficient to cover interest, hence the debt is capitalised. Only the limitation of capital expenditure to the amount of replacement expenditure creates the prospects of the repayment of interest-bearing liabilities in the period coinciding with the banks' declarations (i.e. until the end of 2030). This period, depending on the capital group, oscillates between 4.5 and 6.5 years, and is characterised by relatively low sensitivity to interest rate increases, as shown in Figure 2.

6. Conclusion

The Paris Agreement has certainly changed the attitude of various stakeholder groups towards the need for environmental and climate action. For banks, this problem needs to be analysed from a dual perspective. On the one hand, there is the issue of the direct environmental and climate impact of the bank's operations, while on the other (and this effect is more important), the bank can support or restrict financing to entities representing high-carbon sectors of the economy.

Limiting the discussion to the Polish banking sector, it should be noted that the banks analysed in their financial reports for 2020 present information on the industry structure of their credit portfolios with varying degrees of detail (from

a full structure by NACE, with the amounts of exposure and share in the portfolio, through only to shares, to a few key sectors) or do not provide such a structure at all. The mere disclosure of the industry structure of the loan portfolio (by NACE classification, but with greater detail, for example, at NACE class level) would send a clear signal to the bank's stakeholders regarding a possible mismatch between the lending practices and values declared by that bank. A similar role will certainly be fulfilled by the need to make disclosures related to the implementation of the SFDR Regulation (2019), effective from March 2021.

The majority of banks in Poland (with the exception of banks controlled by the State Treasury, whose exposure to the mining sector and to the electricity production sector in some cases reaches even more than 10% of their total exposure and, according to estimates, constitutes between 80% and 90% of the Polish banking sector's total exposure to the coal sector), declare that they will reduce or stop financing coal mines and coal-fired power plants. While private banks are unanimous in their disapproval of financing coal mines, they are the most likely to allow the continued financing of coal-fired power plants (they will not make new loans), and criteria related to coal's share of sales revenue seem difficult to verify. Only some private banks have set a cut-off date (end of 2030) for financing the coal economy.

These declarations (sometimes made several years ago) do not correspond with the results of analyses of the credit debt of four coal-fired energy companies, the level of which is not being reduced. An analysis of the payback period of interest-bearing liabilities indicates a horizon that will not exceed seven years from the end of 2020.

This is consistent with the banks' declarations as to when they will stop financing coal-fired power generation, but will happen on condition that energy companies significantly reduce their capital expenditure (actually to the level of replacement expenditure). This scenario, however, rules out a de facto transformation of these concerns to become producers of energy from a wide range of sources, and a systematic increase in the share of energy from renewable sources. In an environment of rising prices of CO₂ emission allowances, the solutions appear to be as follows:

- recapitalisation of energy companies so that they can implement new investment projects and settle their liabilities towards banks in the 2030 perspective (if, ultimately, all the banks declare that they will reduce their exposures towards coal sectors to zero by the end of 2030),
- deepening of the division in the banking sector with respect to the issue of coal power financing, i.e. the stabilisation or increase of exposures by state-controlled banks at the expense of private banks owned by foreign investors,
- organisational and capital separation of high-carbon assets from the balance sheets of energy concerns, so that banks could be sure to finance their development based on renewable energy sources.

References

- Alior Bank SA. (2021). *Skonsolidowane sprawozdanie finansowe Grupy Kapitałowej Alior Banku Spółki Akcyjnej za rok zakończony 31 grudnia 2020 roku*. Retrieved November 22, 2021 from <https://www.aliorbank.pl/dodatkowe-informacje/relacje-inwestorskie/wyniki-finansowe.html>
- Bank Gospodarstwa Krajowego. (2021). *Skonsolidowane sprawozdanie finansowe Grupy Kapitałowej BGK sporządzone zgodnie z MSSF za rok obrotowy od dnia 1 stycznia do dnia 31 grudnia 2020 r.* Retrieved November 10, 2021 from <https://www.bgk.pl/dla-klienta/relacje-inwestorskie/okresowe-raporty-finansowe/#c20174>
- Bank Handlowy w Warszawie SA. (2021a). *Raport roczny 2020 Grupy Kapitałowej Banku Handlowego w Warszawie S.A.* Retrieved November 20, 2021 from <https://www.citibank.pl/poland/homepage/polish/relacje-inwestorskie.htm>
- Bank Handlowy w Warszawie SA. (2021b). *Sprawozdanie na temat informacji niefinansowych Banku Handlowego w Warszawie S.A. oraz Grupy Kapitałowej Banku Handlowego w Warszawie S.A. w 2020 roku*. Retrieved November 20, 2021 from <https://www.citibank.pl/poland/homepage/polish/relacje-inwestorskie.htm>
- Bank Millennium SA. (2021a). *Polityka klimatyczna*. Retrieved November 4, 2021 from <https://www.bankmillennium.pl/o-banku/csr/polityka-klimatyczna>
- Bank Millennium SA. (2021b). *Skonsolidowany Finansowy Raport Roczny Grupy Kapitałowej Banku Millennium S.A. za okres 12 miesięcy zakończony 31 grudnia 2020 r.* Retrieved February 7, 2022 from <https://www.bankmillennium.pl/o-banku/relacje-inwestorskie/raporty-finansowe/raporty-roczne>
- Bank Ochrony Środowiska SA. (2021). *Polityka klimatyczna Banku Ochrony Środowiska SA*. Retrieved November 3, 2021 from https://www.bosbank.pl/_data/assets/pdf_file/0013/40333/Polityka-klimatyczna.pdf
- Bank Pekao SA. (2021). *Skonsolidowane Sprawozdanie Finansowe Grupy Kapitałowej Banku Pekao S.A. za 2020 r.* Retrieved November 20, 2021 from <https://www.pekao.com.pl/relacje-inwestorskie/raporty-i-sprawozdania/raporty.html?year=2020>
- Baruya, P. (2017). *EA Clean Coal Centre, CCC/277: International finance for coal-fired power plants*. Retrieved September 29, 2021 from <https://usea.org/sites/default/files/International%20finance%20for%20coal%20fired%20power%20plants%20-%20ccc277.pdf>
- Bernardelli, M., Korzeb, Z., and Niedziółka, P. (2021). The banking sector as the absorber of the COVID-19 crisis? Economic consequences: perception of WSE investors. *Oeconomia Copernicana*, 12(2), 335-374, <https://doi.org/10.24136/oc.2021.012>
- Best, R. (2017). Switching towards coal or renewable energy? The effects of financial capital on energy transitions. *Energy Economics*, (63), 75-83. <https://doi.org/10.1016/j.eneco.2017.01.019>
- BNP Paribas Bank Polska SA. (2021). *Zintegrowany raport roczny 2020*. Retrieved December 15, 2021 from <https://raportroczny.bnpparibas.pl/>
- Bertscher, P.-B., Ravillard, P., and Semeniuk, G. (2021). Do energy efficient firms have better access to finance? *The Energy Journal*, 42(6). <https://doi.org/10.5547/01956574.42.6.pbr>
- Chan, H.-Y., Merdekawati, M., and Suryadi, B. (2022). Bank climate actions and their implications for the coal power sector. *Energy Strategy Reviews*, 39(100799). <https://doi.org/10.1016/j.esr.2021.100799>
- Chen, X., Li, Z., Gallagher, K. P., and Mauzerall, D. L. (2021). Financing carbon lock-in in developing countries: Bilateral financing for power generation technologies from China, Japan, and the United States. *Applied Energy*, 300(117318). <https://doi.org/10.1016/j.apenergy.2021.117318>
- Credit Agricole Bank Polska SA. (2021a). *Raport Odpowiedzialnego Biznesu 2020*. Retrieved December 12, 2021 from https://static.credit-agricole.pl/asset/c/a/-/ca-raport-2020-pl_21452.pdf

- Credit Agricole Bank Polska SA. (2021b). *Sprawozdanie Finansowe Credit Agricole Bank Polska Spółka Akcyjna za rok zakończony dnia 31 grudnia 2020 roku*. Retrieved December 11, 2021 from <https://www.credit-agricole.pl/o-banku/poznaj-credit-agricole-bank-polska#raporty-roczne>
- Delis, M. D., de Greiff, K., and Ongena, S. (2019). *Being stranded with fossil fuel reserves? Climate policy risk and the pricing of bank loans* (EBRD, Working Paper, no. 231). Retrieved October 4, 2021 from <https://www.ebrd.com/publications/working-papers/fossil-fuel-reserves>
- Dvorak, P., Hua, S., and Yoon, F. (2021). Coal projects in Asia face dwindling financing as climate pressure mounts. *The Wall Street Journal*. Retrieved September 20, 2021 from <https://www.wsj.com/articles/coal-projects-in-asia-face-dwindling-financing-as-climate-pressure-mounts-11627896602>
- Eckardt, A., and Mazutis, D. (2020). *Banking for a Low Carbon Future: Explaining climate change responses in a low-salience industry*. Academy of Management Proceedings. <https://doi.org/10.5465/AMBPP.2020.178>
- Ehlers, T., Packer, F., and de Greiff, K. (2021). *The pricing of carbon risk in syndicated loans: which risks are priced and why?* (BIS Working Papers, no. 946). Retrieved September 2, 2021 from <https://www.bis.org/publ/work946.htm>
- Enea SA. (2020). *Skonsolidowane sprawozdanie finansowe GK Enea za 2020 rok*. Retrieved November 7, 2021 from <https://ir.enea.pl/pr/521986/skonsolidowany-raport-roczny-rs-2019>
- Enea SA. (2021). *Skonsolidowane sprawozdanie finansowe GK Enea za 2020 rok*. Retrieved November 3, 2021 from <https://ir.enea.pl/pr/656146/skonsolidowany-raport-roczny-srr-2020>
- Energa SA. (2020). *Skonsolidowane Sprawozdanie Finansowe Grupy Kapitałowej Energa za 2019 rok*. Retrieved November 16, 2021 from <https://ir.energa.pl/pr/518449/skonsolidowane-wyniki-finansowe-za-2019-rok>
- Energa SA. (2021). *Skonsolidowane Sprawozdanie Finansowe Grupy Kapitałowej Energa za 2020 rok*. Retrieved November 20, 2021 from <https://ir.energa.pl/pr/660405/skonsolidowane-wyniki-finansowe-za-2020-rok>
- Getin Noble Bank SA. (2021). *Skonsolidowane sprawozdanie finansowe Grupy Kapitałowej Getin Noble Bank SA za rok zakończony dnia 31 grudnia 2020 roku wraz ze sprawozdaniem niezależnego biegłego rewidenta z badania*. Retrieved November 8, 2021 from <https://www.gnb.pl/raporty/raporty-okresowe/raport-skonsolidowany-za-2020-r.html>
- Grupa Kapitałowa ING Banku Śląskiego SA. (2021a). *Deklaracja ekologiczna 2021 Grupy Kapitałowej ING Banku Śląskiego S.A.* Retrieved January 1, 2022 from https://www.ing.pl/_files/element/item/j5icwwb
- Grupa Kapitałowa ING Banku Śląskiego SA. (2021b). *Roczne Skonsolidowane Sprawozdanie Finansowe za 2020 rok*. Retrieved February 3, 2022 from <https://www.ing.pl/relacje-inwestorskie/wyniki-finansowe>
- Ivanov, I., Kruttli, M. S., and Watugala, S. W. (2021). *Banking on Carbon: Corporate Lending and Cap-and-Trade Policy*. Retrieved September 30, 2021 from <https://ssrn.com/abstract=3650447> or <http://dx.doi.org/10.2139/ssrn.3650447>
- Kustra, A., Pawłowski, S., and Kozieł, D. (2019). Trendy zmian finansowania górnictwa węgla przez międzynarodowe instytucje finansowe. *Przegląd Górniczy*, 75(11), 34-40. Retrieved August 18, 2021 from <http://yadda.icm.edu.pl/yadda/element/bwmeta1.element.baztech-1ed551a0-181a-49b2-a7c8-192d2310cd62>.
- Kuykendall, T. (2021). *S&P Global: Banks provided 11% more money to coal-related companies since 2016 – report*. Retrieved September 20, 2021 from <https://www.spglobal.com/marketintelligence/en/news-insights/latest-news-headlines/banks-provided-11-more-money-to-coal-related-companies-since-2016-8211-report-62849285>
- Manych, N., Steckel, J. Ch., and Jakob, M. (2021). Finance-based accounting of coal emissions. *Environmental Research Letters*, 16(044028), 1-11. <https://doi.org/10.1088/1748-9326/abd972>

- Marques-Ibanez, D., Reghezza, A., Altunbas, Y., d'Acari, C. R., and Spaggiar, M. (2021). *Do banks fuel climate change?* (European Central Bank. Working Papers, no. 2550). Retrieved September 7, 2021 from <https://www.ecb.europa.eu/pub/pdf/scpwps/ecb.wp2550~24c25d5791.en.pdf>
- mBank. (2021a). *Skonsolidowane Sprawozdanie Finansowe Grupy mBanku S.A. według Międzynarodowych Standardów Sprawozdawczości Finansowej za 2020 rok*. Retrieved January 19, 2022 from <https://www.mbank.pl/relacje-inwestorskie/wyniki/>
- mBank SA. (2021b). *Sprawozdanie Zarządu z działalności Grupy mBanku S.A. w 2020 roku (obejmujące Sprawozdanie Zarządu z działalności mBanku S.A.)*. Retrieved January 19, 2022 from <https://www.mbank.pl/relacje-inwestorskie/wyniki/>
- mBank SA. (2019). *Standardy mBanku w zakresie zrównoważonego rozwoju*. Retrieved January 10, 2022 from https://www.mbank.pl/pdf/relacje-inwestorskie/mbank-sustainability-standards_pl.pdf
- Oczyp, P. (2020). Sektor finansowy wehikułem zielonej transformacji. In: *Biznes na rzecz zmiany 2019/2020*. Warszawa: Centrum UNEP/GRID. Retrieved February 8, 2022 from <https://climateleadership.pl/Publikacja%20CL%202020.pdf>
- Park, H., and Kim, J. D. (2020). The transition towards green banking: the role of financial regulators and financial institutions. *AJSSR*, 5(5). <https://doi.org/10.1186/s41180-020-00034-3>
- PGE. (2020). *Skonsolidowane sprawozdanie finansowe Grupy Kapitałowej PGE za 2019 r.* Retrieved January 8, 2022 from <https://www.gkpgge.pl/Relacje-inwestorskie/Materialy-do-pobrania?rok=2019>
- PGE. (2021). *Skonsolidowane sprawozdanie finansowe Grupy Kapitałowej PGE za 2020 r.* Retrieved January 10, 2022 from <https://www.gkpgge.pl/Relacje-inwestorskie/Materialy-do-pobrania?rok=2020>
- PKO BP SA. (2021b). *Skonsolidowane sprawozdanie finansowe Grupy Kapitałowej PKO Banku Polskiego S.A. za rok zakończony 31 grudnia 2020 roku*. Retrieved February 5, 2022 from https://www.pkobp.pl/media_files/3121fe7c-95f3-40ff-9023-0f51564975a5.xhtml
- PKO BP SA. (2021a). *Odpowiedzialność środowiskowa*. Retrieved November 4, 2021 from <https://www.pkobp.pl/relacje-inwestorskie/esg-w-grupie-pko-banku-polskiego/odpowiedzialnosc-srodowiskowa/>
- Rogała, B. (2020). *Największy polski bank wyjaśnił, jak podchodzi do finansowania węgla i energii odnawialnej*. Retrieved September 30, 2021 from <https://300gospodarka.pl/300klimat/najwiekszy-polski-bank-wyjasnil-jak-podchodzi-do-finansowania-wegla-i-energii-odnawialnej>
- Rozporządzenie SFDR – Rozporządzenie Parlamentu Europejskiego i Rady (UE) 2019/2088 z dnia 27 listopada 2019 r. w sprawie ujawniania informacji związanych ze zrównoważonym rozwojem w sektorze usług finansowych (Dz. Urz. UE nr L 317/1 z dnia 09.12.2019 r.). Retrieved February 8, 2022 from <https://eur-lex.europa.eu/legal-content/PL/TXT/PDF/?uri=CELEX:32019R2088&from=PL>
- Rudke, M. (2020). *PKO BP nie sfinansuje już kopalni węgla*. Retrieved October 27, 2021 from <https://www.rp.pl/banki/art539781-pko-bp-nie-sfinansuje-juz-kopalni-wegla>
- Rudke, M. (2021). *BOŚ chce finansować więcej zielonych projektów*. Retrieved November 3, 2021 from <https://www.rp.pl/banki/art19049471-bos-chce-finansowac-wiecej-zielonych-projektow>
- Sachs, J. D., Woo, W. T., Yoshino, N., and Taghizadeh-Hesary, F. (2019). *Why is green finance important?* (ADB Working Paper, no. 917). Tokyo: Asian Development Bank Institute. Retrieved October 6, 2021 from <https://www.adb.org/publications/why-green-finance-important>
- Santander Bank Polska SA. (2021a). *Raport roczny Grupy Kapitałowej Santander Bank Polska SA za 2020 rok*. Retrieved February 7, 2022 from https://www.santander.pl/regulation_file_server/time20210223093858/download?id=162274&lang=pl_PL
- Santander Bank Polska SA. (2021b). *Sprawozdanie Zarządu z działalności Grupy Kapitałowej Santander Bank Polska SA w 2020 roku*. Retrieved January 10, 2022 from https://www.santander.pl/regulation_file_server/time20210223094128/download?id=162275&lang=pl_PL

- Tauron Polska Energia SA. (2020). *Skonsolidowany raport roczny Grupy Kapitałowej Tauron Polska Energia SA za 2019 r.* Retrieved December 20, 2021 from <https://www.tauron.pl/tauron/relacje-inwestorskie>
- Tauron Polska Energia SA. (2021). *Grupa Kapitałowa TAURON Polska Energia S.A. Skonsolidowane sprawozdanie finansowe zgodne z Międzynarodowymi Standardami Sprawozdawczości Finansowej zatwierdzonymi przez Unię Europejską za rok zakończony dnia 31 grudnia 2020 roku.* Retrieved December 20, 2021 from <https://www.tauron.pl/tauron/relacje-inwestorskie>
- Uryniuk, J. (2019). *Alior, Pekao i PKO to jedyne banki, które deklarują jeszcze wsparcie dla węgla. Reszta przeszła na zieloną stronę mocy.* Retrieved September 22, 2021 from <https://www.green-news.pl/54-alior-pko-pekao-energetyka-weglowa>
- Zioło, M. (2020). *Finanse zrównoważone. Rozwój, ryzyko, rynek.* Warszawa – Szczecin: Polskie Wydawnictwo Ekonomiczne.

FINANSOWANIE PRZEDSIĘBIORSTW SEKTORA PALIW KOPALNYCH PRZEZ BANKI W POLSCE

Streszczenie: Celem niniejszego artykułu jest weryfikacja hipotezy o pozytywnym wpływie deklarowanych przez banki w Polsce zmian polityki kredytowej na transformację energetyczną poprzez ograniczanie w sensie absolutnym ekspozycji wobec węglowych koncernów energetycznych. W artykule wykorzystano metodę symulacji okresu zwrotu finansowania dłużnego, wzbogaconą o analizę scenariuszową. Analiza okresu zwrotu oprocentowanych zobowiązań wskazuje na horyzont, który nie przekroczy 7 lat, licząc od końca 2020 roku. Jest to zbieżne z deklaracjami banków odnośnie do terminu zaprzestania finansowania energetyki węglowej, stanie się to jednak pod warunkiem znaczącego ograniczenia przez koncerny energetyczne wydatków inwestycyjnych na ten cel (właściwie do poziomu nakładów odtworzeniowych). Ten scenariusz wyklucza jednakże *de facto* transformację tych koncernów w kierunku stania się producentami energii pochodzącej z wielu źródeł i systematycznego wzrostu udziału energii odnawialnej.

Słowa kluczowe: bank, sektor paliw kopalnych, zmiana klimatu, rozwój zrównoważony.